

BOARD MEETING DATE: December 7, 2012

AGENDA NO. 30

PROPOSAL: Adopt Draft Final 2012 Air Quality Management Plan

SYNOPSIS: The Draft Final 2012 Air Quality Management Plan (AQMP) has been developed in partnership with CARB, U.S. EPA, SCAG and stakeholders throughout the region, including input from local government, health and environmental organizations, and the business community. The AQMP is the legally enforceable blueprint for how to meet and maintain state and federal air quality standards. The 2012 AQMP identifies control measures needed to demonstrate attainment with the federal 24-hour standard for PM2.5 by 2014 in the South Coast Air Basin. In addition, the 2012 AQMP provides updates on progress towards meeting the 8-hour ozone standard for 2023, an attainment demonstration for the revoked 1-hour ozone standard, a VMT offset demonstration for ozone standards, and a report on the health effects of PM2.5.

COMMITTEE: Mobile Source, Reviewed (January 20, February 17, March 16, April 20, May 18, June 15, July 27, September 21, and October 19, 2012)

RECOMMENDED ACTIONS:

1. Append to Appendix I (Health Effects) any additional material or information submitted at the Public Adoption Hearing and then accept Appendix I, which includes a report on the health effects from particulate matter in the South Coast Air Basin, as in conformance with Health and Safety Code Section 40471(b).
2. Certify the Final Program Environmental Impact Report for the 2012 AQMP, in accordance with the attached Resolution (Attachment A);

3. Adopt the 2012 AQMP in accordance with the attached Resolution;
4. Authorize the Executive Officer to make appropriate changes to the adopted 2012 AQMP and its appendices (if necessary) to reflect amendments adopted at the Public Hearing; and then
5. Direct the Executive Officer to forward the adopted 2012 AQMP (as changed) including its appendices to the California Air Resources for its approval and subsequent submittal to the U.S. Environmental Protection Agency.

Barry R. Wallerstein, D.Env.
Executive Officer

EC:PF:vm

Background

The U.S. Environmental Protection Agency (EPA) promulgated the National Ambient Air Quality Standards (NAAQS) for Fine Particles (PM_{2.5}) and 8-hour ozone (O₃) in July 1997 which became effective in June 2004 and April 2005, respectively. The federal 1-hour ozone standard of 1979 was revoked by the U.S. EPA and replaced by the 8-hour average ozone standard, effective June 15, 2005. However, the South Coast Air Basin (Basin) and the former Southeast Desert Modified Air Quality Management Area (which included the Coachella Valley) did not attain the 1-hour federal ozone NAAQS by the attainment date and have some continuing obligations under the former standard. Ozone and PM_{2.5} are the main regional pollutants for which the U.S. EPA has designated the Basin as nonattainment. The Coachella Valley is also a nonattainment area for ozone, but PM_{2.5} concentrations remain below the federal standards.

Several changes to the NAAQS have occurred since the last Air Quality Management Plan (AQMP) update in 2007:

- In 2006, U.S. EPA significantly lowered the level of the 24-hour PM_{2.5} standard, from 65 to 35 µg/m³, while retaining the level of the annual PM_{2.5} standard, 15µg/m³. On December 14, 2009, the U.S. EPA designated the Basin as nonattainment for the 2006 24-hour PM_{2.5} NAAQS. A SIP revision is due to U.S. EPA no later than three years from the effective date of designation, December 14, 2012, demonstrating attainment with the standard by 2014.
- Effective May 27, 2008, the 8-hour ozone NAAQS was subsequently lowered from 80 to 75 ppb. The SIP submittal for this standard is not due until 2015. However, nonattainment areas for the 1997 8-hour ozone standard have continuing obligations to implement their plan and demonstrate attainment of that standard by the applicable attainment date.

- In 2008, the California Air Resources Board (CARB) withdrew key components of its emission reduction commitments in the 2003 South Coast 1-hour ozone SIP. In 2009, U.S EPA approved certain elements of the 2003 South Coast 1-Hour Ozone SIP but disapproved the attainment demonstration, largely because CARB's 2008 withdrawal of emission reduction commitments rendered the plan insufficient to demonstrate attainment. Based on the court decision in *Ass'n of Irrigated Residents v. EPA*, 686 F.3d 668 (9th Cir. 2012), on September 19, 2012, U.S EPA published a proposed SIP call under Section 110(k)(5) of the CAA, finding the existing approved 1-hour ozone SIP substantially inadequate to provide for attainment of the revoked 1-hour ozone standard by the applicable attainment date of November 15, 2010. U.S EPA's proposed SIP call would give the State up to one year after the effective date of the final SIP call to submit the revised attainment demonstration. The District's submittal of the updated 1-hour ozone attainment demonstration as part of this Final 2012 AQMP is in response to this recent U.S. EPA proposed action. Pursuant to the AIR case, U.S EPA also disapproved the SIP revisions submitted by the State of California to meet the vehicle miles traveled (VMT) emissions offset requirement under the Clean Air Act for the Los Angeles-South Coast Air Basin 1-hour and 8-hour ozone nonattainment areas.

The purposes of the 2012 AQMP for the Basin are to set forth a comprehensive and integrated program that will lead the Basin into compliance with the federal 24-hour PM_{2.5} air quality standard, to satisfy the planning requirements of the federal Clean Air Act, and to provide an update to the Basin's commitments towards meeting the federal 8-hour ozone standards. It will also serve to satisfy the recent U.S. EPA proposed requirement for a new attainment demonstration of the revoked 1-hour ozone standard, as well as a VMT emissions offset demonstration. Specifically, the Plan will serve as the official SIP submittal for the federal 2006 24-hour PM_{2.5} standard, for which U.S. EPA has established a due date of December 14, 2012. In addition, the 2012 AQMP will update specific new control measures and commitments for emissions reductions to implement the attainment strategy for the 8-hour ozone SIP, and thus help to reduce reliance on CAA Section 182(e)(5) long-term measures. Once approved by the District Governing Board and CARB, the 2012 AQMP will be submitted to U.S. EPA as the 24-hour PM_{2.5} SIP addressing the 2006 PM_{2.5} NAAQS and as a limited update to the approved 8-hour ozone SIP. The 1-hour ozone attainment demonstration and VMT emissions offset demonstration will also be submitted through CARB to EPA.

The 2012 AQMP also includes an update on the air quality status of the Salton Sea Air Basin (SSAB) in the Coachella Valley, a discussion of the emerging issues of ultrafine particle and near-roadway exposures, a report on the health effects of PM_{2.5}, and an analysis of the energy supply and demand issues that face the Basin and their relationship to air quality. Pursuant to statute, the public hearing will also discuss the report on health effects of PM_{2.5} (Health & Safety Code §40471).

Public Process

The development of the 2012 AQMP has been a regional, multi-agency effort including the District Governing Board, CARB, Southern California Association of Governments (SCAG), and U.S. EPA. A 2012 AQMP Advisory Group was formed to provide feedback and recommendations on the development of the plan, including policy issues and control strategies. The Advisory Group represents a diverse cross section of stakeholders such as large and small businesses, government agencies, environmental and community groups, and academia. In addition, a Scientific, Technical, and Modeling Peer Review (STMPR) Advisory Group convened to make recommendations on air quality modeling, emissions inventory and socioeconomic modeling and analysis. Both Advisory Groups met monthly throughout the AQMP development process and those meetings have been open to the public.

The AQMD conducted a Technology Symposium in September 2011 with the participation of over 150 attendees, including representatives from federal, state, and local governments, academia, industry experts and the public. The goal of the symposium was to solicit new and innovative control concepts to assist in designing a plan for attaining the ambient air quality standards. Based on input received, District staff developed 38 control measures for the 2012 AQMP.

In conjunction with the development of the 2012 AQMP, staff prepared an enhanced 2012 AQMP Outreach Program to inform and engage a wide range of stakeholders on the requirements, approach, goals, and impacts of the 2012 AQMP. In addition to on-going AQMP Advisory Group and Scientific, Technical, Modeling & Peer Review Advisory Group meetings, and the mandatory regional workshops/hearings, staff engaged in enhanced outreach to all stakeholders in the region through numerous presentations, workshops, focus groups throughout the Basin. In all, over 100 meetings were conducted in which the 2012 AQMP was presented or discussed.

A Draft 2012 AQMP was released in July 2012 in order to provide the public and other stakeholders an early opportunity for review. Subsequent to the release of the Draft 2012 AQMP, four regional hearings were held throughout the four counties in September 2012 to discuss the Draft 2012 AQMP and solicit public input.

Based on comments received, revisions to the Draft 2012 AQMP were made publicly available in a Revised Draft 2012 AQMP released in September 2012. An additional four regional public hearings were held in November 2012 in each of the four counties, where additional public input and comments were solicited. These hearings also discussed Appendix I, which reports on the health effects of PM_{2.5}. As a result of this extensive public process, the Final Draft 2012 AQMP is being submitted to the Board for its consideration.

Proposal

The 2012 AQMP incorporates the most recent planning assumptions and the best available information including: revised stationary point and area source emissions inventories; on-road and off-road mobile source emissions inventories based on CARB's latest EMFAC2011 and Off-Road Models; the use of new meteorological episodes for ozone and expanded air quality modeling analysis; and the latest demographic growth forecasts based on the approved 2012 Regional Transportation Plan (2012 RTP) developed by SCAG. The Plan also includes control strategies for demonstrating attainment with the federal 24-hour PM_{2.5} air quality standard, and provides an update to the Basin's commitments towards meeting the federal 8-hour ozone standards. It will also serve to satisfy recent U.S. EPA proposed requirements for a new attainment demonstration of the revoked 1-hour ozone standard, as well as a VMT emissions offset demonstration.

Draft 2012 AQMP

The Draft 2012 AQMP was released on July 2012 and provided the initial strategy for meeting and maintaining the federal 24-hour PM_{2.5} air quality standard by attainment date of 2014, for satisfying the planning requirements of the federal Clean Air Act, and for providing an update to the Basin's commitments towards meeting the federal 8-hour ozone standards. The Draft 2012 AQMP provided base-year and projected emissions inventory updates, Reasonably Available Control Technology (RACT) and Reasonably Available Control Measure (RACM) analysis, control strategies, an attainment demonstration, contingency measures, and transportation conformity budgets.

Revised Draft 2012 AQMP

Based on the comments received and additional analysis, the Revised Draft 2012 AQMP was released in September 2012. The Revised Draft 2012 AQMP included baseline emission inventory refinements, and clarifications to several control measures. Also, in response to public comments, the initial NO_x RECLAIM Phase I measure was shifted from the main strategy to a contingency measure. Based on discussions with SCAG staff, an inter-pollutant flexibility mechanism was developed to allow for emissions below the budget for one pollutant to be used to supplement another pollutant exceeding the budget based on established ratios. During the release of the Revised Draft 2012 AQMP, staff also released two additional appendices to satisfy the recent U.S. EPA proposed requirements for a new attainment demonstration of the revoked 1-hour ozone standard, as well as a VMT emissions offset demonstration; Appendix VII - 1-Hour Ozone Attainment Demonstration; and Appendix VIII - Demonstration of Offset of Growth in Emissions Associated with Growth in Vehicle Miles Traveled Under Section 182(d)(1)(A) of The Federal CAA.

Draft Final 2012 AQMP

The Draft Final 2012 AQMP includes additional revisions to the Revised Draft Plan. Noted revisions include: 1) updated discussions of the 1-hour ozone SIP submittal requirements; 2) finalized emissions inventory data; 3) finalized modeling results; 4) updated precursor equivalency ratios; 5) added clarifications to a few control measures; and 6) added an alternative VMT offset demonstration base year approach. A list of the documents contained in the Draft Final 2012 AQMP is provided as Attachment B to this Board letter. Since the release of the Draft Final AQMP, some minor clarifications were made to several control measures in response to comments received. These changes are included in Attachment F.

Key Findings

Some of the key findings and highlights of the 2012 AQMP include:

- 1) **Air Quality Trends** - Although the long-term trend of air quality in the Basin shows continuous improvement due to existing air quality regulations, the slowing rate of improvement in ozone levels is a cause for concern. Both PM10 and PM2.5 levels have improved dramatically over the past two decades. Annual average PM10 and PM2.5 concentrations have been cut in half since 1990 and 1999, respectively. The Basin has met the PM10 standards at all stations and a request for re-designation to attainment is pending with U.S. EPA. The 2012 AQMP demonstrates attainment of the federal 24-hour PM2.5 standard by 2014 in the Basin through adoption of all feasible measures. However, substantial reductions are still needed to meet the federal 8-hour and 1-hour ozone standards by the applicable attainment dates.
- 2) **Emissions Inventory** - The emission inventory consists of the emissions that occurred in the Basin during the 2008 base year, and the projected emissions in the milestone years of 2014, 2019, 2023, and 2030. The future year emissions are based on growth projections and implementation of adopted air regulations. The emissions inventory is divided into four major classifications: stationary, area, on-road, and off-road sources. Despite projected growth in the population and the economy, baseline emissions decrease over time due to continued implementation of existing regulations. The baseline emission projections provide an estimate of future air quality conditions, including the effects from already adopted rules and regulations, but without the proposed control strategy.
- 3) **Control Strategy** - The overall control strategy proposed in the Final 2012 AQMP will provide for attainment of the 2006 24-hour PM2.5 standard by the 2014 attainment date through implementation of short-term 24-hour PM2.5 control measures. The short term measures primarily consist of enhancements to episodic burning curtailment programs for residential wood burning and open burning. The control strategy also specifies ozone measures to further implement the U.S. EPA approved ozone plan for the 8-hour ozone standard. The control strategy includes

emission reductions from both stationary and mobile sources. The proposed control measures in the 2012 AQMP are based on implementation of all feasible control measures through the application of available cleaner technologies, best management practices, incentive programs, as well as development and implementation of zero- and near-zero technologies and control methods.

Although the Basin is projected to meet the 2006 24-hour PM_{2.5} standards by the applicable attainment deadlines, significant challenges remain in meeting the federal ozone standards. The next AQMP in 2015 will include a more comprehensive strategy to demonstrate attainment of the 1997 and 2008 8-hour ozone standards by 2023 and 2032. The 2007 State Implementation Plan (SIP) for the 8-hour ozone NAAQS contains commitments for emission reductions that rely on advancement of technologies, as authorized under Section 182(e)(5) of the federal Clean Air Act. These innovative strategy (182)(e)(5) measures account for a substantial portion of the NO_x emission reductions needed to attain the federal ozone standards – over 200 tons/day. The deadlines to achieve these reductions in the region is 2023 (to attain the 80 ppb NAAQS) with necessary rulemaking completed by 2020. Therefore, all currently feasible ozone control measures are included in the 2012 AQMP as an update to the previously approved 2007 8-hour ozone SIP.

- 4) **24-Hour PM_{2.5} Attainment Demonstration and RFP-** The CAA requires SIPs for most nonattainment areas to demonstrate reasonable further progress (RFP) towards attainment through emission reductions phased in from the time of the SIP submission until the attainment date time frame. The RFP requirements in the CAA are intended to ensure that there are sufficient PM_{2.5} and precursor emission reductions in each nonattainment area to attain the 2006 24-hour PM_{2.5} NAAQS by the December 14, 2014 deadline. The 2012 AQMP demonstrates attainment with the 24-hour PM_{2.5} standard in 2014, which is five years from the 2009 designation date. In such cases, EPA does not require a separate RFP plan.

With respect to the contingency measure requirements, the 2012 AQMP contains an excess of 1.2 µg/m³ air quality improvement (or 71 tpd of NO_x equivalent reductions) through the proposed measures.

- 5) **SIP Submission -** In order to design the most efficient path to clean air with clear regulatory commitments for the immediate future, the 2012 AQMP is an integrated plan addressing multiple pollutants and multiple deadlines. It serves as the official SIP submittal for the federal 2006 24-hour PM_{2.5} standard, for which U.S. EPA has established a due date of December 14, 2012. The 2012 AQMP also provides a limited update of specific new control measures and commitments for emissions reductions to implement the attainment strategy for the approved 8-hour ozone SIP and to reduce reliance on the Section 182(e)(5) long-term measures;

- 6) **1-Hour Ozone Attainment Demonstration** - The 2012 1-hour attainment demonstration was prepared in response to the U.S. EPA's published "SIP call" proposal on September 19, 2012, finding the existing approved 1-hour ozone SIP substantially inadequate to provide for attainment of the revoked 1-hour ozone standard by the applicable attainment date of November 15, 2010. As a result, the state must submit an attainment demonstration for the South Coast for the 1-hour ozone standard showing attainment "as expeditiously as practicable," but not to exceed 10 years beyond the effective date of the SIP call. EPA's proposed SIP call would give the State up to one year after the effective date of the final SIP call to submit the revised attainment demonstration. The District has demonstrated that a period of the full 10 years allowed by law is needed to attain the 1-hour standard. The 1-hour ozone attainment demonstration is a stand-alone document, but with references to the 2012 AQMP and related documents. The attainment demonstration is based on emissions in the 2008 base year and projected controlled emissions for the 2022 when reductions need to be achieved. Given the approximate alignment of the attainment dates, the control strategy for the 1-hour ozone standard is identical to the control strategy for the 1997 federal 8-hour ozone standard. The form of the 1-hour standard allows for a single exceedance at a station annually. The modeling analysis produces a Basin carrying capacity of 410 tons per day of VOC and 150 tons per day of NOx emissions to bring the Basin into attainment with the 1-hour ozone standard. These emissions translate into 30 TPD (7 percent) reduction in VOC emissions and a 185 TPD (55 percent) reduction in NOx emissions beyond 2022 baseline emissions.
- 7) **VMT Offset Requirement Demonstration** - The VMT emissions offset demonstration for the 1-hour and 8-hour ozone standards is prepared in response to U.S. EPA's proposed action entitled "Disapproval of Implementation Plan Revisions; State of California; South Coast VMT Emissions Offset Demonstrations" published on September 19, 2012 (77 Fed. Reg. 58067). The VMT offset demonstration is performed in accordance with EPA's new guidance for both the 8-hour and 1-hour ozone requirements. To address U.S. EPA's guidance on the selection of a base year, two analyses are provided: One using 1990 as base year for both ozone air quality standards, and a second alternative using 2002 as the base year in conjunction with the 8-hour ozone attainment demonstration provided in the 2007 SIP. Based on the 2007 SIP for the 8-hour ozone attainment demonstration, it is projected that the 8-hour ozone ambient air quality standard will be achieved by 2023. The 1-hour ozone attainment demonstration shows that the revoked 1-hour ozone standard will be achieved by 2022. Although District staff believes that 1990 is the appropriate base year for both the 1-hour and 8-hour demonstration, an alternative analysis using 2002 is provided for the 8-hour ozone. In both analyses, there are sufficient transportation control strategies and TCMs to offset the emissions increase due to growth in VMT.

Public Comments

Numerous comments have been received during the Plan development. The specific responses to 99 written comment letters on the 2012 AQMP are addressed in Attachment C, "Response to Comments to the 2012 AQMP," dated November 2012. Additional responses to comment letters not included in the "Draft Final 2012 AQMP Responses to Comments to the 2012 AQMP" publicly released on November 21, 2012 are included as an Addendum to Attachment C.

Key Policy Issues

There are seven key policy issues related to the adoption of the 2012 AQMP for Board consideration which are briefly presented here:

1. **Inclusion of an Ozone Strategy in the 2012 AQMP** – Comments were received stating that the primary purpose of the 2012 AQMP should be to demonstrate attainment with the 24-hour PM_{2.5} standard, which is the only legal requirement, and the Plan should not include SIP commitments to address the 8-hour ozone standard.

Staff believes that given the short timeframe until 2023, and the fact that a significant fraction of the large amount of emission reductions needed to meet the 8-hour ozone standard by 2023 is still from innovative strategy measures, it is important to identify specific measures to achieve the needed reductions in a timely manner. . Comments and potential litigation on U.S EPA's approval of the 2007 ozone SIP have called into question the relative size and reliance on innovative strategy (182)(e)(5) measures to demonstration ozone attainment. Making SIP commitments for reductions when they are identified as feasible demonstrates AQMD's strong commitment to reduce reliance on (182)(e)(5) measures as attainment deadlines approach and preempts possible litigation. Moreover, federal law requires expeditious progress and state law requires all feasible measures towards meeting clean air standards. Including an 8-hour ozone strategy has been supported by U.S. EPA (comment letter dated August 30, 2012).

2. **Need for VOC Controls in the Ozone Strategy** - Comments received stated that there is no reason for additional VOC controls in the ozone strategy given the need for a NO_x-heavy control approach to meet the 8-hour ozone standards. Industry believes any additional measures aimed at the lowering of VOC content in products, restriction on flexibility provisions, or removal of exemptions will create compliance challenges, and will result in the loss of business activity in the Basin.

Modeling efforts by staff have shown that while a NO_x heavy strategy is needed for 8-hour ozone attainment, continued modest VOC reductions are

also needed to ensure that all areas of the Basin show improvement in ozone levels. This is due to the fact that ozone levels not only depend upon overall VOC and NOx emissions levels, but they also depend on the atmospheric ratio of VOC to NOx. When this ratio increases due to necessarily aggressive NOx reductions, it can lead to increases in ozone levels in some areas, especially in the western portion of the Basin. Reduction in VOC emissions could also lessen the burden of controlling the NOx emissions. The additional VOC reductions are nominal, with some proposed measures ensuring that existing claimed reductions will be realized.

3. **Timing of the Submittal of the 1-hour Ozone Attainment Demonstration -** A requirement for the submittal of an attainment demonstration for the revoked 1-hour ozone standard has been proposed by U.S. EPA, and the submittal will be due by no later than the latter part of 2013 or early 2014. Since the emissions inventory, control strategy, and RACT/RACM analysis has already been developed for the 2012 AQMP, and because attainment of the 1-hour standard relies on the same strategy proposed for the 8-hour ozone standard, staff was able to complete an attainment demonstration for the 1-hour ozone standard as an Appendix to the 2012 AQMP. Some commenters would prefer to delay the submittal of the 1-hour ozone attainment demonstration.

Staff believes that there is no reason to delay submitting the 1-hour ozone attainment demonstration given that the overall control strategy is the same as that for the 8-hour standard. Utilizing the current 2012 AQMP emissions inventory, modeling framework and public process is the most efficient use of resources and time. Furthermore, there is little current or expected guidance from U.S. EPA on the technical approach to the 1-hour ozone attainment demonstration. Staff believes it has developed the most reasonable technical approach, and that the early submittal of the 1-hour ozone attainment demonstration with the 2012 AQMP is the best way to get feedback from and provide input to U.S. EPA on its approach. Finally, because this issue is currently before the Court regarding credit rules, submittal now of the 1-hour attainment demonstration should preempt that issue in the current lawsuit.

4. **Evaluation of the Consumer Products Low Vapor Pressure (LVP) Exemption -** Various affected industries (e.g., cleaning product companies, fragrance manufacturers, etc.) were concerned about their ability to successfully reformulate their products if implementation of control measure CTS-04 results in the removal of exemptions for low vapor pressure components.

The purpose of this measure is to assess the effectiveness of existing rules with an LVP exemption. Recent studies indicate many solvents that currently enjoy the LVP exemption volatilize just as rapidly and exhibit reactivity values

comparable to those of conventional solvents. CTS-04 does not seek an across the board elimination of the LVP exemption but rather the re-evaluation of the criteria for the exemption to ensure that the environmental benefit of the consumer product regulation is fully achieved. The control measure seeks a phased implementation starting with data collection of sales and formulation. Then, it will identify product categories for lab testing of evaporative potential where the exemption may need revision. Finally, alternatives to LVP-VOCs will be identified. CARB has authority over the relevant consumer product regulations, and staff is working in partnership with CARB on proposed technical studies and data collection. Any alteration to the LVP exemption will be developed pursuant to the traditional rulemaking process that includes detailed feasibility and cost benefit evaluations as well as extensive public participation. Potential emission reductions are not being committed into SIP. Proposed clarifications to CTS-04 in the Draft Final Plan are included in Attachment F.

5. **Implementing BCM-01 (Residential Wood Burning)** – Concerns were raised as to whether the burning of wood from residential fireplaces is a major source of PM_{2.5} pollution and if curtailment has any substantial benefits. There have also been comments regarding the need for extensive outreach and education associated with the curtailment measure.

Modeling by staff has clearly shown that the wood burning curtailment substantially reduces PM_{2.5} concentration levels during high pollution episodes, and thus is the primary control measure allowing the Basin to achieve the 24-hour PM_{2.5} standard by 2014. Staff is aware of the challenges in raising public awareness of the curtailment program, in providing sufficient notice on curtailment days, and in communicating the health impacts of wood smoke. Staff believes that education and outreach are the most important components of this measure, and strategic planning for communication programs is already underway. Other air districts in the state of California have successfully implemented a similar program, thus, it is considered a feasible control measure.

6. **Backstop Rule for Indirect Sources at Ports** – The Ports of Los Angeles and Long Beach have provided comments on Control Measure IND-01: Backstop Measure for Indirect Sources of Emissions from Ports and Port Related Sources (Port Backstop Measure). Through the Clean Air Action Plan (CAAP), the Ports have voluntarily implemented programs to reduce emissions from a variety of port-related sources. The Ports have commented that the AQMD “reconsider its approach and allow the continuation of the successful collaborative work by the ports, regulatory agencies and other stakeholders under the voluntary Clean Air Action Plan and the San Pedro Bay Standards.”

As a result, the Ports have requested that the Port Backstop Measure be removed from the 2012 AQMP. The Ports have commented that they “can’t accept any regulatory action by the AQMD that will result in AQMD oversight and approvals of port actions, or enforcement actions by the AQMD on the ports for failure of the port industry to meet the ports’ emission reduction goals.”The AQMD staff agrees that the Ports have made significant progress in reducing emissions. It still remains however, that the Ports of Los Angeles and Long Beach are collectively the single largest fixed source of air pollution in Southern California. Port sources such as marine vessels, locomotives, trucks, harbor craft and cargo handling equipment, continue to be the largest sources of NO_x, PM_{2.5} and PM_{2.5} precursors in the region. These sources play a major role in the Basin’s ability to achieve the national PM_{2.5} ambient air quality standards. The AQMD staff believes that it is appropriate and necessary to include a backstop measure to ensure that the Basin’s largest source of NO_x and PM_{2.5} emissions maintains its course of emission reductions.

In response to comments from the Ports, the AQMD staff has made revisions to the Port Backstop Measure that further clarifies the intent and rule development process (see Attachment F). AQMD staff has clarified that a backstop rule will become effective only if emissions from port-related sources exceed targets for NO_x, SO_x, and PM_{2.5} in 2014. In addition, the measure has been revised to further clarify that if additional emission reductions are needed, the Ports would be required to submit a plan on only the emission reduction shortfall. The backstop rule would not require any strategy to be implemented that lacked legal authority, was not cost-effective, or was found to be infeasible. In addition, staff clarified that the backstop rule would include time extension to achieve the targets, if necessary. Lastly, language has been added to the measure regarding enforcement of the port backstop rule. The AQMD staff is committed to continue to work collaboratively with the Ports, agencies, environmental community groups, industry representatives, and other interested parties through the rule development process

7. **NO_x RECLAIM Reduction** - Comments were made as to the need for the first phase of NO_x emissions reductions from RECLAIM facilities. Commenters have also expressed opinions on the mechanism for the NO_x RECLAIM shave (all RECLAIM sources, larger RECLAIM sources, etc.)

State law requires a periodic review and the last re-evaluation of NO_x RECLAIM occurred 7-8 years ago (2004-2005). Further NO_x reductions are necessary for attainment of the ozone standard. In the Revised Draft 2012 AQMP, the first phase of the NO_x RECLAIM shave has been shifted to a contingency measure, only to be implemented if the Basin fails to attain the 24-

hour PM2.5 standard by 2014. The measure will have a gradual implementation to fully achieve a total of 3-5 tons per day NOx RECLAIM reductions by 2020. Staff will assess mechanisms for the NOx RECLAIM shave during rule development. Proposed clarifications to CMB-01 in the Draft Final Plan are included in Attachment F.

8. **Compressed Schedule** - Concern has been raised that the 2012 AQMP development schedule has been compressed, with limited time for review and public input on all documents.

A total of 17 months for public discussion and review occurred during the 2012 AQMP development process. All data and information has been provided to the public as soon as it became available in an open and transparent process. The review period for most of the documents has been extended, additional workshops and regional public hearings have been added, and the scheduled Governing Board adoption hearing date was postponed from September to December 2012. The Draft Plan was released for 51 days; the Revised Draft for 61 days and the Draft Final for 30 days. The Draft Program EIR and Socioeconomic Report were circulated for public review and comment for 45-days. There have been seven public workshops, eight regional hearings in the four-county region, 13 AQMP Advisory Group meetings and 11 STMPR Advisory Group meetings. Staff participated in 75 outreach meetings and provided 65 formal presentations on the 2012 AQMP. Thus, there has been extensive outreach and sufficient time for public comment was provided.

CEQA

Pursuant to California Environmental Quality Act (CEQA) Guidelines §15168, the AQMD has prepared a Program Environmental Impact Report (PEIR) for the 2012 AQMP. The Draft PEIR was released for a 45-day public review and comment period beginning on September 7, 2012, and ending on October 23, 2012. The Draft PEIR analyzed potential adverse impacts from implementing AQMP control measures in the following environmental areas: aesthetics; air quality; energy; hazards and hazardous materials; hydrology and water quality; land use; noise; solid/hazardous waste; and transportation/traffic. Responses to all comments received have been prepared and incorporated into the Final PEIR for the proposed project. Finally, since significant adverse environmental impacts and mitigation measures were identified for the proposed project, a Statement of Findings, a Statement of Overriding Considerations, and a Mitigation Monitoring Plan were prepared in accordance with the requirements of CEQA (Attachment 2 to the Board Resolution).

Socioeconomic Analysis

The socioeconomic analysis for the 2012 AQMP includes costs of control measures, benefits of clean air, job impacts, and other socioeconomic impacts. The analysis is presented at the sub-county level (21 regions within the four-county area).

The projected average annual implementation cost of the 2012 AQMP is \$448 million. The PM_{2.5} strategy, including TCMs proposed by the Southern California Association of Governments (SCAG), is projected to cost \$326.6 million. The cost of TCMs alone is \$326.4 million. The projected cost for all the ozone measures is approximately \$122 million annually, of which \$40 million is attributable to stationary source controls.

Compliance with the federal 24-hour PM_{2.5} standard and progress toward the ozone standards are projected to result in an average annual clean air benefit of \$3.5 billion. The \$3.5 billion benefit includes approximately \$519 million for congestion relief from TCMs, \$2.2 billion for reductions in premature deaths and averted illness, \$696 million for visibility improvements, and \$14 million for reduced damage to materials.

The socioeconomic analysis represents a rigorous application of statistical and economic framework, epidemiological studies, and computer modeling to assess the aggregate potential impacts of the overall suite of control measures and their resulting clean air benefits. The analysis has undergone external peer-review to improve information for the 2012 AQMP and seek suggestions for enhancement of future analyses.

Based on the analysis, the 2012 AQMP is not expected to result in dramatic impacts on the region's competitiveness. The estimated \$3.5 billion benefit is greater than the estimated \$448 million cost. There is a net modest job gain as a result of the 2012 AQMP.

Staff utilized all available information and state-of-the-art models for the socioeconomic analysis, and the methodology underwent extensive peer-review. Key comments received from stakeholders on the socioeconomic report include the need for the quantification of cost effectiveness for all control measures, as well as questioning the assumptions used to quantify the job creation benefits of cleaner air.

Cost effectiveness values were determined for all the control measures with committed SIP emissions reductions, except for one measure which requires further technology assessment and selection to estimate the costs. Staff is committed to conducting a review of its socioeconomic methodology during 2013, convening a panel of experts, and updating the underlying technical studies and assumptions, the assessment methods, and the modeling approaches as appropriate.

Particulate Matter Health Effects

Appendix I (Health Effects) in the 2012 AQMP was prepared to discuss the overall health effects from criteria pollutants (e.g., ozone, PM, CO, NO₂, SO₂, sulfates, lead) and toxic air contaminants. The Appendix includes a report on the health effects of particulate matter in the South Coast Air Basin as required by California Health & Safety Code Section 40471(b). The evaluation was prepared in conjunction with public health agencies, CARB and OEHHA, and peer-reviewed by an Advisory Council made up of 16 members chosen by the Governing Board members and Advisory Groups pursuant to California Health & Safety Code Section 40428. Appendix I was modified to reflect any comments received from the Advisory Council, health agencies and general public. Findings include that a large body of scientific evidence shows adverse impacts of air pollution including PM_{2.5} on human and animal health. Population-based and laboratory studies link air pollution including PM_{2.5} and increased morbidity and, in some instances, earlier mortality. Finally, while methods to study air pollution health effects have progressed, there are still no clear thresholds below which no adverse effects are demonstrated for some pollutants.

The 2012 AQMP submitted for the Governing Boards' consideration consists of the documents entitled:

- Resolution (Attachment A)
- Draft Final 2012 AQMP (Attachment B)
 - Appendix I - Health Effects
 - Appendix II - Current Air Quality
 - Appendix III - Base and Future Year Emission Inventory
 - Appendix IV (A) - District's Stationary Source Control Measures
 - Appendix IV (B) - Proposed 8-Hour Ozone Measures
 - Appendix IV (C) - Regional Transportation Strategies & Control Measures
 - Appendix V - Modeling & Attainment Demonstrations
 - Appendix VI - Reasonably Available Control Measures (RACM) Demonstration
 - Appendix VII - 1-Hour Ozone Attainment Demonstration
 - Appendix VIII - VMT Offset Requirement Demonstration
- Responses to Comments on the 2012 AQMP (November 2012) – (Attachment C)
- Final Program Environmental Impact Report for the 2012 AQMP (Attachment D)
 - Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Plan (*Attachment 2 to the Resolution*)
- Draft Final Socioeconomic Report for the 2012 AQMP (Attachment E)
- Changes to Control Measures IND-01, CMB-01, CTS-01 and CTS-04 (Attachment F)

All of the above documents, as well as previous drafts and marked-up versions, have been made available to the public on the AQMD Website (<http://www.aqmd.gov/aqmp/2012aqmp/DraftFinal/index.html>) and have also been made available through the AQMD Public Information Center.

Attachments

- A. Resolution (*including Attachment 2: Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Plan*)
- B. Draft Final 2012 AQMP (*including Appendices I-VIII*)
- C. Responses to Comments on the 2012 AQMP
- D. Final Program Environmental Impact Report for the 2012 AQMP
- E. Draft Final Socioeconomic Report for the 2012 AQMP
- F. Changes to Control Measures IND-01, CMB-01, CTS-01 and CTS-04

**ATTACHMENT A
RESOLUTION NO. 12-xx**

A Resolution of the South Coast Air Quality Management District (AQMD or District) Governing Board Certifying the Final Program Environmental Impact Report for the 2012 Air Quality Management Plan (AQMP), adopting the Draft Final 2012 AQMP, to be referred to after adoption as the Final 2012 AQMP, and to be submitted into the California State Implementation Plan.

WHEREAS, the U.S. Environmental Protection Agency (U.S. EPA) promulgated a 24-hour fine particulate matter (PM_{2.5}) national ambient air quality standard (NAAQS or standard) in 2006, and 8-hour ozone NAAQS in 1997, followed up by implementation rules which set forth the classification and planning requirements for State Implementation Plans (SIP); and

WHEREAS, the South Coast Air Basin was classified as nonattainment for the 2006 24-hour PM_{2.5} standard on December 14, 2009, with an attainment date by December 14, 2014; and

WHEREAS, the U.S. EPA revoked the 1-hour ozone standard effective June 15, 2005, but on September 19, 2012 issued a proposed call for a California SIP revision for the South Coast to demonstrate attainment of the 1-hour ozone standard; and

WHEREAS, the 1997 8-hour ozone standard became effective on June 15, 2004, with an attainment date for the South Coast of December 31, 2024; and

WHEREAS, the South Coast Air Basin was classified as “extreme” nonattainment for 8-hour ozone for the 1997 standard with attainment dates by 2024; and

WHEREAS, EPA approved the South Coast SIP for 8-hour ozone on March 1, 2012; and

WHEREAS, the federal Clean Air Act requires SIPs for regions not in attainment with the NAAQS be submitted no later than three years after the nonattainment area was designated, whereby, a SIP for the South Coast Air Basin must be submitted for 24-hour PM_{2.5} by December 14, 2012; and

WHEREAS, the South Coast Air Quality Management District has jurisdiction over the South Coast Air Basin and the desert portion of Riverside County known as the Coachella Valley; and

WHEREAS, 40 Code of Federal Regulations (CFR) Part 93 requires that transportation emission budgets for certain criteria pollutants be specified in the SIP, and

WHEREAS, 40 CFR Part 93.118(e)(4)(iv) requires a demonstration that transportation emission budgets submitted to U.S. EPA are “consistent with applicable requirements for reasonable further progress, attainment, or” maintenance (whichever is relevant to the given implementation plan submission); and

WHEREAS, the South Coast Air Quality Management District is committed to comply with the requirements of the federal Clean Air Act; and

WHEREAS, the Lewis-Presley Air Quality Management Act requires the District’s Governing Board adopt an AQMP to achieve and maintain all state and federal air quality standards; to contain deadlines for compliance with federal primary ambient air quality standards; and to achieve the state standards and federal secondary air quality standards by the application of all reasonably available control measures, by the earliest date achievable (Health and Safety Code Section 40462) and the California Clean Air Act requires the District to endeavor to achieve and maintain state ambient air quality standards for ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide by the earliest practicable date (Health and Safety Code Section 40910); and

WHEREAS, the California Clean Air Act requires a nonattainment area to evaluate and, if necessary, update its AQMP under Health & Safety Code §40910 triennially to incorporate the most recent available technical information; and

WHEREAS, the South Coast Air Quality Management District Governing Board is committed to comply with the requirements of the California Clean Air Act; and

WHEREAS, the South Coast Air Quality Management District is unable to specify an attainment date for state ambient air quality standards for 8-hour ozone, PM2.5, and PM10, however, the 2012 AQMP, in conjunction with earlier AQMPs contains every feasible control strategy and measure to ensure progress toward attainment and the AQMP will be reviewed and revised to ensure that progress toward all standards is maintained; and

WHEREAS, the 2012 AQMP must meet all applicable requirements of state law and the federal Clean Air Act; and

WHEREAS, the South Coast Air Quality Management District Governing Board is committed to achieving healthful air in the South Coast Air Basin and all other parts of the District at the earliest possible date; and

WHEREAS, the 2012 AQMP is the result of 17 months of staff work, public review and debate, and has been revised in response to public comments; and

WHEREAS, the 2012 AQMP incorporates updated emissions inventories, ambient measurements, new meteorological episodes, improved air quality modeling analyses, and updated control strategies by the District, and the Southern California Association of Governments (SCAG) and will be forwarded to the California Air Resources Board (CARB) for any necessary additions and submission to EPA; and

WHEREAS, as part of the preparation of an AQMP, in conjunction or coordination with public health agencies such as CARB and the Office of Environmental Health Hazard Assessment (OEHHA), a report has been prepared and peer-reviewed by the Advisory Council on the health impacts of particulate matter air pollution in the South Coast Air Basin pursuant to California Health and Safety Code § 40471, which has been included as part of Appendix I (Health Effects) of the 2012 AQMP together with any required appendices; and

WHEREAS, the 2012 AQMP establishes transportation conformity budgets for the 24-hour PM_{2.5} standard based on the latest planning assumptions; and

WHEREAS, the AQMP satisfies all the attainment deadlines for federal ambient air quality standards for 24-hour PM_{2.5} and 1-hour ozone NAAQS; and

WHEREAS, the 2012 AQMP satisfies the planning requirements set forth in the federal and California Clean Air Acts; and

WHEREAS, the 2012 AQMP includes the 24-hour PM_{2.5} attainment demonstration plan, reasonably available control measure (RACM) and reasonably available control technology (RACT) determinations, and transportation conformity budgets for the South Coast Air Basin; and

WHEREAS, the 2012 AQMP updates the U.S. EPA approved 8-hour ozone control plan with new measures designed to reduce reliance on the

federal Clean Air Act (CAA) Section 182(e)(5) long-term measures for NOx and VOC reductions; and

WHEREAS, in order to reduce reliance on the CAA Section 182(e)(5) long-term measures, the SCAQMD will need emission reductions from sources outside of its primary regulatory authority and from sources that may lack, in some cases, the financial wherewithal to implement technology with reduced air pollutant emissions; and

WHEREAS, a majority of the measures identified to reduce reliance on the CAA Section 182(e)(5) long-term measures rely on continued and sustained funding to incentivize the deployment of the cleanest on-road vehicles and off-road equipment; and

WHEREAS, the 2012 AQMP includes a new demonstration of 1-hour ozone attainment (Appendix VII) and vehicle miles travelled (VMT) emissions offsets (Appendix VIII), as per recent proposed U.S. EPA requirements; and

WHEREAS, the South Coast Air Quality Management District Governing Board finds and determines with certainty that the 2012 AQMP is considered a “project” pursuant to CEQA; and

WHEREAS, pursuant to the California Environmental Quality Act (CEQA) a Notice of Preparation (NOP) of a Draft Program Environmental Impact Report (PEIR) and Initial Study for the 2012 AQMP was prepared and released for a 30-day public comment period, preliminarily setting forth the potential adverse environmental impacts of adopting and implementing the 2012 AQMP; and

WHEREAS, pursuant to CEQA a Draft PEIR on the 2012 AQMP (State Clearinghouse Number 2012061093), including the NOP and Initial Study and responses to comments on the NOP and Initial Study, was prepared and released for a 45-day public comment period, setting forth the potential adverse environmental impacts of adopting and implementing the 2012 AQMP; and

WHEREAS, the Draft PEIR on the 2012 AQMP included an evaluation of project-specific and cumulative direct and indirect impacts from the proposed project and four project alternatives; and

WHEREAS, the AQMD staff reviewed the 2012 AQMP and determined that it may have the potential to generate significant adverse environmental impacts; and

WHEREAS, the Draft PEIR on the 2012 AQMP has been revised based on comments received and modifications to the draft 2012 AQMP and all

comments received were responded to, such that it is now a Final PEIR on the 2012 AQMP; and

WHEREAS, the Governing Board finds and determines, taking into consideration the factors in §(d)(4)(D) of the Governing Board Procedures, that the modifications that have been made to 2012 AQMP, since the Draft PEIR on the 2012 AQMP was made available for public review would not constitute significant new information within the meaning of the CEQA Guidelines; and

WHEREAS, none of the modifications to the 2012 AQMP alter any of the conclusions reached in the Draft PEIR on the 2012 AQMP, nor provide new information of substantial importance that would require recirculation of the Draft PEIR on the 2012 AQMP pursuant to CEQA Guidelines §15088.5; and

WHEREAS, it is necessary that the adequacy of the Final PEIR on the 2012 AQMP be determined by the AQMD Governing Board prior to its certification; and

WHEREAS, it is necessary that the adequacy of responses to all comments received on the Draft PEIR on the 2012 AQMP be determined prior to its certification; and

WHEREAS, it is necessary that the AQMD prepare Findings and a Statement of Overriding Considerations pursuant to CEQA Guidelines §§15091 and 15093, respectively, regarding adverse environmental impacts that cannot be mitigated to insignificance; and,

WHEREAS, Findings and a Statement of Overriding Considerations have been prepared and are included in Attachment 2 to this Resolution, which is attached and incorporated herein by reference; and

WHEREAS, the provisions of Public Resources Code §21081.6 – Mitigation Monitoring and Reporting - require the preparation and adoption of implementation plans for monitoring and reporting measures to mitigate adverse environmental impacts identified in environmental documents; and

WHEREAS, staff has prepared such a plan which sets forth the adverse environmental impacts, mitigation measures, methods, and procedures for monitoring and reporting mitigation measures, and agencies responsible for monitoring mitigation measure, which is included as Attachment 2 to the Resolution and incorporated herein by reference; and

WHEREAS, the South Coast Air Quality Management District Governing Board voting on this Resolution has reviewed and considered the Final Program Environmental Impact Report on the 2012 AQMP, including responses to

comments on the Draft Program Environmental Impact Report on the 2012 AQMP, the Statement of Findings, Statement of Overriding Considerations, and the Mitigation Monitoring and Reporting Plan; and

WHEREAS, the Draft Socioeconomic Report on the 2012 AQMP was prepared and released for public review and comment; and

WHEREAS, the Draft Socioeconomic Report for the 2012 AQMP is revised based on comments received and modifications to the Draft 2012 AQMP such that it is now a Draft Final Socioeconomic Report for the 2012 AQMP; and

WHEREAS, the 2012 AQMP includes every feasible measure and an expeditious adoption schedule; and

WHEREAS, the CARB and the U.S. EPA have the responsibility to control emissions from motor vehicles, motor vehicle fuels, and non-road engines and consumer products which are primarily under their jurisdiction representing over 80 percent of ozone precursor emissions in 2023; and

WHEREAS, significant emission reductions must be achieved from sources under state and federal jurisdiction for the South Coast Air Basin to attain the federal air quality standards; and

WHEREAS, the formal deadline for submission of the 24-hour PM_{2.5} attainment plan is December 14, 2012, and the formal deadline for submission of the 1-hour ozone SIP revision is expected to be late 2013 or early 2014, but since the emissions inventory and control strategy for ozone has already been developed for the 2012 AQMP, and attaining the 1-hour ozone standard can rely on the same strategy for the 8-hour ozone standard, an attainment demonstration for the 1-hour ozone standard is included as an Appendix to the 2012 AQMP; and

WHEREAS, the 1-hour ozone attainment demonstration (Appendix VII) uses the same base year (2008) and future year inventories as presented in Appendix III of the 2012 AQMP and satisfies the pre-base year offset requirement by including pre-base year emissions in the growth projections, consistent with 40 CFR § 51.165(a)(3)(i)(C)(1), as described on page III-2-54 of Appendix III of the 2012 AQMP.

WHEREAS the South Coast Air Quality Management District Governing Board hereby requests that CARB commit to submitting contingency measures as required by Section 182(e)(5) as necessary to meet the requirements for demonstrating attainment of the 1-hr ozone standard; and

WHEREAS, the South Coast Air Quality Management District Governing Board directs staff to move expeditiously to adopt and implement feasible new control measures to achieve long-term reductions while meeting all applicable public notice and other regulatory development requirements; and

WHEREAS, the South Coast Air Quality Management District has held six public workshops on the Draft 2012 AQMP, one public workshop on the Draft Socioeconomic Report, four public hearings throughout the four-county region in September on the Revised Draft 2012 AQMP, 14 AQMP Advisory Group meetings, 11 Scientific, Technical, and Modeling, Peer Review Advisory Group meetings, four public hearings in November throughout the four-county region on the Draft Final 2012 AQMP, and one adoption hearing pursuant to section 40466 of the Health and Safety Code; and

WHEREAS, pursuant to section 40471(b) of the Health and Safety Code, as part of the six public workshops on the Draft 2012 AQMP, four public hearings on the Revised Draft 2012 AQMP, the four public hearings on the Draft Final 2012 AQMP, and adoption hearing, public testimony and input were taken on Appendix I (Health Effects); and

WHEREAS, the record of the public hearing proceedings is located at South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California 91765, and the custodian of the record is the Clerk of the Board; and

WHEREAS, an extensive outreach program took place that included over 75 meetings with local stakeholders, key government agencies, focus groups, topical workshops, and over 65 presentations on the 2012 AQMP provided; and

WHEREAS, the record of the CEQA proceedings is located at South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California 91765, and the custodian of the record is the Assistant Deputy Executive Officer, Planning, Rule Development, and Area Sources.

NOW, THEREFORE BE IT RESOLVED, that the South Coast Air Quality Management District Governing Board does hereby certify that the Final PEIR for the 2012 AQMP including the responses to comments has been completed in compliance with the requirements of CEQA and finds that the Final PEIR on the 2012 AQMP, including responses to comments, was presented to the AQMD Governing Board, whose members reviewed, considered and approved the information therein prior to acting on the 2012 AQMP; and finds that the Final PEIR for the 2012 AQMP reflects the AQMD's independent judgment and analysis; and

BE IT FURTHER RESOLVED, that the District will develop, adopt, submit, and implement the short-term PM2.5 control measures as identified in Table 4-2 and the 8-hour ozone measures in Table 4-4 of Chapter 4 in the 2012 AQMP (Main Document) as expeditiously as possible in order to meet or exceed the commitments identified in Tables 4-10 and 4-11 of the 2012 AQMP (Main Document), and to substitute any other measures as necessary to make up any emission reduction shortfall.

BE IT FURTHER RESOLVED, the District commits to update AQMP emissions inventories, baseline assumptions and control measures as needed to ensure that the best available data is utilized and attainment needs are met.

BE IT FURTHER RESOLVED, the District commits to conduct a review of its socioeconomic analysis methods during 2013, convene a panel of experts, and update assessment methods and approaches, as appropriate.

BE IT FURTHER RESOLVED, the District commits to continue working with the ports on the implementation of control measure IND-01(Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Sources).

BE IT FURTHER RESOLVED, that the Executive Officer is hereby directed to enhance outreach and education efforts related to the “Check before you Burn” residential wood burning curtailment program, and to expand the current incentive programs for gas log buydown and to include potentially wood stove replacements working closely with U.S. EPA and other stakeholders.

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board, pursuant to the requirements of Title 14 California Code of Regulations, does hereby adopt the Statement of Findings pursuant to §15091, and adopts the Statement of Overriding Considerations pursuant to §15093, included in Attachment 2 and incorporated by reference; and

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board, does hereby adopt the Mitigation Monitoring and Reporting Plan, as required by Public Resources Code, Section 21081.6, attached hereto and incorporated by reference; and

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board finds that the mobile source control measures contained in Appendix IV-B are technically feasible and cost-effective and requests that CARB consider them in any future incentives programs or rulemaking.

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board does hereby direct staff to work with state agencies and state legislators, federal agencies and U.S. Congressional and Senate members to identify funding sources and secure funding for the expedited replacement of older existing vehicles and off-road equipment to help reduce the reliance on the CAA Section 182(e)(5) long-term measures.

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board finds that transportation emission budgets are “consistent with applicable requirements for reasonable further progress, attainment, or maintenance (whichever is relevant to the given implementation plan submission)” pursuant to 40 CFR 93.118(e)(4)(iv).

BE IT FURTHER RESOLVED, that the Executive Officer is hereby directed to finalize the 2012 AQMP including the main document, appendices, and related documents as adopted at the December 7, 2012 public hearing.

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board, whose members reviewed, considered and approved the information contained in the documents listed herein, adopts the 2012 AQMP dated December 7, 2012 consisting of the document entitled 2012 AQMP as amended by the final changes set forth by the AQMD Governing Board and the associated documents listed in Attachment 1 to this Resolution, the Draft Final Socioeconomic Report for the 2012 AQMP; the Final Program EIR for the 2012 AQMP, and the Statements of Findings and Overriding Considerations and Mitigation Monitoring Plan (Attachment 2 to this Resolution).

BE IT FURTHER RESOLVED, the Executive Officer is hereby directed to work with CARB and the U.S. EPA to ensure expeditious approval of this 2012 AQMP for PM2.5 and 1-hour ozone attainment.

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board, requests that the 2012 AQMP serve as the SIP revision submittal for the 24-hour PM2.5 attainment demonstration plan including the RACM/RACT determinations for the PM2.5 standard for the South Coast Air Basin, and the PM2.5 Transportation Conformity Budgets for the South Coast Air Basin.

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board, requests that the 2012 AQMP (Appendix VII) serve as the SIP revision submittal for the 1-hour ozone NAAQS attainment demonstration.

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board, requests that the 2012 AQMP (Appendix VIII) serve as the SIP revision submittal for a revised VMT emissions offset demonstration as required under Section 182(d)(1)(A) for both the 1-hour ozone and 8-hour ozone SIPs for the South Coast Air Basin.

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board, requests that the 2012 AQMP serve as an update to the approved 2007 8-hour ozone SIP for the South Coast Air Basin with specific control measures designed to further implement the 8-hour ozone SIP and reduce reliance on Section 182(e)(5) long term measures.

BE IT FURTHER RESOLVED, that the 2012 AQMP does not serve as a revision to the previously approved 8-hour ozone SIP with respect to emissions inventories, attainment demonstration, RFP, and transportation emissions budgets or any other required SIP elements.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby directed to forward a copy of this Resolution, the 2012 AQMP and its appendices as amended by the final changes, to CARB, and to request that these documents be forwarded to the U.S. EPA for approval as part of the California State Implementation Plan. In addition, the Executive Officer is directed to forward a copy of this Resolution, comments on the 2012 AQMP and responses to comments, public notices, and any other information requested by the U.S. EPA for informational purposes.

Dated: _____

Clerk of the District Board

ATTACHMENT 1

The Final 2012 Air Quality Management Plan submitted for the South Coast Air Quality Management District Governing Board's consideration consists of the documents entitled:

- Draft Final 2012 AQMP (Attachment B) including the following appendices:
 - Appendix I - Health Effects
 - Appendix II - Current Air Quality
 - Appendix III - Base and Future Year Emission Inventory
 - Appendix IV (A) - District's Stationary Source Control Measures
 - Appendix IV (B) - Proposed 8-Hour Ozone Measures
 - Appendix IV (C) - Regional Transportation Strategies & Control Measures
 - Appendix V - Modeling & Attainment Demonstrations
 - Appendix VI - Reasonably Available Control Measures (RACM) Demonstration
 - Appendix VII - 1-Hour Ozone Attainment Demonstration
 - Appendix VIII - VMT Offset Requirement Demonstration
- Comments on the 2012 Air Quality Management Plan, and Responses to Comments (November 2012) – (Attachment C)
- Final Program Environmental Impact Report for the 2012 Air Quality Management Plan (Attachment D)
 - Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Plan (Attachment 2 to the Resolution)
- Draft Final Socioeconomic Report for the 2012 Air Quality Management Plan (Attachment E)
- Changes to Control Measures IND-01, CMB-01, CTS-01 and CTS-04 (Attachment F)

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

FINAL PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE 2012 AIR QUALITY MANAGEMENT PLAN

ATTACHMENT 2: FINDINGS; STATEMENT OF OVERRIDING CONSIDERATIONS; AND, MITIGATION, MONITORING AND REPORTING PLAN

SCH No. 2012061093

November 2012

Executive Officer

Barry Wallerstein, D.Env.

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**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD**

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1.0 INTRODUCTION

The California Environmental Quality Act (CEQA), Public Resources Code §21000 et seq., requires that the potential environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impacts of these projects be identified. To fulfill the purpose and intent of CEQA, the SCAQMD has prepared a Program Environmental Impact Report (EIR) to address the potential environmental impacts associated with the proposed 2012 Air Quality Management Plan (AQMP). The South Coast Air Quality Management District (SCAQMD) is the lead agency for the proposed project and, therefore, has prepared a Final Program EIR pursuant to CEQA. The purpose of the Final Program EIR is to describe the proposed project and to identify, analyze, and evaluate any potentially significant adverse environmental impacts that may result from adopting and implementing the proposed 2012 AQMP. A Draft Program EIR was circulated to the public for a 45-day review and comment period from September 7, 2012 to October 23, 2012. The SCAQMD received 13 comment letters during the 45-day public review and comment period. Responses to all comments were prepared and comments and responses are included in Appendix G of the Final Program EIR.

The California Legislature adopted the Lewis Air Quality Act in 1976, creating the SCAQMD from a voluntary association of air pollution control districts in Los Angeles, Orange, Riverside, and San Bernardino counties. The new agency was charged with developing uniform plans and programs for the South Coast Air Basin (Basin) to attain federal air quality standards by the dates specified in federal law. While the Basin has one of the worst air quality problems in the nation, there have been significant improvements in air quality in the Basin over the last two decades, although some air quality standards are still exceeded relatively frequently, and by a wide margin. The agency was also required to meet state standards by the earliest date achievable through the use of reasonably available control measures.

The Lewis Air Quality Act (now known as the Lewis-Presley Air Quality Management Act) requires that the SCAQMD prepare an Air Quality Management Plan (AQMP) consistent with federal planning requirements. In 1977, amendments to the federal Clean Air Act (CAA) included requirements for submitting State Implementation Plans (SIPs) for non-attainment areas that fail to meet all federal ambient air quality standards (Health and Safety Code §40462). The federal CAA was amended in 1990 to specify attainment dates and SIP requirements for ozone, carbon monoxide (CO), nitrogen dioxide (NO₂) and particulate matter less than 10 microns in diameter (PM₁₀). The California Clean Air Act (CCAA), adopted in 1988, requires the SCAQMD to endeavor to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide (SO₂), and NO₂ by the earliest practicable date (Health and Safety Code §40910), and establishing requirements to update the plan periodically. The first AQMP was prepared and approved by the SCAQMD in 1979 and has been updated and revised a number of times. The CCAA requires a three-year plan review and update to the AQMP.

On November 22, 2010, U.S. EPA issued a notice of proposed partial approval and partial disapproval of the 2007 South Coast SIP for the 1997 Fine Particulate Matter Standards and the corresponding 2007 State Strategy. Specifically, U.S. EPA proposed approving the SIP's inventory and regional modeling analyses, but it also proposed disapproving the attainment demonstration because it relied too extensively on commitments to emission reductions in lieu of

fully adopted, submitted, and SIP-approved rules. The notice also cited deficiencies in the SIP's contingency measures.

- In response the U.S. EPA's proposed partial disapproval of the 2007 SIP, on March 4, 2011, the SCAQMD Governing Board approved Revisions to the 2007 PM_{2.5} and Ozone State Implementation Plan for the South Coast Air Basin and Coachella Valley. The revisions to the 2007 PM_{2.5} and Ozone SIP consist of the following:
 - Updated implementation status of SCAQMD control measures necessary to meet the 2015 PM_{2.5} attainment date;
 - Revisions to the control measure adoption schedule;
 - Changes made to the emission inventory resulting from CARB's December 2010 revisions to the on-road truck and off-road equipment rules; and
 - An SCAQMD commitment to its "fair share" of additional NO_x emission reductions, if needed, in the event U.S. EPA does not voluntarily accept the "federal assignment."
- In response to the July 14, 2011 U.S. EPA notice of proposed partial approval and partial disapproval of the 2007 South Coast IP for the 1997 Fine Particulate Matter Standards, at the October 7, 2011 public hearing, the SCAQMD Governing Board approved Further Revisions to PM_{2.5} and Ozone State Implementation Plan for South Coast Air Basin and Coachella Valley. Revisions to the PM_{2.5} SIP included a three-prong approach for identifying contingency measures needed to address U.S. EPA's partial disapproval:
 - Equivalent emission reductions achieved through improvements in air quality;
 - Relying on committed emission reductions for the 2007 ozone plan;
 - Quantifying excess emission reductions achieved by existing rules and programs that were not originally included in the 2007 PM_{2.5} SIP;
 - U.S. EPA approved the PM_{2.5} SIP except for contingency measures on November 9, 2011. Action is pending on the contingency measures; and
 - U.S. EPA approved the 2007 SIP for the eight-hour ozone standard on March 1, 2012.

The 2012 AQMP outlines a comprehensive control strategy that meets the requirement for expeditious progress towards attainment with the federal 24-hour PM_{2.5} ambient air quality standard with all feasible control measures and demonstrates attainment of the standard by 2014. The 2012 AQMP is also an update to the eight-hour ozone control plan with new emission reduction commitments from a set of new control measures, which implement the 2007 AQMP's §182 (e)(5) commitments. In addition, in response to a U.S. EPA's "SIP call" and in anticipation that it will be finalized, the 2012 AQMP *One-hour Ozone Attainment Demonstration*, which demonstrates attainment of the federal one-hour (revoked) ozone standard by the year 2022. U.S. EPA published in the Federal Register a proposal to withdraw its approval of, and then to disapprove, the transportation control measure (TCM) demonstrations, also referred to as vehicle miles travelled (VMT) emissions offset demonstrations, in the 2003 one-hour ozone plan and the 2007 eight-hour ozone plan. As a result, the 2012 AQMP also includes a *VMT Offset Requirement Demonstration*.

2.0 CERTIFICATION OF THE FINAL PROGRAM EIR

The SCAQMD Governing Board certifies that it has been presented with the Final Program EIR and that it has reviewed and considered the information contained in the Final Program EIR prior to making the following certifications and findings. Pursuant to CEQA Guidelines §15090 (Title 14 of the California Code of Regulations, §15090), the SCAQMD Governing Board certifies that the Final Program EIR, including responses to comments, has been completed in compliance with the CEQA statutes and the CEQA Guidelines. The SCAQMD Governing Board certifies the Final Program EIR for the actions described in these findings and in the Final Program EIR, i.e., the proposed project. The SCAQMD Governing Board further certifies that the Final Program EIR reflects its independent judgment and analysis. The Governing Board Resolution includes the certification of the Final Program EIR.

2.1 ENVIRONMENTAL REVIEW PROCESS

To fulfill the purpose and intent of CEQA, the SCAQMD, as the lead agency for the proposed project, prepared and released a Notice of Preparation and Initial Study (NOP/IS), which is a preliminary evaluation of potentially significant adverse environmental impacts associated with the proposed project to be further analyzed in the Draft Program EIR. The original NOP/IS was distributed to responsible agencies and interested parties for a 30-day review and comment period on June 28, 2012. Subsequent to the release of the June 28, 2012 NOP/IS, minor modifications were made to three control measures in the 2012 AQMP. In response to comments received regarding the modifications to the 2012 AQMP, a revised NOP/IS was circulated from August 2, 2012 to August 31, 2012, in compliance with the requirement for a minimum comment period of 30 days. The NOP/IS formed the basis for, and focus of, the technical analyses in the Draft Program EIR.

The following environmental topics were identified in the June 28, 2012 NOP/IS as potentially significant and were further analyzed in the Draft Program EIR: aesthetics, air quality and greenhouse gas emissions; energy; hazards and hazardous materials; hydrology and water quality; and solid and hazardous waste. The June 28, 2012 NOP/IS concluded that there would be no significant adverse impacts on agricultural and forestry resources, biological resources, cultural resources, geology and soils, land use and planning, mineral resources, noise, population and housing, public services, recreation, and transportation and traffic. Based on comments received during the public comment period for the June 28, 2012 NOP/IS, the topics of land use and planning, noise, and, transportation and traffic were identified as potentially significant impact areas in the August 2, 2012 NOP/IS and were also addressed in the Draft Program EIR. A copy of the August 2, 2012 NOP/IS can be found in Appendix A of the Final Program EIR.

Both the June 28, 2012 NOP/IS and August 2, 2012 NOP/IS were circulated to local jurisdictions and public agencies, 2012 AQMP stakeholders, and interested individuals in order to solicit input on the scope of the environmental analysis to be included in the Draft Program EIR. Eleven comment letters were received relative to the June 28, 2012 NOP/IS. Comments and responses to comments received on the June 28, 2012 NOP/IS are included in Appendix B of the Final Program EIR. No comment letters were received on the August 2, 2012 NOP/IS. Finally, comments were made during the seven scoping meetings for the 2012 AQMP that were held on July 10, 2012 (two meetings), July 11, 2012, July 12, 2012, July 24, 2012, August 9, 2012 and

August 23, 2012, and responses to these comments are provided in Appendix D of the Final Program EIR.

The Draft Program EIR was released for a 45-day public review and comment period from September 7, 2012 through October 23, 2012. As with the June 28, 2012 NOP/IS and August 2, 2012 NOP/IS, the Draft Program EIR was circulated for public review and comment to local jurisdictions and public agencies, 2012 AQMP stakeholders, and interested individuals. The environmental topics that were determined to have potentially significant impacts were further analyzed in the Draft Program EIR, and included the following topics: aesthetics, air quality, energy, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, solid and hazardous waste, and transportation and traffic. The analysis concluded that significant adverse project-specific environmental impacts from the proposed project are expected to occur after implementing mitigation measures for: construction air quality, energy, hazards and hazardous materials, hydrology and water quality, noise, and, transportation and traffic. Similarly, significant adverse cumulative environmental impacts were identified for: air quality impacts during construction, energy impacts, hazards and hazardous materials impacts, hydrology and water quality impacts, noise impacts, and cumulatively considerable transportation and traffic impacts.

Thirteen comment letters were received during the public comment period on the Draft Program EIR. Draft Program EIR comments and responses to the comments have been prepared and are included in Appendix G of the Final Program EIR. Changes to the proposed project, including the *One-hour Ozone Attainment Demonstration* and *VMT Offset Requirement Demonstration*, were evaluated and minor modifications have been made to the Draft Program EIR such that it is now a Final Program EIR. However, none of the modifications alter any of the conclusions reached in the Draft Program EIR or provide new information of substantial importance relative to the draft document that would require recirculation of the Draft Program EIR pursuant to CEQA Guidelines §15088.5. Because the 2012 AQMP has the potential to generate significant adverse environmental impacts that cannot be mitigated to less than significance, Findings and a Statement of Overriding Considerations are required and have been prepared pursuant to CEQA Guidelines §15091 and §15093, respectively.

The Final Program EIR consists of an executive summary, project description, environmental setting, environmental impacts and mitigation measures, cumulative impacts, project alternatives, the August 2, 2012 NOP/IS (Appendix A of the Final Program EIR), comments and responses to comments on the June 28, 2012 NOP/IS (Appendix B of the Final Program EIR), a statement that no comments were received on the August 2, 2012 NOP/IS (Appendix C of the Final Program EIR), scoping meeting comments and responses to comments (Appendix D of the Final Program EIR), SCAG's TCM table (Appendix E of the Final Program EIR), *Examples of Measures That Could Reduce Impacts from Planning, Development and Transportation Projects* from SCAG's 2012–2035 RTP/SCS (Appendix F of the Final Program EIR), and comments and responses to comments on the Draft Program EIR (Appendix G of the Final Program EIR). All documents comprising the Final Program EIR for the proposed project are available at SCAQMD headquarters, 21865 Copley Drive, Diamond Bar, California, 91765. The Final Program EIR was made available to the public on November 20, 2012, and can be obtained by contacting the SCAQMD's Public Information Center at (909) 396-2039 or by accessing the SCAQMD's CEQA webpage at: <http://www.aqmd.gov/ceqa/nonaqmd.html>.

2.2 SUMMARY OF THE PROPOSED PROJECT

The purpose of the 2012 AQMP for the South Coast Air Basin (Basin) is to set forth a comprehensive and integrated program that will lead the Basin into compliance with the federal 24-hour PM_{2.5} air quality standard, and to provide an update of the Basin's projections in meeting the federal eight-hour ozone standard. Specifically, the 2012 AQMP would serve as the official SIP submittal for the federal 2006 24-hour PM_{2.5} standard, for which U.S. EPA has established a due date of December 14, 2012. In addition, the 2012 AQMP would update specific elements of the previously approved eight-hour ozone SIP: 1) an updated emissions inventory; 2) new control measures and commitments for emissions reductions to help fulfill the §182 (e)(5) portion of the eight-hour ozone SIP; 3) include an attainment demonstration for the federal one-hour ozone standard (revoked) by the year 2022; and 4) provide a VMT offset requirement demonstration pursuant to U.S. EPA guidance.

2.3 ABSENCE OF NEW INFORMATION

CEQA Guidelines §15088.5 requires a lead agency to recirculate an EIR for further review and comment when significant new information is added to the EIR after public notice is given of the availability of the draft EIR but before certification of a final EIR. New information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect that the project proponent declines to implement. The CEQA Guidelines provide examples of significant new information under this standard. Recirculation is not required where the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR.

The SCAQMD Governing Board recognizes that the Final Program EIR incorporates information obtained by SCAQMD since the Draft Program EIR was completed, and contains additions and clarifications. With respect to this information, the SCAQMD Governing Board finds as follows.

Updated Information: As described in the Final Program EIR, since the Draft Program EIR was circulated, a number of environmental topic areas were modified in response to comments on the 2012 AQMP or to further clarify 2012 AQMP and the associated control measures. Examples of modifications between the Draft and Final Program EIR are summarized below, and discussed in more detail throughout the Response to Comments document (included in Appendix G of the Final Program EIR):

- In response to a U.S. EPA's "SIP call" and in anticipation that it will be finalized, the *One-hour Ozone Attainment Demonstration*, which demonstrates attainment of the federal one-hour (revoked) ozone standard by the year 2022, was prepared and is included as Appendix VII of the 2012 AQMP. In anticipation that U.S. EPA would likely request that the SCAQMD prepare a one-hour ozone SIP, the Final Program EIR for the 2012 AQMP includes 11 project objectives, two that specifically address attaining the federal one-hour ozone standard. The *One-hour Ozone Attainment Demonstration* concluded that the same control measures and TCMs already included in the 2012 AQMP can be relied on to address progress in attaining the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023. This means that the *One-hour Ozone Attainment Demonstration* includes all of the

same ozone-related control measures currently in the 2012 AQMP that were already analyzed in the Draft Program EIR. Therefore, no further environmental analysis is necessary.

- U.S. EPA published in the Federal Register a proposal to withdraw its approval of, and then to disapprove, VMT emissions offset demonstrations, in the 2003 one-hour ozone plan and the 2007 eight-hour ozone plan. As a result, the 2012 AQMP also includes a *VMT Offset Requirement Demonstration*. The *VMT Offset Requirement Demonstration* concluded that the same TCMs already included in the 2012 AQMP can be relied on to comply with the VMT offset requirement. This means that the *VMT Offset Requirement Demonstration* includes all of the same TCMs currently in the 2012 AQMP that were already analyzed in the Draft Program EIR. Therefore, no further environmental analysis is necessary.
- Minor modifications to improve clarity and to provide additional information were made to several 2012 AQMP control measures. The summary descriptions of these control measure were modified in Chapter 2 – Project Description, to reflect these changes.
- In response to comments, minor corrections were made in Subchapter 3.6 – Land Use and Planning, to the Orange County discussion in subsection 3.6.3.2.
- Based on updated information minor changes to inventory and emission reduction estimates were made in Subchapter 4.2 – Air Quality.
- Based on updated information minor changes to inventory and emission reduction estimates were made to the project alternatives in Chapter 6 – Alternatives.

The SCAQMD Governing Board finds that these changes to 2012 AQMP are in accordance to requests by responsible agencies or other entities to comply with their regulatory requirements and processes, but do not cause any new or more severe environmental impacts. Therefore, in accordance with CEQA and the CEQA Guidelines, no recirculation of the Final Program EIR is necessary based on the changes to 2012 AQMP.

Responses to Comments: In response to comments, a number of environmental topic areas were clarified and described in more detail. The SCAQMD Governing Board finds that this additional information does not constitute significant new information requiring recirculation, but rather that the additional information clarifies or amplifies an adequate Program EIR. Specifically, the SCAQMD Governing Board finds that the additional information including the changes described above, does not show that:

1. A new significant environmental impact would result from the project.
2. A substantial increase in the severity of an environmental impact would result.
3. A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the significant environmental impacts of the project, but the project's proponents decline to adopt it.
4. The Draft Program EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

Based on the foregoing reasons, and having reviewed the information contained in the Final Program EIR and in the record of SCAQMD's proceedings, including the comments on the Draft Program EIR and the responses thereto, and the above-described information, the SCAQMD

Governing Board hereby finds that no significant new information has been added to the Final Program EIR since public notice was given of the availability of the Draft Program EIR that would require recirculation of the Draft Program EIR.

2.4 DIFFERENCES OF OPINION REGARDING THE IMPACTS OF THE PROJECT

In making its determination to certify the Final Program EIR and to approve the proposed project, the SCAQMD Governing Board recognizes that the proposed project involves a number of controversial environmental issues and that a range of opinion exists with respect to those issues. The SCAQMD Governing Board has acquired an understanding of the range of opinion by its review of the Draft Program EIR, comments received on the Draft Program EIR and the responses to those comments in the Final Program EIR (Appendix G). Additionally, the SCAQMD Governing Board has its own experience and expertise in assessing air quality effects and in administering its regulatory programs. The SCAQMD Governing Board has reviewed and considered, as a whole, the evidence and analysis presented in the Draft Program EIR, the analysis presented in the comments on the Draft Program EIR, the analysis presented in the Final Program EIR, and the expert opinions of SCAQMD staff addressing those comments. The SCAQMD Governing Board has gained a comprehensive and well-rounded understanding of the environmental issues presented by the proposed project. In turn, this understanding has enabled the SCAQMD Governing Board to make its decisions after weighing and considering the various viewpoints on these important issues. The SCAQMD Governing Board accordingly certifies that its findings are based on full appraisal of all of the information contained in the Final Program EIR, as well as the evidence and other information in the record.

2.5 IMPACTS AND MITIGATION MEASURES

This attachment provides the written analysis and conclusions of the SCAQMD Governing Board regarding the environmental impacts of the proposed project and the mitigation measures proposed in the Final Program EIR and adopted by the decision-making body. In making these findings, the SCAQMD Governing Board has considered the opinions of other members of the public, including opinions that disagree with some of the analysis in the Final Program EIR. The SCAQMD Governing Board finds that the appropriate methodology for calculating effects and determining significance is a judgment within the discretion of the decision-making body; the method of analysis used in the Final Program EIR is supported by substantial evidence in the record, including the expert opinions of the SCAQMD staff; and the significance thresholds used in the Final Program EIR provide reasonable and appropriate means of assessing the significance of the adverse environmental effects of the proposed project.

Table 1 below summarizes the environmental determinations of the Final Program EIR regarding the proposed project's impacts. This table does not attempt to describe the full analysis of each environmental impact contained in the Final Program EIR. Instead, Table 1 provides a summary description of each impact and states the decision-making body's findings on the significance of each impact. A full explanation of these environmental findings and conclusions can be found in the Final Program EIR. These findings hereby incorporate by reference the discussion and analysis in the Final Program EIR supporting the Final Program EIR's determinations regarding the proposed project's impacts and mitigation measures designed to address those impacts. In

making these findings, the SCAQMD Governing Board ratifies, adopts, and incorporates the analysis and explanation in the Final Program EIR, and ratifies, adopts, and incorporates in these findings the determinations and conclusions of the Final Program EIR relating to environmental impacts and mitigation measures, except to the extent any such determinations and conclusions are specifically and expressly modified by these findings. Findings need not be made for environmental impacts that are not significant.

**Table 1
Summary of Environmental Impacts**

Impact	Project-Specific Impact	Cumulative Impact
Aesthetics		
Potential visual impacts and impacts to scenic highways due to overhead power lines	Not significant	Not significant
Air Quality		
Construction emissions of CO and PM10	Significant	Significant
Secondary impacts from increased electricity demand	Not significant	Not significant
Secondary impacts from control of stationary sources	Not significant	Not significant
Secondary impacts from change in use of lower VOC materials	Not significant	Not significant
Secondary impacts from mobile sources	Not significant	Not significant
Secondary impacts from miscellaneous sources	Not significant	Not significant
Impacts associated with toxic air contaminants	Not significant	Not significant
GHG impacts from the implementation of control measures	Not significant	Not significant
Energy		
Increase in energy demand associated with control strategies	Significant	Significant
Increase in natural gas demand	Significant	Significant
Increase in petroleum fuel use	Not significant	Not significant
Increase in alternative fuel use	Not significant	Not significant

Table 1 (Continued)
Summary of Environmental Impacts

Impact	Project-Specific Impact	Cumulative Impact
Hazards and Hazardous Materials		
Fire hazards associated with reformulated coatings, solvents, adhesives, mold release, and consumer products	Mitigated to be less than significant	Not significant
Hazards associated with the use of alternative fuels	Not significant	Not significant
Hazards associated with the transportation of LNG	Significant	Significant
Hazards associated with the release of ammonia during transport	Mitigated to less than significant	Not significant
Hazards associated with the onsite spill of ammonia	Mitigated to less than significant	Not significant
Hazards associated with fuel additives	Not significant	Not significant
Hazards associated with safety issues during start-up, shutdown, and turnaround procedures from the increased use of catalysts	Not significant	Not significant
Hydrology and Water Quality		
Increased wastewater treatment impact on water quality	Not significant	Not significant
Increased use of alternative fuels impact on water quality	Not significant	Not significant
Increased use of electric and hybrid vehicles impact on water quality	Not significant	Not significant
Water demand associated with the manufacture and use of waterborne and add-on air pollution control technologies	Significant	Significant
Impacts associated with the use and application of SBS on water quality	Not significant	Not significant
Impacts associated with the onsite spill of ammonia	Not significant	Not significant
Land Use and Planning		
Conflicts with applicable land use plans, policies, or regulations or the physical division of an established community	Not significant	Not significant

Table 1 (Concluded)
Summary of Environmental Impacts

Impact	Project-Specific Impact	Cumulative Impact
Noise		
Noise and vibration impacts due to construction activities	Significant	Significant
Noise and vibration impacts due to operational activities	Not significant	Not significant
Solid and Hazardous Waste		
Increase in the use of batteries associated with more electric and hybrid vehicles	Not significant	Not significant
Impacts associated with air pollution control technologies	Not significant	Not significant
Impacts associated with new equipment from the implementation of new control measures	Not significant	Not significant
Transportation and Traffic		
Construction related traffic associated with the installation of catenary overhead electrical lines and related facilities	Significant	Significant
Operational related traffic associated with dedicated lanes of the overhead catenary electrical lines	Mitigation required on a project-specific basis	Significant

Notes:

CO = carbon monoxide

PM10 = particulate matter less than 10 microns in diameter

VOC = volatile organic compound

3.0 FINDINGS

When considering the approval of a proposed project, CEQA prohibits a public agency from approving or carrying out the project for which a CEQA document has been completed which identifies one or more significant adverse environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding (CEQA Guidelines §15091). The analysis in the Final Program EIR concluded that the 2012 AQMP has the potential to generate significant adverse air quality, noise, and traffic impacts from construction activities associated with the proposed project, while increased demand for electricity and natural gas, increased water demand, hazards associated with transport of LNG, and traffic impacts were identified during operation of various PM2.5 and ozone control measures. These findings provide the written analysis and conclusions of the Governing Board regarding the environmental impacts of the

2012 AQMP and the mitigation measures included in the Final Program EIR and adopted by the Governing Board as part of approving the 2012 AQMP.

In making these findings, the Governing Board has considered the opinions of other members of the public, including opinions that disagree with some of the analysis used in the Final Program EIR. The Governing Board finds that the appropriate methodology for calculating effects and determining significance is a judgment within the discretion of the Governing Board; the method of analysis used in the Final Program EIR is supported by substantial evidence in the record, including the expert opinions of the SCAQMD staff; and the significance thresholds used in the Final Program EIR provide reasonable and appropriate means of assessing the significance of the adverse environmental effects of the Project. Having received, reviewed, and considered the Final Program EIR and other information in the record of proceedings, the SCAQMD Governing Board hereby adopts the findings below in compliance with CEQA and the CEQA Guidelines.

The following sets forth findings for the significant adverse impacts identified in the Final Program EIR that cannot be reduced to insignificance, those that can be mitigated to less than significant, and the rationale for each finding. The findings are supported by substantial evidence in the record as explained in each finding. These findings will be included in the record of project approval and will also be noted in the Notice of Determination.

3.1 POTENTIALLY SIGNIFICANT IMPACTS WHICH CANNOT BE MITIGATED TO A LEVEL OF INSIGNIFICANCE

The Final Program EIR identified potentially significant project-specific adverse environmental impacts that cannot be reduced to a level of insignificance for the following environmental topics: 1) air quality (CO and PM10) impacts from construction activities; 2) energy – increased demand for electricity and natural gas; 3) hazards associated with an accidental release of LNG during transport; 4) increased demand for water; 5) noise impacts from construction activities; and, 6) traffic impacts from construction activities and operations. The Final Program EIR also identified six potentially significant cumulative adverse environmental impacts that cannot be reduced to a level of insignificance: 1) construction air quality; 2) energy – increased electricity and natural gas demand; 3) hazards and hazardous materials; 4) hydrology and water quality; 5) noise; and, 6) transportation and traffic.

3.1.1 Project-specific CO and PM10 Emissions Associated with Construction Activities Exceed SCAQMD Significance Thresholds Following Mitigation

Finding: The SCAQMD's Governing Board finds that: 1) mitigation measures were incorporated into the project that would reduce the significant adverse construction air quality impacts, but not to less than significant; 2) such mitigation measures are within the jurisdiction of the SCAQMD; and, 3) no feasible measures were identified that would mitigate significant adverse construction CO and PM10 air quality impacts to less than significant. The air quality analysis showed that no other criteria pollutant emissions during construction would exceed any of the applicable construction air quality significance thresholds.

Explanation: An analysis of potentially significant adverse project-specific construction air quality impacts from implementing the 2012 AQMP control measures was performed and it was

concluded that construction CO and PM10 emissions are expected to exceed the applicable SCAQMD regional significance thresholds (see Final Program EIR, Subchapter 4.2 – Air Quality, section 4.2.4). An analysis of potential mitigation measures was conducted to determine if construction CO and PM10 emissions could be mitigated to less than the applicable regional significance threshold. Seven feasible mitigation measures were identified that could reduce significant CO and PM10 construction emission impacts, but would not reduce the pollutant emissions to less than significant. Although these measures would not reduce construction emissions below the applicable SCAQMD CO and PM10 construction air quality significance thresholds, no other feasible mitigation measures or project alternatives have been identified that would reduce the construction impacts to less than significant. Therefore, construction air quality impact of CO and PM10 emissions are expected to remain significant following mitigation.

3.1.2 Project-specific Energy – Electricity Demand Impacts Remain Significant Following Mitigation

Finding: The SCAQMD Governing Board finds that: 1) mitigation measures were incorporated into the project that would reduce the significant adverse electricity demand impacts, but not to less than significant; 2) such mitigation measures are not within the jurisdiction of the SCAQMD, but are within the jurisdiction of local utilities, project sponsors, or other CEQA lead agencies; and, 3) no feasible measures were identified that would mitigate significant adverse electric energy impacts to insignificance.

Explanation: Project-specific increased electricity demand impacts resulting from implementing the 2012 AQMP control measures, where sufficient data exist, are expected to exceed the applicable SCAQMD significance threshold (see Final Program EIR, Subchapter 4.3 – Energy, section 4.3.4). An analysis of potential mitigation measures was conducted to determine if increased electricity demand impacts could be mitigated to less than the applicable significance threshold. Seven feasible mitigation measures were identified that could reduce electricity demand impacts, but would not reduce the level to less than significant. Although these measures would not reduce electricity demand to less than the applicable SCAQMD significance threshold, no other feasible mitigation measures or project alternatives have been identified that would reduce the electricity demand impacts to less than significant. The analysis included the worst-case assumption that all emissions sources affected by a control measure that have the potential to increase demand for electricity, would operate using electricity rather than the more likely result of multiple types of energy being used. In addition, any increase in electricity demand would likely result in a concurrent reduction in demand for other types of fuels, particularly petroleum-based fuels. Therefore, electricity demand impacts are expected to remain significant following mitigation.

As a single purpose public agency responsible for adopting and enforcing air quality rules and regulations, the SCAQMD's authority to implement mitigation measures for electricity demand impacts is limited. CEQA is intended to be implemented in conjunction with discretionary powers granted to public agencies by other laws (CEQA Guidelines §15040 (a)). Further, CEQA Guidelines §15040 (b) specifically states, "CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws." Thus, it may not be feasible for

the SCAQMD to implement appropriate project-specific mitigation measures for electricity demand impacts identified in the Final Program EIR.

3.1.3 Project-specific Energy – Natural Gas Demand Impacts Remain Significant Following Mitigation

Finding: The SCAQMD Governing Board finds that: 1) mitigation measures were incorporated into the project that would reduce the significant adverse natural gas demand impacts, but not to less than significant; 2) such mitigation measures are not within the jurisdiction of the SCAQMD, but are within the jurisdiction of local utilities, project sponsors, or other CEQA lead agencies; and, 3) no feasible measures were identified that would mitigate significant adverse natural gas demand impacts to insignificance.

Explanation: Project-specific natural gas demand impacts resulting from implementing the 2012 AQMP control measures, where sufficient data exist, are expected to exceed the applicable SCAQMD significance threshold (see Final Program EIR, Subchapter 4.3 – Energy, section 4.3.4). An analysis of potential mitigation measures was conducted to determine if natural gas demand impacts could be mitigated to less than the applicable significance threshold. Five feasible mitigation measures were identified that could reduce natural gas demand impacts, but would not reduce the level to less than significant. Although these measures would not reduce natural gas demand impacts to less than the applicable SCAQMD significance threshold, no other feasible mitigation measures or project alternatives have been identified that would reduce the natural gas demand impacts to less than significant. The analysis included the worst-case assumption that all emissions sources affected by a control measure that have the potential to increase demand for natural gas, would operate using natural gas rather than the more likely result of multiple types of energy being used. In addition, any increase in natural gas demand would likely result in a concurrent reduction in demand for other types of fuels, particularly petroleum-based fuels. Therefore, natural gas demand impacts are expected to remain significant following mitigation.

As a single purpose public agency responsible for adopting and enforcing air quality rules and regulations, the SCAQMD's authority to implement mitigation measures for natural gas demand impacts is limited. CEQA is intended to be implemented in conjunction with discretionary powers granted to public agencies by other laws (CEQA Guidelines §15040 (a)). Further, CEQA Guidelines §15040 (b) specifically states, "CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws." Thus, it may not be feasible for the SCAQMD to implement appropriate project-specific mitigation measures for natural gas demand impacts identified in the Final Program EIR.

3.1.4 Project-specific Hazards Associated with Transport of LNG Remain Significant Following Mitigation

Finding: The SCAQMD Governing Board finds that: 1) mitigation measures were incorporated into the project that would reduce the significant adverse hazard impacts associated with the potential accidental release of LNG during transport, but not to less than significant; 2) such mitigation measures are within the jurisdiction of the SCAQMD; and, 3) no feasible measures

were identified that would mitigate significant adverse hazard impacts associated with the potential accidental release of LNG during transport to less than significant.

Explanation: Project-specific hazard impacts associated with transport of LNG are expected to exceed the applicable SCAQMD significance threshold (see Final Program EIR, Subchapter 4.4 – Hazards and Hazardous Materials, section 4.4.4). An analysis of potential mitigation measures was conducted to determine if LNG transport release impacts could be mitigated to less than the applicable significance threshold. Four feasible mitigation measures were identified that could reduce hazard impacts from an accidental release of LNG during transport, but would not reduce the impact to less than significant. Though these measures will not reduce hazard impacts from an accidental release of LNG during transport to less than the applicable SCAQMD significance threshold, no other feasible mitigation measures or project alternatives have been identified that would reduce the hazard impacts associated with transport of LNG to less than significant. Therefore, hazard impacts from an accidental release of LNG during transport are expected to remain significant following mitigation.

3.1.5 Project-specific Water Demand Impacts Associated with Control Technologies Remain Significant Following Mitigation

Finding: The SCAQMD Governing Board finds that: 1) mitigation measures were incorporated into the project that would reduce the significant adverse water demand impacts associated with the manufacture and use of waterborne coatings and add-on air pollution control technologies, but not to less than significant; 2) such mitigation measures are not within the jurisdiction of the SCAQMD, but are within the jurisdiction of local water agencies, project sponsors, or other CEQA lead agencies; and, 3) no feasible measures were identified that would mitigate significant adverse water demand impacts associated with the manufacture and use of waterborne coatings and add-on air pollution control technologies to less than significant.

Explanation: Project-specific water demand impacts associated with increased use of waterborne coatings and add-on air pollution control technologies are expected to exceed the applicable SCAQMD significance threshold (see Final Program EIR, Subchapter 4.5 – Hydrology and Water Quality, section 4.5.4). An analysis of potential mitigation measures was conducted to determine if increased water demand impacts could be mitigated to less than the applicable significance threshold. Four feasible mitigation measures were identified that could reduce water demand impacts, but would not reduce the impacts to less than significant. Although these measures would not reduce water demand impacts to less than the applicable SCAQMD significance threshold, no other feasible mitigation measures or project alternatives have been identified that would reduce the water demand impacts associated with waterborne coatings and add-on air pollution control technologies to less than significant. The analysis included the worst-case assumption that all future compliant coatings would be formulated with water instead of exempt solvents and that, where applicable, operators of emissions sources would only install control equipment that uses water as part of the control process instead of the more likely result of multiple types of control equipment being used. Therefore, water demand impacts are expected to remain significant following mitigation.

As a single purpose public agency responsible for adopting and enforcing air quality rules and regulations, the SCAQMD's authority to implement mitigation measures for water demand

impacts is limited. CEQA is intended to be implemented in conjunction with discretionary powers granted to public agencies by other laws (CEQA Guidelines §15040 (a)). Further, CEQA Guidelines §15040 (b) specifically states, “CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws.” Thus, it may not be feasible for the SCAQMD to implement all appropriate project-specific mitigation measures for water demand impacts identified in the Final Program EIR.

3.1.6 Project-specific Noise Associated with Construction Activities Remain Significant Following Mitigation

Finding: The SCAQMD Governing Board finds that: 1) mitigation measures were incorporated into the project that would reduce the significant adverse noise impacts associated with construction activities, but not to insignificance; 2) some noise impact mitigation measures may be within the jurisdiction of the SCAQMD, while other mitigation measures are within the jurisdiction of local land use agencies, project sponsors, or other CEQA lead agencies; and, 3) no feasible measures were identified that would mitigate significant adverse noise impacts associated construction activities to less than significant.

Explanation: Project-specific noise impacts associated with construction activities are expected to exceed the applicable SCAQMD significance thresholds (see Final Program EIR, Subchapter 4.7 – Noise, section 4.7.4). An analysis of potential mitigation measures was conducted to determine if noise impacts could be mitigated to less than the applicable significance threshold. Nine feasible mitigation measures were identified that could reduce noise impacts, but would not reduce noise impacts to less than significant. Though these measures would not reduce noise impacts to less than the applicable SCAQMD significance threshold, no other feasible mitigation measures or project alternatives have been identified that would reduce the noise impacts associated with construction activities to less than significant. Therefore, noise impacts are expected to remain significant following mitigation. It should be noted that, once construction activities cease, potentially significant adverse noise impacts during construction from implementing 2012 AQMP control measures would also cease.

As a single purpose public agency responsible for adopting and enforcing air quality rules and regulations, the SCAQMD’s authority to implement mitigation measures for noise impacts is limited. CEQA is intended to be implemented in conjunction with discretionary powers granted to public agencies by other laws (CEQA Guidelines §15040 (a)). Further, CEQA Guidelines §15040 (b) specifically states, “CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws.” Thus, it may not be feasible for the SCAQMD to implement all appropriate project-specific mitigation measures for noise impacts identified in the Final Program EIR.

3.1.7 Project-specific Traffic Impacts Associated with Construction Activities and Operations Remain Significant Following Mitigation

Finding: The SCAQMD Governing Board finds that: 1) mitigation measures were incorporated into the project that would reduce the significant adverse traffic impacts associated with construction activities and operations, but not to less than significant; 2) some traffic impact mitigation measures may be within the jurisdiction of the SCAQMD, while other mitigation

measures are within the jurisdiction of local land use agencies, project sponsors, or other CEQA lead agencies; and, 3) no feasible measures were identified that would mitigate significant adverse traffic impacts associated construction activities and operations to insignificance.

Explanation: The project-specific traffic impacts associated with construction activities and operations are expected to exceed the applicable SCAQMD significance thresholds (see Final Program EIR, Subchapter 4.9 – Transportation and Traffic, section 4.9.4). An analysis of potential mitigation measures was conducted to determine if traffic impacts could be mitigated to less than the applicable significance threshold. One feasible mitigation measure was identified that could reduce traffic impacts, but would not reduce the impacts to less than significant. Although this measure would not reduce traffic impacts to less than the applicable SCAQMD significance threshold, no other feasible mitigation measures or project alternatives have been identified that would reduce the traffic impacts associated with construction activities to less than significant. Therefore, traffic impacts during construction and operation are expected to remain significant following mitigation. It should be noted that, once construction activities cease, potentially significant adverse traffic impacts during construction from implementing 2012 AQMP control measures would also cease.

As a single purpose public agency responsible for adopting and enforcing air quality rules and regulations, the SCAQMD's authority to implement mitigation measures for traffic impacts is limited. CEQA is intended to be implemented in conjunction with discretionary powers granted to public agencies by other laws (CEQA Guidelines §15040 (a)). Further, CEQA Guidelines §15040 (b) specifically states, "CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws." Thus, it may not be feasible for the SCAQMD to implement all appropriate project-specific mitigation measures for traffic and transportation impacts identified in the Final Program EIR.

3.1.8 Cumulative Construction Emissions Were Concluded to Be Significant and Would Remain Significant Following Mitigation

SCAG's TCMs and related strategies, measures and recommendations included in the 2012-2035 RTP/SCS are also included in the 2012 AQMP. Because the TCMs, their associated mitigation measures, and their emissions reductions are included along with the 2012 AQMP and because the TCMs and other projects in the 2012-2035 RTP/SCS have the potential to generate related or similar impacts compared to the 2012 AQMP, the 2012-2035 RTP/SCS is considered to be a cumulatively related project.

Finding: The SCAQMD Governing Board finds that: 1) project-specific mitigation measures were incorporated into the project that would also reduce significant adverse cumulative construction air quality impacts, but not to less than significant; 2) such project-specific mitigation measures are within the jurisdiction of the SCAQMD; 3) no additional feasible measures were identified in the Final Program EIR for the 2012 AQMP that would mitigate significant adverse cumulative construction air quality impacts to less than significant; 4) feasible mitigation measures to reduce significant adverse construction air quality impacts were identified in the Program EIR for the 2012-2035 RTP/SCS; and, 5) in spite of implementing construction air quality impacts mitigation measures from the 2012 AQMP and the 2012-2035 RTP/SCS Program EIRs, cumulative construction air quality impacts remain significant.

Explanation: Project-specific construction air quality impacts were concluded to be significant and, therefore, cumulatively considerable as defined by CEQA Guidelines §15064 (h)(1). As a result, cumulative construction air quality impacts are concluded to be cumulatively significant (see Final Program EIR, Chapter 5 – Cumulative Impacts, section 5.4.1). The Program EIR for the 2012-2035 RTP/SCS concluded that implementing the 2012-2035 RTP/SCS also has the potential to generate significant adverse construction air quality impacts. Eighteen feasible mitigation measures were identified in the Program EIR for the 2012-2035 RTP/SCS that could reduce project-specific construction air quality impacts, but would not reduce the impacts to less than significant. Any concurrent emissions-generating activities from reasonably foreseeable construction activities from both the 2012 AQMP and the 2012-2035 RTP/SCS would add additional construction air quality emissions burdens to these significance determinations. However, implementing the 2012-2035 RTP/SCS would likely include other entities or agencies, acting as the lead agency, which would be responsible for implementing feasible mitigation measures if required. For these impacts, SCAQMD incorporates by reference the mitigation measures and mitigation, monitoring and reporting program for the 2012-2035 RTP/SCS.

3.1.9 Cumulative Energy Impacts Were Concluded to Be Significant and Would Remain Significant Following Mitigation

SCAG's TCMs and related strategies, measures and recommendations included in the 2012-2035 RTP/SCS are also included in the 2012 AQMP. Because the TCMs, their associated mitigation measures, and their emissions reductions are included along with the 2012 AQMP and because the TCMs and other projects in the 2012-2035 RTP/SCS have the potential to generate related or similar impacts compared to the 2012 AQMP, the 2012-2035 RTP/SCS is considered to be a cumulatively related project.

Finding: The SCAQMD Governing Board finds that: 1) project-specific mitigation measures were incorporated into the project that would also reduce significant adverse cumulative electricity and natural gas demand impacts, but not to less than significant; 2) some of the mitigation measures are not within the jurisdiction of the SCAQMD, but are within the jurisdiction of local utilities, project sponsors, or other CEQA lead agencies; 3) no additional feasible measures were identified in the Final Program EIR for the 2012 AQMP that would mitigate significant adverse cumulative energy demand impacts to less than significant; 4) feasible mitigation measures to reduce significant adverse energy demand impacts were identified in the Program EIR for the 2012-2035 RTP/SCS; and, 5) in spite of implementing energy demand impact mitigation measures from the 2012 AQMP and the 2012-2035 RTP/SCS Program EIRs, cumulative energy demand impacts remain significant.

Explanation: Project-specific electricity and natural gas demand impacts were concluded to be significant and, therefore, cumulatively considerable as defined by CEQA Guidelines §15064 (h)(1). As a result, cumulative electricity and natural gas demand impacts are concluded to be cumulatively significant (see Final Program EIR, Chapter 5 – Cumulative Impacts, section 5.4.1). The Program EIR for the 2012-2035 RTP/SCS concluded that implementing the 2012-2035 RTP/SCS also has the potential to generate significant adverse electricity and natural gas demand impacts. Over 60 feasible mitigation measures were identified in the Program EIR for the 2012-2035 RTP/SCS that could reduce electricity and natural gas demand impacts, but would not reduce the impacts to less than significant. Concurrent operations from reasonably

foreseeable activities from both the 2012 AQMP and the 2012-2035 RTP/SCS that increase demand for electricity and natural gas would add additional electricity and natural gas demand burdens to these significance determinations. However, implementing the 2012-2035 RTP/SCS would likely include other entities or agencies, acting as the lead agency, which would be responsible for implementing feasible mitigation measures if required. For these impacts, SCAQMD incorporates by reference the mitigation measures and mitigation, monitoring and reporting program for the 2012-2035 RTP/SCS.

3.1.10 Cumulative Hazards and Hazardous Materials Impacts Were Concluded to Be Significant and Would and Remain Significant Following Mitigation

SCAG's TCMs and related strategies, measures and recommendations included in the 2012-2035 RTP/SCS are also included in the 2012 AQMP. Because the TCMs, their associated mitigation measures, and their emissions reductions are included along with the 2012 AQMP and because the TCMs and other projects in the 2012-2035 RTP/SCS have the potential to generate related or similar impacts compared to the 2012 AQMP, the 2012-2035 RTP/SCS is considered to be a cumulatively related project.

Finding: The SCAQMD Governing Board finds that: 1) project-specific mitigation measures were incorporated into the project that would reduce the significant adverse hazard impacts associated with an accidental release of LNG during transport, but not to less than significant; 2) such mitigation measures are within the jurisdiction of the SCAQMD; 3) no additional feasible measures were identified that would mitigate these significant adverse hazard impacts to less than significant; 4) feasible mitigation measures to reduce significant adverse hazard impacts were identified in the Program EIR for the 2012-2035 RTP/SCS; and, 5) in spite of implementing hazard impact mitigation measures from the 2012 AQMP and the 2012-2035 RTP/SCS Program EIRs, cumulative energy demand impacts remain significant.

Explanation: Project-specific hazard impacts from an accidental release of LNG during transport were concluded to be significant and, therefore, cumulatively considerable as defined by CEQA Guidelines §15064 (h)(1). The Program EIR for the 2012-2035 RTP/SCS concluded that implementing the 2012-2035 RTP/SCS also has the potential to generate significant adverse hazard impacts. Approximately 14 feasible mitigation measures were identified in the Program EIR for the 2012-2035 RTP/SCS that could reduce hazard impacts, but would not reduce the impacts to less than significant. Concurrent operations from reasonably foreseeable activities from both the 2012 AQMP and the 2012-2035 RTP/SCS that increase transport of hazardous materials would add additional hazard burdens to these significance determinations. However, implementing the 2012-2035 RTP/SCS would likely include other entities or agencies, acting as the lead agency, which would be responsible for implementing feasible mitigation measures if required. For these impacts, SCAQMD incorporates by reference the mitigation measures and mitigation, monitoring and reporting program for the 2012-2035 RTP/SCS.

3.1.11 Cumulative Hydrology and Water Quality Impacts Were Concluded to Be Significant and Would Remain Significant Following Mitigation

SCAG's TCMs and related strategies, measures and recommendations included in the 2012-2035 RTP/SCS are also included in the 2012 AQMP. Because the TCMs, their associated mitigation

measures, and their emissions reductions are included along with the 2012 AQMP and because the TCMs and other projects in the 2012-2035 RTP/SCS have the potential to generate related or similar impacts compared to the 2012 AQMP, the 2012-2035 RTP/SCS is considered to be a cumulatively related project.

Finding: The SCAQMD Governing Board finds that: 1) mitigation measures were incorporated into the project that would reduce the significant adverse water demand impacts, but not to less than significant; 2) some of the mitigation measures are not within the jurisdiction of the SCAQMD, but are within the jurisdiction of local water agencies, project sponsors, or other CEQA lead agencies; 3) no additional feasible measures were identified in the Final Program EIR for the 2012 AQMP that would mitigate significant adverse cumulative water demand impacts to less than significant; 4) feasible mitigation measures to reduce significant adverse water demand impacts were identified in the Program EIR for the 2012-2035 RTP/SCS; and, 5) in spite of implementing water demand impact mitigation measures from the 2012 AQMP and the 2012-2035 RTP/SCS Program EIRs, cumulative water demand impacts remain significant.

Explanation: Project-specific water demand impacts were concluded to be significant and, therefore, cumulatively considerable as defined by CEQA Guidelines §15064 (h)(1). As a result, cumulative water demand impacts are concluded to be cumulatively significant (see Final Program EIR, Chapter 5 – Cumulative Impacts, section 5.10). The Program EIR for the 2012-2035 RTP/SCS concluded that implementing the 2012-2035 RTP/SCS also has the potential to generate significant adverse electricity and natural gas demand impacts. Over 60 feasible mitigation measures were identified in the Program EIR for the 2012-2035 RTP/SCS that could reduce water demand impacts, but would not reduce the impacts to less than significant. Concurrent operations from reasonably foreseeable activities from both the 2012 AQMP and the 2012-2035 RTP/SCS that increase demand for water would add additional water demand burdens to these significance determinations. However, implementing the 2012-2035 RTP/SCS would likely include other entities or agencies, acting as the lead agency, which would be responsible for implementing feasible mitigation measures if required. For these impacts, SCAQMD incorporates by reference the mitigation measures and mitigation, monitoring and reporting program for the 2012-2035 RTP/SCS.

3.1.12 Cumulative Noise Impacts Were Concluded to Be Significant and Would Remain Significant Following Mitigation

SCAG's TCMs and related strategies, measures and recommendations included in the 2012-2035 RTP/SCS are also included in the 2012 AQMP. Because the TCMs, their associated mitigation measures, and their emissions reductions are included along with the 2012 AQMP and because the TCMs and other projects in the 2012-2035 RTP/SCS have the potential to generate related or similar impacts compared to the 2012 AQMP, the 2012-2035 RTP/SCS is considered to be a cumulatively related project.

Finding: The SCAQMD Governing Board finds that: 1) mitigation measures were incorporated into the project that would reduce the significant adverse noise impacts from construction activities, but not to less than significant; 2) some of the mitigation measures are not within the jurisdiction of the SCAQMD, but are within the jurisdiction of local land use agencies, project sponsors, or other CEQA lead agencies; 3) no additional feasible measures were identified in the

Final Program EIR for the 2012 AQMP that would mitigate significant adverse cumulative noise impacts during construction to less than significant; 4) feasible mitigation measures to reduce significant adverse noise impacts during construction were identified in the Program EIR for the 2012-2035 RTP/SCS; and, 5) in spite of implementing construction noise impact mitigation measures from the 2012 AQMP and the 2012-2035 RTP/SCS Program EIRs, cumulative construction noise impacts remain significant.

Explanation: Project-specific noise impacts during construction were concluded to be significant and, therefore, cumulatively considerable as defined by CEQA Guidelines §15064 (h)(1). As a result, cumulative construction noise impacts are concluded to be cumulatively significant (see Final Program EIR, Chapter 5 – Cumulative Impacts, section 5.10). The Program EIR for the 2012-2035 RTP/SCS concluded that implementing the 2012-2035 RTP/SCS also has the potential to generate significant adverse noise impacts during both construction and operation of future 2012-2035 RTP/SCS projects. Approximately 18 feasible mitigation measures were identified in the Program EIR for the 2012-2035 RTP/SCS that could reduce potential impacts during construction and operation, but would not reduce the impacts to less than significant. Concurrent operations from reasonably foreseeable activities from both the 2012 AQMP and the 2012-2035 RTP/SCS that increase noise impacts during construction would add additional construction noise burdens to these significance determinations. However, implementing the 2012-2035 RTP/SCS would likely include other entities or agencies, acting as the lead agency, which would be responsible for implementing feasible mitigation measures if required. For these impacts, SCAQMD incorporates by reference the mitigation measures and mitigation, monitoring and reporting program for the 2012-2035 RTP/SCS.

3.1.13 Cumulative Transportation and Traffic Impacts Were Concluded to Be Significant and Would Remain Significant Following Mitigation

Finding: The SCAQMD Governing Board finds that: 1) mitigation measures were incorporated into the project that would reduce the significant adverse transportation and traffic impacts from construction activities, but not to less than significant; 2) some of the mitigation measures are not within the jurisdiction of the SCAQMD, but are within the jurisdiction of local utilities, project sponsors, or other CEQA lead agencies; 3) no additional feasible measures were identified in the Final Program EIR for the 2012 AQMP that would mitigate significant adverse cumulative transportation and traffic impacts to less than significant; 4) feasible mitigation measures to reduce significant adverse transportation and traffic impacts were identified in the Program EIR for the 2012-2035 RTP/SCS; and, 5) in spite of implementing transportation and traffic impact mitigation measures from the 2012 AQMP and the 2012-2035 RTP/SCS Program EIRs, cumulative transportation and traffic impacts remain significant.

Explanation: Project-specific transportation and traffic impacts were concluded to be significant and, therefore, cumulatively considerable as defined by CEQA Guidelines §15064 (h)(1). As a result, cumulative transportation and traffic impacts are concluded to be cumulatively significant (see Final Program EIR, Chapter 5 – Cumulative Impacts, section 5.18). The Program EIR for the 2012-2035 RTP/SCS concluded that implementing the 2012-2035 RTP/SCS also has the potential to generate significant adverse transportation and traffic impacts. The Program EIR for the 2012-2035 RTP/SCS evaluated potential transportation and traffic impacts to six different areas. One transportation and traffic impact area was identified that

would produce related or similar types of transportation and traffic impacts compared to the 2012 AQMP. It was concluded in the Program EIR for the 2012-2035 RTP/SCS that implementing roadway improvement projects, the 2012-2035 RTP/SCS would contribute to a cumulatively considerable amount of transportation VMT impacts despite regional planning efforts.

The Program EIR for the 2012-2035 RTP/SCS identified 98 feasible mitigation measures were that could reduce transportation and traffic impacts for all areas analyzed, including increased VMT impacts, but would not reduce the impacts to less than significant. Concurrent operations from reasonably foreseeable activities from both the 2012 AQMP and the 2012-2035 RTP/SCS that increase transportation and traffic impacts would add additional transportation and traffic burdens to these significance determinations. However, implementing the 2012-2035 RTP/SCS would likely include other entities or agencies, acting as the lead agency, which would be responsible for implementing feasible mitigation measures if required. For these impacts, SCAQMD incorporates by reference the mitigation measures and mitigation, monitoring and reporting program for the 2012-2035 RTP/SCS.

3.2 POTENTIALLY SIGNIFICANT IMPACTS WHICH CAN BE MITIGATED TO A LEVEL OF INSIGNIFICANCE

The Final Program EIR for the 2012 AQMP identified significant adverse impacts to the following environmental topics: increased flammability of potential replacement solvents; hazard impacts associated with an accidental release of ammonia during transport; and hazard impacts associated with an accidental release of ammonia stored onsite. As explained in the following paragraphs, feasible mitigation measures were identified that have the potential to reduce the significant adverse environmental impacts identified here.

Potential hazard impacts associated with increased flammability of potential replacement solvents, reformulated coatings, and consumer products are expected to exceed the applicable SCAQMD significance threshold (see Final Program EIR, Subchapter 4.4 – Hazards and Hazardous Materials, section 4.4.3). An analysis of potential mitigation measures was conducted to determine if fire hazards could be mitigated to less than the applicable significance threshold. The analysis identified two feasible mitigation measures that could reduce fire hazards to less than significant. Therefore, applying the mitigation measure would reduce the fire hazard impacts to less than significant.

Potential hazard impacts associated with an accidental release of ammonia during transport are expected to exceed the applicable SCAQMD significance threshold (see Final Program EIR, Subchapter 4.4 – Hazards and Hazardous Materials, subsection 4.4.4.3). An analysis of potential mitigation measures was conducted to determine if transportation hazards could be mitigated to less than the applicable significance threshold. The analysis identified one feasible mitigation measure that could reduce ammonia transport hazards to less than significant. Therefore, applying the mitigation measure would reduce the ammonia transport hazard impacts to less than significant.

Potential hazard impacts associated with an accidental release of ammonia stored onsite are expected to exceed the applicable SCAQMD significance threshold (see Final Program EIR, Subchapter 4.4 – Hazards and Hazardous Materials, subsection 4.4.4.3). An analysis of potential

mitigation measures was conducted to determine if onsite storage hazards could be mitigated to less than the applicable significance threshold. The analysis identified four feasible mitigation measures that could reduce onsite ammonia storage hazards to less than significant. Therefore, applying the mitigation measure would reduce the onsite ammonia storage hazard impacts to less than significant.

3.3 IMPACTS ASSOCIATED WITH ALTERNATIVES

The Final Program EIR includes an evaluation of four potential alternatives to the 2012 AQMP. The Final Program EIR examines the environmental impacts of each alternative in comparison with the proposed project and the relative ability of each alternative to satisfy the project objectives. The Final Program EIR also summarizes the criteria used to identify a range of reasonable alternatives for review and describes proposals that SCAQMD concluded did not merit additional, more-detailed review either because they did not present viable alternatives to the proposed project or they are variations on the alternatives that are evaluated in detail.

In making these findings, the SCAQMD Governing Board certifies that it has independently reviewed and considered the information on alternatives provided in the Final Program EIR, including the information provided in comments on the Draft Program EIR and the responses to those comments in the Final Program EIR. The Final Program EIR's discussion and analysis of these alternatives is not repeated in these findings, but the discussion and analysis of the alternatives in the Final Program EIR is incorporated in these findings by reference.

3.3.1 Description of Project Objectives

CEQA Guidelines §15124 (b) requires an EIR to include a statement of objectives, which describes the underlying purpose of the proposed project. The purpose of the statement of objectives is to aid the lead agency in identifying alternatives and the decision-makers in preparing findings and a statement of overriding considerations, if necessary. The objectives of the proposed 2012 AQMP are summarized in the following points.

1. Reduce PM_{2.5} nonattainment pollutants and their precursors on an expeditious implementation schedule;
2. Demonstrate attainment of the 24-hour PM_{2.5} national ambient air quality standard at the earliest possible date;
3. Reduce population exposure to PM_{2.5} by achieving the 24-hour PM_{2.5} national ambient air quality standard;
4. Continue making expeditious progress towards attaining the federal eight-hour ozone standard and demonstrate attainment of the federal one-hour ozone standard (revoked) by 2022 – 2023;
5. Reduce population exposure to ozone through continued progress towards attaining the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023;
6. Reduce nonattainment pollutants at a rate of five percent per year, or include all feasible measures and an expeditious adoption schedule;

7. Update planning assumptions and the best available information such as SCAG's 2012 RTP, CARB's latest EMFAC2011 for the on-road mobile source emissions inventory, and CARB's OFF-ROAD 2011 model;
8. Update emission inventories using 2008 as the base year and incorporate emission reductions achieved from all applicable rules and regulations and the latest demographic forecasts;
9. Update any remaining control measures from the 2007 AQMP and incorporated into the 2012 AQMP as appropriate;
10. Compliance with federal contingency measure requirements;
11. Continue to work closely with businesses and industry groups to identify the most cost-effective and efficient path to meeting clean air goals while being sensitive to their economic concerns.

3.3.2 Project Alternatives that Would Reduce the Potentially Significant Impacts are Not Available

Finding: The Final Program EIR describes and evaluates four alternatives to the proposed project. The SCAQMD Governing Board finds that the proposed project would satisfy the Project Objectives. The SCAQMD Governing Board finds that the alternatives are unable to satisfy the project objectives to the same degree as the proposed project. The SCAQMD Governing Board further finds that, on balance, none of the alternatives has environmental advantages over the proposed project that are sufficiently great to justify approval of such an alternative instead of the 2012 AQMP, in light of each such alternative's inability to satisfy the proposed project objectives to the same degree as the proposed project. Accordingly, the SCAQMD Governing Board has determined to approve the proposed project instead of approving any of the alternatives.

In making this determination, the SCAQMD Governing Board finds that when compared to the alternatives described and evaluated in the Final Program EIR, the proposed project provides a reasonable balance between fully satisfying the project objectives and reducing potential environmental impacts to an acceptable level. The SCAQMD Governing Board further finds and determines that the proposed project should be approved, rather than one of the other alternatives.

Explanation: Potential adverse environmental impacts from four project alternatives were analyzed and their relative merits were compared to the 2012 AQMP. Alternatives evaluated in the Final Program EIR for the 2012 AQMP include: the No Project Alternative, PM2.5 Attainment Plan Localized PM Control in Mira Loma Area, Greater Reliance on NOx Emissions Reductions, and PM2.5 Emissions Reductions Strategies Only. No feasible alternatives were identified that would attain most of the basic objectives of the 2012 AQMP, described above in subsection 3.3.1, and generate fewer or less severe environmental impacts than those of the proposed project, as shown in Table 2.

Table 2
Environmental Impacts of Alternatives Compared to the 2012 AQMP

Environmental Topic	PROJECT				
	2012 AQMP	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Aesthetics					
PM2.5	NS	NS (=)	NS (=)	NS (=)	NS (=)
Ozone	NS	NS (=)	NS (=)	NS (=)	NS (-)
Cumulative	NS	NS (=)	NS (=)	NS (=)	NS (-)
Direct Air Quality Impacts – PM2.5 Attainment Year					
	2014	2019	2017	2017	2014
Secondary Air Quality Impacts					
PM2.5 Construction	S	NS (-)	S (=)	S (=)	S (=)
PM2.5 Operation	NS	NS (-)	NS (-)	NS (-)	NS (=)
Ozone Construction	S	NS (-)	S (=)	S (=)	NS (-)
Ozone Operation	NS	NS (-)	NS (-)	S (=)	NS (-)
Cumulative	S	NS (-)	S (-)	S (=)	NS (-)
Energy					
PM2.5	S	NS (-)	S (-)	S (=)	S (=)
Ozone	S	NS (-)	S (-)	S (+)	NS (-)
Cumulative	S	NS (-)	S (-)	S (+)	S (-)
Hazards and Hazardous Materials					
PM2.5	S	NS (-)	S (-)	S (=)	S (=)
Ozone	S	NS (-)	S (-)	S (+)	NS (-)
Cumulative	S	NS (-)	S (-)	S (+)	S (-)
Hydrology and Water Quality					
PM2.5	S	NS (-)	S (=)	S (=)	S (=)
Ozone	S	NS (-)	S (=)	S (=)	NS (-)
Cumulative	S	NS (-)	S (=)	S (=)	S (-)
Land Use and Planning					
PM2.5	NS	NS (-)	NS (=)	NS (=)	NS (=)
Ozone	NS	NS (-)	NS (=)	NS (=)	NS (-)
Cumulative	NS	NS (-)	NS (=)	NS (=)	NS (-)
Noise					
PM2.5	NS	NS (-)	NS (=)	NS (=)	NS (=)
Ozone	S	NS (-)	S (=)	S (=)	NS (-)
Cumulative	S	NS (-)	S (=)	S (=)	NS (-)
Solid and Hazardous Wastes					
PM2.5	NS	NS (-)	NS (=)	NS (=)	NS (=)
Ozone	NS	NS (-)	NS (=)	NS (+)	NS (-)
Cumulative	NS	NS (-)	NS (=)	NS (+)	NS (-)
Transportation and Traffic					
PM2.5	NS	NS (-)	NS (=)	NS (=)	NS (=)
Ozone	S	NS (-)	S (=)	S (+)	NS (-)
Cumulative	S	NS (-)	S (=)	S (+)	NS (-)

Notes:

NS = Not Significant

S = Significant

(-) = Potential impacts are less than the proposed project.

(+) = Potential impacts are greater than the proposed project.

(=) = Potential impacts are approximately the same as the proposed project.

Summary of Findings Regarding Alternatives: For all of the foregoing reasons, the SCAQMD Governing Board has determined to approve the proposed project instead of one of the alternatives to the proposed project. The SCAQMD Governing Board finds that the range of alternatives evaluated in the Final Program EIR reflects a reasonable attempt to identify and evaluate various types of alternatives that would potentially be capable of reducing the proposed project's environmental effects, while accomplishing most, but not all of the project objectives. The SCAQMD Governing Board finds that the alternatives analysis is sufficient to inform the SCAQMD Governing Board and the public regarding the tradeoffs between the degree to which alternatives to the proposed project could reduce environmental impacts and the corresponding degree to which the alternatives would hinder the SCAQMD's ability to achieve the project objectives.

3.4 FINDINGS CONCLUSION

Changes or alterations have been incorporated into the proposed project to mitigate or minimize the potentially significant adverse environmental effects associated with the following six potentially significant project-specific adverse environmental impacts that cannot be reduced to a level of insignificance: 1) air quality (CO and PM10) impacts from construction activities; 2) energy – increased electricity and natural gas demand; 3) hazards associated with an accidental release of LNG during transport; 4) increased demand for water; 5) noise impacts from construction activities; and, 6) traffic impacts from construction activities and operations. No additional feasible mitigation measures or alternatives were identified that could further reduce the significant project-specific and cumulative environmental impacts identified here. The 2012 AQMP also achieves the project objectives, as described above in subsection 3.3.1, more effectively than the project alternatives analyzed.

Based on the above information, the SCAQMD Governing Board finds that the proposed project achieves the best balance between minimizing potential adverse environmental impacts and achieving the overall project objectives. The SCAQMD Governing Board further finds that all of the findings presented here are supported by substantial evidence in the record.

4.0 STATEMENT OF OVERRIDING CONSIDERATION

If significant adverse impacts of a proposed project remain after incorporating feasible mitigation measures, or no feasible measures to mitigate the adverse impacts are identified, the lead agency must make a determination that the benefits of the proposed project outweigh the unavoidable, significant, adverse environmental effects if it is to approve the project. In accordance with CEQA Guidelines §15093, the SCAQMD Governing Board has, in determining whether or not to approve the proposed project, balanced the economic, social, technological, and other project benefits against its unavoidable environmental risks, and finds that each of the benefits of the proposed project set forth below outweigh the significant adverse environmental effects that are not mitigated to less than significant levels. This statement of overriding considerations is based on the decision-making body's review of the Final Program EIR, responses to comments, and other information in the administrative record. Each of the benefits identified below provides a separate and independent basis for overriding the significant adverse environmental effects of the 2012 AQMP. Accordingly, this Statement of Overriding Considerations regarding potentially significant adverse environmental impacts resulting from the 2012 AQMP, as set forth below,

has been prepared. Pursuant to CEQA Guidelines §15093 (c), a Statement of Overriding Considerations will be included in the record of the project approval and will also be noted in the Notice of Determination.

Having reduced the potential effects of the proposed project through all feasible mitigation measures as described previously in this attachment, and balancing the benefits of the proposed project against its potential unavoidable adverse impacts on air quality, demand for electricity, demand for natural gas, transportation hazards, demand for water, noises, and traffic, the SCAQMD finds that the following legal requirements and benefits of the proposed project outweigh the potentially significant unavoidable adverse impacts for the following reasons:

1. The analysis of potential adverse environmental impacts incorporates a “worst-case” approach. This means that whenever the analysis requires assumptions to be made, those assumptions that result in the greatest adverse environmental impacts are typically chosen. This method likely overestimates the actual significant adverse environmental impacts from the 2012 AQMP.
2. The proposed project would reduce PM2.5 nonattainment pollutants and their precursors on an expeditious implementation schedule;
3. The proposed project would demonstrate attainment of the 24-hour PM2.5 national ambient air quality standard by the year 2014, as required by the federal CAA;
4. The proposed project would reduce population exposure to PM2.5 by achieving the 24-hour PM2.5 national ambient air quality standard by 2014, as required by the federal CAA;
5. The proposed project would continue making expeditious progress towards attaining the federal eight-hour ozone standard and demonstrate attainment of the federal one-hour ozone standard (revoked) by the years 2022 and 2023, respectively;
6. The proposed project would reduce population exposure to ozone through continued progress towards attaining the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023;
7. The proposed project would include all feasible measures and an expeditious adoption schedule;
8. The proposed project would update planning assumptions and the best available information such as SCAG’s 2012 RTP, CARB’s latest EMFAC2011 for the on-road mobile source emissions inventory, and CARB’s OFF-ROAD 2011 model;
9. The proposed project would update emission inventories using 2008 as the base year and incorporate emission reductions achieved from all applicable rules and regulations and the latest demographic forecasts;
10. The proposed project would update any remaining control measures from the 2007 AQMP and incorporated into the 2012 AQMP as appropriate;
11. The proposed project would demonstrate compliance with federal contingency measure requirements;
12. Implementing Mitigation Measures AQ-1 through AQ-2 would reduce significant adverse construction air quality impacts to the maximum extent feasible, but not to less than significant, while also providing construction emission reduction co-benefits because using

Tier 3 construction engines would additionally provide PM and hydrocarbon emission reduction benefits.

13. Implementing Mitigation Measures E-1 through E-12 would reduce significant adverse energy impacts to the maximum extent feasible, but not to less than significant.
14. Implementing Mitigation Measures HZ-1 through HZ-10 would reduce significant adverse hazards and hazardous materials impacts to the maximum extent feasible, but not to less than significant.
15. Implementing Mitigation Measures HWQ-1 through HWQ-4 would reduce significant adverse hydrology and water quality impacts to the maximum extent feasible, but not to less than significant.
16. Implementing Mitigation Measures NO-1 through NO-9 would reduce significant adverse noise impacts to the maximum extent feasible, but not to less than significant.
17. Implementing Mitigation Measure TT-1 would reduce significant adverse transportation and traffic impacts to the maximum extent feasible, but not to less than significant.

In balancing the benefits of the overall project described above with the proposed project's unavoidable and significant adverse environmental impacts, SCAQMD Governing Board finds that the proposed project's benefits individually and collectively outweigh the unavoidable adverse impacts, such that these impacts are acceptable. The SCAQMD Governing Board further finds that substantial evidence presented in the Final Program EIR supports adopting the Final Program EIR despite the proposed project's potential adverse impacts.

5.0 RECORD OF PROCEEDINGS

Upon certification, the record of approval for this proposed project, i.e., the Notice of Determination, will be posted and recorded by the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties. The record of approval for the proposed project and all documents and other materials related to this proposed project may be found at SCAQMD Headquarters, 21865 Copley Drive, Diamond Bar, California, 91765. The Custodian of the Record is the Deputy Executive Officer of Planning, Rules and Area Sources.

6.0 MITIGATION, MONITORING, AND REPORTING PLAN

Pursuant to CEQA Guidelines §15097 and PRC §21081.6, when a public agency conducts an environmental review of a proposed project in conjunction with approving it, the lead agency shall adopt a program for monitoring or reporting on the measures it has imposed to mitigate or avoid significant adverse environmental effects. PRC §21081.6 states in part that when making the findings required by PRC §21081 (a):

“...the public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. For those changes

which have been required or incorporated into the project at the request of a responsible agency or a public agency having jurisdiction by law over natural resources affected by the project, that agency shall, if so requested by the lead or responsible agency, prepare and submit a proposed reporting or monitoring program.”

No responsible agencies or public agencies having jurisdiction by law over natural resources affected by the 2012 AQMP requested changes or mitigation measures relative to potentially significant adverse environmental impacts be incorporated into the 2012 AQMP. Further, it should be noted that the SCAQMD does not construct or operate projects that may result from implementing 2012 AQMP control measures as rules or regulations. As a single purpose public agency responsible for adopting and enforcing air quality rules and regulations, where applicable and within the jurisdiction of the SCAQMD, enforcement of implementing mitigation measures, monitoring, and reporting requirements described in this mitigation, monitoring, and reporting plan (MMRP) is the responsibility of the SCAQMD as the lead agency under CEQA. However, as noted in discussions under Section 3.0 Findings, some of the mitigation measures identified in the Final Program EIR for the 2012 AQMP may not be within the jurisdiction of the SCAQMD, but are within the jurisdiction of local land use agencies, project sponsors, public agencies having jurisdiction by law over natural resources affected by the project, or other CEQA lead agencies.

A public agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity which accepts the delegation; however, until mitigation measures have been completed the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program (CEQA Guidelines §15097 (a)). As a result, this MMRP will identify other public agencies that “can and should” comply with CEQA in assessing and mitigating project-specific impacts.

Finally, the responsibility for mitigation monitoring and reporting described in this MMRP will vary depending on the location and jurisdiction of individual projects because the individual projects resulting from implementing 2012 AQMP control measures as rules or regulations may affect a wide variety of commercial, institutional, industrial, and even residential emission sources located throughout the district. It is expected that additional and more specific mitigation measures and monitoring requirements may be developed as specific rules are promulgated. Similarly, additional and more specific mitigation measures and monitoring requirements may be required for individual projects required to comply with any future rules or regulations that must also undergo an environmental analysis pursuant to CEQA.

6.1 AIR QUALITY IMPACTS AND MITIGATION MEASURES

The analysis of secondary air quality impacts in the Final Program EIR for the 2012 AQMP concluded that construction-related CO and PM10 emissions have the potential to exceed the applicable SCAQMD regional significance thresholds for daily construction emissions. Emission sources contributing to significant CO and PM10 air quality impacts include worker vehicles, heavy construction equipment, and grading/construction activities. The construction air quality mitigation measures identified in the following paragraphs are intended reduce potential construction emissions associated with construction-related emission sources to the maximum extent feasible. Mitigation measure AQ-1 would serve to reduce impacts from on-road mobile

sources and mitigation measures AQ-2 through AQ-7 would serve to reduce impacts from off-road mobile sources. The timing of implementing the construction air quality mitigation measures would be ongoing over the life of the 2012 AQMP and includes the following mitigation measures:

- AQ-1** Develop a Construction Emission Management Plan for the proposed project. The Construction Emission Management Plan shall be submitted to SCAQMD CEQA for approval prior to the start of construction. The Plan shall include measures to minimize emissions from vehicles including, but not limited to consolidating truck deliveries, description of truck routing, description of deliveries including hours of delivery, description of entry/exit points, locations of parking, and construction schedule. At a minimum the Construction Emission Management Plan would include the following types of mitigation measures.
- AQ-2** Maintain construction equipment tuned up and with two to four degree retard diesel engine timing or tuned to manufacturer's recommended specifications that optimize emissions without nullifying engine warranties.
- AQ-3** The project proponent shall survey and document the proposed project's construction areas and identify all construction areas that are served by electricity. This documentation shall be provided as part of the Construction Emissions Management Plan. Electric welders shall be used in all construction areas that are demonstrated to be served by electricity.
- AQ-4** The project proponent shall survey and document the proposed Project's construction areas and identify all construction areas that are served by electricity. This documentation shall be provided as part of the Construction Emissions Management Plan. Onsite electricity rather than temporary power generators shall be used in all construction areas that are demonstrated to be served by electricity.
- AQ-5** The project proponent shall use cranes rated 200 hp or greater equipped with Tier 3 or equivalent engines. Engines equivalent to Tier 3 may consist of Tier 2 engines retrofitted with diesel particulate filters and oxidation catalysts, selective catalytic reduction, or other equivalent NOx control equipment. Retrofitting cranes rated 200 hp or greater with PM and NOx control devices must occur before the start of construction. If cranes rated 200 hp or greater equipped with Tier 3 engines are not available or cannot be retrofitted with PM and NOx control devices, the project proponent shall use cranes rated 200 hp or greater equipped with Tier 2 or equivalent engines. The project proponent shall provide documentation that cranes rated 200 hp or greater equipped with Tier 3 or equivalent engines are not available in the Construction Emissions Management Plan.
- AQ-6** For off-road construction equipment rated 50 to 200 hp that will be operating for eight hours or more, the project proponent shall use equipment rated 50 to 200 hp equipped with Tier 3 or equivalent engines. Engines equivalent to Tier 3 may consist of Tier 2 engines retrofitted with diesel particulate filters and oxidation catalysts, selective catalytic reduction, or other equivalent NOx control equipment. Retrofitting equipment rated 50 to 200 hp with PM and NOx control devices must occur before the start of construction. If equipment rated 50 to 200 hp equipped with Tier 3 engines are not available or cannot be retrofitted with PM and NOx control devices, the project proponent shall use equipment rated 50 to 200 hp equipped with Tier 2 or equivalent engines. The project proponent shall provide documentation that equipment rated 50 to

200 hp equipped with Tier 3 or equivalent engines are not available in the Construction Emissions Management Plan or associated subsequent status reports as information becomes available.

AQ-7 Suspend use of all construction activities that generate air pollutant emissions during first stage smog alerts.

6.2 AIR QUALITY MITIGATION MONITORING AND REPORTING

Implementing Party: Because the 2012 AQMP is a regional plan that can be characterized as an ongoing regulatory program, some of the 2012 AQMP construction air quality mitigation measures in this MMRP may be described as general policies, although some refer to specific actions. The SCAQMD finds that the party or parties responsible for implementing construction air quality mitigation measures from the Final Program EIR for the 2012 AQMP for future projects that have the potential to generate construction air quality impacts from complying with 2012 AQMP control measures promulgated as rules or regulations would be project applicants, project sponsors, or public agencies within the district.

To the extent that the SCAQMD is the lead agency for future projects that must comply with 2012 AQMP control measures promulgated as rules or regulations, it can enforce implementation of 2012 AQMP air quality mitigation measures through its authority to impose binding permit conditions on permit applicants at the time permit applications are processed and approved. Similarly, if the SCAQMD is a responsible agency for such future projects, it would still have the ability to enforce 2012 AQMP mitigations through its authority to impose permit conditions on permit applicants at the time permit applications are processed and approved. If the SCAQMD has no approval authority over future projects that have the potential to generate construction air quality impacts from complying with 2012 AQMP control measures promulgated as rules or regulations, then the public agency with primary approval authority over these future projects can and should impose 2012 AQMP mitigation measures through its authority to impose permit conditions on permit applicants at the time permit applications are processed and approved or through other legally binding instruments.

Monitoring Agency: Because future projects to implement 2012 AQMP control measures promulgated as rules or regulations could be undertaken project applicants, project sponsors, or public agencies throughout the district, the monitoring agency is expected to vary and may include a variety of public agencies performing the role of lead agency. Monitoring would be accomplished as follows:

MMAQ-1 A project applicant, project sponsor, or public agency shall develop and submit a Construction Emission Management Plan to the lead agency for approval. Alternatively, the lead agency can develop a monitoring plan applicable to projects within its jurisdiction. The Construction Emission Management Plan shall include the following: description of construction traffic control methods such as flag persons, contractor entry/exit gates, etc.; construction schedule including hours of operation; description of truck routing; and description of deliveries, including hours of delivery.

The plan shall be submitted to the lead agency for approval prior to beginning construction activities. The lead agency can and should conduct routine inspections of the construction site to verify compliance.

- MMAQ-2** The project applicant, project sponsor, or public agency shall maintain or cause to be maintained maintenance records for the construction equipment. All construction vehicles must be maintained in compliance with the manufacturer's recommended maintenance schedule. Equipment maintenance records would be kept for the duration of the construction phase and at least two years following completion of construction. Equipment maintenance records must be available upon the request of the appropriate agency inspector.
- MMAQ-3** The use of gas or diesel welders shall be prohibited in areas that have access to electricity. Construction areas where electricity is not available will be identified on a site plan as part of the Construction Emission Management Plan submitted to the lead agency for approval. The use of gas or diesel welders within these identified areas will be allowed. The use of gas or diesel welders outside of these identified areas shall be prohibited. The project applicant, project sponsor, or public agency shall include in all construction contracts the requirement that gas and diesel welders are prohibited in certain portions of the site as identified on the site plan. The applicant shall maintain records on where the gas or diesel welders are actually used and their duration of use.
- MMAQ-4** The use of temporary power generators shall be prohibited in areas that have access to electricity. Construction areas where electricity is not available will be identified on a site plan as part of the Construction Emission Management Plan. The use of temporary power generators within these identified areas will be allowed. The use of temporary power generators outside of these identified areas shall be prohibited. The project applicant, project sponsor, or public agency shall include in all construction contracts the requirement that the use of temporary power generators is prohibited in certain portions of the site as identified on the site plan. The applicant shall maintain records on where the generators are actually used and the duration of use.
- MMAQ-5** The use of cranes rated 200 hp or greater shall be limited to cranes equipped with Tier 3 or equivalent engines. Engines equivalent to Tier 3 may consist of Tier 2 engines retrofitted with diesel particulate filters and oxidation catalysts, selective catalytic reduction, or other equivalent NOx control equipment. Retrofitting cranes rated 200 hp or greater with PM and NOx control devices must occur before the start of construction. If cranes rated 200 hp or greater equipped with Tier 3 engines are not available or cannot be retrofitted with PM and NOx control devices, the project proponent shall use cranes rated 200 hp or greater equipped with Tier 2 or equivalent engines. The project applicant, project sponsor, or public agency shall provide documentation that cranes rated 200 hp or greater equipped with Tier 3 or equivalent engines are not available in the Construction Emission Management Plan.
- MMAQ-6** The project applicant, project sponsor, or public agency must ensure that all off-road construction equipment meets the exhaust emission standards and test procedures for heavy-duty off-road diesel cycle engines as presented in the California Code of Regulations, Title 13, §2423 (b)(1). The exhaust emissions from new off-road compression-ignition engines, sold in California, must not exceed the exhaust emission standards set forth for each Tier and corresponding

model year. The project applicant, project sponsor, or public agency will supply the local/lead agency with a report prior to commencement of construction activities that documents the availability of retrofit technologies for large construction equipment, such as diesel particulate filters/traps, oxidation catalysts, and air enhancement technologies. In the event a Tier 3 engine is not available for any off-road engine larger than 100 horsepower, the project applicant, project sponsor, or public agency will ensure that the engine be equipped with a diesel particulate filter, unless certified by engine manufacturers that the use of such devices is not practical for specific engine types. A copy of this report shall be maintained on-site along with other recordkeeping required by this Mitigation Monitoring Plan.

MMAQ-7 The project applicant, project sponsor, or public agency shall maintain a log that contains the days when first stage smog alerts occur and the time that construction activities were suspended or the reasons (emergency conditions) that the activities were not suspended. A copy of this log shall be maintained on-site along with other recordkeeping required by this Mitigation Monitoring Plan.

6.3 ENERGY IMPACTS AND MITIGATION MEASURES

The analysis of secondary air quality impacts in the Final Program EIR for the 2012 AQMP concluded that the 2012 AQMP has the potential to generate significant adverse electricity and natural gas demand impacts associated with converting conventionally-fueled stationary and mobile sources to electricity or natural gas fueled sources. The mitigation measures identified in the following paragraphs are intended to reduce impacts associated with these sources to the maximum extent feasible. Mitigation measures E-1 through E-7 would serve to reduce impacts from increased electricity demand and mitigation measures E-8 through E-12 would reduce impacts from increased demand for natural gas. The timing of implementing electricity and natural gas demand mitigation measures would be ongoing over the life of the 2012 AQMP and includes the following types of control measures:

- E-1** Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation.
- E-2** Utilities should increase capacity of existing transmission lines to meet forecast demand that supports sustainable growth, where feasible and appropriate in coordination with local planning agencies.
- E-3** Project sponsors should submit projected electricity calculations to the local electricity provider for any project anticipated to require substantial electricity consumption. Any infrastructure improvements necessary should be completed according to the specifications of the electricity provider.
- E-4** Project sponsors should include energy analyses in environmental documentation with the goal of conserving energy through the wise and efficient use of energy.
- E-5** Project sponsors should evaluate the potential for reducing peak energy demand by encouraging charging of electrical vehicles and other mobile sources during off-peak hours.

- E-6** Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of catenary or way-side electrical systems developed for transportation systems to operate during off-peak hours.
- E-7** Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of electrified stationary sources during off-peak hours (e.g., cargo handling equipment).
- E-8** Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation.
- E-9** Utilities should increase capacity of existing natural gas lines to meet forecast demand that supports sustainable growth, where feasible and appropriate in coordination with local planning agencies.
- E-10** Project sponsors should submit projected natural gas calculations to the local natural gas provider for any project anticipated to require substantial natural gas consumption. Any infrastructure improvements necessary should be completed according to the specifications of the natural gas provider.
- E-11** Project sponsors should include energy analyses in environmental documentation with the goal of conserving energy through the wise and efficient use of energy.
- E-12** Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of natural gas stationary sources during off-peak hours.

6.4 ENERGY MITIGATION MONITORING AND REPORTING

Implementing Party: Because the 2012 AQMP is a regional plan that can be characterized as an ongoing regulatory program, some of the electricity or natural gas demand mitigation measures in this MMRP may be described as general policies, although some refer to specific actions. The SCAQMD finds that the party or parties responsible for implementing electricity or natural gas demand mitigation measures from the Final Program EIR for the 2012 AQMP for future projects that have the potential to generate electricity or natural gas demand impacts from complying with 2012 AQMP control measures promulgated as rules or regulations would be project applicants, project sponsors, and public agencies, including cities or counties, within the district.

To the extent that the SCAQMD is the lead agency for future projects that must comply with 2012 AQMP control measures promulgated as rules or regulations, it may be able to enforce implementation of some 2012 AQMP electricity or natural gas demand mitigation measures through its authority to impose binding permit conditions on permit applicants at the time permit applications are processed and approved. If the SCAQMD is a responsible agency or has no approval authority over future projects that have the potential to generate electricity or natural gas demand impacts from complying with 2012 AQMP control measures promulgated as rules or regulations, then the public agency with primary approval authority over these future projects can and should impose 2012 AQMP Final Program EIR mitigation measures through its authority to impose permit conditions on permit applicants at the time permit applications are processed and approved or through other legally binding instruments. Similarly, to the extent allowed by state and federal regulations, electricity generating utilities or natural gas provider utilities within the district as the entities that provide electricity and natural to users may be

responsible for implementing some of the 2012 AQMP mitigation measures, specifically those mitigation measures that call for increased energy generating and supply capacities.

Monitoring Agency: Because future projects to implement 2012 AQMP control measures promulgated as rules or regulations could be undertaken by project applicants, project sponsors, public agencies, public electricity generating utilities, or public natural gas provider utilities throughout the district, the monitoring agency is expected to vary and may include a variety of public agencies performing the role of lead agency. Monitoring would be accomplished as follows:

- MME-1** A project applicant, project sponsor, or public agency shall provide to the lead agency documentation for approval of incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation prior to the beginning of project operation. The lead agency can and should conduct routine inspections of the project to verify compliance.
- MME-2** To the extent allowed by state and federal law, electricity generating utilities within the district can and should increase capacity of existing transmission lines to meet forecast electricity demand that supports sustainable growth, where feasible and appropriate in coordination with local planning agencies.
- MME-3** The project applicant, project sponsor, or public agency should submit projected electricity calculations to the local electricity provider for any project anticipated to require substantial electricity consumption. Such electricity calculations can and should be used by the local electricity provider when forecasting future electricity demand. Any infrastructure improvements necessary should be completed according to the specifications of the electricity provider.
- MME-4** The project applicant, project sponsor, or public agency should include energy analyses in environmental documentation with the goal of conserving energy through the wise and efficient use of energy. The lead agency can and should conduct routine inspections of the project to verify compliance with any energy conservation mitigation measures.
- MME-5** The project applicant, project sponsor, or public agency should evaluate the potential for reducing peak energy demand by encouraging charging of electrical vehicles and other mobile sources during off-peak hours. The lead agency can and should conduct routine inspections of the project to verify compliance with any mitigation measures encouraging charging of electrical vehicles and other mobile sources during off-peak hours.
- MME-6** The project applicant, project sponsor, or public agency should evaluate the potential for reducing peak energy demand by encouraging the use of catenary or way-side electrical systems developed for transportation systems to operate during off-peak hours. The lead agency can and should conduct routine inspections of the project to verify compliance with any mitigation measures encouraging the use of catenary or way-side electrical systems developed for transportation systems to operate during off-peak hours.
- MME-7** The project applicant, project sponsor, or public agency should evaluate the potential for reducing peak energy demand by encouraging the use of electrified stationary sources during off-peak hours (e.g., cargo handling equipment). The lead

agency can and should conduct routine inspections of the project to verify compliance with any energy conservation mitigation measures encouraging the use of electrified stationary sources during off-peak hours.

- MME-8** The project applicant, project sponsor, or public agency should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation. The lead agency can and should conduct routine inspections of the project to verify compliance with any mitigation measures that encourage the use of energy efficient equipment and vehicles and promote energy conservation.
- MME-9** To the extent allowed by state and federal law, natural gas provider utilities should increase capacity of existing natural gas lines to meet forecast demand that supports sustainable growth, where feasible and appropriate in coordination with local planning agencies.
- MME-10** Project sponsors should submit projected natural gas calculations to the local natural gas provider for any project anticipated to require substantial natural gas consumption. Any infrastructure improvements necessary should be completed according to the specifications of the natural gas provider.
- MME-11** Project sponsors should include energy analyses in environmental documentation with the goal of conserving energy through the wise and efficient use of energy.
- MME-12** Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of natural gas stationary sources during off-peak hours.

6.5 HAZARDS AND HAZARDOUS MATERIALS IMPACTS AND MITIGATION MEASURES

The analysis of secondary hazards and hazardous materials impacts in the Final Program EIR for the 2012 AQMP concluded that 2012 AQMP has the potential to generate significant adverse hazards and hazardous materials impacts as follows: from reformulating coating and solvent products with flammable or more flammable products, impacts related to an accidental release of either ammonia or LNG during transport, or impacts related to an accidental release of ammonia stored onsite. The mitigation measures identified in the following discussion are intended to reduce hazardous and hazardous materials impacts associated with these sources to the maximum extent feasible. Mitigation measures HZ-1 and HZ-2 would serve to reduce impacts from reformulating coatings or solvents with flammable or more flammable products, mitigation measures HZ-3 through HZ-6 would reduce impacts related to an accidental release of either ammonia or LNG during transport, and mitigation measures HZ-7 through HZ-10 would reduce impacts from an accidental release of ammonia stored onsite. The timing of implementing the hazards and hazardous materials mitigation measures would be ongoing over the life of the 2012 AQMP and includes the following mitigation measures:

- HZ-1** Add consumer warning requirements for all flammable and extremely flammable products; and,
- HZ-2** Add requirements to conduct a public education and outreach program in joint cooperation with local fire departments regarding flammable and extremely flammable products that may be included in consumer paint thinners and multipurpose solvents.

- HZ-3** Install secondary containment (e.g., berms).
- HZ-4** Install valves that fail shut.
- HZ-5** Install emergency release valves and barriers around LNG storage tanks to prevent the physical damage to storage tanks or limit the release of LNG from storage tanks.
- HZ-6** Perform integrity testing of LNG storage tanks to assist in preventing failure from structural problems. Construct a containment system to be used for deliveries during off-loading operations.
- HZ-7** Install safety devices, including but not limited to: continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, leak monitoring and detection system, alarms, check valves, and emergency block valves.
- HZ-8** Install secondary containment to capture 110 percent of the storage tank volume in the event of a spill:
- HZ-9** Install a grating-covered trench around the perimeter of the delivery bay to passively contain potential spills from the tanker truck during the transfer of aqueous ammonia from the delivery truck to the storage facility.
- HZ-10** The truck loading/unloading area was designed to be equipped with an underground gravity drain that flows to a large on-site retention basin to provide sufficient ammonia dilution to the extent that no hazards impact is possible in the event of an accidental release during transfer of aqueous ammonia.

6.6 HAZARDS AND HAZARDOUS MATERIALS MITIGATION MONITORING AND REPORTING

Implementing Party: Because the 2012 AQMP is a regional plan that can be characterized as an ongoing regulatory program, some of the hazards and hazardous materials mitigation measures in this MMRP may be described as general policies, although some refer to specific actions. The SCAQMD finds that the party or parties responsible for implementing 2012 AQMP control measures for future projects that have the potential to generate hazards and hazardous materials impacts would be project applicants, project sponsors and public agencies, including cities or counties within the district.

To the extent that hazards and hazardous materials use results from complying with SCAQMD rules that have been promulgated from 2012 AQMP control measures, the SCAQMD can impose permit conditions on permit applicants at the time permit applications are processed and approved. If the SCAQMD is a responsible agency or has no approval authority over future projects that have the potential to generate significant adverse hazards and hazardous materials impacts from complying with 2012 AQMP control measures promulgated as rules or regulations, then the public agency with primary approval authority over these future projects can and should impose 2012 AQMP mitigation measures through its authority to impose permit conditions on permit applicants at the time permit applications are processed and approved or through other legally binding instruments. Similarly, to the extent allowed by state and federal regulations, cities or counties within the district as the entities that may have primary approval authority over projects implementing 2012 AQMP control measures may also be responsible for implementing some of the 2012 AQMP mitigation measures.

Monitoring Agency: Because future projects to implement 2012 AQMP control measures promulgated as rules or regulations could be undertaken by project applicants, project sponsors, or public agencies, throughout the district, the monitoring agency is expected to vary and may include a variety of public agencies performing the role of lead agency. Monitoring would be accomplished as follows:

- MMHZ-1** Add consumer warning requirements for all flammable and extremely flammable products; and,
- MMHZ-2** Add requirements to conduct a public education and outreach program in joint cooperation with local fire departments regarding flammable and extremely flammable products that may be included in consumer paint thinners and multipurpose solvents.
- MMHZ-3** Install secondary containment (e.g., berms).
- MMHZ-4** Install valves that fail shut.
- MMHZ-5** Install emergency release valves and barriers around LNG storage tanks to prevent the physical damage to storage tanks or limit the release of LNG from storage tanks.
- MMHZ-6** Perform integrity testing of LNG storage tanks to assist in preventing failure from structural problems. Construct a containment system to be used for deliveries during off-loading operations.
- MMHZ-7** Install safety devices, including but not limited to: continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, leak monitoring and detection system, alarms, check valves, and emergency block valves.
- MMHZ-8** Install secondary containment to capture 110 percent of the storage tank volume in the event of a spill:
- MMHZ-9** Install a grating-covered trench around the perimeter of the delivery bay to passively contain potential spills from the tanker truck during the transfer of aqueous ammonia from the delivery truck to the storage facility.
- MMHZ-10** The truck loading/unloading area was designed to be equipped with an underground gravity drain that flows to a large on-site retention basin to provide sufficient ammonia dilution to the extent that no hazards impact is possible in the event of an accidental release during transfer of aqueous ammonia.

6.7 HYDROLOGY AND WATER QUALITY IMPACTS AND MITIGATION MEASURES

The analysis of secondary air quality impacts in the Final Program EIR for the 2012 AQMP concluded that the 2012 AQMP has the potential to generate significant adverse hydrology and water quality impacts, specifically water demand impacts. Certain air pollution control technologies and the use of waterborne coatings may significantly increase the demand for water. The mitigation measures that would be implemented for water demand impacts would depend on the characteristics of individual projects, the volume of water expected to be used, and could vary among jurisdictions. The timing of implementing the hydrology and water quality

mitigation measures would be ongoing over the life of the 2012 AQMP and includes the following types of control measures:

- HWQ-1** Local water agencies should continue to evaluate future water demand and establish the necessary supply and infrastructure to meet that demand, as documented in their Urban Water Management Plans.
- HWQ-2** Project sponsors should coordinate with the local water provider to ensure that existing or planned water supply and water conveyance facilities are capable of meeting water demand/pressure requirements. In accordance with State Law, a Water Supply Assessment should be required for projects that meet the size requirements specified in the regulations. In coordination with the local water provider, each project sponsor will identify specific on- and off-site improvements needed to ensure that impacts related to water supply and conveyance demand/pressure requirements are addressed prior to issuance of a certificate of occupancy. Water supply and conveyance demand/pressure clearance from the local water provider will be required at the time that a water connection permit application is submitted.
- HWQ-3** Project sponsors should implement water conservation measures and use recycled water for appropriate end uses.
- HWQ-4** Project sponsors should consult with the local water provider to identify feasible and reasonable measures to reduce water consumptions.

6.8 HYDROLOGY AND WATER QUALITY MITIGATION MONITORING AND REPORTING

Implementing Party: Because the 2012 AQMP is a regional plan that can be characterized as an ongoing regulatory program, some of the water demand mitigation measures in this MMRP may be described as general policies, although some refer to specific actions. The SCAQMD finds that the party or parties responsible for implementing mitigation measures for future projects that have the potential to generate hydrology and water quality impacts from complying with 2012 AQMP control measures promulgated as rules or regulations would be project applicants, project sponsors, public agencies, and water provider utilities within the district.

To the extent that water demand results from complying with SCAQMD rules that have been promulgated from AQMP control measures, the SCAQMD can impose permit conditions on permit applicants at the time permit applications are processed and approved. If the SCAQMD is a responsible agency or has no approval authority over future projects that have the potential to generate water demand impacts from complying with 2012 AQMP control measures promulgated as rules or regulations, then the public agency with primary approval authority over these future projects can and should impose 2012 AQMP mitigation measures through its authority to impose permit conditions on permit applicants at the time permit applications are processed and approved or through other legally binding instruments. Similarly, to the extent allowed by state and federal regulations, water provider utilities within the district as the entities that provide water to users may be responsible for implementing some of the 2012 AQMP mitigation measures.

Monitoring Agency: Because future projects to implement 2012 AQMP control measures promulgated as rules or regulations could be undertaken by project applicants, project sponsors, public agencies, water provider utilities throughout the district, the monitoring agency is expected to vary and may include a variety of public agencies performing the role of lead agency. Monitoring would be accomplished as follows:

MMHWQ-1 Local water agencies should continue to evaluate future water demand and establish the necessary supply and infrastructure to meet that demand, as documented in their Urban Water Management Plans.

MMHWQ-2 Project sponsors should coordinate with the local water provider to ensure that existing or planned water supply and water conveyance facilities are capable of meeting water demand/pressure requirements. In accordance with State Law, a Water Supply Assessment should be required for projects that meet the size requirements specified in the regulations. In coordination with the local water provider, each project sponsor will identify specific on- and off-site improvements needed to ensure that impacts related to water supply and conveyance demand/pressure requirements are addressed prior to issuance of a certificate of occupancy. Water supply and conveyance demand/pressure clearance from the local water provider will be required at the time that a water connection permit application is submitted.

MMHWQ-3 Project sponsors should implement water conservation measures and use recycled water for appropriate end uses.

MMHWQ-4 Project sponsors should consult with the local water provider to identify feasible and reasonable measures to reduce water consumptions.

6.9 NOISE IMPACTS AND MITIGATION MEASURES

The analysis of secondary air quality impacts in the Final Program EIR for the 2012 AQMP concluded that the 2012 AQMP has the potential to generate significant adverse construction-related noise impacts associated with construction activities that have the potential to generate noise from heavy construction equipment and construction-related traffic. The mitigation measures in the 2012 AQMP Final Program EIR as identified in the following discussion are intended to minimize the impacts associated with these sources. The timing of implementing the construction-related noise mitigation measures would be ongoing over the life of the 2012 AQMP and includes the following types of control measures:

NO-1 To reduce noise impacts due to construction, project sponsors may require construction contractors to implement a site-specific noise reduction program, subject to the Lead Agency (or other appropriate government agency) review and approval, which includes the following measures:

- Equipment and trucks used for project construction may utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).

- Except as may be exempted by the Lead Agency (or other appropriate government agency), impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction may be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust may be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves may be used, if such jackets are commercially available and this could achieve a reduction of five dBA. Quieter procedures may be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.
- Stationary noise sources may be located as far from adjacent sensitive receptors as possible and they may be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the Lead Agency (or other appropriate government agency) to provide equivalent noise reduction.

NO-2 Prior to the issuance of a building permit, along with the submission of construction documents, each project sponsor may submit to the Lead Agency (or other government agency as appropriate) a list of measures to respond to and track complaints pertaining to construction noise. These measures may include:

- A procedure and phone numbers for notifying the Lead Agency staff and local Police Department (during regular construction hours and off-hours);
- A sign posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign may also include a listing of both the Lead Agency and construction contractor's telephone numbers (during regular construction hours and off hours);
- The designation of an on-site construction complaint and enforcement manager for the project;
- Notification of neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity; and
- A preconstruction meeting may be held with the job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

NO-3 Project sponsor may implement use of portable barriers in the vicinity of sensitive receptors during construction including construction of subsurface barriers, debris basins, and storm water drainage facilities.

NO-4 For projects that require pile driving or other construction noise above 90 dBA in proximity to sensitive receptors, to further reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90dBA, a set of site-specific noise attenuation measures may be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures may be submitted for review and approval by the Lead Agency (or other appropriate government agency) to ensure that maximum feasible noise attenuation

would be achieved. This plan may be based on the final design of the project. A third-party peer review, paid for by the project sponsor, may be required to assist the Lead Agency in evaluating the feasibility and effectiveness of the noise reduction plan submitted by the project sponsor. The criterion for approving the plan may be a determination that maximum feasible noise attenuation would be achieved. The noise reduction plan may include, but not be limited to, an evaluation of implementing the following measures. These attenuation measures may include as many of the following control strategies as applicable to the site and construction activity:

- Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings;
- Implement “quiet” pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;
- Utilize noise control blankets on the building structure as the structures are erected to reduce noise emission from the site;
- Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example and implement such measure if such measures are feasible and would noticeably reduce noise impacts; and
- Monitor the effectiveness of noise attenuation measures by taking noise measurements.

NO-5 Noise generated from any rock-crushing or screening operations performed within 3,000 feet of any occupied residence may be mitigated by the project sponsor by strategic placement of material stockpiles between the operation and the affected dwelling or by other means approved by the local jurisdiction.

NO-6 Where feasible, pile holes may be pre-drilled to reduce potential noise and vibration impacts.

NO-7 As necessary, each project sponsor may retain a structural engineer or other appropriate professional to determine threshold levels of vibration and cracking that could damage any adjacent historic or other structure subject to damage, and design means and construction methods to not exceed the thresholds.

NO-8 Project sponsors may comply with all local sound control and noise level rules, regulations, and ordinances.

NO-9 As part of the appropriate environmental review of each project, a project-specific noise evaluation may be conducted and appropriate mitigation identified and implemented.

6.10 NOISE MITIGATION MONITORING AND REPORTING

Implementing Party: Because the 2012 AQMP is a regional plan that can be characterized as an ongoing regulatory program, some of the construction-related noise mitigation measures in this MMRP may be described as general policies, although some refer to specific actions. The SCAQMD finds that the party or parties responsible for implementing construction-related noise

mitigation measures from the Final Program EIR for the 2012 AQMP for future projects that have the potential to generate construction-related noise impacts from complying with 2012 AQMP control measures promulgated as rules or regulations would be project applicants, project sponsors, public agencies, electricity generating utilities, or natural gas provider utilities within the district.

To the extent that noise impacts result from complying with SCAQMD rules that have been promulgated from AQMP control measures, the SCAQMD may be able to impose permit conditions on permit applicants at the time permit applications are processed and approved. If the SCAQMD is a responsible agency or has no approval authority over future projects that have the potential to generate construction-related noise impacts from complying with 2012 AQMP control measures promulgated as rules or regulations, then the public agency with primary approval authority over these future projects can and should impose mitigation measures through its authority to impose permit conditions on permit applicants at the time permit applications are processed and approved or through other legally binding instruments. Similarly, to the extent allowed by state and federal regulations, cities or counties within the district as the entities that regulate noise sources through ordinances or general plan noise elements, may be responsible for implementing some of the 2012 AQMP mitigation measures.

Monitoring Agency: Because future projects to implement 2012 AQMP control measures promulgated as rules or regulations could be undertaken by project applicants, project sponsors, or public agencies, throughout the district, the monitoring agency is expected to vary and may include a variety of public agencies performing the role of lead agency. Monitoring would be accomplished as follows:

MMNO-1 To reduce noise impacts due to construction, project sponsors should require construction contractors to implement a site-specific noise reduction program, subject to the Lead Agency (or other appropriate government agency) review and approval, which includes the following measures:

- Equipment and trucks used for project construction should utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).
- Except as exempted by the Lead Agency (or other appropriate government agency), impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction should be hydraulically or electrically powered, where feasible, to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust should be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves should also be used, if such jackets are commercially available and a reduction of five dBA can be achieved. Quieter procedures should also be used such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.
- Stationary noise sources should be located as far from adjacent sensitive receptors as possible and they should be muffled and enclosed within

temporary sheds, incorporate insulation barriers, or use other measures as determined by the Lead Agency (or other appropriate government agency) to provide equivalent noise reduction, where feasible.

MMNO-2 Prior to the issuance of a building permit, along with the submission of construction documents, each project sponsor should submit to the Lead Agency (or other government agency as appropriate) a list of measures to respond to and track complaints pertaining to construction noise. These measures should include:

- A procedure and phone numbers for notifying the Lead Agency staff and local Police Department (during regular construction hours and off-hours);
- A sign posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign should also include a listing of both the Lead Agency and construction contractor's telephone numbers (during regular construction hours and off hours);
- The designation of an on-site construction complaint and enforcement manager for the project;
- Notification of neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity; and
- A preconstruction meeting should be held with the job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

MMNO-3 Project sponsor should implement use of portable barriers in the vicinity of sensitive receptors during construction including construction of subsurface barriers, debris basins, and storm water drainage facilities.

MMNO-4 For projects that require pile driving or other construction noise above 90 dBA in proximity to sensitive receptors, to further reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90dBA, a set of site-specific noise attenuation measures should be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures should be submitted for review and approval by the Lead Agency (or other appropriate government agency) to ensure that maximum feasible noise attenuation would be achieved. This plan should be based on the final design of the project. A third-party peer review, paid for by the project sponsor, should be required to assist the Lead Agency in evaluating the feasibility and effectiveness of the noise reduction plan submitted by the project sponsor. The criterion for approving the plan should be based on a determination that maximum feasible noise attenuation would be achieved. The noise reduction plan should include, but not be limited to, an evaluation of implementing the following measures. These attenuation measures should also include as many of the following control strategies as applicable to the site and construction activity:

- Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings;
- Implement “quiet” pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;
- Utilize noise control blankets on the building structure as the structures are erected to reduce noise emission from the site;
- Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example and implement such measure if such measures are feasible and would noticeably reduce noise impacts; and
- Monitor the effectiveness of noise attenuation measures by taking noise measurements.

MMNO-5 Noise generated from any rock-crushing or screening operations performed within 3,000 feet of any occupied residence should be mitigated, where feasible, by the project sponsor by strategic placement of material stockpiles between the operation and the affected dwelling or by other means approved by the local jurisdiction.

MMNO-6 Where feasible, pile holes should be pre-drilled to reduce potential noise and vibration impacts.

MMNO-7 As necessary, each project sponsor should retain a structural engineer or other appropriate professional to determine threshold levels of vibration and cracking that could damage any adjacent historic or other structure subject to damage, and design means and construction methods to not exceed the thresholds.

MMNO-8 Project sponsors should comply with all local sound control and noise level rules, regulations, and ordinances.

MMNO-9 As part of the appropriate environmental review of each project, a project-specific noise evaluation should be conducted and appropriate mitigation identified and implemented, where feasible.

6.11 TRANSPORTATION AND TRAFFIC IMPACTS AND MITIGATION MEASURES

The analysis of secondary air quality impacts in the Final Program EIR for the 2012 AQMP concluded that the 2012 AQMP has the potential to generate significant adverse traffic impacts during construction activities and during operation. Construction activities could generate construction-related traffic and adversely affect traffic flow through lane closures or other traffic restrictions. To the extent that catenary lines are constructed over roadways and the roadways are restricted to heavy-duty trucks equipped to use the lines, more vehicles could be required to use existing roadways. Mitigation measure TT-1 would serve to reduce potential traffic impacts during construction. No mitigation measures were identified for traffic impacts during operation. The timing of implementing the construction traffic impact mitigation measure would be

ongoing over the life of the 2012 AQMP and include the following types of mitigation measure activities:

TT-1: Project sponsors and construction contractors can and should meet with the appropriate Lead Agency (or other government agency) to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this project and other nearby projects that could be simultaneously under construction. The project sponsor should develop a construction management plan for review and approval by the Lead Agency (or other government agency as appropriate). The plan should include at least the following items and requirements:

- A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes.
- Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur.
- Location of construction staging areas for materials, equipment, and vehicles at an approved location.
- A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an onsite complaint manager. The manager should determine the cause of the complaints and should take prompt action to correct the problem. The Lead Agency should be informed who the Manager is prior to the issuance of the first permit.
- Provision for accommodation of pedestrian flow.
- As necessary, provision for parking management and spaces for all construction workers to ensure that construction workers do not park in on street spaces.
- Any damage to the street caused by heavy equipment, or as a result of this construction, should be repaired, at the project sponsor's expense, within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair should occur prior to issuance of a final inspection of the building permit. All damage that is a threat to public health or safety should be repaired immediately. The street should be restored to its condition prior to the new construction as established by the Lead Agency (or other appropriate government agency) and/or photo documentation, at the sponsor's expense, before the issuance of a Certificate of Occupancy.
- Any heavy equipment brought to the construction site should be transported by truck, where feasible.
- No materials or equipment should be stored on the traveled roadway at any time.
- Prior to construction, a portable toilet facility and a debris box should be installed on the site, and properly maintained through project completion.
- All equipment should be equipped with mufflers.

- Prior to the end of each work-day during construction, the contractor or contractors should pick up and properly dispose of all litter resulting from or related to the project, whether located on the property, within the public rights-of-way, or properties of adjacent or nearby neighbors.

6.12 TRANSPORTATION AND TRAFFIC MITIGATION MONITORING AND REPORTING

Implementing Party: Because the 2012 AQMP is a regional plan that can be characterized as an ongoing regulatory program, the construction traffic impact mitigation measure in this MMRP may be described as a general policy even though some of the activities refer to specific actions. The SCAQMD finds that the party or parties responsible for implementing the construction traffic mitigation measure on future projects that have the potential to generate construction traffic impacts from complying with the 2012 AQMP control measures promulgated as rules or regulations would be project applicants, project sponsors, public agencies, electricity generating utilities, or natural gas provider utilities within the district.

To the extent that traffic impacts during construction and/or operation result from complying with SCAQMD rules that have been promulgated from 2012 AQMP control measures, the SCAQMD can impose permit conditions on permit applicants at the time permit applications are processed and approved. If the SCAQMD is a responsible agency or has no approval authority over future projects that have the potential to generate significant adverse construction and/or operation traffic impacts from complying with 2012 AQMP control measures promulgated as rules or regulations, then the public agency with primary approval authority over these future projects can and should impose 2012 AQMP mitigation measures through its authority to impose permit conditions on permit applicants at the time permit applications are processed and approved or through other legally binding instruments. Similarly, to the extent allowed by state and federal regulations, CalTrans or local transportation agencies within the district as the entities that may have approval authority over roadway projects and also responsible for implementing the 2012 AQMP Final Program EIR construction traffic mitigation measure.

Monitoring Agency: Because future projects to implement 2012 AQMP control measures promulgated as rules or regulations could be undertaken by project applicants, project sponsors, or public agencies, throughout the district, the monitoring agency is expected to vary and may include a variety of public agencies performing the role of lead agency. Monitoring will be accomplished as follows:

MMTT-1 Project sponsors and construction contractors can and should meet with the appropriate lead agency (or other public agency with approval authority over the project) to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this project and other nearby projects that could be simultaneously under construction. The project sponsor should develop a construction management plan for review and approval by the Lead Agency (or other government agency as appropriate).

7.0 CONCLUSION

To the extent that the SCAQMD is the lead agency with primary approval authority over projects implementing 2012 AQMP control measures, project applicants, project sponsors, or public agencies will maintain records onsite of applicable compliance activities to demonstrate the steps taken to assure compliance with imposed mitigation measures as specified in Table 3. All construction logs and other records shall be made available to SCAQMD inspectors upon request by the project proponent. The project proponent may be required to submit quarterly (or some other specified time duration) reports to the SCAQMD during the construction phase that summarize the construction progress, including all required logs, inspection reports, and monitoring reports, as well as identify any problems and corrective actions, as necessary. SCAQMD staff and the project proponent will evaluate the effectiveness of this monitoring program during the construction period. It is expected that, as part of the CEQA document for any future projects implementing 2012 AQMP control measures, mitigation measures identified in this MMRP would be required as necessary, along with any additional mitigation measures identified at that time by the SCAQMD or other responsible agencies.

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Table 3
Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan

Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
Air Quality			
AQ-1 / Develop a Construction Emission Management Plan for the proposed project.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve the Construction Emission Management Plan submitted to them for approval if adequate.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before the start of construction
AQ-2 / Maintain construction equipment tuned up and with two to four degree retard diesel engine timing or tuned to manufacturer's recommended specifications that optimize emissions without nullifying engine warranties.	Project Applicant/Project Sponsor/Public Agency	Maintain any required records onsite for two years and make available upon request to the appropriate agency inspector/monitor.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Daily during construction and at least 2 years after construction ends.
AQ-3 / The project proponent shall survey and document the proposed project's construction areas and identify all construction areas that are served by electricity. Electric welders shall be used in all construction areas that are demonstrated to be served by electricity.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve documentation in the Construction Emission Management Plan, if adequate, those construction areas without electricity and maintain records of gas or diesel welder use and duration of use. Maintain any required records onsite and make available upon request to the appropriate agency inspector/monitor.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Prior to start of construction
AQ-4 / The project proponent shall survey and document the proposed Project's construction areas and identify all construction areas that are served by electricity. Onsite electricity rather than temporary power generators shall be used in all construction areas that are demonstrated to be served by electricity.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve documentation in the Construction Emission Management Plan, if adequate, construction areas without electricity and maintain records of temporary power generator use and duration of use. Maintain any required records onsite and make available upon request to the appropriate agency inspector/monitor.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Prior to start of construction

Table 3 (Continued)

Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan

Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
<p>AQ-5 / The project proponent shall use cranes rated 200 hp or greater equipped with Tier 3 or equivalent engines. Engines equivalent to Tier 3 may consist of Tier 2 engines retrofitted with diesel particulate filters and oxidation catalysts, selective catalytic reduction, or other equivalent NOx control equipment. Retrofitting cranes rated 200 hp or greater with PM and NOx control devices must occur before the start of construction.</p>	<p>Project Applicant/Project Sponsor/Public Agency</p>	<p>The lead agency can and should approve documentation in the Construction Emission Management Plan, if adequate, identifying cranes rated 200 hp or greater where Tier 3 engines are not available and Tier 2 engines must be used.</p>	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before the start of construction
<p>AQ-6 / For off-road construction equipment rated 50 to 200 hp that will be operating for eight hours or more, the project proponent shall use equipment rated 50 to 200 hp equipped with Tier 3 or equivalent engines. Engines equivalent to Tier 3 may consist of Tier 2 engines retrofitted with diesel particulate filters and oxidation catalysts, selective catalytic reduction, or other equivalent NOx control equipment. Retrofitting equipment rated 50 to 200 hp with PM and NOx control devices must occur before the start of construction.</p>	<p>Project Applicant/Project Sponsor/Public Agency</p>	<p>The lead agency can and should approve documentation of the availability of retrofit technologies for large construction equipment, if adequate, such as diesel particulate filters/traps, oxidation catalysts, and air enhancement technologies. Maintain the required report onsite and make available upon request to the appropriate agency inspector/monitor.</p>	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before the start of construction
<p>AQ-7 / Suspend use of all construction activities that generate air pollutant emissions during first stage smog alerts.</p>	<p>Project Applicant/Project Sponsor/Public Agency</p>	<p>Maintain a log documenting when 1st stage smog alerts occurred and the time construction activities were suspended. Maintain the required log onsite and make available upon request to the appropriate agency inspector/monitor.</p>	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Daily

Table 3 (Continued)
Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan

Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
Energy			
E-1 / Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve, as appropriate and adequate, any necessary documentation of incentives to encourage energy efficiency and conservation.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and throughout implementation of the 2012 AQMP
E-2 / Utilities should increase capacity of existing transmission lines to meet forecast demand that supports sustainable growth, where feasible and appropriate in coordination with local planning agencies.	Electric Utilities	Electricity generating utilities within the district can and should coordinate with local public agencies, to the extent allowed by state and federal law, with regard to increasing capacity of existing transmission lines to meet forecast demand.	1. Electricity Utilities 2. Electricity Utilities 3. During the environmental review process and before the start of construction
E-3 / Project sponsors should submit projected electricity calculations to the local electricity provider for any project anticipated to require substantial electricity consumption. Any infrastructure improvements necessary should be completed according to the specifications of the electricity provider.	Project Applicant/Project Sponsor/Public Agency	When forecasting future electricity demand and/or infrastructure improvements, electricity utilities can and should consider the effects of local projects on future energy demand.	1. Electricity Utilities 2. Electricity Utilities 3. During the environmental review process and before the start of construction
E-4 / Project sponsors should include energy analyses in environmental documentation with the goal of conserving energy through the wise and efficient use of energy.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should carefully evaluate the adequacy of any required energy analyses and make a determination that all feasible energy conservation goals are identified.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process
E-5 / Project sponsors should evaluate the potential for reducing peak energy demand by encouraging charging electrical vehicles and other mobile sources during off-peak hours.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should carefully evaluate the adequacy of any required energy analyses that encourage charging electric vehicles and other mobile sources during off-peak hours.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process

Table 3 (Continued)**Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan**

Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
E-6 / Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of catenary or way-side electrical systems developed for transportation systems to operate during off-peak hours.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should carefully evaluate the adequacy of any required energy analyses that encourage using catenary or way-side electrical systems developed for transportation systems to operate during off-peak hours.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process
E-7 / Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of electrified stationary sources during off-peak hours (e.g., cargo handling equipment).	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should carefully evaluate the adequacy of any required energy analyses that encourage using electrified stationary sources during off-peak hours.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process
E-8 / Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should carefully evaluate the adequacy of any required energy analyses that encourage the use of energy efficient equipment and vehicles and promote energy conservation.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process
E-9 / Utilities should increase capacity of existing natural gas lines to meet forecast demand that supports sustainable growth, where feasible and appropriate in coordination with local planning agencies.	Natural Gas Utilities	Natural gas utilities within the district can and should coordinate with local public agencies, to the extent allowed by state and federal law, with regard to increasing capacity of existing natural gas lines to meet forecast demand.	1. Natural Gas Utilities/Other Lead Agencies 2. Natural Gas Utilities/Other Lead Agencies 3. During the environmental review process and throughout implementation of the 2012 AQMP
E-10 / Project sponsors should submit projected natural gas calculations to the local natural gas provider for any project anticipated to require substantial natural gas consumption. Any infrastructure improvements necessary should be completed according to the specifications of the natural gas provider.	Project Applicant/Project Sponsor/Public Agency	When forecasting future natural gas demand and/or infrastructure improvements, natural gas utilities can and should consider the effects of local projects on future energy demand.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before the start of construction

Table 3 (Continued)**Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan**

Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
E-11 / Project sponsors should include energy analyses in environmental documentation with the goal of conserving energy through the wise and efficient use of energy.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should carefully evaluate the adequacy of any required energy analyses and make a determination that all feasible energy conservation goals are identified.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process
E-12 / Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of natural gas stationary sources during off-peak hours.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should carefully evaluate the adequacy of any required energy analyses that encourage the use of natural gas stationary sources during off-peak hours.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process
Hazards and Hazardous Materials			
HZ-1 / Add consumer warning requirements for all flammable and extremely flammable products.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local fire departments or hazmat departments, as appropriate, to develop appropriate warnings and locations of warning labels.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before operation
HZ-2 / Add requirements to conduct a public education and outreach program in joint cooperation with local fire departments regarding flammable and extremely flammable products that may be included in consumer paint thinners and multipurpose solvents.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local fire departments or school districts, as appropriate, to develop appropriate education campaigns and outreach programs regarding the flammability of consumer paint thinners and solvents.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before operation begins
HZ-3 / Install secondary containment (e.g., berms).	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local fire departments to ensure that secondary containment has been installed before giving final approval of the project.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before operation begins
HZ-4 / Install valves that fail shut.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local fire departments to ensure that fail shut valves have been installed before giving final approval of the project..	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before operation begins

Table 3 (Continued)

Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan

Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
HZ-5 / Install emergency release valves and barriers around LNG storage tanks to prevent the physical damage to storage tanks or limit the release of LNG from storage tanks.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local fire departments to ensure that emergency release valves and barriers around LNG storage tanks have been installed before giving final approval of the project.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before operation begins
HZ-6 / Perform integrity testing of LNG storage tanks to assist in preventing failure from structural problems. Construct a containment system to be used for deliveries during off-loading operations.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local fire departments to ensure that integrity testing of LNG storage tanks has been performed and containment systems to be used for deliveries during off-loading operations have been installed before giving final approval of the project.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before operation begins
HZ-7 / Install safety devices, including but not limited to: continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, leak monitoring and detection system, alarms, check valves, and emergency block valves.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local fire departments to ensure that safety devices, including but not limited to: continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, leak monitoring and detection system, alarms, check valves, and emergency block valves have been installed before giving final approval of the project.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before operation begins
HZ-8 / Install secondary containment to capture 110 percent of the storage tank volume in the event of a spill:	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local fire departments to ensure that secondary containment that can capture 110 % of the storage tank volume has been installed before giving final approval of the project.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before operation begins

Table 3 (Continued)

Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan

Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
HZ-9 / Install a grating-covered trench around the perimeter of the delivery bay to passively contain potential spills from the tanker truck during the transfer of aqueous ammonia from the delivery truck to the storage facility.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local fire departments to ensure a grating-covered trench around the perimeter of the delivery bay to passively contain potential spills from the tanker truck during the transfer of aqueous ammonia from the delivery truck to the storage facility has been installed before giving final approval of the project.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before operation begins
HZ-10 / The truck loading/unloading area should be designed to be equipped with an underground gravity drain that flows to a large on-site retention basin to provide sufficient ammonia dilution to the extent that no hazards impact is possible in the event of an accidental release during transfer of aqueous ammonia.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local fire departments to ensure that the truck loading/unloading area is designed and equipped with an underground gravity drain that flows to a large on-site retention basin, which has been installed before giving final approval of the project.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before operation begins
Hydrology and Water Quality (Water Demand)			
HWQ-1 / Local water agencies should continue to evaluate future water demand and establish the necessary supply and infrastructure to meet that demand, as documented in their Urban Water Management Plans.	Local Water Agencies	Local water agencies within the district can and should coordinate with local public agencies, to the extent allowed by state and federal law, with regard to forecasting future water demand and providing the necessary water supply infrastructure to meet forecast demand.	<ol style="list-style-type: none"> 1. Local Water Agencies 2. Local Water Agencies 3. During the environmental review process and throughout implementation of the 2012 AQMP
HWQ-2 / Project sponsors should coordinate with the local water provider to ensure that existing or planned water supply and water conveyance facilities are capable of meeting water demand/pressure requirements.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with local water providers to ensure that existing or planned water supply and water conveyance facilities are capable of meeting water demand/pressure requirements before giving final approval of the project.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before the start of construction

Table 3 (Continued)

Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan

Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
HWQ-3 / Project sponsors should implement water conservation measures and use recycled water for appropriate end uses.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve, as appropriate and adequate, any necessary documentation of incentives to encourage water conservation measures and recycled water use.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before the start of construction
HWQ-4 / Project sponsors should consult with the local water provider to identify feasible and reasonable measures to reduce water consumptions.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should carefully coordinate with local water providers to evaluate the adequacy of any required measures to reduce water consumption.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before the start of construction
Noise			
NO-1 /To reduce noise impacts due to construction, project sponsors may require construction contractors to implement a site-specific noise reduction program, subject to the Lead Agency (or other appropriate government agency) review and approval.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve any required noise reduction program submitted to them for approval if adequate. Maintain any required records onsite and make available upon request to the appropriate agency inspector/monitor.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before the start of construction
NO-2 / Prior to the issuance of a building permit, along with the submission of construction documents, each project sponsor may submit to the Lead Agency (or other government agency as appropriate) a list of measures to respond to and track complaints pertaining to construction noise.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve any required list of measures for responding to and tracking construction noise complaints submitted to them for approval if adequate. Maintain any required records onsite and make available upon request to the appropriate agency inspector/monitor.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before the start of construction

Table 3 (Continued)

Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan

Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
NO-3 / Project sponsor may implement use of portable barriers in the vicinity of sensitive receptors during construction including construction of subsurface barriers, debris basins, and storm water drainage facilities.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should coordinate with the project applicant, project sponsor, or public agency to ensure that portable barriers are installed, if required.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before the start of construction
NO-4 / For projects that require pile driving or other construction noise above 90 dBA in proximity to sensitive receptors, to further reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90dBA, a set of site-specific noise attenuation measures may be completed under the supervision of a qualified acoustical consultant.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve any required noise attenuation measures submitted to them for approval if adequate.	<ol style="list-style-type: none"> 1. SCAQMD 2. SCAQMD 3. During the environmental review process and before the start of construction
NO-5 / Noise generated from any rock-crushing or screening operations performed within 3,000 feet of any occupied residence may be mitigated by the project sponsor by strategic placement of material stockpiles between the operation and the affected dwelling or by other means approved by the local jurisdiction.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve, as appropriate and adequate, any necessary documentation of the need to place material stockpiles between any rock crushing operation and residences within 3,000 feet.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and during construction
NO-6 / Where feasible, pile holes may be pre-drilled to reduce potential noise and vibration impacts.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve, as appropriate and adequate, any necessary documentation of the need to pre-drill pile holes.	<ol style="list-style-type: none"> 1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before the start of construction

Table 3 (Continued)

Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan

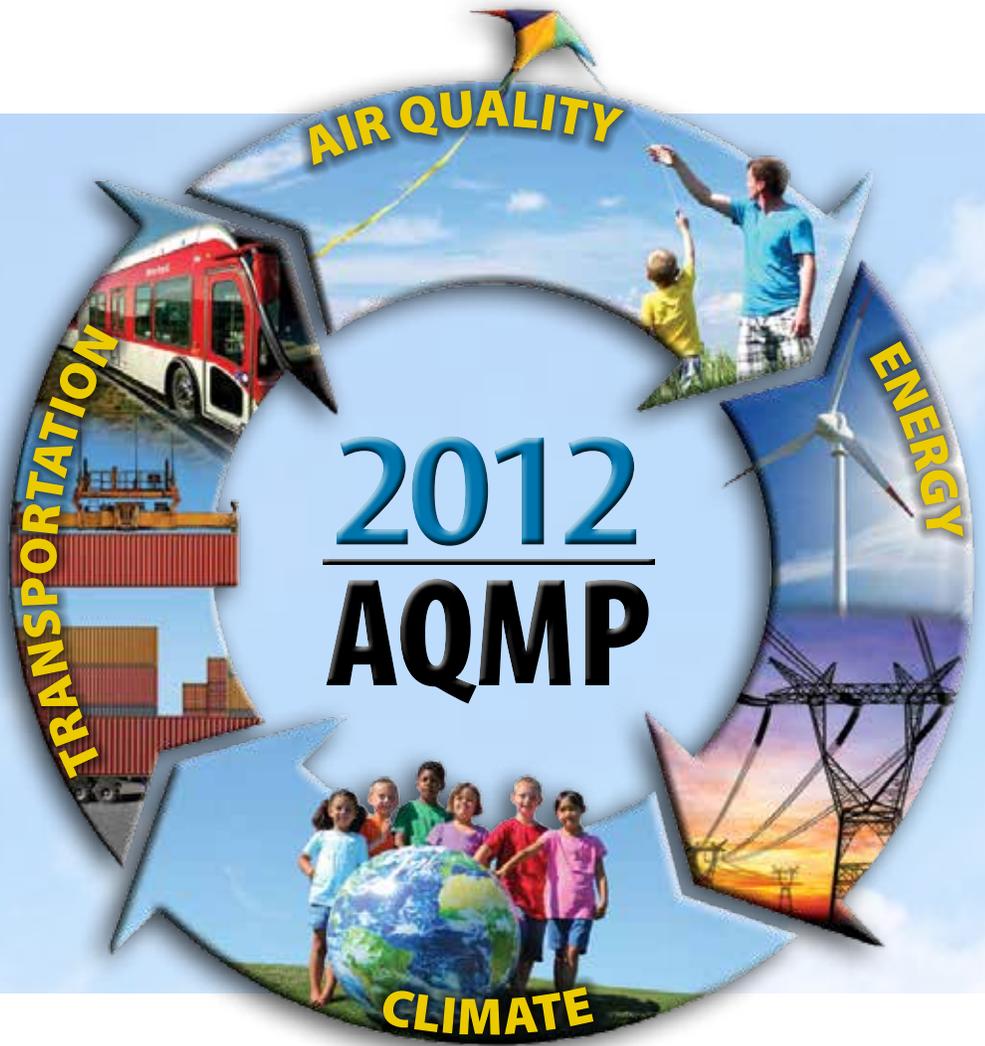
Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
NO-7 / As necessary, each project sponsor may retain a structural engineer or other appropriate professional to determine threshold levels of vibration and cracking that could damage any adjacent historic or other structure subject to damage, and design means and construction methods to not exceed the thresholds.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve, as appropriate and adequate, any necessary documentation of the need to retain a structural engineer or other appropriate professional to determine threshold levels of vibration and cracking that could damage any adjacent structures.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Before construction starts and daily during construction activities
NO-8 / Project sponsors may comply with all local sound control and noise level rules, regulations, and ordinances.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should send inspectors or other enforcement personnel to construction sites to ensure that project sponsors comply with all local sound control and noise level rules, regulations, and ordinances.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. Daily during construction
NO-9 / As part of the appropriate environmental review of each project, a project-specific noise evaluation may be conducted and appropriate mitigation identified and implemented.	Project Applicant/Project Sponsor/Public Agency	The lead agency can and should approve, as appropriate and adequate, any necessary environmental review containing a noise evaluation requirement and noise mitigation measures.	1. SCAQMD/Other Lead Agencies 2. SCAQMD/Other Lead Agencies 3. During the environmental review process and before start of construction

Table 3 (Concluded)

Mitigation, Monitoring and Reporting Plan for 2012 Air Quality Management Plan

Mitigation Measure/Implementation Requirement	Party Responsible for Implementing Mitigation	Monitoring Action	<ol style="list-style-type: none"> 1. Enforcement Agency 2. Monitoring Agency 3. Monitoring Phase
Transportation and Traffic			
TT-1 / Project sponsors and construction contractors can and should meet with the appropriate Lead Agency (or other government agency) to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this project and other nearby projects that could be simultaneously under construction. The project sponsor should develop a construction management plan for review and approval by the Lead Agency (or other government agency as appropriate).	Project Applicant/Project Sponsor/Public Agency	Obtain approval of the constuction management plan from the appropriate agency(ies).	<ol style="list-style-type: none"> 1. SCAQMD/ Other Lead Agencies 2. SCAQMD/ Other Lead Agencies 3. Before the start of construction

DRAFT FINAL 2012 Air Quality Management Plan



November 2012

South Coast Air Quality Management District

Cleaning the air that we breathe...



**DRAFT FINAL 2012 AIR QUALITY
MANAGEMENT PLAN**

NOVEMBER 2012

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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PREFACE

The 2012 AQMP represents a regional blueprint for achieving healthful air on behalf of the 16 million residents of the South Coast Basin.

The air quality challenges are great, the stakes are high...and the legal deadlines loom sooner than most people realize.

STEADY PROGRESS AND MOMENTUM

The primary task of the 2012 AQMP is to bring our Basin into attainment with federal health-based standards for unhealthy fine particulate matter (PM_{2.5}) by 2014. Yet to have any reasonable expectation of meeting the 2023 ozone deadline, the scope and pace of continued air quality improvement must greatly intensify.

- Regulatory frameworks to reduce unhealthy emissions are mostly pollutant-specific, focusing on one pollutant at a time to meet clean air standards. However, outdoors, people inhale pollutants as a mixture, and the chemical interactions of multiple pollutants are complex. For this reason, each AQMP is also a comprehensive plan that examines multiple pollutants and the most up-to-date scientific knowledge, in order to achieve the greatest air quality and health benefits for Southland residents while also balancing factors of cost and available funding.
- The 2012 AQMP is a critical opportunity to re-sharpen our approach to achieve both breathable air and a healthier, revitalized economic future. Fuel combustion for goods movement, transportation, and energy is the major cause of our worst-in-the-nation ozone problem, while strategies for climate protection that reduce fuel use & energy consumption also have corresponding air quality benefits for everyone in the Southland region.

ECONOMIC SENSITIVITY

The District remains sensitive to our region's slow recovery from recession, while retaining the precept that healthful air is not a luxury, but a right. Therefore the 2012 AQMP seeks to maintain steady momentum along a dollar-wise path - - one that will reduce near-term public health expenses and lay a long-term foundation for more livable, energy-efficient communities and open additional economic opportunities.

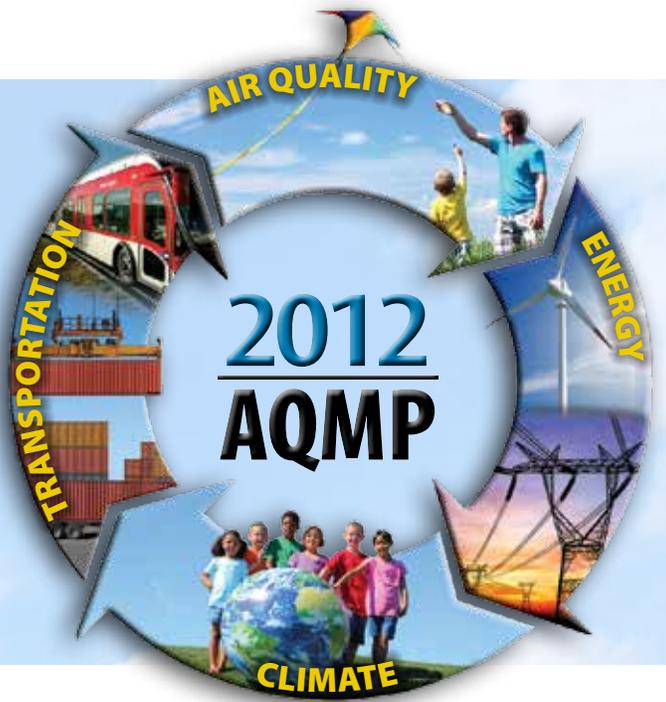
- Wherever possible, the plan seeks to identify solutions that can solve multiple problems from focused investments and clean-technology incentives. Also, a number of the proposed measures are voluntary incentives and/or education programs that encourage innovation and early adoption. In addition, the District, the California Air Resources Board (CARB), and fellow non-attainment district San Joaquin Valley have engaged in a major effort to collaborate on concepts for combined clean air gains and more efficient energy production & usage, especially in transportation - - in a coordinated manner.

COLLABORATIVE, SYNERGISTIC EFFORTS

Key to timely implementation of the 2012 AQMP will be coordinated, integrated planning efforts among local, regional, state, and federal entities, together with effective public-private partnerships; and continuing active participation by stakeholders including community health groups, academic, research, & training institutions, and experts in advanced near-zero and zero-emission technologies, especially as related to advanced goods movement technologies.

- Recent years have seen co-funded projects among entities including SCAQMD, U.S. EPA, U.S. DOE, CARB, CEC, metropolitan planning organizations (such as SCAG), Clean Cities affiliates, Councils of Government, major OEMS, utility providers, goods movement authorities, and even international environmental consortiums. These efforts have been an important first step - - but the time for redoubled commitment by all parties is **now**.





Executive Summary

South Coast Air Quality Management District

Cleaning the air that we breathe...



EXECUTIVE SUMMARY

Introduction

Why Is This Draft Final Plan Being Prepared?

Is Air Quality Improving?

How Did the Recent Recession Affect Air Quality?

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What Is the Overall Control Strategy in the 2012 AQMP?

**Why Not Request The Full 5-Year Extension to Meet the 24-Hour
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Shouldn't the District Wait Before Adding Additional Regulatory
Refined Control Commitments into the SIP?**

**Is the 2012 AQMP Being Coordinated with the State's Greenhouse Gas
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INTRODUCTION

The long-term trend of the quality of air we Southern Californians breathe shows continuous improvement, although the slowing rate of improvement in ozone levels causes concern. The remarkable historical improvement in air quality since the 1970's is the direct result of Southern California's comprehensive, multiyear strategy of reducing air pollution from all sources as outlined in its Air Quality Management Plans (AQMP). Yet the air in Southern California is far from meeting all federal and state air quality standards and, in fact, is among the worst in the nation. Stemming from the preponderance of latest health evidence, new federal fine particulate (PM_{2.5}) and 8-hour surface-level ozone standards are more stringent than the previous standards. To reach federal Clean Air Act (CAA) deadlines over the next two decades, Southern California must significantly accelerate its pollution reduction efforts.

Continuing the Basin's progress toward clean air is a challenging task, not only to recognize and understand complex interactions between emissions and resulting air quality, but also to pursue the most effective possible set of strategies to improve air quality, maintain a healthy economy, and coordinate efforts with other key public and private partners to meet a larger set of transportation, energy and climate objectives. To ensure continued progress toward clean air and comply with state and federal requirements, the South Coast Air Quality Management District (AQMD or District) in conjunction with the California Air Resources Board (CARB), the Southern California Association of Governments (SCAG) and the U.S. Environmental Protection Agency (U.S. EPA) have prepared the Draft Final 2012 AQMP (Plan). The Plan employs the most up-to-date science and analytical tools and incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on-road and off-road mobile sources and area sources.

The Draft Final Plan demonstrates attainment of the federal 24-hour PM_{2.5} standard by 2014 in the South Coast Air Basin (Basin) through adoption of all feasible measures. The Draft Final Plan also updates the U.S. EPA approved 8-hour ozone control plan with new measures designed to reduce reliance on the CAA Section 182 (e)(5) long-term measures for NO_x and VOC reductions.

The Draft Final 2012 AQMP also addresses several state and federal planning requirements, incorporating new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and new meteorological air quality models. This Plan builds upon the approaches taken in the 2007 AQMP for the South Coast Air Basin for the attainment of federal PM and ozone standards, and highlights the

significant amount of reductions needed and the urgent need to engage in interagency coordinated planning to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the timeframes allowed under federal Clean Air Act.

The Draft Final 2012 AQMP also includes an update on the air quality status of the Salton Sea Air Basin (SSAB) in the Coachella Valley, a discussion of the emerging issues of ultrafine particle and near-roadway exposures, an analysis of the energy supply and demand issues that face the Basin and their relationship to air quality. The Plan also includes a new demonstration of 1-hour ozone attainment and vehicle miles travelled (VMT) emissions offsets, as per recent U.S. EPA requirements.

This Draft Final Plan as well as other key supporting information are available electronically and can be downloaded from the District's home page on the Internet (<http://www.aqmd.gov/aqmp/2012aqmp/index.htm>).

WHY IS THIS DRAFT FINAL PLAN BEING PREPARED?

The federal Clean Air Act requires a 24-hour PM_{2.5} non-attainment area to prepare a State Implementation Plan (SIP) which must be submitted to U.S. EPA by December 14, 2012. The SIP must demonstrate attainment with the 24-hour PM_{2.5} standard by 2014, with the possibility of up to a five-year extension to 2019, if needed. U.S. EPA approval of any extension request is based on the lack of feasible control measures to move forward the attainment date by one year. The District's attainment demonstration shows that, with implementation of all feasible controls, the earliest possible attainment date is 2014, and thus no extension of the attainment date is needed.

In addition, the U.S. EPA requires that transportation conformity budgets be established based on the most recent planning assumptions (i.e., within the last five years) and approved motor vehicle emission models. The Draft Final Plan is based on the most recent assumptions provided by both CARB and SCAG for motor vehicle emissions and demographic updates and includes updated transportation conformity budgets.

IS AIR QUALITY IMPROVING?

Yes. Over the years, the air quality in the Basin has improved significantly, thanks to the comprehensive control strategies implemented to reduce pollution from mobile and stationary sources. For instance, the total number of days on which the Basin

experiences high ozone levels has decreased dramatically over the last two decades. As shown in Figure ES-1, the majority of exceedances occur in the mountains and valleys of Southwestern San Bernardino County. The maximum 8-hour ozone levels measured in the Basin were well above 200 ppb in the early 1990s, and are now less than 140 ppb. Figure ES-2 shows the long-term trend in ambient 8-hour average and 1-hour average ozone levels since 1990. However, the Basin still exceeds the federal 8-hour standard more frequently than any other location in the U.S. Under federal law, the Basin is designated as an "extreme" nonattainment area for the 8-hour ozone standard.

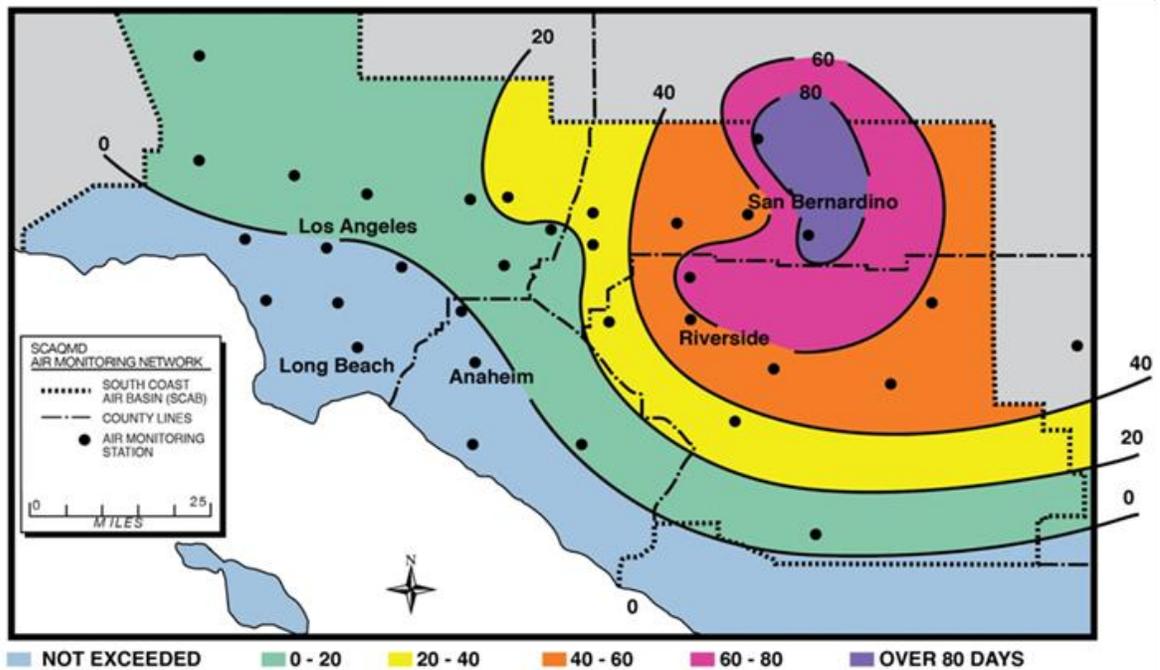


FIGURE ES-1

2011 8-Hour Ozone: Number of Days Exceeding the Current Federal Standard (8-hour average ozone > 0.075 ppm)

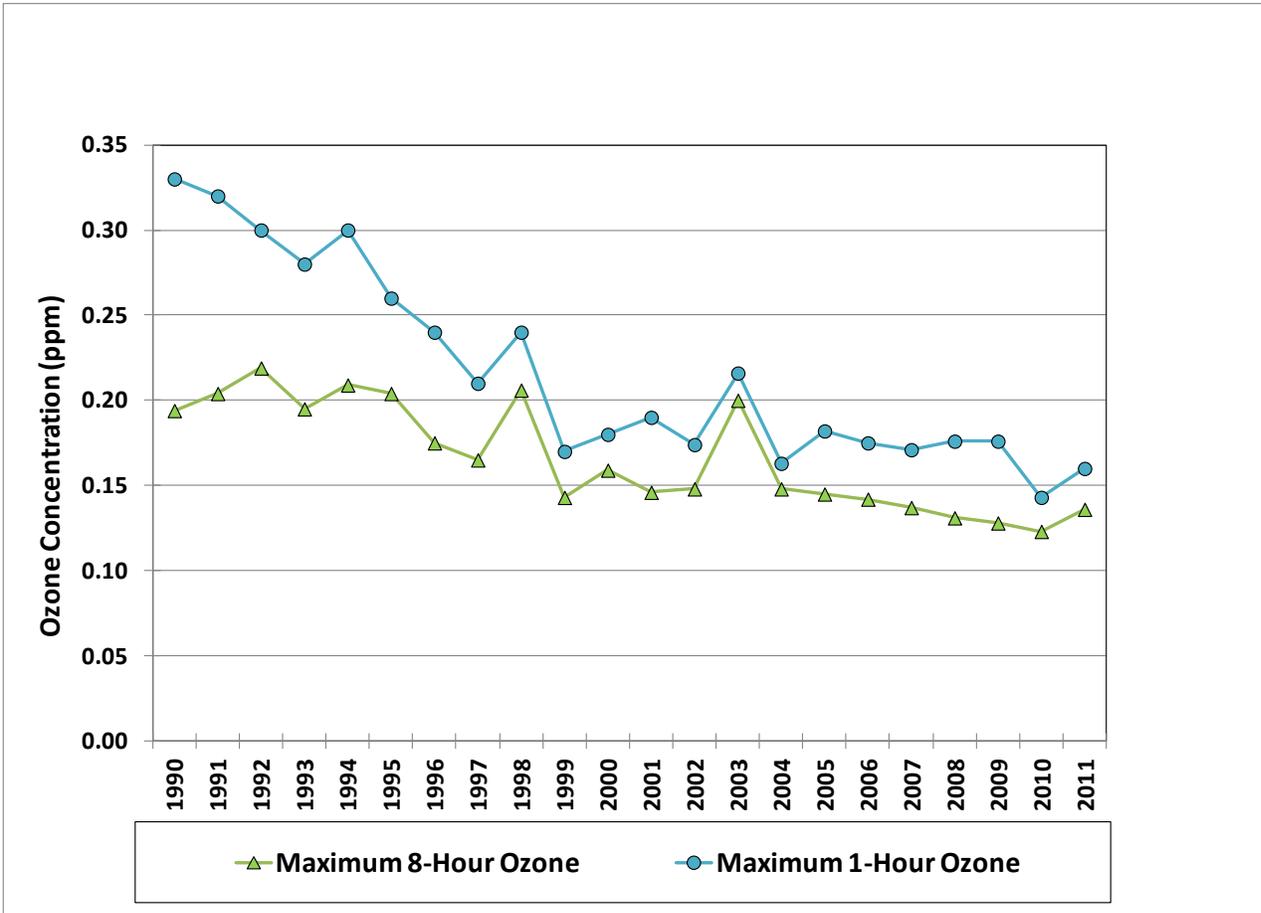


FIGURE ES-2

Maximum 1-Hour and 8-Hour Average Ozone Trends in the Basin

The rate of progress in improving ozone air quality has slowed for the last several years. The District has conducted extensive analysis, held technical forums, and reviewed all available scientific literature examining the issue of why progress has slowed, including the accuracy of emissions inventories, the effectiveness of control strategies, and the knowledge of photochemical processes. The overall result is that a strategy focusing primarily on NO_x reductions has been deemed the best way to achieve long-term ozone attainment objectives. However, a recurring policy question is whether another approach, such as significant VOC reductions, would be as effective at reducing ozone levels. But given that NO_x reductions are needed not only to achieve the ozone standards but also to achieve the PM_{2.5} standards, and given that a heavy VOC reduction strategy alone could not achieve the ozone standards, a NO_x-heavy control strategy is considered best. VOC reductions are, however, still needed to provide additional ozone benefits, especially in the western areas of the Basin.

Relative to the 1-hour ozone standard, which was revoked by the U.S. EPA in favor of the new 8-hour ozone standard, the past air pollution control programs have had an overall positive impact. The number of days in which the Basin exceeds the federal 1-hour ozone standard has continually declined over the years. But as seen in Figure ES-2, the rate of progress has slowed since 2000. The Basin currently still experiences ozone levels over the revoked 1-hour federal standard on approximately 5% of the days. U.S. EPA guidance has indicated that while certain planning requirements remained in effect, a new SIP would not be required if an area failed to attain the standard by the attainment date. However, recent litigation and court decisions have suggested that there is likely a need for the District to prepare a new 1-hour ozone SIP in the near future. If a 1-hour ozone SIP is requested by U.S. EPA, the SIP would be due within 12 months of such a SIP call. The attainment demonstration in the SIP would have to show attainment within 5 years with a potential 5-year extension, which would be a similar time frame as the 1997 8-hr ozone standard deadline of 2023. Based on previous modeling estimates, the control strategies that are needed to attain the 8-hour ozone standard are nearly identical to those that would be needed to attain the 1-hour ozone standard.

Both PM₁₀ and PM_{2.5} levels have improved dramatically over the past two decades. Annual average PM₁₀ concentrations have been cut in half since 1990, and likewise, annual average PM_{2.5} concentrations have been cut in half since measurements began in 1999 (Figure ES-3). The Basin has met the PM₁₀ standards at all stations and a request for re-designation to attainment is pending with U.S. EPA. In 2011, both the annual PM_{2.5} standard (15 µg/m³) and the 24-hour PM_{2.5} standard (98th percentile greater than 35 µg/m³) were exceeded at only one air monitoring station, Mira Loma, in Northwestern Riverside County (Figure ES-4). The primary focus of this Draft Final 2012 AQMP is to bring the Basin into attainment with the 24-hour PM_{2.5} standard.

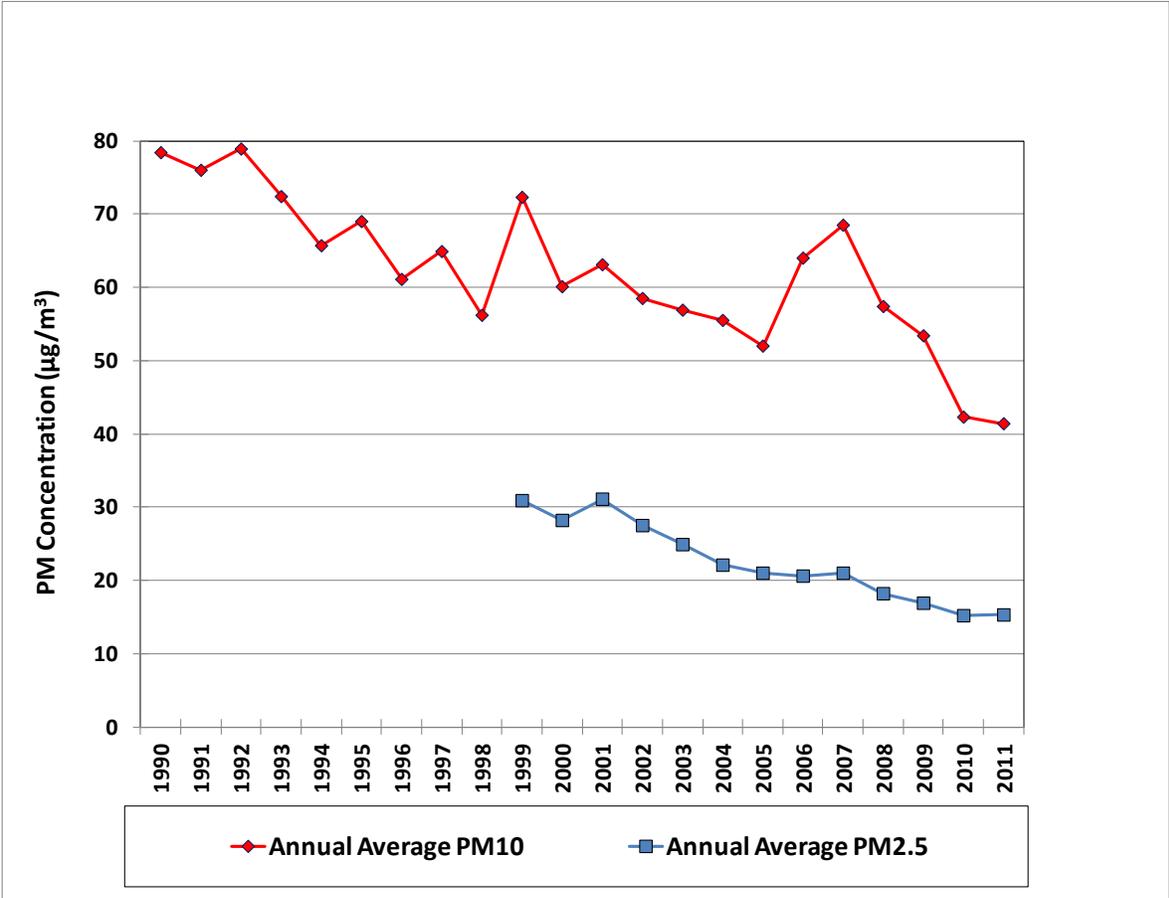


FIGURE ES-3

Maximum-Site Annual Average PM10, PM2.5 Trends in the Basin

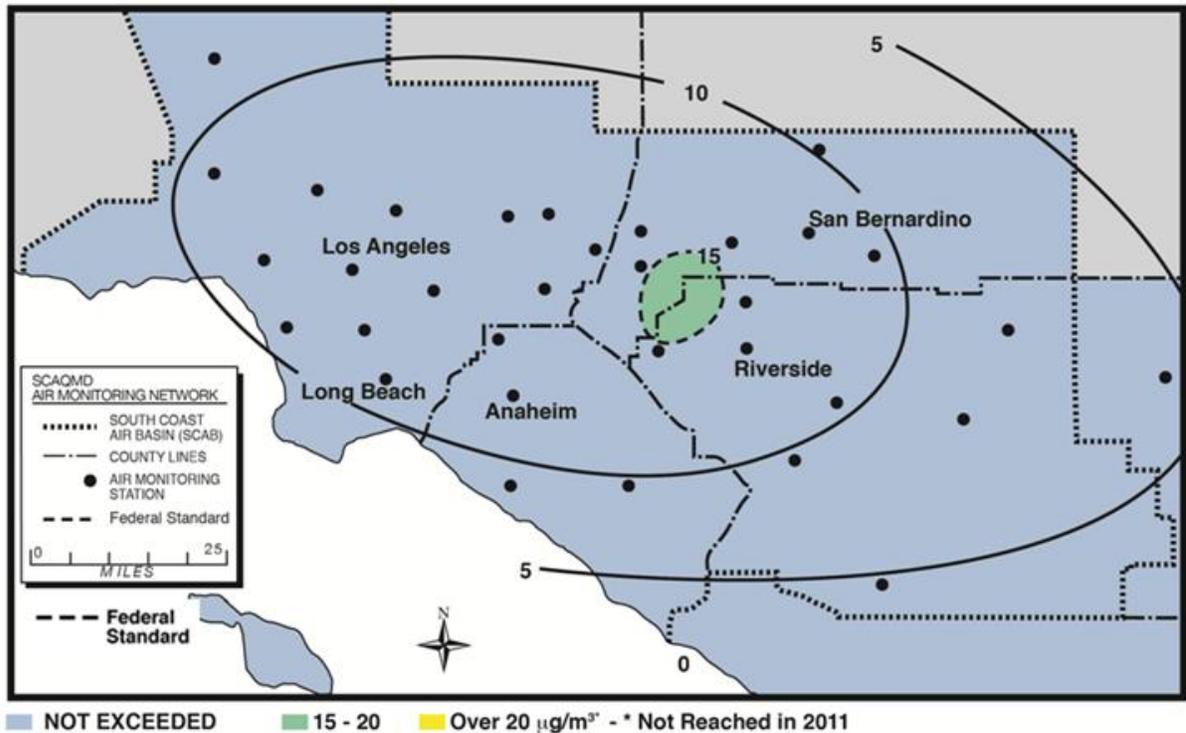


FIGURE ES-4

2011 PM_{2.5}: Annual Average Concentration Compared to the Federal Standard
(Federal standard = 15 µg/m³, annual arithmetic mean)

In 2011, the Basin did not exceed the standards for carbon monoxide, nitrogen dioxide, or sulfur dioxide¹.

Although exposure to pollution has decreased substantially in the Basin through several decades of implementing pollution controls, increases in the population over that time have made further emissions reductions more difficult. Many sources, such as automobiles and stationary sources, have been significantly controlled. However, increases in the number of sources, particularly those growing proportionately to population, can offset the potential air quality benefits of past and existing regulations. The net result is that unless additional steps are taken to further control air pollution, growth itself may begin to reverse the gains of the past decades.

¹ U.S. EPA recently revised the NO₂ and SO₂ air quality, but analysis to date shows continued compliance with these newly mandated levels.

HOW DID THE RECENT RECESSION AFFECT AIR QUALITY?

As shown above, air quality has improved over the last five years. Many factors affect air quality, including meteorological conditions, emissions, and control programs designed to reduce those emissions. The recession that began in late 2007, and continued reduced economic activity in the Basin, has also impacted pollutant emission levels. For example, goods movement activity declined by more than 20%, construction activity dropped by approximately 40%, and high fuel prices led to less vehicle miles travelled. It is difficult to determine exactly which portion of the air quality gains seen over the last five years are related to the economic downturn, but a rough estimate suggests that 15 - 20% of the recent improvements in air quality are attributable to economic factors. As the economy recovers, commercial activity will increase, and there is the potential for some emissions increases. The Draft Final 2012 AQMP utilizes the most recent economic data and projections, including data from SCAG, which include some levels of economic growth. Using these assumptions, the analysis demonstrates that air quality will continue to improve in the future, but not to the degree necessary to achieve air quality standards without additional control programs.

WHAT ARE THE MAJOR SOURCES CONTRIBUTING TO AIR QUALITY PROBLEMS?

Figure ES-5 shows the sources of NO_x, VOC, SO_x, and direct PM_{2.5} emissions for 2008. PM_{2.5} levels benefit from reductions in all four pollutants. On a per ton basis, the greatest PM_{2.5} benefit results from SO_x and direct PM_{2.5} emissions reductions. In the Basin, ozone levels benefit from both NO_x and VOC reductions.

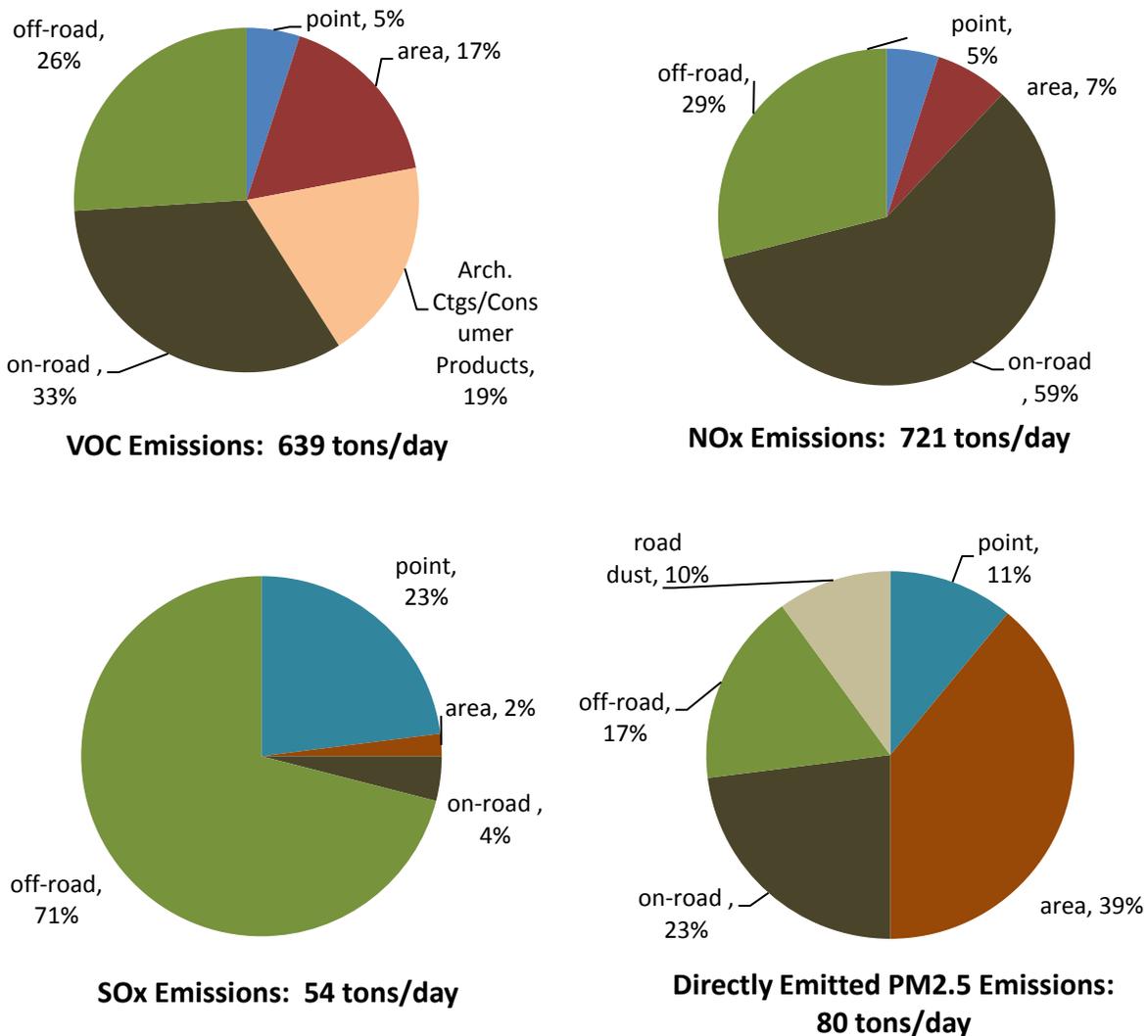


FIGURE ES-5

Relative Contribution by Source Category to 2008 Emission Inventory
(VOC & NOx – Summer Planning; SOx, & PM2.5 – Annual Average Inventory)

WHAT IS THE OVERALL CONTROL STRATEGY IN THE 2012 AQMP?

The Draft Final 2012 AQMP outlines a comprehensive control strategy that meets the requirement for expeditious progress towards attainment with the 24-hour PM2.5 NAAQS in 2014 with all feasible control measures. The Plan also includes specific measures to further implement the ozone strategy in the 2007 AQMP to assist attaining the 8-hour ozone standard by 2023. The 2007 AQMP demonstrated attainment with the

2023 8-hour ozone standard using a provision of the federal CAA, Section 182(e)(5), that allows credit for emissions reductions from future improvements in control techniques and technologies. These “black box” emissions reductions are still needed to show attainment with the 2023 8-hour ozone NAAQS. Accordingly, these Section 182(e)(5) reductions still account for about 65% of the remaining NOx emissions reductions needed in 2023. Given the magnitude of these needed emission reductions, it is critical that the Basin maintain its continuing progress and work actively towards achieving as many specific emissions reductions as possible, and not wait until subsequent AQMPs to begin to address this looming shortfall.

As stated above, the only air monitoring station that is currently exceeding or projected to exceed the 24-hour PM2.5 standard by 2014 is Mira Loma in Western Riverside County. Consistent with U.S. EPA guidance, seasonal or episodic controls that focus on bringing the Mira Loma station into compliance can be considered as a method to bring the Basin into attainment.

The control measures contained in the Draft Final 2012 AQMP can be categorized as follows:

Basin-wide Short-term PM2.5 Measures. Measures that apply Basin-wide, have been determined to be feasible, will be implemented by the 2014 attainment date, and are required to be implemented under state and federal law. The main short-term measures are episodic, in that they only apply during high PM2.5 days and will only be implemented as needed to achieve the necessary air quality improvements.

Contingency Measures. Measures to be automatically implemented if the Basin fails to achieve the 24-hour PM2.5 standard by 2014.

8-hour Ozone Measures. Measures that provide for necessary actions to maintain progress towards meeting the 2023 8-hour ozone NAAQS, including regulatory measures, technology assessments, key investments, and incentives.

Transportation Control Measures. Measures generally designed to reduce vehicle miles travelled (VMT) as included in SCAG’s 2012 Regional Transportation Plan.

Many of the control measures proposed are not regulatory in form, but instead focus on incentives, outreach, and education to bring about emissions reductions through voluntary participation and behavioral changes needed to complement regulations.

WHY NOT REQUEST THE FULL 5-YEAR EXTENSION TO MEET THE 24-HOUR PM_{2.5} STANDARD?

The U.S. EPA deadline for meeting the 24-hour PM_{2.5} NAAQS is 2014, with a possible extension of up to five years. The extension is not automatic, and approval of an extension request will be based on a demonstration that there are no additional feasible control measures available to move up the attainment date by one year. As demonstrated in Chapter 5 of this Draft Final 2012 AQMP, with the existing control program the Basin can attain the 24-hour PM_{2.5} standard by 2019, the latest possible attainment date with a full five-year extension granted by U.S. EPA. Under the federal CAA, the Basin must achieve the federal NAAQS “as expeditiously as practicable.” Therefore, if feasible measures to advance attainment are available, they must be adopted and implemented in the SIP. With all feasible measures implemented, including the episodic controls proposed, the Basin can achieve attainment by 2014 without requesting an extension.

WHY AND HOW IS THE 8-HOUR OZONE PLAN BEING UPDATED?

Given the continuing challenge of achieving the magnitude of emissions reductions needed to meet the federal 2023 8-hour ozone deadline, this Plan updates the previous 8-hour ozone plan with new emission reduction commitments from a set of new control measures, which further implement the 2007 AQMP commitments. The 2023 deadline is fast approaching and the magnitude of needed emission reductions remains about the same as it was in the 2007 AQMP. It is not a prudent or efficient strategy to wait for future plans and controls to achieve all of these reductions when they are possible today. Thus, these Draft Final 2012 AQMP measures serve as a down payment for the much larger reductions that will be needed in future years.

Furthermore, these additional emissions reductions are needed to demonstrate attainment with the revoked 1-hour ozone standard. Due to a recent court decision, U.S. EPA has proposed to require a new 1-hour ozone attainment demonstration. The 1-hour ozone attainment strategy is essentially identical to the 8-hour ozone attainment strategy, including the updates in the Draft Final 2012 AQMP. The 1-hour ozone attainment demonstration is included as an appendix to this Plan.

The U.S. EPA approved the 8-hour ozone SIP portion of the 2007 AQMP in 2011. The submittal of the Draft Final 2012 AQMP will update certain portions of that SIP submittal. Namely, the new 8-hour ozone control measures will be submitted into the SIP with commitments for corresponding emissions reductions.

GIVEN THE CURRENT DIFFICULT AND UNCERTAIN ECONOMIC CONDITIONS, SHOULD THE DISTRICT WAIT BEFORE ADDING REFINED CONTROL COMMITMENTS INTO THE SIP?

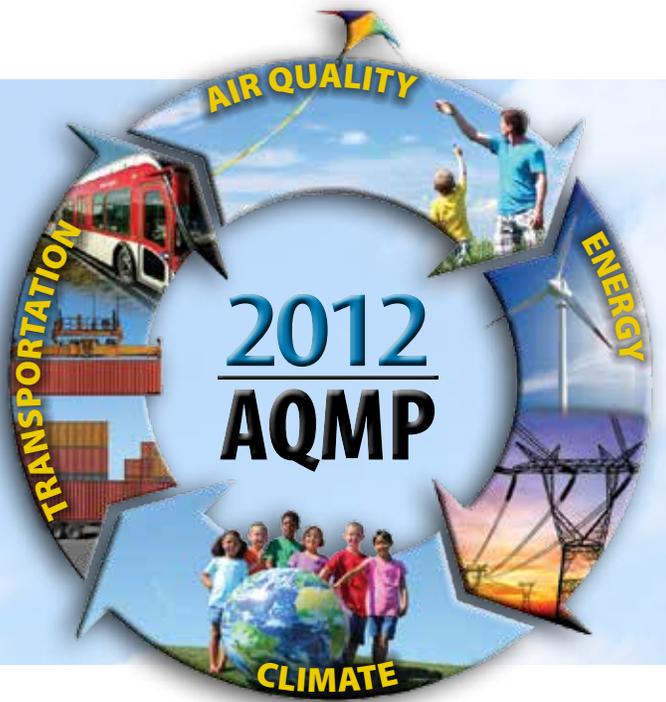
No. The PM_{2.5} measures are required to be submitted by December 14, 2012. As for ozone, the challenges are too great, the stakes too high, and the deadlines too soon. Waiting until the last few years to try and achieve the necessary emission reductions will make the efforts more difficult, disruptive, and probably more expensive. However, the district remains sensitive to the current economic climate and the struggles that many local businesses are experiencing. That is why this Draft Final 2012 AQMP strives to identify the most cost-effective and efficient path to achieve federal clean air standards. A number of the measures proposed in the Plan are voluntary incentive and/or education programs that aim to achieve emission reductions without imposing new regulatory requirements. The episodic control approach seeks to minimize overall cost and economic impacts by focusing on the limited numbers of days and locations still experiencing the exceedances of the federal standards.

Furthermore, the effort to achieve multiple clean air goals will require significant public investments in the region over a long period of time. These investments need to be accomplished in an optimum fashion starting now. This also has the potential to create new Southern California jobs in clean technology sectors such as renewable power, energy efficiency, clean products, and advanced emissions controls. Fulfilling this unique opportunity to concentrate these clean air investments and jobs in the region where the air quality problems exist will require strong partnerships among all levels of government and business interests.

IS THE 2012 AQMP BEING COORDINATED WITH THE STATE'S GREENHOUSE GAS REDUCTION EFFORTS?

The Basin faces several ozone and PM attainment challenges, as strategies for significant emission reductions become harder to identify and the federal standards continue to become more stringent. California's Greenhouse Gas reductions targets under AB32 add new challenges and timelines that affect many of the same sources that emit criteria pollutants. In finding the most cost-effective and efficient path to meet multiple deadlines for multiple air quality and climate objectives, it is essential that an integrated planning approach is developed. Responsibilities for achieving these goals span all levels of government, and coordinated and consistent planning efforts among multiple government agencies are a key component of an integrated approach.

To this end, and concurrent with the development of the 2012 AQMP, the District, the Air Resources Board, and San Joaquin Valley Air Pollution Control District engaged in a joint effort to take a coordinated and integrated look at strategies needed to meet California's multiple air quality and climate goals, as well as its energy policies. California's success in reducing smog has largely relied on technology and fuel advances, and as health-based air quality standards are tightened, the introduction of cleaner technologies must keep pace. More broadly, a transition to zero- and near-zero emission technologies is necessary to meet 2023 and 2032 air quality standards and 2050 climate goals. Many of the same technologies will address air quality, climate and energy goals. As such, strategies developed for air quality and climate change planning should be coordinated to make the most efficient use of limited resources and the time needed to develop cleaner technologies. The product of this collaborative effort, the draft *Vision for Clean Air: A Framework for Air Quality and Climate Planning*, examines how those technologies can meet both air quality and climate goals over time. A public review draft of this document is now available at <http://www.aqmd.gov/aqmp/2012aqmp> and serves as context and a resource for the 2012 AQMP.



Chapter 1

Introduction

South Coast Air Quality Management District
Cleaning the air that we breathe...



CHAPTER 1

INTRODUCTION

Purpose

Constraints in Achieving Standards

Control Efforts

Progress in Implementing the 2007 AQMP

Draft Final 2012 AQMP

Format of This Document

PURPOSE

The purpose of the 2012 Air Quality Management Plan (AQMP or Plan) for the South Coast Air Basin (Basin) is to set forth a comprehensive and integrated program that will lead the Basin into compliance with the federal 24-hour PM_{2.5} air quality standard, and to provide an update to the Basin's commitments towards meeting the federal 8-hour ozone standards. It will also serve to satisfy recent U.S. EPA requirements for a new attainment demonstration of the revoked 1-hour ozone standard, as well as a vehicle miles travelled (VMT) emissions offset demonstration. The Plan will be submitted to the U.S. Environmental Protection Agency (U.S. EPA) as the State Implementation Plan (SIP) once it is approved by the South Coast Air Quality Management District's (AQMD or District) Governing Board and the California Air Resources Board (CARB). Specifically, the Plan will serve as the official SIP submittal for the federal 2006 24-hour PM_{2.5} standard, for which U.S. EPA has established a due date of December 14, 2012. In addition, the Plan will update specific new control measures and commitments for emissions reductions to implement the attainment strategy for the 8-hour ozone SIP and help reduce reliance on the Section 182(e)(5) long-term measures. The key federal and state planning requirements are summarized briefly later in this chapter. Given the challenges and complexities in demonstrating attainment with air quality standards, District staff believes it is important to initiate broad public dialogue on a broad range of air quality issues, to inform the public regarding the challenges ahead, and to solicit public input in an open and transparent process. This Draft Final 2012 AQMP sets forth programs which require integrated planning efforts and the cooperation of all levels of government: local, regional, state, and federal.

At the federal level, U.S. EPA is charged with establishing emission standards for on-road motor vehicles; train, airplane, and ship pollutant exhaust and fuel standards; and establishing emissions standards for non-road engines less than 175 horsepower. CARB, at the state level, also establishes on-road vehicle emission standards, fuel specifications, some off-road source requirements, and most consumer product standards. CARB is also primarily responsible for the implementation of California's greenhouse gas emission reduction program as mandated by AB 32. The strategies to achieve air quality and climate goals have significant overlap in terms of sources and control measures. When also considering other regional needs and constraints, such as energy supply, mobility, goods movement, and jobs, it is clear that an integrated and coordinated planning approach is needed to efficiently achieve multiple objectives.

Since air pollution is not constrained within city and county boundaries, it is largely a regional issue. As the regional air quality agency for Orange County and portions of Los Angeles, Riverside, and San Bernardino Counties, including the Coachella Valley, the District is responsible for stationary sources with some limited mobile source and consumer product authority. The District also has the primary responsibility for the development and adoption of the AQMP. Lastly, at the local level, the cities, counties and their various departments (e.g., harbors and airports) have a dual role related to transportation and land use. Their efforts are coordinated through the regional metropolitan planning organization (MPO) for the Basin, the Southern California Association of Governments (SCAG). Along with CARB, SCAG is the District's partner in the preparation of the AQMP, providing the latest economic forecasts and developing transportation control measures. Interagency commitment and cooperation are keys to the success of the AQMP. No one agency can design or implement the Plan alone and the strategies in the Plan reflect this fact.

CONSTRAINTS IN ACHIEVING STANDARDS

The District is faced with a number of constraints and that make achieving clean air standards a difficult challenge. These include the physical and meteorological setting, the large pollutant emissions burden of the Basin (including pollution from international goods movement), and the continued population growth of the area.

Setting

The District has jurisdiction over an area of approximately 10,743 square miles, consisting of the South Coast Air Basin, and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). The Basin, which is a subregion of the District's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The Riverside County portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federal nonattainment area (known as the Coachella Valley Planning Area) is a sub-region of Riverside County and the SSAB that is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east. The Los Angeles County portion of the MDAB (known as North County or Antelope Valley) is bounded by the San Gabriel Mountains to the south and west, the Los Angeles/Kern County border to the north,

and the Los Angeles/San Bernardino County border to the east. The SSAB and MDAB were previously included in a single large basin called the Southeast Desert Air Basin (SEDAB). On May 30, 1996, CARB replaced the SEDAB with the SSAB and MDAB. In July 1997, the Antelope Valley area of MDAB was separated from the District and incorporated into a new air district under the jurisdiction of the newly formed Antelope Valley Air Pollution Control District (AVAPCD). The entire region is shown in Figure 1-1.

The Coachella Valley Planning Area is impacted by pollutant transport from the South Coast Air Basin. In addition, pollutant transport also impacts the Antelope Valley, Mojave Desert, Ventura County, and San Diego County. As part of this AQMP, an update on the status of the Coachella Valley ozone non-attainment area is also provided.

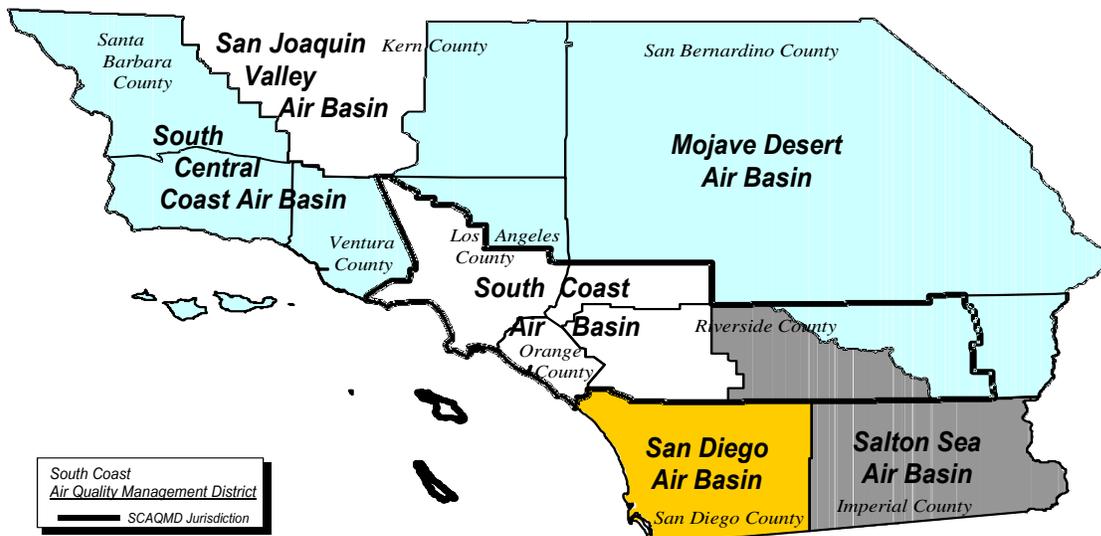


FIGURE 1-1

Boundaries of the South Coast Air Quality Management District
and Federal Planning Areas

The topography and climate of Southern California combine to make the Basin an area of high air pollution potential. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction

between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cooler surface layer which inhibits the pollutants from dispersing upward. Light winds during the summer further limit ventilation. Additionally, abundant sunlight triggers the photochemical reactions which produce ozone and the majority of particulate matter. The region experiences more days of sunlight than any other major urban area in the nation except Phoenix.

The Basin's economic base is diverse. Historically, the four counties of the Basin have collectively comprised one of the fastest-growing local economies in the United States. Significant changes have occurred in the composition of the industrial base of the region in the past twenty years. As in many areas of the country, a large segment of heavy manufacturing, including steel and tire manufacturing as well as automobile assembly, has been phased down. Due to growth in shipping and trade, small service industries and businesses have replaced much of the heavy industry.

Emission Sources

The pollution burden of the Basin is substantial. In spite of substantial reductions already achieved through effective control strategies, additional significant reductions of volatile organic compounds (VOCs), oxides of nitrogen (NO_x), sulfur oxides (SO_x), and particulate matter (PM) in the Basin are needed to attain the federal and state air quality standards.

Air pollution forms either directly or indirectly from pollutants emitted from a variety of sources. These sources can be natural, such as oil seeps, vegetation, or windblown dust, but the majority of emissions are related to human activity. Emissions result from fuel combustion sources, such as cars and trucks; from the evaporation of organic liquids, such as those used in coating and cleaning processes; and through abrasion processes, such as tires on roadways. The air pollution control strategy in the Draft Final 2012 AQMP is directed entirely at controlling man-made sources. The emission sources in the Basin are described in Chapter 3. Natural emissions are included in the air quality modeling analysis in Chapter 5.

Population

Since the end of World War II, the Basin has experienced faster population growth than the rest of the nation. Although growth has slowed somewhat, the region's population is expected to increase significantly through 2023 and beyond. Table 1-1 shows the projected growth based on SCAG's regional growth forecast.

TABLE 1-1
Population Growth

YEAR	POPULATION	AVERAGE PERCENT INCREASE PER YEAR OVER THE PERIOD
1990	13.0 million	--
2000	14.8 million	1.4
2008	15.6 million	0.7
2023 ^a	17.3 million	0.7
2030 ^a	18.1 million	0.7

^a Based on SCAG forecasts in the 2012 Regional Transportation Plan

Despite this growth, air quality has improved significantly over the years, primarily due to the impacts of the region’s air quality control program. Figure 1-2 shows the trends since 1990 in the annual average PM10 and PM2.5 concentrations. PM10 levels have declined almost 50% since 1990, and PM2.5 levels have also declined 50% since measurements began in 1999. As shown in Chapters 2 and 5, the only air monitoring station that is currently exceeding or projected to exceed the 24-hour PM2.5 standard from 2011 forward is the Mira Loma station in Western Riverside County. Figure 1-3 shows the improvements in the 1-hour ozone and 8-hour ozone levels over the same time period. Similar improvements are observed with ozone, although the rate of ozone decline has slowed in recent years.

Although exposure to pollution has decreased substantially in the Basin through several decades of implementing pollution controls, increases in the population over that time have made further emission reductions more difficult. Many sources, such as automobiles and stationary sources, have been significantly controlled. However, increases in the number of sources, particularly those growing proportionately to population, can offset the potential air quality benefits of past and existing regulations. The net result is that unless additional steps are taken to further control air pollution, growth itself may reverse the gains of the past decades.

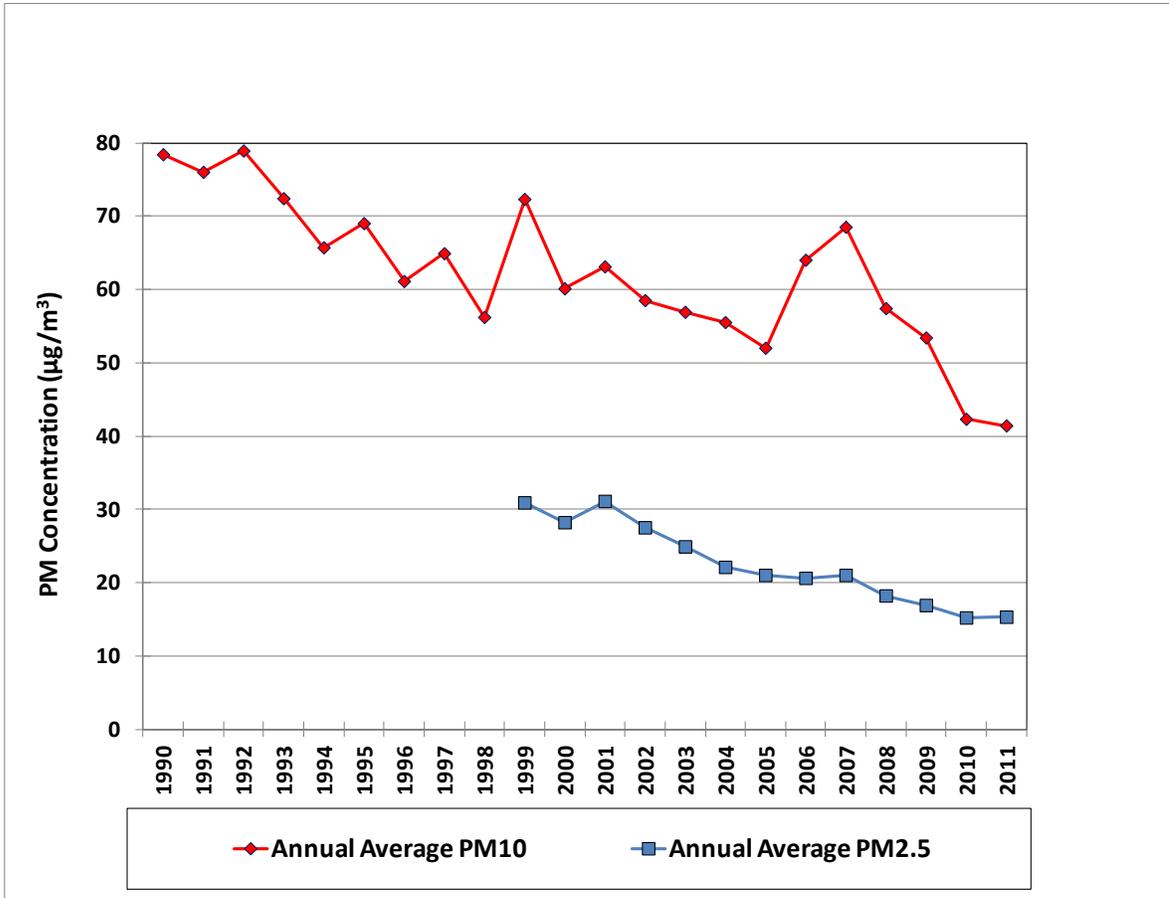


FIGURE 1-2

Maximum Annual Average PM10, PM2.5 Trends in the Basin

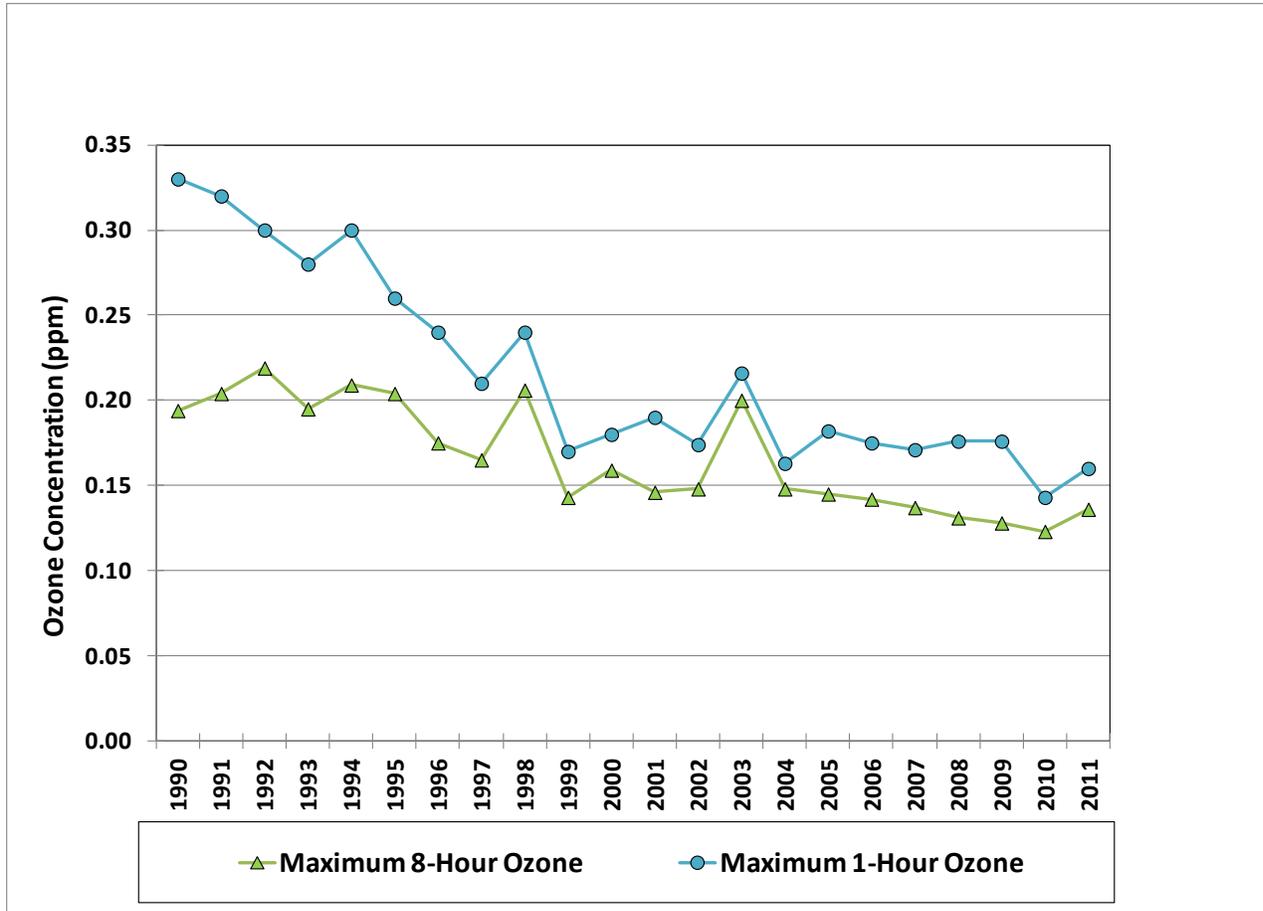


FIGURE 1-3

Maximum 1-hour and 8-hour Average Ozone Trends in the Basin

The Recent Recession

The collapse in the housing and financial markets precipitated the economic recession that began in the fourth quarter of 2007. By technical economic definitions, the recession ended in the second quarter of 2009, but the economy is still being affected and recovery has been slow. Certain industries, such as housing and construction, were disproportionately affected and continue to struggle to return to pre-recessionary growth levels. While unemployment has improved since the height of the recession, it still remains above historical levels. As many businesses continue to struggle under difficult and uncertain economic conditions, the District will continue to work closely with businesses and industry groups to identify the most cost-effective and efficient path to meeting clean air goals while being sensitive to their economic concerns.

CONTROL EFFORTS

History

The seriousness of the local air pollution problem in the Basin was recognized in the early 1940s. In 1946, the Los Angeles County Board of Supervisors established the first air pollution control district in the nation to address the problems of industrial air pollution. In the mid-1950s, California established the first state agency to control motor vehicle emissions. County or regional air pollution districts were formed in California by the 1970s. Many of the control strategies originating in California became the basis for the federal control programs which began in the 1960s.

Nearly all control programs developed to date have relied on the development and application of cleaner technologies and add-on emission control devices. Emissions from industrial and vehicular sources have been significantly cut by the use of these technologies. Only recently have preventive efforts come to the forefront of the air pollution control program, including alternative materials, waste minimization, and maintenance procedures for industrial sources.

In the 1970s, it became apparent at both the state and federal levels that local programs were not enough to solve a problem that was regional in nature and was not contained within city and county jurisdictional boundaries. Instead, air basins, defined by logical geographical boundaries, became the basis for regulatory programs.

In 1976, the California Legislature adopted the Lewis Air Quality Management Act which created the South Coast Air Quality Management District from a voluntary association of air pollution control districts in Los Angeles, Orange, Riverside, and San Bernardino Counties. The new agency was charged with developing uniform plans and programs for the region to attain federal standards by the dates specified in federal law. The agency was also mandated to meet state standards by the earliest date achievable, using reasonably available control measures.

Rule development in the 1970s through 1990s resulted in dramatic improvement in Basin air quality (see Chapter 2 and Appendix II). However, the effort to impose incremental rule changes on the thousands of stationary sources through the command-and-control regulatory process began to be challenged as less economically efficient than programs taking advantage of market incentives. The 1991 AQMP introduced the concept of a Marketable Permits Program and outlined

the framework of an idea that was the forerunner to what is now known as the Regional Clean Air Incentives Market (RECLAIM). RECLAIM, a NO_x and SO_x cap-and-trade program, calls for declining mass emission limits on the total emissions from all facilities within the program and achieves cost-effective emission reductions. In addition to the implementation of RECLAIM, other statewide incentive programs such as the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) and the Highway Safety, Traffic reduction, Air Quality, and Port Security Bond Act of 2006 (Proposition 1B) were implemented and provide expedited reductions through accelerated fleet turnover that would otherwise have been difficult to obtain through regulatory mandates and their associated lead time for implementation.

In summary, while the region's effort to attain applicable ambient air quality standards continues to rely on the successful command-and-control regulatory structure, the strategy is supplemented, where appropriate, with market incentive and compliance flexibility strategies.

Air Quality Impact of Control Efforts

Air pollution controls have had a positive impact on the Basin's air quality relative to the now revoked 1979 federal 1-hour ozone standard. The number of days where the Basin exceeded the federal 1-hour ozone standard has continually declined over the years. However, while the number of days exceeding the federal 1-hour ozone standard has dropped since the 1990s, the rate of progress has slowed since 2000. The Basin experienced ozone levels over the revoked federal 1-hour ozone standard on 7 days in 2010, the original attainment year for the revoked 1-hour ozone standard, and the maximum recorded value exceeded the standard by nearly 20 percent.

Although past controls were primarily designed to address the federal 1-hour ozone and the PM₁₀ standards, they also benefited the more recent efforts to attain the 8-hour ozone and the PM_{2.5} standards. The 8-hour ozone levels have been reduced by half over the past 20 years, nitrogen dioxide and sulfur dioxide standards have been met, and other criteria pollutant concentrations have significantly declined. The federal and state CO standards were also met as of the end of 2002. The Basin has met the PM₁₀ standards at all stations and has requested a redesignation to attainment status. However, the Basin still experiences substantial exceedances of the 8-hour ozone standards and nominal exceedances of the PM_{2.5} standards. Air quality summaries and health effects in the Basin are discussed in Chapter 2;

Appendix II provides an in-depth analysis of air quality as measured within the District's jurisdiction.

PROGRESS IN IMPLEMENTING THE 2007 AQMP

District's Actions

The ozone portion of the 2007 AQMP has been approved by U.S. EPA into the SIP. The majority of the PM_{2.5} portion of the 2007 AQMP has also been approved by U.S. EPA, with the only exception being the failure to meet contingency measure requirements. These approvals include SIP revisions submitted in response to U.S. EPA's initial findings. The District has also submitted a SIP revision designed to meet the contingency measure requirement for the annual PM_{2.5} plan.

The District continues to implement the 2007 AQMP. Progress in implementing the 2007 AQMP can be measured by the number of control measures that have been adopted as rules and the resulting tons of pollutants targeted for reduction. Emission reduction commitments and reductions which will be achieved in 2014 and 2023 through already adopted measures are based on the emissions inventories from the 2007 AQMP. Between 2008 and 2011, twelve control measures or rules have been adopted or amended by the District. Table 1-2 lists the District's 2007 AQMP commitments and the control measures or rules that were adopted through 2011. The table is largely derived from the PM_{2.5} SIP revisions submitted to U.S. EPA in 2011, and thus emissions substitutions and other factors are included in the footnotes. As shown in Table 1-2, for the control measures adopted by the District over this period, 22.5 tons per day of VOC reductions, 7.6 tons per day of NO_x reductions, 4.0 tons per day of SO_x reductions, and 1.0 tons per day of PM_{2.5} reductions will be achieved by 2014. Additional reductions from these adopted rules will be achieved by 2023.

TABLE 1-2

2007 AQMP Emission Reductions (tons per day) by Measure/Adoption Date

Control Measure #	CONTROL MEASURE TITLE	Adoption Date	COMMITMENT ^a		ACHIEVED ^a	
			2014	2023	2014	2023
VOC EMISSIONS						
MOB-05	AB923 Light-Duty Vehicle High-Emitter Identification Program [NOx, VOC]	On-going	0.8	0.7	--	--
MOB-06	AB923 Medium-Duty Vehicle High-Emitter Identification Program [NOx, VOC]	On-going	0.5	0.6	--	--
FUG-04	Pipeline and Storage Tank Degassing[VOC]- R1149	2008	NA	NA	0.04	0.04
BCM-03	Emission Reductions from Wood Burning Fireplaces and Wood Stoves [All]	2008	NA	NA	0.44	0.70
MCS-01	Facility Modernization [NOx, VOC, PM] - R1110.2	2008+	2.0	9.2	0.3	0.3
CTS-01	Emission Reductions from Lubricants [VOC][R1144]	2009	1.9	2.0	3.9	3.2
CTS-04	Emission Reductions from the Reduction of VOC Content of Consumer Products Not Regulated by the State Board [VOC][R1143]	2009	NA	NA	9.7	10.1
MCS-04	Further Emission Reductions from Greenwaste Composting Operations [VOC][R1133.3]	2011	NA	NA	0.88	0.88
MCS-07	Application of All Feasible Measures [VOC][R1113, R1177]	2011	NA	NA	7.2	11.1
FLX-02	Petroleum Refinery Pilot Program [VOC and PM2.5]	(b)	0.7	1.6	0	0
FUG-02	Emission Reductions from Gasoline Transfer and Dispensing Facilities [VOC]	(b)	3.7	4.0	0	0
MCS-05	Emission Reductions from Livestock Waste [VOC]	(b)	0.8	0.6	0	0
EGM-01	Emission Reductions from New or Redevelopment Projects [NOx, VOC, PM2.5]	(c)	NA	0.5	NA	--
TOTAL VOC REDUCTIONS (TPD)			10.4	19.2	22.5	26.4

TABLE 1-2 (continued)

2007 AQMP Emission Reductions (tons per day) by Measure/Adoption Date

Control Measure #	CONTROL MEASURE TITLE	Adoption Date	COMMITMENT ^a		ACHIEVED ^a	
			2014	2023	2014	2023
NO_x EMISSIONS						
MOB-05	AB923 Light-Duty Vehicle High-Emitter Identification Program [NO _x , VOC]	On-going	0.4	0.4	--	--
MOB-06	AB923 Medium-Duty Vehicle High-Emitter Identification Program [NO _x , VOC]	On-going	0.5	0.6	--	--
CMB-01	NO _x Reduction from Non-RECLAIM Ovens, Dryers and Furnaces [NO _x][R1147]	2008	3.5	4.1	3.5	4.1
BCM-03	Emission Reductions from Wood Burning Fireplaces and Wood Stoves [All][R445]	2008	NA	NA	0.06	0.10
	SOON Program	2008	4-8	NA	1.8	NA
MCS-01	Facility Modernization [NO _x , VOC, PM] - <i>R1110.2, PR1146, PR1146.1</i>	2008+	1.6	2.2	2.17	3.15
CMB-03	Further NO _x Reductions from Space Heaters [NO _x]	2009	0.8	1.1	0.1	3.0
EGM-01	Emission Reductions from New or Redevelopment Projects [NO _x , VOC, PM _{2.5}]	(c)	0	0.8	--	--
TOTAL NO_x REDUCTIONS ^(d) (TPD)			10.8	9.2	7.6	10.3
PM_{2.5} EMISSIONS						
BCM-03	Emission Reductions from Wood Burning Fireplaces and Wood Stoves [PM _{2.5}]	2008	1.0	1.6	1.0	1.6
FLX-02	Petroleum Refinery Pilot Program [VOC and PM _{2.5}]	(d)	0.4	0.4	--	--
EGM-01	Emission Reductions from New or Redevelopment Projects [NO _x , VOC, PM _{2.5}]	(c)	NA	0.5	NA	--
MCS-01	Facility Modernization [NO _x , VOC, PM]	(d)	0.4	1.7	0	0
BCM-05	PM Emission Reductions from Under-fired Charbroilers [PM _{2.5}]	(d)	1.1	1.2	--	--
TOTAL PM_{2.5} REDUCTIONS (TPD)			2.9	5.4	1.0	1.6

TABLE 1-2 (concluded)

2007 AQMP Emission Reductions (tons per day) by Measure/Adoption Date

Control Measure #	CONTROL MEASURE TITLE	Adoption Date	COMMITMENT ^a		ACHIEVED ^a	
			2014	2023	2014	2023
SOx EMISSIONS						
CMB-02	Further SOx Reductions for RECLAIM (BARCT) [SOx]	2010	2.9	2.9	4.0	5.7
TOTAL SOx REDUCTIONS (TPD)			2.9	2.9	4.0	5.7

^(a) 2014 reductions estimated in average annual day, 2023 in planning inventory.

^(b) SIP commitment for VOC reductions in the PM2.5 Plan was met via excess reductions achieved from CTS-04 (R1143).

^(c) No SIP emission reduction commitment for the PM2.5 Plan. Rulemaking is delayed due to potential co-benefits of SB375 reduction targets.

^(d) Reduction commitment for NOx and PM2.5 reductions in the PM2.5 SIP was met via excess reductions achieved from the 2010 SOx RECLAIM amendments. The PM2.5 forming potential established in the 2007 AQMP is NOx: PM2.5:SOx=1:10:15.

NA: Not applicable, no SIP Reductions quantified in the 2007 AQMP

CARB Actions

Table 1-3 lists the 2007 AQMP's control measure commitments that have been adopted (either entirely or partially) by CARB since the 2007 AQMP was adopted. The emissions are presented in terms of remaining emissions, rather than reductions, due to some significant changes to the inventory that preclude a direct comparison of committed emissions to those achieved. The table is based on SIP revisions submitted to U.S. EPA in 2011, and thus reflect adopted measures through specific dates in 2011 as described in the footnotes. To date, CARB has achieved more than the committed 2014 emissions reductions for all pollutants for these source categories. The same is true for VOC and NO_x emissions in 2023.

TABLE 1-3

South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
	2014 ^a	2023 ^b	2014 ^a	2023 ^b
NO_x EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	134.2	74.3	131.6	73.1
Cleaner In-Use Heavy-Duty Trucks & Buses	151.2	76.8	132.6	49.4
Cleaner In-Use Off-Road Equipment (over 25hp)	28.0	18.9	27.5	15.8
Ship Auxiliary Engine Cold Ironing & Clean Tech.	23.7	40.3	15.6	12.0
Cleaner Main Ship Engines and Fuel - Main Engines	38.5	65.8	20.9	21.3
Accelerated Intro. of Cleaner Line-Haul Locomotives	18.3	21.0	18.3	21.0
Clean Up Existing Harbor Craft	15.2	18.4	11.1	8.4
Cargo Handling Equipment	3.2	1.8	3.2	1.8
New Emission Standards for Recreational Boats	11.0	18.3	11.0	18.3
Co-Benefits from Greenhouse Gas Reduction Measures ^d	--	--	--	--
All other local, state, and federal emissions	166	157	159	147 ^e
TOTAL NO_x REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	589	493	530	368

TABLE 1-3 (continued)

South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
	2014 ^a	2023 ^b	2014 ^a	2023 ^b
VOC EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	132.1	97.4	123.5	92.1
Cleaner In-Use Heavy-Duty Trucks & Buses	8.7	6.6	5.4	5.3
Cleaner In-Use Off-Road Equipment (over 25hp)	2.6	2.0	2.5	1.7
Ship Auxiliary Engine Cold Ironing & Clean Tech.	0.9	1.5	0.7	0.9
Cleaner Main Ship Engines and Fuel - Main Engines	1.9	3.2	1.4	2.5
Accelerated Intro. of Cleaner Line-Haul Locomotives	2.3	2.4	2.3	2.4
Clean Up Existing Harbor Craft	1.2	1.0	1.1	0.5
Cargo Handling Equipment	0.3	0.6	0.3	0.6
New Emission Standards for Recreational Boats	37.9	50.8	37.9	50.8
Expanded Off-Road Rec. Vehicle Emission Standards	6.7	13.4	6.7	13.4
Consumer Products Program	102.6	109.5	96.7	102.4
All other local, state, and federal emissions	221	241	206	226 ^c
TOTAL VOC REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	518	529	485	498
PM_{2.5} EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	7.8	--	7.5	--
Cleaner In-Use Heavy-Duty Trucks & Buses	6.0	--	3.4	--
Cleaner In-Use Off-Road Equipment (over 25hp)	1.3	--	1.3	--
Ship Auxiliary Engine Cold Ironing & Clean Tech.	0.5	--	0.4	--
Cleaner Main Ship Engines and Fuel - Main Engines	3.9	--	0.4	--
Accelerated Intro. of Cleaner Line-Haul Locomotives	0.7	--	0.7	--
Clean Up Existing Harbor Craft	0.6	--	0.4	--
Cargo Handling Equipment	0.1	--	0.1	--
All other local, state, and federal emissions	74	--	73	--

TABLE 1-3 (concluded)

South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
	2014 ^a	2023 ^b	2014 ^a	2023 ^b
TOTAL PM2.5 REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	95	--	87	--
SOx EMISSIONS (TPD)^c				
Cleaner In-Use Heavy-Duty Trucks & Buses	0.3	--	0.3	--
Ship Auxiliary Engine Cold Ironing & Clean Tech.	1.1	--	0.8	--
Cleaner Main Ship Engines and Fuel - Main Engines	38.7	--	1.7	--
All other local, state, and federal emissions	21	--	17	--
TOTAL SOX REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	61	--	20	--

- a. The 2014 emissions data reflect the 2014 Emissions Inventory that was included in the March 2011 *Progress Report on Implementation of PM2.5 State Implementation Plans*. The inventory is in the process of being updated, and may change slightly in the final AQMP draft.
- b. The 2023 emissions data tables reflect the 2023 Emissions Inventory that was current as of August 2011. The inventory is in the process of being updated, and may change slightly in the final AQMP draft.
- c. These are remaining emissions. If achieved emissions are lower than the committed emissions, it means the SIP targets are met.
- d. Remaining emissions are included in "other local, state, and federal emissions"
- e. Includes benefits of local emission reductions that were not reflected in the revised RFP estimates.

The actual emissions inventory in 2008, the base year of the Draft Final 2012 AQMP, can be compared to the previous projections for 2008 in the 2007 AQMP. As shown in Figure 1-4, actual 2008 emissions were lower than 2007 AQMP projections for VOC, NO_x, and direct PM_{2.5}. The only exception, SO_x, was due to a court ordered stay of a CARB marine vessel regulation that resulted in higher emissions of SO_x in 2008 than what was projected. However, the regulation was reinstated in 2009 and beyond, and thus SO_x emissions have been lower than projections since 2008.

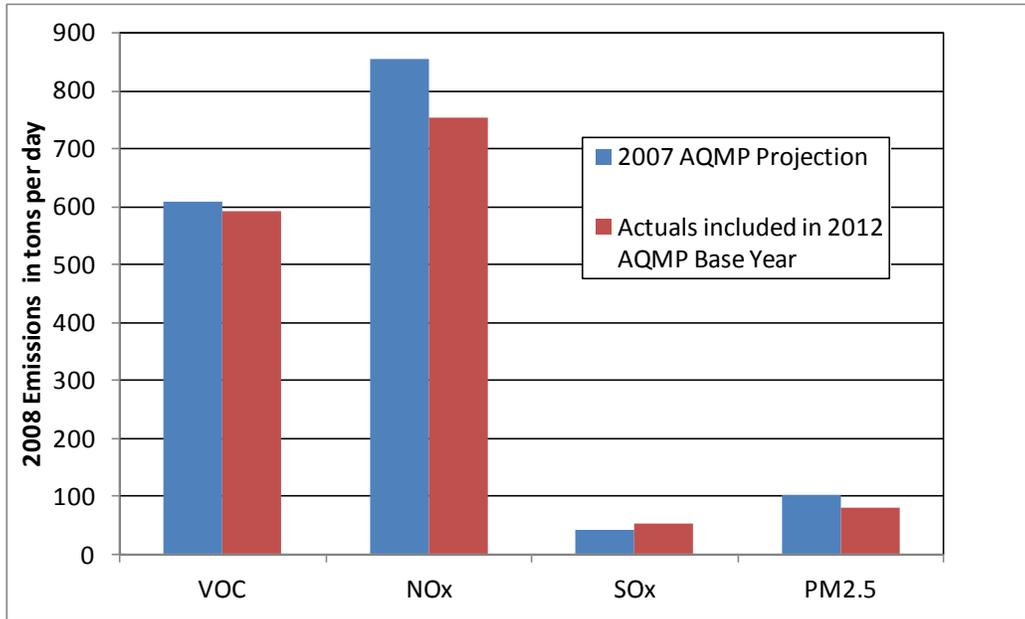


FIGURE 1-4

Actual 2008 Emissions Compared with 2008 Projections in the 2007 AQMP (tpd)

U.S. EPA Actions

The U.S. EPA did not commit to SIP-creditable emissions reductions in their approval of the 2007 AQMP. However, their actions will facilitate future emissions reductions, although some with implementation timelines too late for the Basin's mandated deadlines. U.S. EPA actions taken since the 2007 AQMP include the 2008 Locomotive Rule which promulgated more stringent Tier 3 and Tier 4 emission standards; the 2009 Category 3 Marine Diesel Engine regulation for U.S. flagged ocean-going ships which established more stringent emission standards and marine fuel sulfur limits; and, along with the Canadian Government, the successful proposal to the International Maritime Organization (IMO), which will amend MARPOL Annex VI to designate most North American coastal waters as an emissions control area (ECA) for the control of SO_x, NO_x, and PM.

DRAFT FINAL 2012 AQMP

Scope

As mentioned earlier in this chapter, this 2012 AQMP is designed to address the federal 24-hour PM_{2.5} air quality standards in the Basin, to satisfy the planning requirements of the federal Clean Air Act, and to provide an update on the strategy to meet the 8-hour ozone standard. Once approved by the District Governing Board and CARB, the Draft Final 2012 AQMP will be submitted to U.S. EPA as the 24-hour PM_{2.5} SIP addressing the 2006 PM_{2.5} National Ambient Air Quality Standards (NAAQS) and as limited updates to the current 8-hour ozone SIP.

In addition, the 2012 AQMP includes a chapter on the emerging issues surrounding ultrafine particles and near-roadway exposures (Chapter 9). It also includes a chapter on energy issues within the Basin and their relationship to the region's climate and air quality challenges. A separate chapter reporting on the air quality status of the Salton Sea Air Basin (Coachella Valley) is also included. Two separate appendices serve to satisfy recent U.S. EPA requirements for a new attainment demonstration of the revoked 1-hour ozone standard, as well as a vehicle miles travelled (VMT) emissions offset demonstration.

Approach

The U.S. EPA deadline for meeting the 24-hour PM_{2.5} NAAQS is 2014, with a possible extension of up to five years. The extension is not automatic, and approval of an extension request is based on a demonstration that there are no additional feasible control measures available to move up the attainment date by one year. However, as demonstrated in Chapter 5, with the existing control program and the new control strategy in the Draft Final 2012 AQMP, the Basin can attain the 24-hour PM_{2.5} standard by 2014. Under the federal CAA, the Basin must achieve the federal NAAQS "as expeditiously as practicable." Therefore, if feasible measures are available, they must be adopted and implemented in the SIP. Chapter 4 of the Draft Final 2012 AQMP outlines a comprehensive control strategy that meets the requirement for expeditious progress towards a 2014 attainment date for the 24-hour PM_{2.5} NAAQS. The strategy also includes specific measures and commitments to continue implementing measures that assist in attaining the 1997 8-hour ozone (80 ppb) standard by 2023. The 2007 AQMP demonstrated attainment with the 80 ppb standard using a provision of the federal CAA Section 182(e)(5) that allows credit for emissions reductions from future improvements in control techniques and

technologies. As shown in the ozone discussion in Chapter 5, these “black box” emissions reductions are still needed to show attainment with the 1997 8-hour ozone NAAQS. Accordingly, these Section 182(e)(5) reductions still account for about 65% of the remaining NOx emissions in 2023. Given the magnitude of these needed emission reductions, it is critical that the District maintain its continuing progress and work actively towards achieving as many emissions reductions as possible, and not wait until subsequent AQMPs to begin to address this looming shortfall.

The control measures contained in the Draft Final 2012 AQMP, described in Chapter 4, can be categorized as follows:

Basin-wide and Episodic Short-term PM2.5 Measures. Measures that apply Basin-wide and in some cases only episodically, have been determined to be feasible, will be implemented prior to the 2014 attainment date, and are required to be implemented under state and federal law. *Contingency Measures.* Measures to be automatically implemented if the Basin fails to achieve the 24-hour PM2.5 standard by 2014.

8-hour Ozone Implementation Measures. Measures that provide for necessary actions to meet the 1997 8-hour ozone NAAQS, including technology assessments, key investments, incentives, and rules.

Transportation Control Measures. Measures generally designed to reduce vehicle miles travelled (VMT) as included in SCAG’s 2012 Regional Transportation Plan or otherwise.

Many of the control measures proposed are not based on command and control regulations, but instead focus on incentives, outreach, and education to bring about emissions reductions through voluntary participation and behavioral changes.

Need for Integrated and Coordinated Planning

The Basin faces several ozone and PM2.5 attainment challenges as strategies for significant emission reductions become harder to identify and the federal standards continue to become more stringent. California’s greenhouse gas reductions targets under AB 32 add new challenges and timelines that affect many of the same sources that emit criteria pollutants. In finding the most cost-effective and efficient path to meet multiple deadlines for multiple air quality and climate objectives, it is best that an integrated planning approach is developed. Responsibilities for achieving these goals span all levels of government, and coordinated and consistent planning efforts among multiple government agencies are a key component of an integrated approach.

To this end and concurrent with the development of the Draft Final 2012 AQMP, the District, CARB, and San Joaquin Valley Air Pollution Control District engaged in a joint effort to take a coordinated and integrated look at strategies needed to meet California's multiple air quality and climate goals. California's success in reducing smog has largely relied on technology and fuel advances, and as health-based air quality standards are tightened, the introduction of cleaner technologies must keep pace. More broadly, a transition to zero- and near-zero emission technologies is necessary to meet 2023 and 2032 air quality standards and 2050 climate goals. Many of the same technologies will address both air quality and climate needs. As such, strategies developed for air quality and climate change planning should be coordinated to make the most efficient use of limited resources and the time needed to develop cleaner technologies. The product of this collaborative effort, the draft *Vision for Clean Air: A Framework for Air Quality and Climate Planning*, examines how those technologies can meet both air quality and climate goals over time. A public review draft of this document is now available (<http://www.aqmd.gov/aqmp/2012aqmp/VisionDocument>), and serves as context and a resource for the Draft Final 2012 AQMP.

Economic Considerations

As the Basin slowly emerges from the recession, it remains important to be cognizant of the economic impacts of control strategies in the 2012 AQMP. However, history has shown that large improvements to air quality can be achieved concurrent with periods of healthy economic growth. As shown in Figure 1-5, approximately 50% air quality improvements were realized over a time period where the Basin's population and Gross Domestic Product (GDP, inflation adjusted) increased by approximately 22% and 42%, respectively. But as many businesses continue to struggle under difficult and uncertain economic conditions, it is imperative for the District to work closely with businesses and industry groups to identify the most cost-effective and efficient path to meeting clean air goals.

Furthermore, the effort to achieve multiple clean air goals will require significant public investments in the region. This has the potential to create new Southern California jobs in clean technology sectors such as renewable power, energy efficiency, clean products, and advanced emissions controls. Fulfilling this unique opportunity to concentrate these clean air investments and jobs in the region where the air quality problems exist will require strong partnerships between all levels of government and business interests.

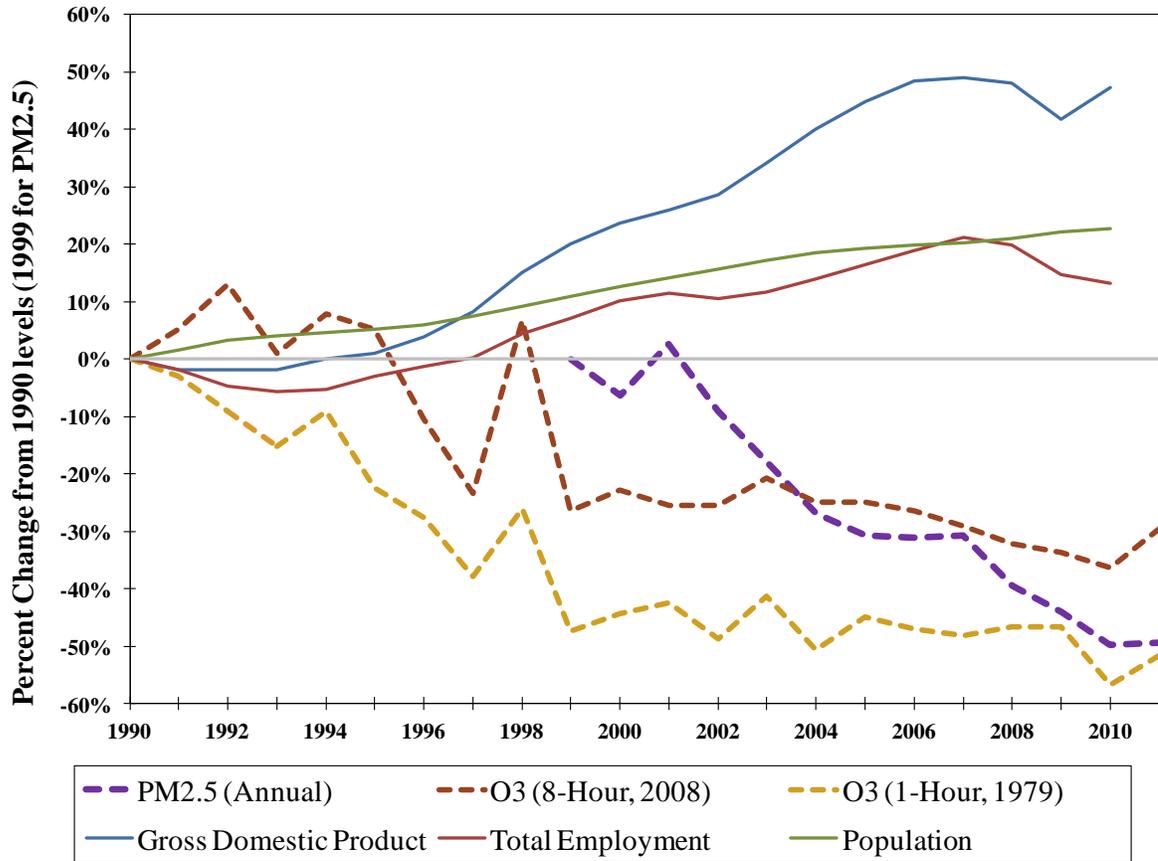


FIGURE 1-5

Percent Change in Air Quality Along with Demographic Data of the 4-County Region (1990-2011)

Federal CAA Planning Requirements Addressed by the Draft Final 2012 AQMP

In November 1990, Congress enacted a series of amendments to the Clean Air Act intended to intensify air pollution control efforts across the nation. One of the primary goals of the 1990 CAA Amendments was an overhaul of the planning provisions for those areas not currently meeting National Ambient Air Quality Standards. The CAA identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to attain or to meet interim milestones.

There are several sets of general planning requirements in the federal CAA, both for nonattainment areas (Section 172(c)) and for implementation plans in general (Section 110(a) (2)). These requirements are listed and briefly described in Tables 1-4 and 1-5, respectively. The general provisions apply to all applicable pollutants unless superseded by pollutant-specific requirements. Chapter 6 of the AQMP describes how the Draft Final 2012 AQMP satisfies these CAA requirements.

TABLE 1-4

Nonattainment Plan Provisions
[CAA Section 172(c)]

REQUIREMENT	DESCRIPTION
Reasonably available control measures	Implementation of all reasonably available control measures as expeditiously as practicable.
Reasonable further progress	Provision for reasonable further progress which is defined as “such annual incremental reductions in emissions of the relevant air pollutant as are required for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date.”
Inventory	Development and periodic revision of a comprehensive, accurate, current inventory of actual emissions from all sources.
Allowable emission levels	Identification and quantification of allowable emission levels for major new or modified stationary sources.
Permits for new and modified stationary sources	Permit requirements for the construction and operation of new or modified major stationary sources.
Other measures	Inclusion of all enforceable emission limitations and control measures as may be necessary to attain the standard by the applicable attainment deadline.
Contingency measures	Implementation of contingency measures to be undertaken in the event of failure to make reasonable further progress or to attain the NAAQS.

TABLE 1-5
 General CAA Requirements for Implementation Plans
 [CAA Section 110(a)]

REQUIREMENT	DESCRIPTION
Ambient monitoring	An ambient air quality monitoring program. [Section 110(a)(2)(B)]
Enforceable emission limitations	Enforceable emission limitations or other control measures as needed to meet the requirements of the CAA. [Section 110(a)(2)(A)]
Enforcement and regulation	A program for the enforcement of adopted control measures and emission limitations and regulation of the modification and construction of any stationary source to assure that the NAAQS are achieved. [Section 110(a)(2)(C)]
Interstate transport	Adequate provisions to inhibit emissions that will contribute to nonattainment or interfere with maintenance of NAAQS or interfere with measures required to prevent significant deterioration of air quality or to protect visibility in any other state. [Section 110(a)(2)(D)]
Adequate resources	Assurances that adequate personnel, funding, and authority are available to carry out the plan. [Section 110(a)(2)(E)]
Source testing and monitoring	Requirements for emission monitoring and reporting by the source operators. [Section 110(a)(2)(F)]
Emergency authority	Ability to bring suit to enforce against source presenting imminent and substantial endangerment to public health or environment. [Section 110(a)(2)(G)]
Plan revisions	Provisions for revising the air quality plan to incorporate changes in the standards or in the availability of improved control methods. [Section 110(a)(2)(H)]
Other CAA requirements	Adequate provisions to meet applicable requirements relating to new source review, consultation, notification, and prevention of significant deterioration and visibility protection contained in other sections of the CAA. [Section 110(a)(2)(I),(J)]
Impact assessment	Appropriate air quality modeling to predict the effect of new source emissions on ambient air quality. [Section 110(a)(2)(K)]
Permit fees	Provisions requiring major stationary sources to pay fees to cover reasonable costs for reviewing and acting on permit applications and for implementing and enforcing the permit conditions. [Section 110(a)(2)(L)]
Local government participation	Provisions for consultation and participation by local political subdivisions affected by the plan. [Sections 110(a)(2)(M) & 121]

The CAA requires that most submitted plans include information on tracking plan implementation and milestone compliance. Requirements for these elements are described in Section 182(g). Chapter 4 addresses these issues.

The U.S. EPA also requires a public hearing on many of the required elements in SIP submittals before considering them officially submitted. The District's AQMP public process includes multiple public workshops and public hearings on all of the required elements prior to submittal. Chapter 11 describes the comprehensive outreach program for the Draft Final 2012 AQMP.

State Law Requirements addressed by the Draft Final 2012 AQMP

The California Clean Air Act (CCAA) was signed into law on September 30, 1988, became effective on January 1, 1989, and was amended in 1992. Also known as the Sher Bill (AB 2595), the CCAA established a legal mandate to achieve health-based state air quality standards at the earliest practicable date. The Lewis Presley Act provides that the District's plan must also contain deadlines for compliance with all state ambient air quality standards and the federally mandated primary ambient air quality standards (Health and Safety Code (H&SC) 40462(a)). In September 1996, AB 3048 (Olberg) amended Sections 40716, 40717.5, 40914, 40916, 40918, 40919, 40920, 40920.5, and 44241, and repealed Sections 40457, 40717.1, 40925, and 44246 of the Health and Safety Code relating to air pollution. The amendments to the Health and Safety Code became effective January 1, 1997. Chapter 6 describes how the Draft Final 2012 AQMP meets the state planning requirements under the CCAA, including plan effectiveness, emissions reductions of 5% per year or adoption of all feasible measures, reducing population exposure, and control measure ranking by cost-effectiveness. While these requirements do not specifically apply to PM_{2.5}, they provide useful benchmarks.

FORMAT OF THIS DOCUMENT

This document is organized into eleven chapters, each addressing a specific topic. Each of the remaining chapters is summarized below.

Chapter 2, "Air Quality and Health Effects," discusses the Basin's current air quality in comparison with federal and state air pollution standards.

Chapter 3, "Base Year and Future Emissions," summarizes recent updates to the emissions inventories, estimates current emissions by source and pollutant, and projects future emissions with and without growth.

Chapter 4, "Control Strategy and Implementation," presents the control strategy, specific measures, and implementation schedules to attain the air quality standards by the specified attainment dates.

Chapter 5, “Future Air Quality,” describes the modeling approach used in the AQMP and summarizes the Basin’s future air quality projections with and without controls.

Chapter 6, “Federal and State Clean Air Act Requirements,” discusses specific federal and state requirements as they pertain to the Draft Final 2012 AQMP.

Chapter 7, “Current and Future Air Quality – Desert Nonattainment Areas,” describes the air quality status of the Coachella Valley, including emissions inventories, designations, and current and future air quality.

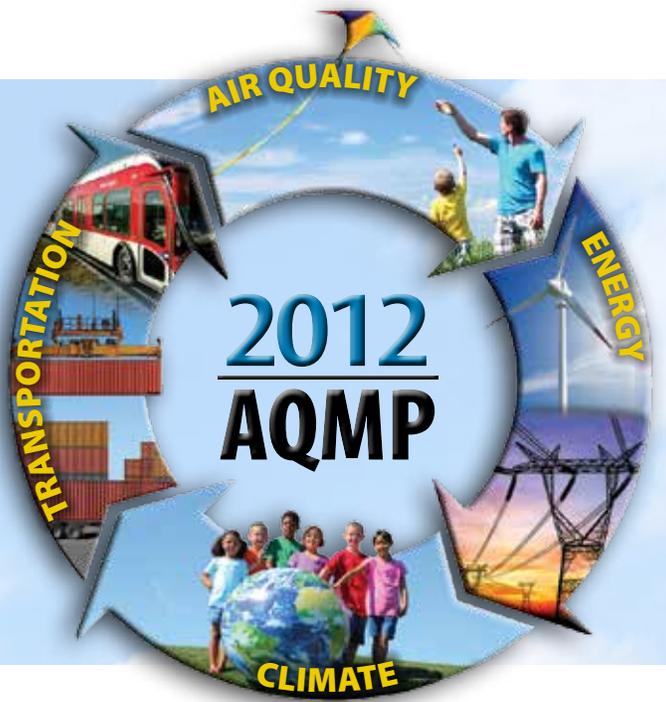
Chapter 8, “Looking Beyond Current Requirements,” assesses the Basin’s status with respect to the recently proposed lowering of the annual PM_{2.5} standard from 15 ug/m³ to 12-13 ug/m³, as well as potential new ozone standards under consideration.

Chapter 9, “Near-Roadway Exposure and Ultrafine Particles,” examines the emerging issue of near-roadway exposure and health impacts, including a focus on ultrafine particles, research needs and potential future actions.

Chapter 10, “Energy and Climate” provides a description of current and projected energy demand and supply issues in the Basin and their relationship to air quality improvement and greenhouse gas mitigation goals.

Chapter 11, “Public Process and Participation” describes the District’s public outreach effort associated with the development of the Draft Final 2012 AQMP.

A “Glossary” is provided at the end of the document, presenting definitions of commonly used terms found in the Draft Final 2012 AQMP.



Chapter 2

Air Quality and Health Effects

South Coast Air Quality Management District
Cleaning the air that we breathe...



CHAPTER 2

AIR QUALITY AND HEALTH EFFECTS

Introduction

Ambient Air Quality Standards

Current Air Quality

Comparison to Other U.S. Areas

Summary

INTRODUCTION

In this chapter, air quality is summarized for the year 2011, along with prior year trends, in both the South Coast Air Basin (Basin) and the Riverside County portion of the Salton Sea Air Basin (SSAB), primarily the Coachella Valley, as monitored by the South Coast Air Quality Management District (District). The District's 2011 air quality is compared to national ambient air quality standards (NAAQS). Nationwide air quality data for 2011 is also briefly summarized in this chapter, comparing air quality in the Basin to that of other U.S. and California urban areas. Health effects of the criteria air pollutants, that is, those that have NAAQS, are also discussed. More detailed information on the health effects of air pollution can be found in Appendix I: Health Effects.

Statistics presented in this chapter indicate the current attainment or non-attainment status of the various NAAQS for the criteria pollutants to assist the District in planning for future attainment. For ozone (O₃) and fine particulate matter (PM_{2.5}, particles less than 2.5 microns in diameter), the main pollutants for which the U.S. EPA has declared the Basin to be a nonattainment area, maps are included to spatially compare the air quality throughout the Basin in 2011. The Los Angeles County portion of the Basin is also currently a nonattainment area for the federal lead (Pb) standard due to source-specific monitoring, but Pb air quality data and attainment has been addressed separately in greater detail in the 2012 Lead SIP for Los Angeles County. The Basin is a nonattainment area for the federal PM₁₀ (particulates less than 10 microns in diameter) standard, although a request to U.S. EPA to redesignate to attainment is pending. The Coachella Valley is currently declared a nonattainment area for both ozone and PM₁₀ by U.S. EPA, although a request to redesignate to attainment for PM₁₀ is pending. Appendix II: Current Air Quality provides additional information on current air quality and air quality trends, changes in the NAAQS, the impact on the District's attainment status for different pollutants, and air quality compared to state standards, as well as more information on specific monitoring station data.

There were some minor changes to the AQMD monitoring network since the 2007 AQMP, which included air quality data through 2005. New stations were added at South Long Beach, close to the Ports of Los Angeles and Long Beach, and at Temecula in southern Riverside County. In addition, the extent and frequency of PM_{2.5} monitoring has been increased throughout the District.

AMBIENT AIR QUALITY STANDARDS

Federal and State Standards

Ambient air quality standards for ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM₁₀ and PM_{2.5}), and lead (Pb) have been set by both the State of California and the federal government. The state has also set standards for sulfates (SO₄²⁻) and visibility. The state and federal ambient air quality standards for each of the criteria pollutants and their effects on health are summarized in Table 2-1.

Several changes to the NAAQS have occurred since the last AQMP update in 2007. The federal 1-hour ozone standard was revoked by the U.S. EPA and replaced by the 8-hour average ozone standard, effective June 15, 2005. However, the Basin and the former Southeast Desert Modified Air Quality Management Area (which included the Coachella Valley) had not attained the 1-hour federal ozone NAAQS by the attainment date and have some continuing obligations under the former standard. The 8-hour ozone NAAQS was subsequently lowered from 0.08 to 0.075 ppm, effective May 27, 2008. However, the SIP submittal for this standard is not due until 2015. In 2010, U.S. EPA proposed to lower the 8-hour ozone NAAQS again and solicited comments on a proposed standard between 0.060 and 0.070 ppm. To date, U.S. EPA has not taken final action on a lower ozone standard and the NAAQS currently remains at 0.075 ppm, as established in 2008. Statistics presented in this chapter refer to the most current 2008 8-hour ozone standard (0.075 ppm) and the former 1979 1-hour ozone standard for purposes of historical comparison.

U.S. EPA revoked the annual PM₁₀ NAAQS (50 µg/m³) and lowered the 24-hour PM_{2.5} NAAQS from 65 µg/m³ to 35 µg/m³, effective December 17, 2006. On June 14, 2012, U.S. EPA proposed to strengthen the annual PM_{2.5} federal standard from 15 µg/m³ to a proposed range between 12 and 13 µg/m³. U.S. EPA also proposed to require near-roadway PM_{2.5} monitoring. Final action on the proposed PM_{2.5} standards is expected by December 14, 2012.

The national standard for Pb was revised on October 15, 2008 to a rolling 3-month average of 0.15 µg/m³, from a quarterly average of 1.5 µg/m³. Most recently, U.S. EPA established a new 1-hour NO₂ federal standard of 0.100 ppm, effective April 7, 2010, and revised the SO₂ federal standard by establishing a new 1-hour standard of 0.075 ppm and revoking the annual (0.03 ppm) and 24-hour (0.14 ppm) standards, effective August 2, 2010.

TABLE 2-1
Current Ambient Air Quality Standards and Health Effects

AIR POLLUTANT	STATE STANDARD	FEDERAL STANDARD (NAAQS)	RELEVANT HEALTH EFFECTS [#]
	Concentration, Averaging Time	Concentration, Averaging Time	
Ozone (O₃)	0.09 ppm, 1-Hour 0.070 ppm, 8-Hour	0.075 ppm, 8-Hour (2008) 0.08 ppm, 8-Hour (1997)	(a) Pulmonary function decrements and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; (f) Property damage
Carbon Monoxide (CO)	20 ppm, 1-Hour 9.0 ppm, 8-Hour	35 ppm, 1-Hour 9 ppm, 8-Hour	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide (NO₂)	0.18 ppm, 1-Hour 0.030 ppm, Annual	100 ppb, 1-Hour 0.053 ppm, Annual	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide (SO₂)	0.25 ppm, 1-Hour 0.04 ppm, 24-Hour	75 ppb, 1-Hour	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM₁₀)	50 µg/m ³ , 24-Hour 20 µg/m ³ , Annual	150 µg/m ³ , 24-Hour	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Decline in pulmonary function or growth in children; (c) Increased risk of premature death
Suspended Particulate Matter (PM_{2.5})	12.0 µg/m ³ , Annual	35 µg/m ³ , 24-Hour 15.0 µg/m ³ , Annual	
Sulfates-PM₁₀ (SO₄²⁻)	25 µg/m ³ , 24-Hour	N/A	(a) Decrease in lung function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead (Pb)	1.5 µg/m ³ , 30-day	0.15 µg/m ³ , 3-month rolling	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount such that the extinction coefficient is greater than 0.23 inverse kilometers at relative humidity less than 70 percent, 8-hour average (10am - 6pm)	N/A	Visibility impairment on days when relative humidity is less than 70 percent

ppm – parts per million by volume

ppb – parts per billion by volume

State standards are “not-to-exceed” values; Federal standards follow the design value form of the NAAQS

[#] More detailed health effect information can be found in the 2012 AQMP Appendix I or the U.S. EPA NAAQS documentation at <http://www.epa.gov/ttn/naaqs/>

U.S. EPA allows certain air quality data to be flagged in the U.S. EPA Air Quality System (AQS) database and not considered for NAAQS attainment status when that data is influenced by exceptional events, such as high winds, wildfires, volcanoes, or some cultural events (Independence Day fireworks) that meet strict requirements. For a few PM measurements in the Basin in 2007 and 2008, the District applied the U.S. EPA Exceptional Events Rule to flag PM10 and PM2.5 data due to high wind natural events, wildfires and Independence Day fireworks (the District has submitted the required documentation and U.S. EPA concurrence with these flags is pending). In the Coachella Valley, PM10 data has been flagged for high wind natural events, under the current Exceptional Events Rule and the previous U.S. EPA Natural Events Policy¹. All of the exceptional event flags through 2011 have been submitted by the District to U.S. EPA's AQS along with the data. The most recent of these are pending submittal of the District's final documentation for each event and all are pending U.S. EPA concurrence. The pending PM10 redesignation request for the Coachella Valley may hinge on U.S. EPA's concurrence with the exceptional event flags and the appropriate treatment of these uncontrollable natural events.

In this chapter and in Appendix II, air quality statistics are presented for the maximum concentrations measured at stations or in air basins, as well as for the number of days exceeding state or federal standards. These statistics are instructive in regards to trends and control effectiveness. However, it should be noted that an exceedance of the concentration level of a federal standard does not necessarily mean that the NAAQS was violated or that it would cause a nonattainment designation. The form of the standard must also be considered. For example, for 24-hour PM2.5, the form of the standard is the 98th percentile measurement of all of the 24-hour PM2.5 samples at each station. For 8-hour ozone, the form of the standard is the 4th highest measured 8-hour average concentration at each station. For NAAQS attainment/nonattainment decisions, the most recent 3 years of data are considered (1 year for CO and 24-hour SO₂), along with the form of the standard, and are typically averaged to calculate a *design value*² for each station. The overall design value for an air basin is the highest

¹ The U.S. EPA Exceptional Events Rule, *Treatment of Data Influence by Exceptional Events*, became effective May 21, 2007. The previous U.S. EPA *Natural Events Policy* for Particulate Matter was issued May 30, 1996. On July 6, 2012, U.S. EPA released the *Draft Guidance To Implement Requirements for the Treatment of Air Quality Monitoring Data Influenced by Exceptional Events* for public comment.

² A design value is a statistic that describes the air quality status of a given area relative to the level and form of the National Ambient Air Quality Standards (NAAQS). For most criteria pollutants, the design value is a 3-year average and takes into account the form of the short-term standard (e.g., 98th percentile, fourth high value, etc.) Design values are especially helpful when the standard is exceedance-based (e.g. 1-hour ozone, 24-hour PM10, etc.) because they are expressed as a concentration instead of an exceedance count, thereby allowing a direct comparison to the level of the standard.

design value of all the stations in that basin. Table 2-2 shows the NAAQS, along with the design value and form of each federal standard.

TABLE 2-2

National Ambient Air Quality Standards (NAAQS) and Design Value Requirements

POLLUTANT	AVERAGING TIME	STANDARD LEVEL	DESIGN VALUES AND FORM OF STANDARDS*
Ozone (O₃)	1-Hour** (1979)	0.12 ppm	Not to be exceeded more than once per year averaged over 3 years
	8-Hour** (1997)	0.08 ppm	Annual fourth highest 8-hour average concentration, averaged over 3 years
	8-Hour (2008)	0.075 ppm	Annual fourth highest 8-hour average concentration, averaged over 3 years
Carbon Monoxide (CO)	1-Hour	35 ppm	Not to be exceeded more than once a year
	8-Hour	9 ppm	
Nitrogen Dioxide (NO₂)	1-Hour	100 ppb	3-year avg. of the annual 98 th percentile of the daily maximum 1-hour average concentrations (rounded)
	Annual	0.053 ppm	Annual avg. concentration, averaged over 3 years
Sulfur Dioxide (SO₂)	1-Hour	75 ppb	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	24-Hour [#]	0.14 ppm	Not to be exceeded more than once per year
	Annual [#]	0.03 ppm	Annual arithmetic average
Particulate Matter (PM₁₀)	24-Hour	150 µg/m ³	Not to be exceeded more than once per year averaged over 3 years
	Annual**	50 µg/m ³	Annual average concentration, averaged over 3 years
Particulate Matter (PM_{2.5})	24-Hour	35 µg/m ³	3-year average of the annual 98 th percentile of daily 24-hour concentration
	Annual	15.0 µg/m ³	Annual avg. concentration, averaged over 3 years
Lead (Pb)	3-Month Rolling ^{###}	0.15 µg/m ³	Highest rolling 3-month average of the 3 years

* Standard is attained when the design value (form of concentration listed) is equal to or less than the NAAQS; for pollutants with the design values based on “exceedances” (1-hour O₃, 24-hour PM₁₀, CO, and 24-hour SO₂), the NAAQS is attained when the concentration associated with the design value is less than or equal to the standard:

- For 1-hour O₃ and 24-hour PM₁₀, the standard is attained when the 4th highest daily concentrations of the 3-year period is less than or equal to the standard
- For CO and 24-hour SO₂, the standard is attained when the 2nd highest daily concentration of the most recent year is equal to or less than the standard

** Standard is revoked or revised. For 1-hour O₃, nonattainment areas have some continuing obligations under the former 1979 standard. For 8-hour O₃, standard is lowered from (0.08 ppm to 0.075 ppm), but the 1997 O₃ standard and most related implementation rules remain in place until the 1997 standard is revoked by U.S. EPA

Annual and 24-hour SO₂ NAAQS will be revoked one year from attainment designations for the new (2010) 1-hour SO₂ standard

3-month rolling averages of the first year (of the three year period) include November and December monthly averages of the prior year. The 3-month average is based on the average of “monthly” averages

NAAQS Attainment Status

Figure 2-1 shows the South Coast and Coachella Valley 3-year design values (2009-2011) for ozone and PM2.5, as a percentage of the corresponding federal standards. The current status of NAAQS attainment for the criteria pollutants is presented in Table 2-3 for the Basin and in Table 2-4 for the Riverside County portion of the SSAB (Coachella Valley).

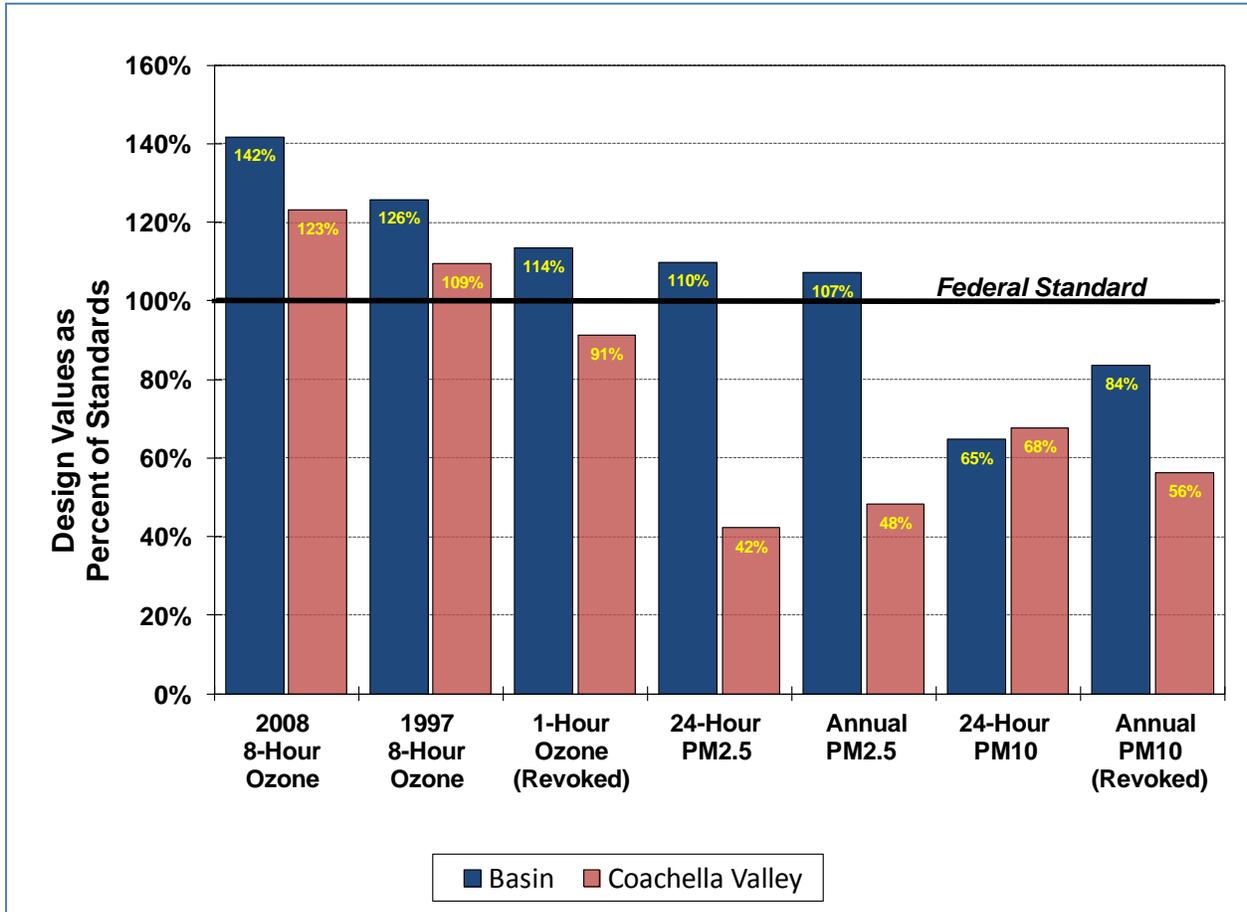


FIGURE 2-1

South Coast Air Basin and Coachella Valley 3-Year (2009-2011) Design Values
(Percentage of Federal Standards, by Criteria Pollutant)

TABLE 2-3National Ambient Air Quality Standards (NAAQS) Attainment Status
South Coast Air Basin

CRITERIA POLLUTANT	AVERAGING TIME	DESIGNATION ^{a)}	ATTAINMENT DATE ^{b)}
1979 1-Hour Ozone^{c)}	1-Hour (0.12 ppm)	Nonattainment (Extreme)	11/15/2010 (not attained) ^{c)}
1997 8-Hour Ozone^{d)}	8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024
2008 8-Hour Ozone	8-Hour (0.075 ppm)	Nonattainment (Extreme)	12/31/2032
CO	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
NO₂^{e)}	1-Hour (100 ppb)	Unclassifiable/Attainment	Attained
	Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998
SO₂^{f)}	1-Hour (75 ppb)	Designations Pending	Pending
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	3/19/1979 (attained)
PM10	24-hour (150 µg/m ³)	Nonattainment (Serious) ^{g)}	12/31/2006 (redesignation request submitted) ^{g)}
PM2.5	24-Hour (35 µg/m ³)	Nonattainment	12/14/2014 ^{h)}
	Annual (15.0 µg/m ³)	Nonattainment	4/5/2015
Lead	3-Months Rolling (0.15 µg/m ³)	Nonattainment (Partial) ⁱ⁾	12/31/2015

a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable

b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration

c) 1-hour O₃ standard (0.12 ppm) was revoked, effective June 15, 2005; however, the Basin has not attained this standard based on 2008-2010 data and has some continuing obligations under the former standard

d) 1997 8-hour O₃ standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the 1997 O₃ standard and most related implementation rules remain in place until the 1997 standard is revoked by U.S. EPA

e) New NO₂ 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO₂ standard retained

f) The 1971 annual and 24-hour SO₂ standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO₂ 1-hour standard. Area designations are expected in 2012, with Basin designated Unclassifiable /Attainment

g) Annual PM10 standard was revoked, effective December 18, 2006; redesignation request to Attainment of the 24-hour PM10 standard is pending with U.S. EPA

h) Attainment deadline for the 2006 24-Hour PM2.5 NAAQS is December 14, 2014

i) Partial Nonattainment designation – Los Angeles County portion of Basin only

TABLE 2-4

National Ambient Air Quality Standards (NAAQS) Attainment Status
Coachella Valley Portion of the Salton Sea Air Basin

CRITERIA POLLUTANT	AVERAGING TIME	DESIGNATION ^{a)}	ATTAINMENT DATE ^{b)}
1979 1-Hour Ozone ^{c)}	1-Hour (0.12 ppm)	Nonattainment (Severe-17)	11/15/2007 (not timely attained ^{e)})
1997 8-Hour Ozone ^{d)}	8-Hour (0.08 ppm)	Nonattainment (Severe-15)	6/15/2019
2008 8-Hour Ozone	8-Hour (0.075 ppm)	Nonattainment (Severe-15)	12/31/2027
CO	1-Hour (35 ppm) 8-Hour (9 ppm)	Unclassifiable/Attainment	Attained
NO₂ ^{e)}	1-Hour (100 ppb)	Unclassifiable/Attainment	Attained
	Annual (0.053 ppm)	Unclassifiable/Attainment	Attained
SO₂ ^{f)}	1-Hour (75 ppb)	Designations Pending	Pending
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	Attained
PM10	24-hour (150 µg/m ³)	Nonattainment (Serious) ^{g)}	12/31/2006 (redesignation request submitted) ^{g)}
PM2.5	24-Hour (35 µg/m ³) Annual (15.0 µg/m ³)	Unclassifiable/Attainment	Attained
Lead	3-Months Rolling (0.15 µg/m ³)	Unclassifiable/Attainment	Attained

- a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable
- b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration
- c) 1-hour O₃ standard (0.13 ppm) was revoked, effective June 15, 2005; the Southeast Desert Modified Air Quality Management Area, including the Coachella Valley, has not attained this standard based on 2005-2007 data and has some continuing obligations under the former standard (latest 2009-2011 data shows attainment)
- d) 1997 8-hour O₃ standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the 1997 O₃ standard and most related implementation rules remain in place until the 1997 standard is revoked by U.S. EPA
- e) New NO₂ 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO₂ standard retained
- f) The 1971 Annual and 24-hour SO₂ standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO₂ 1-hour standard. Area designations expected in 2012 with SSAB designated Unclassifiable /Attainment
- g) Annual PM10 standard was revoked, effective December 18, 2006; redesignation request to Attainment of the 24-hour PM10 standard is pending with U.S. EPA

In 2011, the Basin exceeded federal standards for either ozone or PM_{2.5} at one or more locations on a total of 124 days, based on the current federal standards for 8-hour ozone and 24-hour PM_{2.5}. Despite substantial improvement in air quality over the past few decades, some air monitoring stations in the Basin still exceed the NAAQS for ozone more frequently than any other stations in the U.S. In 2011, three of the top five stations in the nation most frequently exceeding the 8-hour federal ozone NAAQS were located within the Basin (i.e., Central San Bernardino Mountains, East San Bernardino Valley and Metropolitan Riverside County). In the year 2011, the former 1-hour³ and current 8-hour average federal standard levels for ozone were exceeded at one or more Basin locations on 16 and 106 days, respectively.

PM_{2.5} in the Basin has improved significantly in recent years, with 2010 and 2011 being the cleanest years on record. In 2011, only one station in the Basin (Metropolitan Riverside County at Mira Loma) exceeded the annual PM_{2.5} NAAQS and the 98th percentile form of the 24-hour PM_{2.5} NAAQS, as well as the 3-year design values for these standards. (Although other stations had 24-hour averages exceeding the federal 24-hour PM_{2.5} standard concentration level in 2011, the 98th percentile concentration did not exceed.) Basin-wide, the federal PM_{2.5} 24-hour standard level was exceeded in 2011 on 17 sampling days⁴.

The Basin and the Coachella Valley have technically met the PM₁₀ NAAQS and redesignation for attainment for the federal PM₁₀ standard has been requested for both. These requests are still pending with U.S. EPA at this time⁵.

The District is currently in attainment for the federal standards for SO₂, CO, and NO₂. While the concentration level of the new 1-hour NO₂ federal standard (100 ppb) was exceeded in the Basin at two stations (Central Los Angeles and Long Beach, on the same day) in 2011, the NAAQS NO₂ design value has not been exceeded (the 3-year average of the annual 98th percentile of the daily 1-hour maximums). Therefore, the Basin remains in attainment of the NO₂ NAAQS. U.S. EPA requirements for future

³ The federal 1-hour O₃ NAAQS has been revoked by U.S. EPA, although certain nonattainment areas, including the Basin, may be still required to demonstrate attainment of that standard based on recent court decisions.

⁴ The number of PM exceedances may have been higher at some locations, since PM_{2.5} samples are collected every 3 days at most sites. However, seven sites sample every day, including the Basin maximum concentration stations. PM₁₀ filter samples are collected every 6 days, except at the design value maximum sites in the Basin and the Coachella Valley at which samples are collected every 3 days. Daily PM₁₀ data for the Basin maximum stations is provided by supplementing the filter measurements with Federal Equivalent Method (FEM) continuous monitors. The gaseous pollutants, including O₃, NO₂, SO₂, and CO, are sampled continuously.

⁵ U.S. EPA has requested additional PM₁₀ monitoring in the southeastern Coachella Valley for a 1-year period to further assess windblown dust in that area. This project is currently ongoing.

near-road NO₂ measurements are not a part of the current ambient NO₂ NAAQS determinations.

U.S. EPA designated the Los Angeles County portion of the Basin (excluding the high desert areas, and San Clemente and Santa Catalina Islands) as nonattainment for the recently revised (2008) federal lead standard (0.15 µg/m³, rolling 3-month average), due to the addition of source-specific monitoring under the new federal regulation. This designation was based on two source-specific monitors in Vernon and in the City of Industry exceeding the new standard in the 2007-2009 period of data used. For the most recent 2009-2011 data period, only one of these stations (Vernon) still exceeded the lead standard, with a maximum 3-month rolling average of 0.67 µg/m³ occurring in 2009. In 2011, the rolling 3-month average at that site was 0.46 µg/m³.

The remainder of the Basin, outside the Los Angeles County nonattainment area, and the Coachella Valley remain in attainment of the new standard and no ambient monitors that are not source-oriented exceed. For areas in attainment of the old 1978 standard (1.5 µg/m³, as a quarterly average), the 1978 lead standard remained in effect until one year after an area was designated for the 2008 standard. While the entire Basin and the Coachella Valley have remained in attainment of the 1978 lead standard, U.S. EPA's current lead designations for the new standard became effective on December 31, 2010; thus, the old standard is now superseded by the 2008 revised NAAQS. A separate SIP revision addressing the 2008 lead standard has been submitted to U.S. EPA.

CURRENT AIR QUALITY

In 2011, O₃, PM_{2.5}, NO₂ and Pb exceeded federal standard concentration levels at one or more of the routine monitoring stations in the Basin. An exceedance of the concentration level does not necessarily mean a violation of the NAAQS, given that the form of the standard must be considered. For example, the Basin did not violate the federal NO₂ standard, based on the form of the standard. Ozone and PM₁₀ concentrations exceeded the federal standard concentration levels in the Coachella Valley.

The PM_{2.5} 2011 maximum 24-hour average (94.6 µg/m³, measured in the East San Gabriel Valley area) and annual average (15.3 µg/m³, measured in the Metropolitan Riverside County area) concentrations were 266 and 101 percent of the federal 24-hour and annual average standard concentration levels, respectively. The highest 24-

hour PM_{2.5} concentration in the Basin, mentioned above, was recorded on July 5, 2011, associated with Independence Day firework activities and has been flagged in the U.S. EPA Air Quality System (AQS) database for exclusion for NAAQS compliance consideration according to the U.S. EPA Exceptional Event Rule. The next highest 24-hour average PM_{2.5} concentration was 65 µg/m³ recorded in Central San Bernardino Valley. The PM_{2.5} federal standard was nearly exceeded on one day in the Coachella Valley, during an exceptional event in which dust was entrained by outflow from a large summertime thunderstorm complex over Arizona and Mexico, transporting high concentrations of PM₁₀ and PM_{2.5} into the Coachella Valley. None of these three stations with the highest 24-hour average PM_{2.5} concentrations had 98th percentile concentrations exceeding the standard. Only the Metropolitan Riverside County (Mira Loma) station had a 98th percentile concentration over the 24-hour federal standard.

The 2011 maximum PM₁₀ 24-hour average concentration measured in the South Coast Air Basin was 152 µg/m³ in the Metropolitan Riverside County area, nearly 100% of the federal standard (but not exceeding it, since a concentration of 155 µg/m³ is needed to exceed the PM₁₀ standard). This maximum 24-hour average concentration was measured with a Federal Equivalent Method (FEM) continuous monitor. The highest 24-hour PM₁₀ concentration in the Basin measured with the Federal Reference Method (FRM) filter sampler was 84 µg/m³ recorded in Central San Bernardino Valley, 56 percent of the standard. The maximum annual average PM₁₀ concentration (42.3 µg/m³ in the Metropolitan Riverside County area) is 85 percent of the former (now revoked) federal annual average standard level. The two routine AQMD monitoring stations in the Coachella Valley exceeded the 24-hour PM₁₀ federal standard on two days, both related to windblown dust generated by thunderstorm activity. These two days have been flagged by the District in the U.S. EPA AQS database for consideration under the Exceptional Event Rule.

The 2011 maximum ozone concentrations continued to exceed federal standards by wide margins. Maximum 1-hour and 8-hour average ozone concentrations (0.160 ppm and 0.136 ppm, both recorded in the Central San Bernardino Mountains area) were 128 and 181 percent of the former 1-hour and current 8-hour federal standards, respectively. The Coachella Valley did not exceed the former 1-hour federal standard in 2011, but the maximum 8-hour concentration (0.098 ppm) was 130 percent of the current federal standard.

The maximum 1-hour average NO₂ concentration in 2011 (110 ppb, measured in Central Los Angeles) was 109 percent of the federal standard, exceeding the

concentration level, but not the 98th percentile form of the NAAQS. Lead concentrations in 2011 were well below the recently (2008) revised federal standard at all ambient monitoring sites not located near lead sources. However, the source-specific monitoring site immediately downwind of a stationary lead source in the City of Vernon recorded a maximum 3-month rolling average of 0.46 $\mu\text{g}/\text{m}^3$, or 297 percent of the standard. Concentrations of other criteria pollutants (SO_2 and CO) remained well below the federal standards.

Figure 2-2 shows the trend of maximum pollutant concentrations in the Basin for the past two decades, as percentages of the corresponding federal standards. Most pollutants show significant improvement over the years, with PM2.5 showing the most dramatic decrease. Again, these are maximum concentrations and actual attainment of the standards is based on the design value.

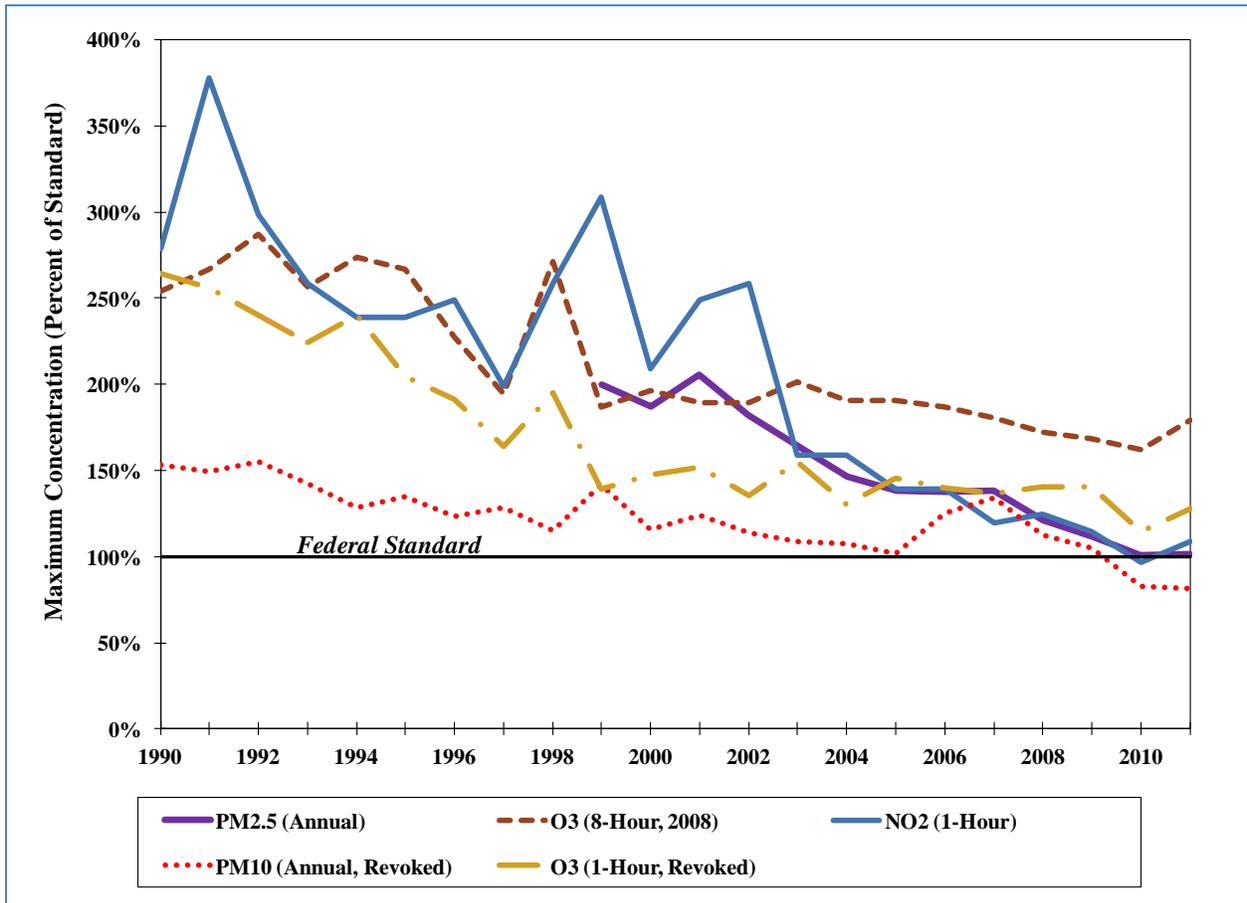


FIGURE 2-2
Trends of South Coast Air Basin Maximum Pollutant Concentrations
(Percentages of Federal Standards)

Particulate Matter (PM_{2.5} and PM₁₀) Specific Information

Health Effects, Particulate Matter

A significant body of peer-reviewed scientific research, including studies conducted in Southern California, points to adverse impacts of particulate matter air pollution on both increased illness (morbidity) and increased death rates (mortality). The 2009 U.S. EPA *Integrated Science Assessment for Particulate Matter*⁶ describes these health effects and discusses the state of the scientific knowledge. A summary of health effects information and additional references can also be found in the 2012 AQMP, Appendix I.

There was considerable controversy and debate surrounding the review of particulate matter health effects and the consideration of ambient air quality standards when U.S. EPA promulgated the initial PM_{2.5} standards in 1997⁷. Since that time, numerous additional studies have been published⁸. In addition, some of the key studies supporting the 1997 standards were closely scrutinized and the analyses repeated and extended. These reanalyses confirmed the initial findings associating adverse health effects with PM exposures.

Several studies have found correlations between elevated ambient particulate matter levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks, and the number of hospital admissions in different parts of the United States and in various areas around the world. In recent years, studies have reported an association between long-term exposure to PM_{2.5} and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in PM_{2.5} concentration levels have also been related to increased mortality due to cardiovascular or respiratory diseases, hospital admissions for acute respiratory conditions, school and kindergarten absences, a decrease in respiratory function in normal children, and increased medication use in children and adults with asthma. Long-term exposure to PM has been found to be associated with reduced lung function growth in children. The elderly, people with pre-existing respiratory

⁶ U.S. EPA. (2009). *Integrated Science Assessment for Particulate Matter (Final Report)*. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-08/139F.

⁷ Vedal, S. (1997). Critical Review. Ambient Particles and Health: Lines that Divide. *JAMA*, 47(5):551-581.

⁸ Kaiser, J. (2005). Mounting Evidence Indicts Fine-Particle Pollution. *Science*, 307:1858-1861.

Enstrom, J.E. (2005), "Fine particulate air pollution and total mortality among elderly Californians, 1973–2002," *Inhalation Toxicology* 17:803–16

and/or cardiovascular disease, and children appear to be more susceptible to the effects of PM10 and PM2.5.

The U.S. EPA, in its most recent review, has concluded that long term exposure to PM2.5 is causally related to increases in mortality rates. Despite this, skepticism remains among some quarters whether exposures to PM2.5 in California are responsible for increases in mortality.⁹ An expanded discussion of studies relating to PM exposures and mortality is contained in Appendix I of this document.

Air Quality, PM2.5

The District began regular monitoring of PM2.5 in 1999 following the U.S. EPA's adoption of the national PM2.5 standards in 1997. In 2011, PM2.5 concentrations were monitored at 21 locations throughout the District, 20 of which had filter-based FRM monitoring sites while one had only continuous monitoring. Six sites had collocated, continuous monitoring in addition to the FRM samplers. The maximum 24-hour and annual average PM2.5 concentrations in 2011 are shown in Tables 2-5 and 2-6.

Figure 2-3 maps the distribution of annual average PM2.5 concentrations in different areas of the Basin. Similar to PM10 concentrations, PM2.5 concentrations were higher in the inland valley areas of metropolitan Riverside County (highest at the Mira Loma Station). PM2.5 concentrations were also elevated in the metropolitan area of Los Angeles County, but did not exceed the level of the annual federal standard in 2011. Although maximum 24-hour concentrations exceed the standard, the 98th percentile form of the 2009-2011 design value only exceeded the standard at one station in Metropolitan Riverside County (Mira Loma).

The higher PM2.5 concentrations in the Basin are mainly due to the secondary formation of smaller particulates resulting from mobile, stationary and area source emissions of precursor gases (i.e., NO_x, SO_x, NH₄, and VOC) that are converted to PM in the atmosphere. In contrast to PM10, PM2.5 concentrations were low in the Coachella Valley area of SSAB. PM10 concentrations are normally higher in the desert areas due to windblown and fugitive dust emissions; PM2.5 is relatively low in the desert area due to fewer combustion-related emissions sources.

⁹ CARB Symposium: Estimating Premature Deaths from Long-term Exposure to PM2.5, February 26, 2010, [http://www.arb.ca.gov/research/health/pm-mort/pm-mort-ws_02-26-10.htm].

TABLE 2-5

2011 Maximum 24-hour Average PM_{2.5} Concentrations by Basin and County

BASIN/COUNTY	MAXIMUM 24-HR AVERAGE# (µG/M ³)	PERCENT OF FEDERAL STANDARD* (35 µG/M ³)	AREA
South Coast Air Basin			
Los Angeles**	49.5	139	East San Gabriel Valley
Orange	39.2	110	Central Orange County
Riverside	60.8	171	Metropolitan Riverside County
San Bernardino	65.0	183	Central San Bernardino Valley
Salton Sea Air Basin			
Riverside***	35.4	99.7	Coachella Valley

Based on FRM data

* Although maximum 24-hour concentrations exceed the standard, the 98th percentile form of the 2009-2011 design value only exceeded the standard at one station in Metropolitan Riverside County (Mira Loma)

** One higher concentration that was recorded due to “Independence Day” firework activities has been flagged for exclusion from NAAQS comparison in accordance with the U.S. EPA Exceptional Events Rule; with this data included, the 2009-2011 design value for East San Gabriel Valley would also exceed the federal standard

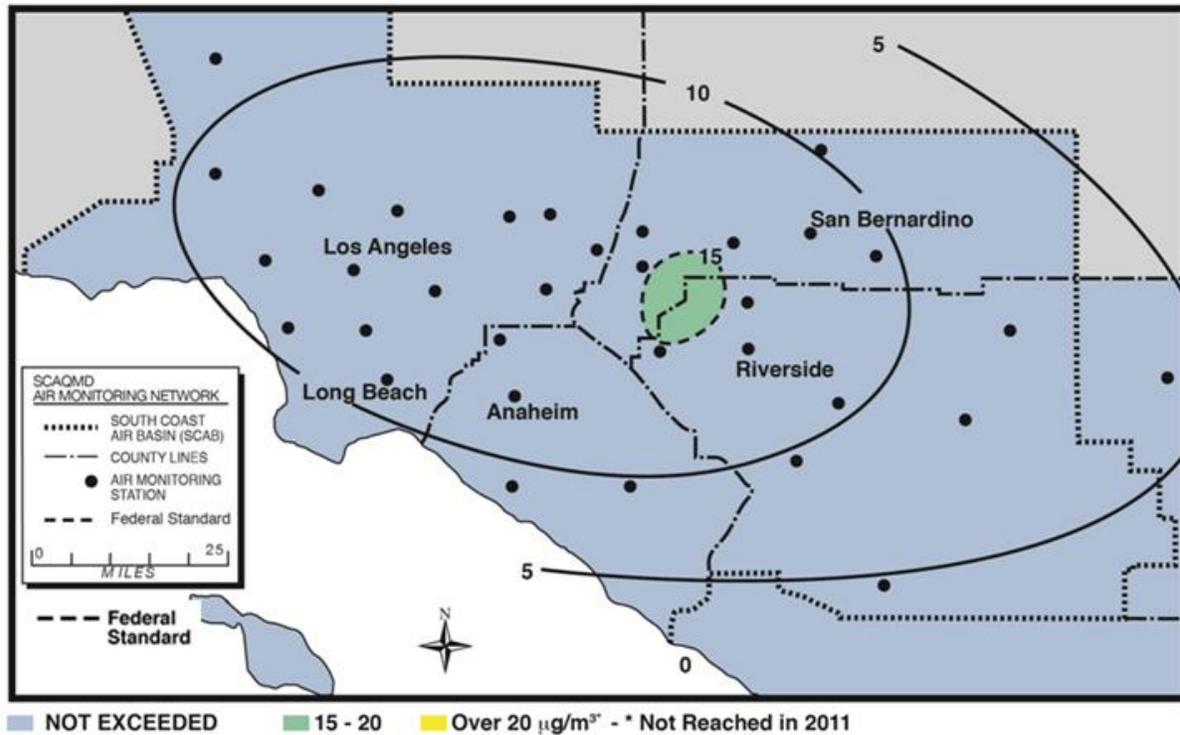
*** While this concentration of 35.4 µg/m³ is near the level of the standard, it is technically not exceeding the standard (35.5 µg/m³ exceeds); this concentration was associated with a high wind exceptional event

TABLE 2-6

2011 Maximum Annual Average PM_{2.5} Concentrations by Basin and County

BASIN/COUNTY	ANNUAL AVERAGE* (µG/M ³)	PERCENT OF FEDERAL STANDARD (15 µG/M ³)	AREA
South Coast Air Basin			
Los Angeles	13.3	89	Central Los Angeles
Orange	11.0	73	Central Orange County
Riverside	15.3	101	Metropolitan Riverside County
San Bernardino	13.3	89	Southwest San Bernardino Valley
Salton Sea Air Basin			
Riverside	7.1	47	Coachella Valley

* Based on FRM data

**FIGURE 2-3**

2011 PM_{2.5}: Annual Average Concentration Compared to the Federal Standard
(Federal standard = 15 µg/m³, annual arithmetic mean)

Air Quality, PM₁₀

In 2011, the District monitored PM₁₀ concentrations at 25 routine sampling locations, 22 with Federal Reference Method (FRM) filter samplers and 3 with Federal Equivalent Method (FEM) continuous monitors. Five sites had collocated FRM and FEM samplers. Maximum 24-hour and annual average PM₁₀ concentrations in 2011 are shown in Tables 2-7 and 2-8.

The highest annual PM₁₀ concentrations were recorded in Riverside and San Bernardino Counties, in and around the metropolitan Riverside County area and further inland in the San Bernardino valley areas. The federal 24-hour standard was not exceeded at any of the locations monitored in 2011, although Riverside County came close with a 24-hour average concentration of 152 µg/m³ (155 µg/m³ is needed to exceed). The revoked annual average PM₁₀ federal standard (50 µg/m³) was not exceeded in either the Basin or the Coachella Valley in 2011. The much more stringent state standards were exceeded in most areas of the Basin and in the Coachella Valley.

TABLE 2-7

2011 Maximum 24-hour Average PM10 Concentrations by Basin and County

BASIN/COUNTY	MAXIMUM 24-HR AVERAGE* ($\mu\text{G}/\text{M}^3$)	PERCENT OF FEDERAL STANDARD ($150 \mu\text{G}/\text{M}^3$)#	AREA
South Coast Air Basin			
Los Angeles	119	77	Central Los Angeles
Orange	79	51	Central Orange County
Riverside	152	98	Metropolitan Riverside County
San Bernardino	127	82	Central San Bernardino Valley
Salton Sea Air Basin**			
Riverside	120	77	Coachella Valley

* Based on the FRM and FEM data

** Higher concentrations were recorded for high wind events in the Coachella Valley which have been flagged for exclusion from NAAQS comparison in accordance with the U.S. EPA Exceptional Events Rule

$155 \mu\text{g}/\text{m}^3$ is needed to exceed the PM10 standard

TABLE 2-8

2011 Maximum Annual Average PM10 Concentrations by Basin and County

BASIN/COUNTY	ANNUAL AVERAGE* ($\mu\text{G}/\text{M}^3$)	PERCENT OF FEDERAL STANDARD** ($50 \mu\text{G}/\text{M}^3$)	AREA
South Coast Air Basin			
Los Angeles	32.7	64	East San Gabriel Valley
Orange	24.9	49	Central Orange County
Riverside	41.4	81	Metropolitan Riverside County
San Bernardino	31.8	62	Central San Bernardino Valley
Salton Sea Air Basin			
Riverside	32.6	64	Coachella Valley

* Based on the FRM and FEM data

** The federal annual PM10 standard was revoked in 2006

Ozone (O₃) Specific Information

Health Effects, O₃

The adverse effects of ozone air pollution exposure on health have been studied for many years, as is documented by a significant body of peer-reviewed scientific research, including studies conducted in southern California. The 2006 U.S. EPA document, *Air Quality Criteria for Ozone and Related Photochemical Oxidants*¹⁰, describes these health effects and discusses the state of the scientific knowledge and research. A summary of health effects information and additional references can also be found in the 2012 AQMP, Appendix I.

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups to ozone effects. Short-term exposures (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences and daily hospital admission rates. An increased risk for asthma has been found in children who participate in multiple sports and live in high ozone communities.

Ozone exposure under exercising conditions is known to increase the severity of the above-mentioned observed responses. Animal studies suggest that exposures to a combination of pollutants which include ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Air Quality, O₃

In 2011, the District regularly monitored ozone concentrations at 29 locations in the Basin and the Coachella Valley portion of the SSAB. All areas monitored measured 1-hour average ozone levels well below the Stage 1 episode level (0.20 ppm), but the maximum concentrations measured in the Basin exceeded the health advisory level (0.15 ppm, 1-hour) in San Bernardino County. The maximum ozone concentrations in Los Angeles, Riverside and San Bernardino Counties all exceeded the former 1-

¹⁰ U.S. EPA. (2006). *Air Quality Criteria for Ozone and Related Photochemical Oxidants* (2006 Final). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-05/004aF-cF.

hour federal standard in 2011; Orange County and the Coachella Valley did not exceed that standard. Maximum ozone concentrations in the SSAB areas monitored by the District were lower than in the Basin and were below the health advisory level. All counties of the Basin and the Coachella Valley exceeded the current 8-hour ozone standard in 2011. Tables 2-9 and 2-10 show maximum 1-hour and 8-hour ozone concentrations by air basin and county.

TABLE 2-9

2011 Maximum 1-Hour Average Ozone Concentrations by Basin and County

BASIN/COUNTY	MAXIMUM 1-HR AVERAGE (PPM)	PERCENT OF FEDERAL STANDARD (0.12 PPM)	AREA
South Coast Air Basin			
Los Angeles	0.144	115	Santa Clarita Valley
Orange	0.095	76	North Orange County
Riverside	0.133	106	Lake Elsinore
San Bernardino	0.160	128	Central San Bernardino Mountains
Salton Sea Air Basin			
Riverside	0.124	99	Coachella Valley

TABLE 2-10

2011 Maximum 8-Hour Average Ozone Concentrations by Basin and County

BASIN/COUNTY	MAXIMUM 8-HR AVERAGE (PPM)	PERCENT OF FEDERAL STANDARD (0.075 PPM)	AREA
South Coast Air Basin			
Los Angeles	0.122	162	Santa Clarita Valley
Orange	0.083	110	Saddleback Valley
Riverside	0.115	152	Metropolitan Riverside County
San Bernardino	0.136	180	Central San Bernardino Mountains
Salton Sea Air Basin			
Riverside	0.098	130	Coachella Valley

The number of days exceeding federal standards for ozone in the Basin varies widely by area. Figures 2-4 and 2-5 map the number of days in 2011 exceeding the current 8-hour and former 1-hour ozone federal standards in different areas of the Basin in 2011. The former 1-hour federal standard was not exceeded in areas along or near the coast in the Counties of Los Angeles and Orange, due in large part to the prevailing sea breeze which transports emissions inland before high ozone concentrations are reached. The standard was exceeded most frequently in the Central San Bernardino Mountains. Ozone exceedances also extended through San Bernardino and Riverside County valleys in the eastern Basin, as well as the northeast and northwest portions of Los Angeles County in the foothill and valley areas. The number of exceedances of the 8-hour federal ozone standard was also lowest at the coastal areas, increasing towards the Riverside and San Bernardino valleys and the adjacent mountain areas. The Central San Bernardino Mountains area recorded the greatest number of exceedances of the 1-hour and 8-hour federal standards (8 days and 84 days, respectively) and 8-hour state standard (103 days). While the Coachella Valley did not exceed the former 1-hour ozone standard in 2011, the 2008 8-hour federal standard was exceeded on 54 days.

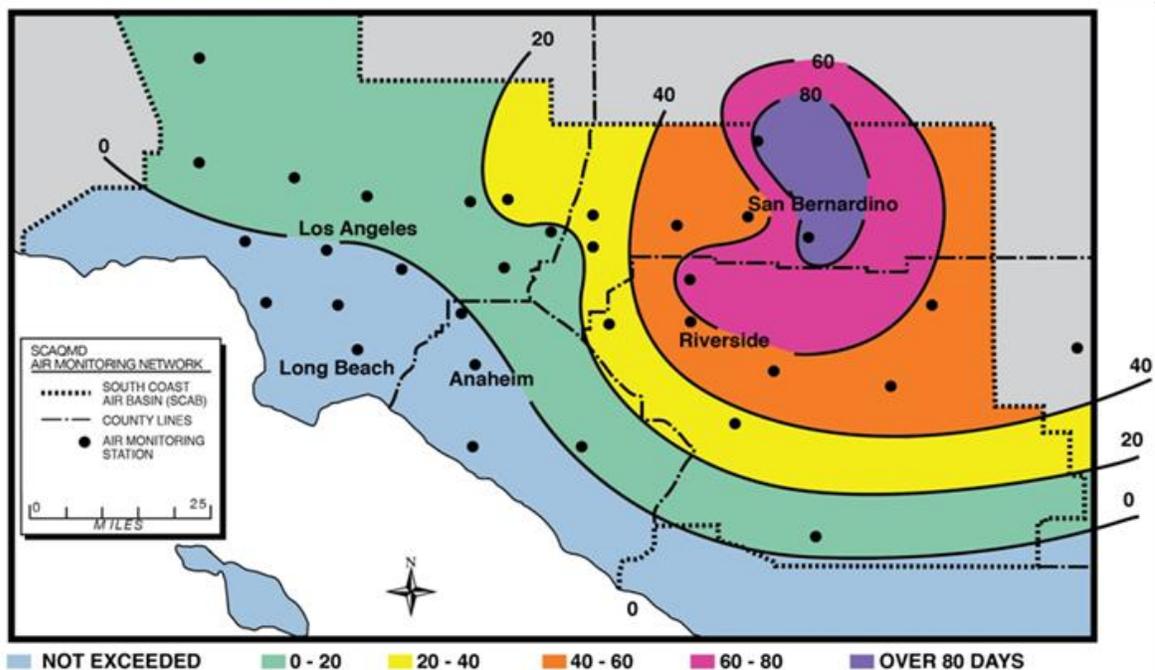


FIGURE 2-4

Number of Days in 2011 Exceeding the 2008 8-Hour Ozone Federal Standard
(8-hour average $O_3 > 0.075$ ppm)

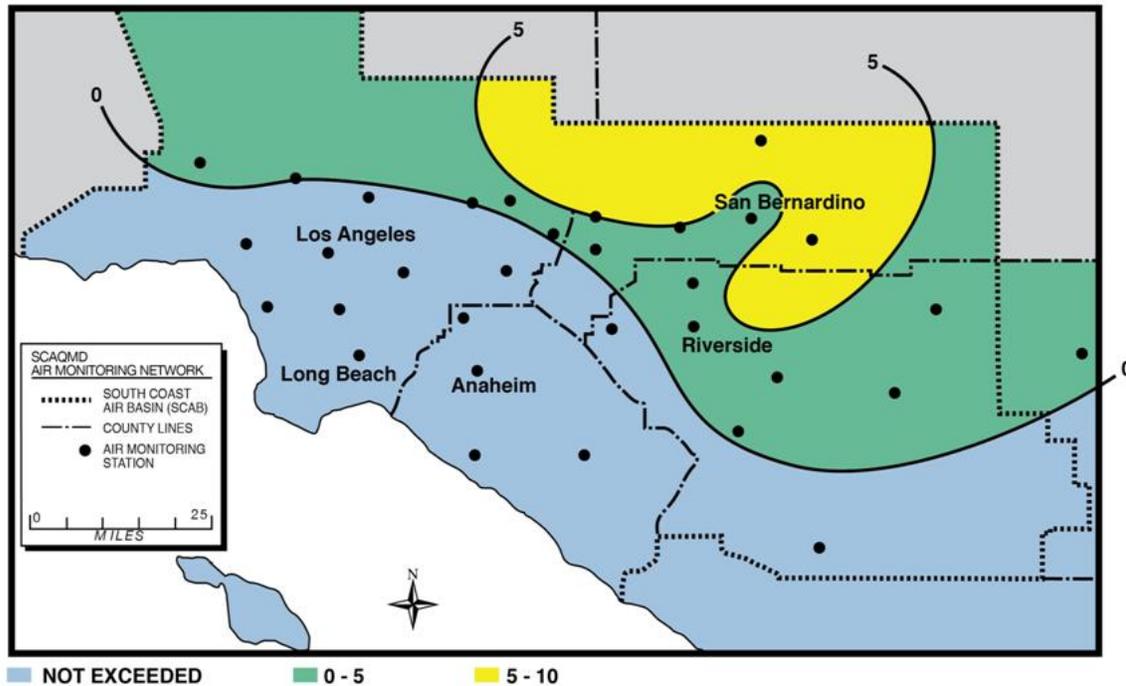


FIGURE 2-5

Number of Days in 2011 Exceeding the 1979 1-Hour Federal Ozone Standard
(1-hour average O₃ > 0.12 ppm)

Other Criteria Air Pollutants

Carbon Monoxide (CO) Specific Information

Health Effects, CO

The adverse effects of ambient carbon monoxide air pollution exposure on health have been recently reviewed in the 2006 U.S. EPA *Integrated Science Assessment for Carbon Monoxide*.¹¹ This document presents a detailed review of the available scientific studies and conclusions on the causal determination of the health effects of CO. A summary of health effects information and additional references can also be found in the 2012 AQMP, Appendix I.

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest

¹¹ U.S. EPA. (2010). *Integrated Science Assessment for Carbon Monoxide (Final Report)*. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-09/019F.

pain with exercise, and electrocardiograph changes indicative of worsening oxygen supply delivery to the heart.

Inhaled CO has no known direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport, by competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, people with conditions requiring an increased oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reductions in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels. These include pre-term births and heart abnormalities.

Air Quality, CO

Carbon monoxide concentrations were measured at 25 locations in the Basin and neighboring SSAB areas in 2011. Table 2-11 shows the 2011 maximum 8-hour and 1-hour average concentrations of CO by air basin and county.

In 2011, no areas exceeded the CO air quality standards. The highest concentrations of CO continued to be recorded in the areas of Los Angeles County where vehicular traffic is most dense, with the maximum 8-hour and 1-hour concentration (4.7 ppm and 6.0 ppm, respectively) recorded in the South Central Los Angeles County area. All areas of the Basin have continued to remain below the federal standard level since 2003.

TABLE 2-11

2011 Maximum 8-Hour and 1-Hour CO Concentrations by Basin and County

BASIN/COUNTY	MAXIMUM 8-HR AVERAGE (PPM)	PERCENT OF FEDERAL STANDARD (9 PPM)	MAXIMUM 1-HR AVERAGE (PPM)	PERCENT OF FEDERAL STANDARD (35 PPM)	AREA
South Coast Air Basin					
Los Angeles	4.7	49	6.0	17	South Central L.A. County
Orange	2.2	23	3.4	10	North Coastal Orange County
Riverside	1.9	20	2.7	8	Metropolitan Riverside County
San Bernardino	1.7	18	1.8	5	Central San Bernardino Valley
Salton Sea Air Basin					
Riverside	0.6	6	3.0	8	Coachella Valley

Nitrogen Dioxide (NO₂) Specific Information

Health Effects, NO₂

The adverse effects of ambient nitrogen dioxide air pollution exposure on health have been recently reviewed in the 2008 U.S. EPA *Integrated Science Assessment for Oxides of Nitrogen – Health Criteria*¹². This document presents a detailed review of the available scientific studies and conclusions on the causal determination of the health effects of NO₂, including evidence supporting the recently adopted short-term NO₂ standard (1-hour, 100 ppb). A summary of health effects information and additional references can also be found in the 2012 AQMP, Appendix I.

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO₂ at levels found in homes with gas stoves, which are higher than ambient concentrations found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO₂ in healthy subjects. Larger decreases in lung functions are observed in

¹² U.S. EPA. (2008). *Integrated Science Assessment for Oxides of Nitrogen – Health Criteria (Final Report)*. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-08/071.

individuals with asthma and/or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups. More recent studies have found associations between NO₂ exposures and cardiopulmonary mortality, decreased lung function, respiratory symptoms, and emergency room asthma visits.

In animals, exposure to levels of NO₂ that are considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO₂.

Based on the review of the NO₂ standards, U.S. EPA has established the 1-hour NO₂ standard to protect the public health against short-term exposure. The standard is set at 100 ppb 1-hour average, effective April 7, 2010.

Air Quality, NO₂

In 2011, NO₂ concentrations were monitored at 25 locations, including one in the Coachella Valley. The Basin has not exceeded the federal annual standard for NO₂ (0.0534 ppm) since 1991, when the Los Angeles County portion of the Basin recorded the last exceedance of the standard in any U.S. county. The recently established 1-hour average NO₂ standard (100 ppb), however, was exceeded on one day in 2011 (but the 98th percentile form of the standard was not exceeded). The higher relative concentrations in the Los Angeles area are indicative of the concentrated emission sources, especially motor vehicles. The maximum 1-hour and annual average concentrations for 2011 are shown in Table 2-12, by basin and county.

TABLE 2-12

2011 Maximum 1-Hour and Annual Average NO₂ Concentrations by Basin and County

BASIN/COUNTY	MAXIMUM 1-HOUR AVERAGE (PPB)	PERCENT OF FEDERAL STANDARD (100 PPB)	MAXIMUM ANNUAL AVERAGE (PPB)	PERCENT OF FEDERAL STANDARD (53 PPB)	AREA
South Coast Air Basin					
Los Angeles	109.6*	109	24.6	46	Central Los Angeles County; Pomona/Walnut Valley
Orange	73.8	73	17.7	33	Central Orange County
Riverside	63.3	63	16.9	32	Metropolitan Riverside County
San Bernardino	76.4	76	21.1	39	Central San Bernardino Valley
Salton Sea Air Basin					
Riverside	44.7	44	8.0	15	Coachella Valley

* Although the maximum 1-hour concentrations exceeded the standard, the 98th percentile form of the design value did not exceed the NAAQS

Sulfur Dioxide (SO₂) Specific Information

Health Effects, SO₂

The adverse effects of SO₂ air pollution exposure on health have been recently reviewed in the 2008 U.S. EPA *Integrated Science Assessment (ISA) for Sulfur Oxides – Health Criteria*.¹³ This document presents a detailed review of the available scientific studies and conclusions on the causal determination of the health effects of SO₂, including the justification to rescind the 24-hour standard and replace it with the new (2010) 1-hour standard (75 ppb). A summary of health effects information and additional references can also be found in the 2012 AQMP, Appendix I.

Individuals affected by asthma are especially sensitive to the effects of SO₂. Exposure to low levels (0.2 to 0.6 ppm) of SO₂ for a few (5-10) minutes can result in airway constriction in some exercising asthmatics. In asthmatics, increase in

¹³ U.S. EPA. (2008). *Integrated Science Assessment (ISA) for Sulfur Oxides – Health Criteria (Final Report)*. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-08/047F.

resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute high exposure to SO₂. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO₂.

Animal studies suggest that even though SO₂ is a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO₂ levels. In these studies, efforts to separate the effects of SO₂ from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Based on the review of the SO₂ standards, U.S. EPA has established the 1-hour SO₂ standard to protect the public health against short term exposure. The 1-hour average standard is set at 75 ppb, revoking the existing annual (0.03 ppm) and 24-hour (0.14 ppm) standards, effective August 2, 2010.

Air Quality, SO₂

No exceedances of federal or state standards for sulfur dioxide occurred in 2011 at any of the seven District locations monitored. Though sulfur dioxide concentrations remain well below the standards, sulfur dioxide is a precursor to sulfate, which is a component of fine particulate matter. Maximum concentrations of sulfur dioxide for 2011 are shown in Table 2-13. Sulfur dioxide was not measured at the Coachella Valley sites in 2011. Historical measurements showed concentrations in the Coachella Valley to be well below state and federal standards and monitoring has been discontinued.

TABLE 2-13

2011 Maximum 1-Hour Average SO₂ Concentrations by Basin and County

BASIN/COUNTY	MAXIMUM 1-HR AVERAGE (PPB)	PERCENT OF FEDERAL STANDARD (75 PPB)	AREA
South Coast Air Basin			
Los Angeles	43.4	57	South Coastal LA County
Orange	7.8	10	North Coastal Orange County
Riverside	51.2	68	Metropolitan Riverside County
San Bernardino	12.4	16	Central San Bernardino Valley
Salton Sea Air Basin			
Riverside	N.D.		Coachella Valley

N.D. = No Data. Historical measurements and lack of emissions sources indicate concentrations are well below standards

Sulfates (SO₄²⁻) Specific Information

Health Effects, SO₄²⁻

In 2002, CARB reviewed and retained the state standard for sulfates, retaining the concentration level (25 µg/m³) but changing the basis of the standard from a Total Suspended Particulate (TSP) measurement to a PM10 measurement. In their 2002 staff report,¹⁴ CARB reviewed the health studies related to exposure to ambient sulfates, along with particulate matter, and found an association with mortality and the same range of morbidity effects as PM10 and PM2.5, although the associations were not as consistent as with PM10 and PM2.5. The 2009 U.S. EPA *Integrated Science Assessment for Particulate Matter*¹⁵ also contains a review of sulfate studies. A summary of health effects information can also be found in the 2012 AQMP, Appendix I.

Most of the health effects associated with fine particles and SO₂ at ambient levels are also associated with sulfates. Thus, both mortality and morbidity effects have been observed with an increase in ambient sulfate concentrations. However, efforts to

¹⁴ CARB. (2002). Staff Report: Public Hearing to Consider Amendments to the Ambient Air Quality Standards for Particulate Matter and Sulfates. California Air Resources Board, Sacramento, CA.

<http://www.arb.ca.gov/regact/aaqspm/isor.pdf>

¹⁵ U.S. EPA. (2009). Integrated Science Assessment for Particulate Matter (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-08/139F.

separate the effects of sulfates from the effects of other pollutants have generally not been successful.

Clinical studies of asthmatics exposed to sulfuric acid suggest that adolescent asthmatics are possibly a subgroup susceptible to acid aerosol exposure. Animal studies suggest that acidic particles such as sulfuric acid aerosol and ammonium bisulfate are more toxic than non-acidic particles like ammonium sulfate. Whether the effects are attributable to acidity or to particles remains unresolved.

Air Quality, SO_4^{2-}

Sulfate from PM10 was measured at 22 stations in 2011, including one in the Coachella Valley. In 2011, the state PM10-sulfate standard was not exceeded anywhere in the Basin or the Coachella Valley. Maximum concentrations by air basin and county are shown in Table 2-14.

TABLE 2-14

2011 Maximum 24-Hour Average Sulfate (PM10) Concentrations by Basin and County

BASIN/COUNTY	MAXIMUM 24-HR AVERAGE ($\mu\text{G}/\text{M}^3$)	PERCENT OF STATE STANDARD (25 $\mu\text{G}/\text{M}^3$)	AREA
South Coast Air Basin			
Los Angeles	8.0	32	Central Los Angeles County
Orange	6.5	26	Central Orange County
Riverside	5.4	22	Metropolitan Riverside County
San Bernardino	6.0	24	Central San Bernardino Valley
Salton Sea Air Basin			
Riverside	5.7	23	Coachella Valley

Lead (Pb) Specific Information

Health Effects, Pb

The adverse effects of ambient lead exposures on health have been reviewed in the 2006 U.S. EPA document, *Air Quality Criteria for Lead (2006) Final Report*.¹⁶ This document presents a detailed assessment of the available scientific studies and presents conclusions on the causal determination of the health effects of lead, including the justification to lower the federal lead standard.

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead exposure. Exposure to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

Lead poisoning can cause anemia, lethargy, seizures, and death. It appears that there are no direct effects of lead on the respiratory system. Lead can be stored in the bone from early-age environmental exposure, and elevated blood lead levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland), and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of lead because of previous environmental lead exposure of their mothers.

Air Quality, Pb

Based on the review of the NAAQS for lead, U.S. EPA has established a new standard of 0.15 $\mu\text{g}/\text{m}^3$ for a rolling 3-month average, effective October 15, 2008 (measured from total suspended particulates, TSP). Except for the source-specific monitoring that is now required under the new standard, there have been no violations of the lead standards at the District's regular air monitoring stations since 1982, as a result of removal of lead from gasoline. However, monitoring at two stations immediately adjacent to stationary sources of lead have recorded exceedances of the standards in localized areas of the Basin in more recent years. Table 2-15 shows the maximum 3-month rolling average concentrations recorded in 2011. In 2011, lead concentrations in the Basin exceeded the new 3-month rolling average standard (0.15 $\mu\text{g}/\text{m}^3$) at one source-specific monitoring site in Los Angeles County, located immediately downwind of a stationary lead source. The federal rolling 3-month and

¹⁶ U.S. EPA. (2006). *Air Quality Criteria for Lead (2006) Final Report*. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-05/144aF-bF, 2006.

state 30-day standards for lead were not exceeded in any other area of the District in 2011.

TABLE 2-15

2011 Maximum 3-Month Rolling Average Lead Concentrations by Basin and County

BASIN/COUNTY	MAXIMUM 3-MONTH ROLLING AVERAGE ($\mu\text{G}/\text{M}^3$)	PERCENT OF FEDERAL STANDARD ($0.15 \mu\text{G}/\text{M}^3$)	AREA
South Coast Air Basin			
Los Angeles*	0.46	297	Central Los Angeles
Orange	N.D.		
Riverside	0.01	6	Metropolitan Riverside County
San Bernardino	0.01	6	Northwest San Bernardino Valley, Central San Bernardino Valley
Salton Sea Air Basin			
Riverside	N.D.		Coachella Valley

* This high lead concentration was measured at a site immediately downwind of a lead source.

N.D. = No Data. Historical measurements indicate concentrations are well below standards.

COMPARISON TO OTHER U.S. AREAS

The Basin's severe air pollution problem is a consequence of the combination of emissions from the nation's second largest urban area, mountainous terrain surrounding the Basin that traps pollutants as they are pushed inland with the sea breeze, and meteorological conditions which are adverse to the dispersion of those emissions. The average wind speed for Los Angeles is the lowest of the nation's ten largest urban areas. In addition, the summertime daily maximum mixing heights (an index of how well pollutants can be dispersed vertically in the atmosphere) in Southern California are the lowest, on average, in the U.S., due to strong temperature inversions in the lower atmosphere that effectively trap pollutants near the surface. The Southern California area is also an area with abundant sunshine, which drives the photochemical reactions which form pollutants such as ozone and a significant portion of PM_{2.5}.

In the Basin, high concentrations of ozone are normally recorded during the late spring and summer months, when more intense sunlight drives enhanced

photochemical reactions. In contrast, higher concentrations of carbon monoxide are generally recorded in late fall and winter, when nighttime radiation inversions trap the emissions at the surface. High PM₁₀ and PM_{2.5} concentrations can occur throughout the year, but occur most frequently in fall and winter in the Basin. Although there are changes in emissions by season, the observed variations in pollutant concentrations are largely a result of seasonal differences in weather conditions.

Figures 2-6 and 2-7 show maximum pollutant concentrations in 2011 for the South Coast Air Basin compared to other urban areas in the U.S. and California, respectively. Maximum concentrations in all of these areas exceeded the federal 8-hour ozone standard. The annual PM_{2.5} standard was exceeded in the Basin and in one other California air basin (San Joaquin Valley). The 24-hour PM_{2.5} standard, however, was exceeded in a few of the other large U.S. urban areas and in many California air basins. The 24-hour PM₁₀ standard was exceeded in one of the U.S. urban areas shown (Phoenix), although potential flagging of exceptional events may affect the treatment of that data. It is important to note that maximum pollutant concentrations do not necessarily indicate potential nonattainment designations, as the design values that are used for attainment status are based on the form of the standard.

Nitrogen dioxide concentrations exceeded the recently established 1-hour standard in the Basin and Phoenix (on one day each). Denver, Colorado (not shown in Figure 2-7), was the only other U.S. urban area exceeding the NO₂ standard in 2011. Sulfur dioxide concentrations were below the recently established 1-hour federal standard in the Basin and all of the urban areas shown in Figures 2-6 and 2-7. However, the SO₂ standard was exceeded in other U.S. areas, with the highest concentrations recorded in Hawaii, due to volcano emissions. The CO standards were not exceeded in the U.S. in 2011.

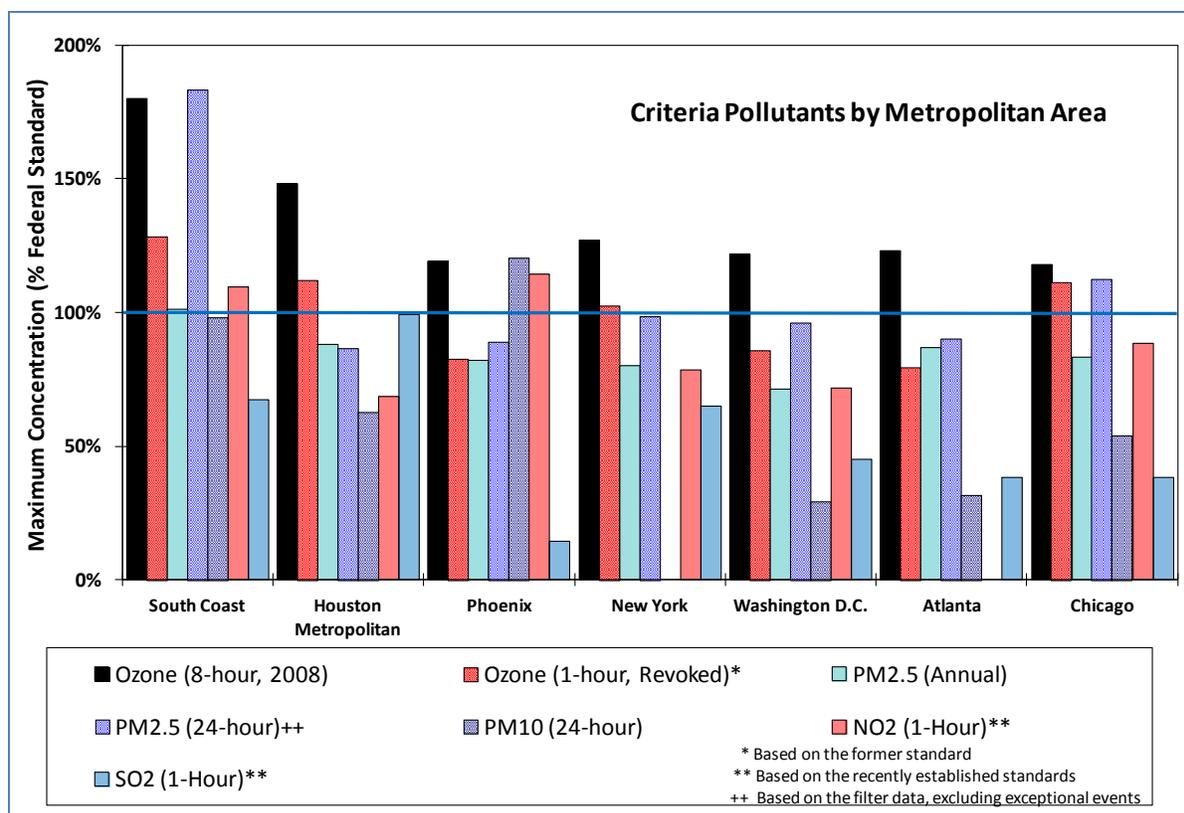


FIGURE 2-6

2011 South Coast Air Basin Air Quality Compared to Other U.S. Metropolitan Areas (Maximum Pollutant Concentrations as Percentages of Corresponding Federal Standards)

In 2011, the Central San Bernardino Mountains area in the Basin recorded the highest maximum 1-hour and 8-hour average ozone concentrations in the nation (0.160 and 0.136 ppm, respectively). The highest 8-hour average concentration was more than one and a half times the federal standard level. In 2011, seven out of ten stations with the highest maximum 8-hour average ozone concentrations in the nation were located in the Basin¹⁷. The South Coast Air Basin also exceeded the 8-hour ozone standard on more days (106) than most other urban areas in the country in 2011, with only California's San Joaquin Valley exceeding on more days (109).

¹⁷ The 10 highest measured ozone concentrations in 2011 included 7 Basin stations: Central San Bernardino Mountains (Crestline), East San Bernardino Valley (Redlands), Central San Bernardino Valley (Fontana and San Bernardino), Santa Clarita Valley (Santa Clarita), Northwest San Bernardino Valley (Upland), and Metropolitan Riverside (Rubidoux).

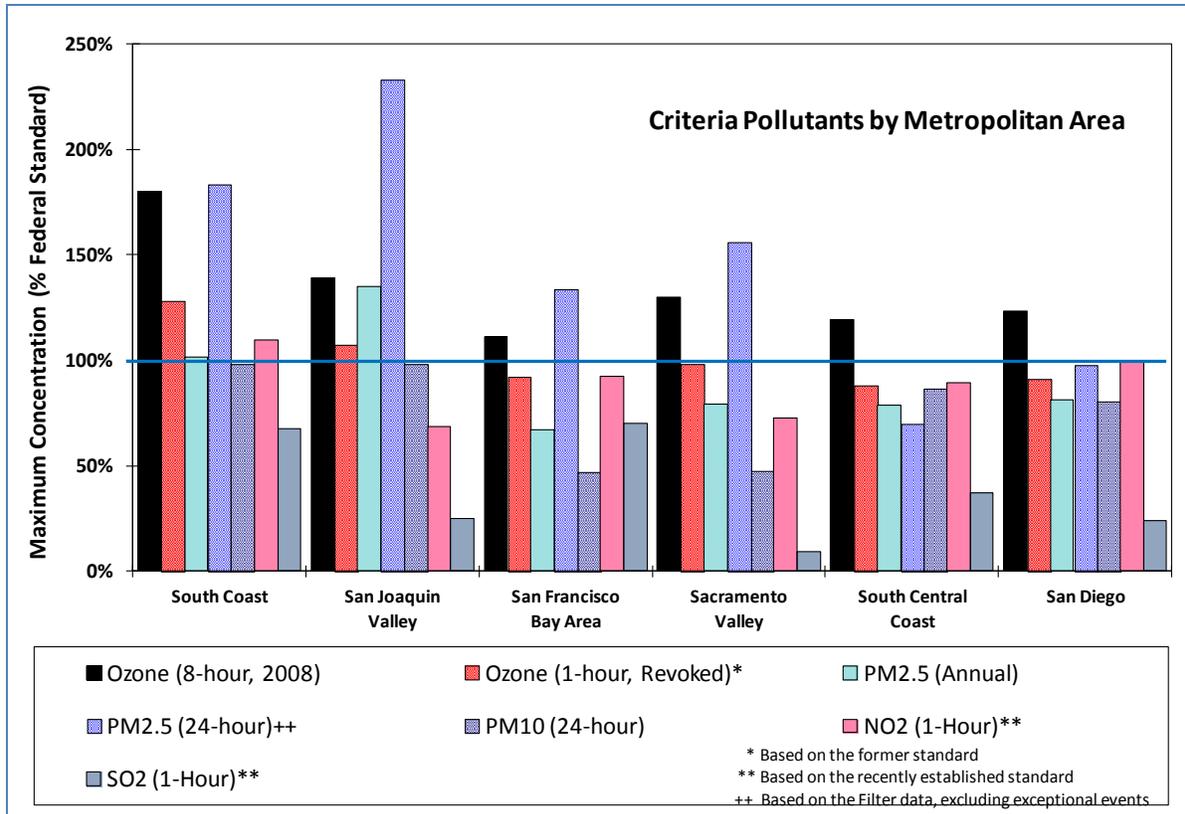


FIGURE 2-7

2011 South Coast Air Basin Air Quality Compared to Other California Air Basins
(Maximum Pollutant Concentrations as Percentages of Corresponding Federal Standards)

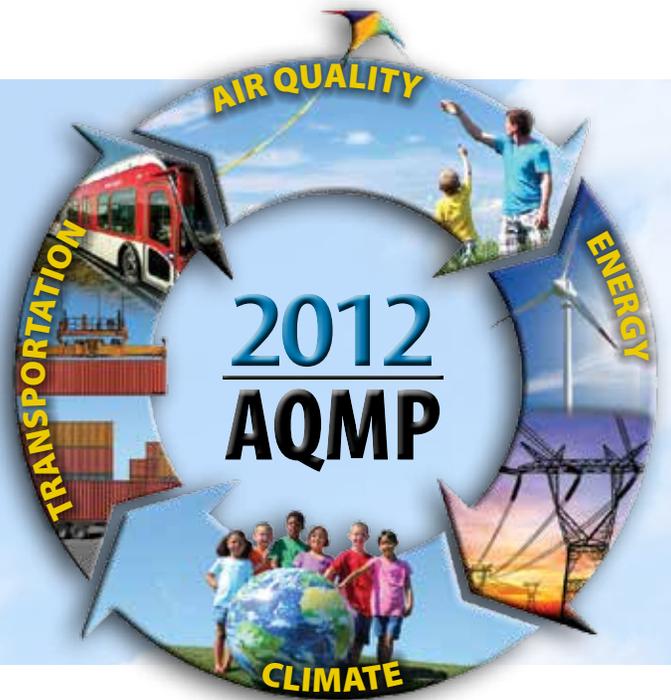
SUMMARY

In 2011, the Basin continued to exceed federal and state standards for ozone and PM2.5. The maximum measured concentrations for these pollutants were among the highest in the country, although significant improvement has been seen in recent years for both 24-hour and annual PM2.5 concentrations and only one location in the Basin is currently exceeding the 24-hour and annual design value form of the PM2.5 federal standards. The Basin’s federal 3-year design values for ozone and PM2.5 have continued to exhibit downward trends through 2011.

The Coachella Valley area in the Riverside County portion of the Salton Sea Air Basin exceeded federal and state standards for ozone and PM10. However, the high PM10 concentrations exceeding the federal 24-hour PM10 standard occurred on days influenced by high-wind natural events, which the District has flagged in the U.S. EPA AQS database so that U.S. EPA will consider excluding such data when

determining the NAAQS attainment status in accordance with U.S. EPA's Exceptional Events Rule. For the stations in the Coachella Valley, the federal 3-year design values for 8-hour ozone have continued to exhibit downward trends through 2011.

The NO₂ concentrations in Los Angeles County exceeded the recently established short-term federal standard on one day at two locations, but did not exceed the standards anywhere on any other day in the Basin. The 98th percentile form of the federal NO₂ standard was not exceeded and the Basin's attainment status remains intact. The Los Angeles County portion of the Basin also exceeded the 3-month rolling average Pb federal standard at one source-specific monitor adjacent to a Pb source. A separate SIP revision has been submitted to address Pb violations. Maximum concentrations for SO₂, CO, and sulfate (measured from PM₁₀) continued to remain below the state and federal standards.



Chapter 3

Base Year and Future Emissions

South Coast Air Quality Management District
Cleaning the air that we breathe...



CHAPTER 3

BASE YEAR AND FUTURE EMISSIONS

Introduction

Emission Inventories

Base Year Emissions

Future Emissions

Impact of Growth

Top Ten Source Categories (2008, 2014, 2023)

INTRODUCTION

This chapter summarizes emissions that occurred in the Basin during the 2008 base year, and projected emissions in the years 2014, 2019, 2023, and 2030. More detailed emission data analyses are presented in Appendix III of the Draft Final 2012 AQMP. The 2008 base year emissions inventory reflects adopted air regulations with current compliance dates as of 2008; whereas future baseline emissions inventories are based on adopted air regulations with both current and future compliance dates. A list of the District and CARB's rules and regulations that are part of the base year and future-year baseline emissions inventories is presented in Appendix III of the Draft Final 2012 AQMP. The District is committed to implement the District rules that are incorporated in the Draft Final 2012 AQMP future baseline emissions inventories.

The emissions inventory is divided into four major classifications: point, area, on-road, and off-road sources. The 2008 base year point source emissions are based principally on reported data from facilities using the District's Annual Emissions Reporting Program. The area source emissions are estimated jointly by CARB and the District. The on-road emissions are calculated by applying CARB's EMFAC2011 emission factors to the transportation activity data provided by Southern California Association of Governments (SCAG) from their adopted 2012 Regional Transportation Plan (2012 RTP). CARB's 2011 In-Use Off-Road Fleet Inventory Model is used for the construction, mining, gardening and agricultural equipment. CARB also provides other off-road emissions, such as ocean-going vessels, commercial harbor craft, locomotives and cargo handling equipment. Aircraft emissions are based on an updated analysis by the District. The future emission forecasts are primarily based on demographic and economic growth projections provided by SCAG. In addition, emission reductions resulting from District regulations adopted by June, 2012 and CARB regulations adopted by August 2011 are included in the baseline.

This chapter summarizes the major components of developing the base year and future baseline inventories. More detailed information, such as CARB's and the District's emission reductions resulting from adopted rules and regulations since the 2007 AQMP, growth factors, and demographic trends, are presented in Appendix III of the Draft Final 2012 AQMP. In addition, the top ten source categories contributing to the 2008, 2014, and 2023 emission inventories are identified in this chapter. Understanding information about the highest emitting source categories leads to the identification of potentially more effective and/or cost effective control strategies for improving air quality.

EMISSION INVENTORIES

Two inventories are prepared for the Draft Final 2012 AQMP for the purpose of regulatory and SIP performance tracking and transportation conformity: an annual average inventory, and a summer planning inventory. Baseline emissions data presented in this chapter are based on average annual day emissions (i.e., total annual emissions divided by 365 days) and seasonally adjusted summer planning inventory emissions. The Draft Final 2012 AQMP uses annual average day emissions to estimate the cost-effectiveness of control measures, to rank control measure implementation, and to perform PM_{2.5} modeling and analysis. The summer planning inventory emissions are developed to capture the emission levels during a poor air quality season, and are used to report emission reduction progress as required by the federal and California Clean Air Acts.

Detailed information regarding the emissions inventory development for the base year and future years, the emissions by major source category of the base year, and future baseline emission inventories are presented in Appendix III of the Draft Final 2012 AQMP. Attachments A and B to Appendix III list the annual average and summer planning emissions by major source category for 2008, 2014, 2017, 2019, 2023 and 2030, respectively. Attachment C to Appendix III has the top VOC and NO_x point sources which emitted greater than or equal to ten tons per year in 2008. Attachment D to the Appendix III contains the on-road emissions by vehicle class and by pollutant for 2008, 2014, 2019, 2023 and 2030. Attachment E to Appendix III shows emissions associated with the combustion of diesel fuel for various source categories.

Stationary Sources

Stationary sources can be divided into two major subcategories: point and area sources. Point sources are large emitters with one or more emission sources at a permitted facility with an identified location (e.g., power plants, refineries). These facilities have annual emissions of 4 tons or more of either Volatile Organic Compounds (VOC), Nitrogen Oxide (NO_x), Sulfur Oxide (SO_x), or total Particulate Matter (PM), or annual emissions of over 100 tons of Carbon Monoxide (CO). Facilities are required to report their criteria pollutant emissions and selected toxics to the District on an annual basis, if any of these thresholds are exceeded.

Area sources consist of many small emission sources (e.g., residential water heaters, architectural coatings, consumer products as well as permitted sources smaller than the above thresholds) which are distributed across the region. There are about 400 area

source categories for which emissions are jointly developed by CARB and the District. The emissions from these sources are estimated using activity information and emission factors. Activity data are usually obtained from survey data or scientific reports (e.g., Energy Information Administration (EIA) reports for fuel consumption other than natural gas fuel, Southern California Gas Company for natural gas consumption, paint suppliers and, District databases). The emission factors are based on rule compliance factors, source tests, Material Safety Data Sheets (MSDS), default factors (mostly from AP-42, U.S. EPA's published emission factor compilation), or weighted emission factors derived from the point source facilities' annual emissions reports. Additionally, the emissions over a given area may be calculated using socioeconomic data.

Appendix III of the Draft Final 2012 AQMP has more detail regarding emissions from specific source categories such as fuel combustion sources, landfills, composting waste, metal-coating operations, architectural coatings, and livestock waste. Since the 2007 AQMP was finalized, new area source categories, such as LPG transmission losses, storage tank and pipeline cleaning and degassing, and architectural colorants, were created and included in the emission inventories. These updates and new additions are listed below:

- Fuel combustion sources: The emissions from commercial and industrial internal combustion engines were updated to include the portable equipment emissions.
- Landfills: The emission estimation methodology for this area source category was revised to incorporate CARB's landfills greenhouse gas (GHG) emission inventory data.
- Composting waste category: The emission estimation methodology for this area source category was revised to include the emissions from green waste composting covered under District Rule 1133.3. The 2007 AQMP only included the emissions from co-composting, as it relates to District Rule 1133.2.
- Metal coating operations: This area source category in the 2007 AQMP only included the emissions from small permitted facilities with VOC emissions below 4 tons per year. As such, emissions from these sources maybe underreported in the 2007 AQMP. During the rule development process for amending Rule 1107, staff discovered numerous small shops using coating materials with compliant high solid concentrations, which are subsequently thinned beyond the allowable limits permitted by Rule 1107. The Draft Final

2012 AQMP revised inventory adjusts the 2007 AQMP inventory to account for excess emissions from these coating activities.

- Architectural coating category: Three new area source categories were added under this category to accurately track the emissions from colorants.
- LPG transmission losses: This newly added area source category was created to include the emissions from LPG storage and fueling losses.
- Livestock waste sources: This inventory was updated to reflect the difference amongst dairy cattle based on the fraction of milking cows, dry cows, calves, and heifers as each has different VOC and NH₃ emission factors based on the quantity of manure production.
- Storage tanks and pipeline cleaning: This new area source category was added to include the emissions from these types of operations.

Mobile Sources

Mobile sources consist of two subcategories: on-road and off-road sources. On-road vehicle emissions are calculated by applying CARB's EMFAC2011 emissions factors to the transportation activity data provided by SCAG from their adopted 2012 RTP. Spatial distribution data from Caltrans' Direct Travel Impact Model (DTIM4) are used to generate the gridded emissions. Off-road emissions are calculated using CARB's 2011 In-Use Off-Road Fleet Inventory model for construction, mining, gardening, and agricultural equipment. Ship, locomotive, and aircraft emissions are excluded from CARB's In-Use Off-Road Fleet Inventory model. Their emissions for 2008 and future years were revised separately based on the most recently available data.

On-Road

CARB's EMFAC2011 has been updated to reflect more recent vehicle population, activity, and emissions data. Light-duty motor vehicle fleet age, vehicle type, and vehicle population are updated based on 2009 California Department of Motor Vehicles data. The model also reflects recently adopted rules and benefits that were not reflected in EMFAC2007. The rules and benefits include on-road diesel fleet rules, the Pavley Clean Car Standards, and the Low Carbon Fuel standard. The most important improvement in the model is the integration of new data and methods to estimate emissions from diesel trucks and buses. CARB's Truck and Bus Regulation for the on-road heavy-duty in-use diesel vehicles applies to nearly all privately owned diesel fueled trucks and privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. EMFAC2011 includes the

emissions benefits of the Truck and Bus Rule and previously adopted rules for other on-road diesel equipment. The impacts of the recent recession on emissions, quantified as part of the truck and bus rulemaking, are also included.

EMFAC2011 uses a modular emissions modeling approach that departs from past EMFAC versions. The first module, named EMFAC-LDV, is used as the basis for estimating emissions from gasoline powered on-road vehicles, diesel vehicles below 14,000 pounds GVWR, and urban transit buses. The second module, called EMFAC-HD, is the basis for emissions estimates for diesel trucks and buses with a GVWR greater than 14,000 pounds operating in California. This module is based on the Statewide Truck and Bus Rule emissions inventory that was developed between 2007 and 2010 and approved by the CARB Board in December 2010. The third module is called EMFAC2011SG. It takes the output from EMFAC-LDV and EMFAC-HD and applies scaling factors to estimate emissions consistent with user-defined vehicle miles of travel and vehicle speeds. Together the three modules comprise EMFAC2011.

Several external adjustments were made to EMFAC2011 in the Draft Final 2012 AQMP to reflect CARB's rules and regulations which were adopted after the development of EMFAC2011. The adjustments include the advanced clean cars regulations, reformulated gasoline, and smog check improvement.

Figure 3-1 compares the on-road emissions between EMFAC2007 V2.3 used in the 2007 AQMP and EMFAC2011 used in the Draft Final 2012 AQMP, respectively. It should be noted that the comparison for 2008 reflects changes in methodology whereas the comparison for 2023 includes adopted rules and updated growth projections since the release of EMFAC2007. In general, the emissions are lower in EMFAC2011 as compared to EMFAC2007. The lower emissions can be attributed to additional rules and regulations which result in reduced emissions, revisions to growth projections, and the economic impacts of the recent recession.

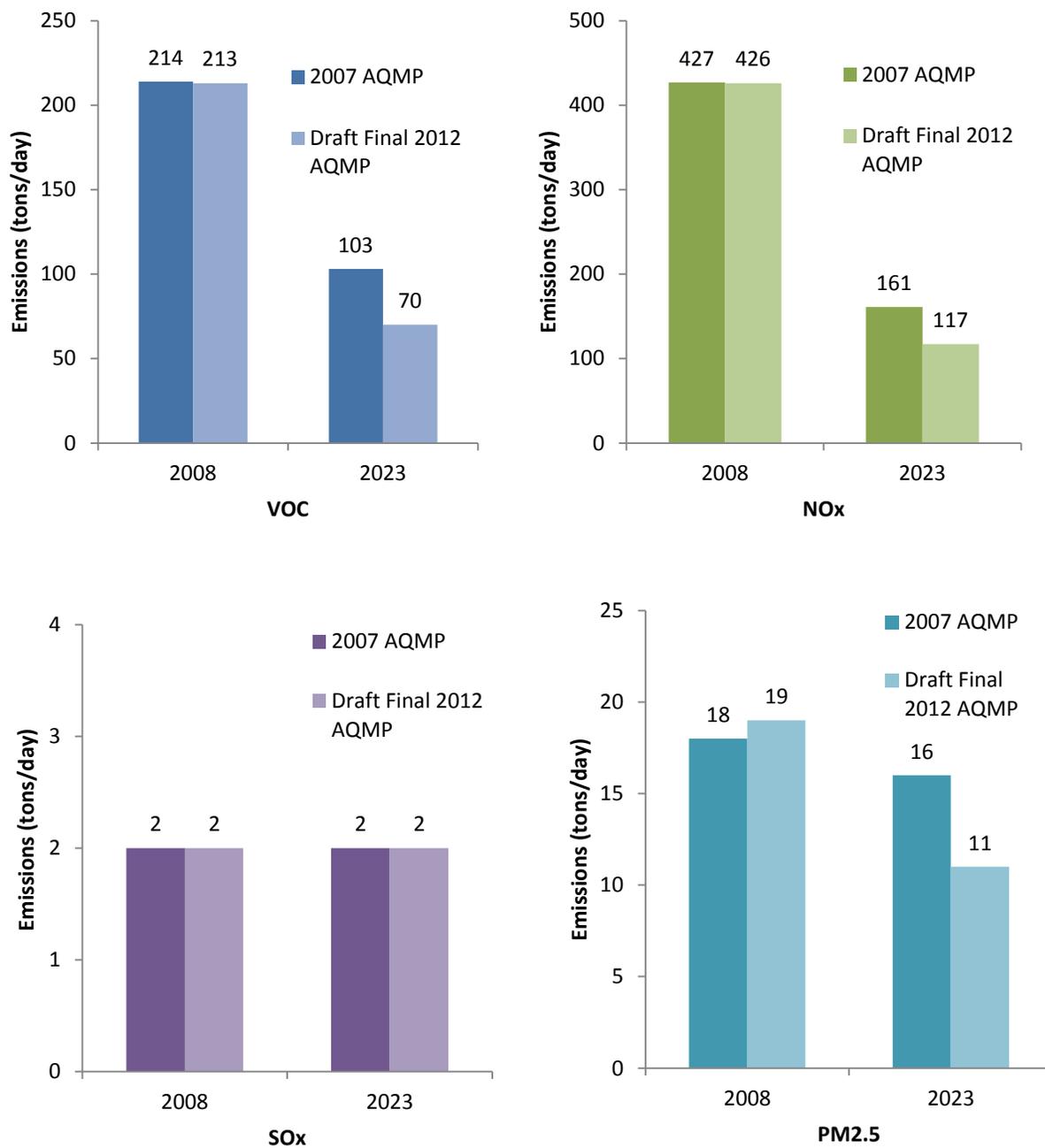


FIGURE 3-1

Comparison of On-Road Emissions Between EMFAC2007 V2.3 (2007 AQMP) and EMFAC2011 (Draft Final 2012 AQMP)

(VOC & NOx – Summer Planning; SOx & PM2.5 – Annual Average Inventory)

Off-Road

Emissions from off-road vehicle categories (construction & mining equipment, lawn & gardening equipment, ground support equipment, agricultural equipment) in CARB's In-Use Off-Road Model were developed primarily based on estimated activity levels and emission factors. Ships, commercial harbor crafts, locomotives, aircrafts, and cargo handling equipment emissions are not included in CARB's In-Use Off-Road Fleet Inventory Model. Separate models or estimations were used for these emissions sources. The off-road source population, activities, and emission factors were re-evaluated and re-estimated since the last AQMP. Consequently, the emissions are modified accordingly.

The major updates and/or improvements to the off-road inventory include:

1. The equipment population in CARB's In-Use Off-Road Fleet Inventory model is updated by using the equipment population reported to CARB for rule compliance. Based on information from CARB, the total population in 2009 was 26% lower than had been anticipated in 2007 due to fleet downsizing during the recent recession.
2. The equipment hours of use in CARB's In-Use Off-Road Fleet Inventory model are updated based on the reported activity data between 2007 and 2009. According to CARB, the new data indicates a 30% or more reduced activity in most cases for 2009 as compared to 2007 due to recession.
3. The equipment load factor in CARB's In-Use Off-Road Fleet Inventory model is updated using a 2009 academic study and information from engine manufacturers. According to CARB, the new data suggests that the load factors should be reduced by 33%.
4. According to CARB, construction activity and emissions have dropped by more than 50% between 2005 and 2011. Future emissions are uncertain and depend on the pace of economic recovery. The future growth in CARB's In-Use Off-Road Fleet Inventory model is projected based on the average of the future forecast scenarios. CARB's data suggest off-road activity and emissions will recover slowly from the recessionary lows.
5. Locomotive inventories reflect the 2008 U.S. EPA Locomotive regulations and adjustments due to economic activity.

6. Cargo handling equipment has been updated for population, activity, recessionary impacts on growth, and engine load. The updates are based on new information collected since 2005. The new information includes CARB's regulatory reporting data which provides an accounting of all the cargo handling equipment in the state including their model year, horsepower and activity. In addition, the Ports of Los Angeles and Long Beach have developed annual emissions inventories and a number of the major rail yards and other ports in the state have completed individual emission inventories.
7. Ocean-going vessel emissions in the Draft Final 2012 AQMP include CARB's fuel regulation for ocean-going vessels and the 2007 shore power regulation. In addition, the improvements and corrections include recoding the model for speed, updating auxiliary engine information, updating ship routing, revising vessel speed reduction compliance rates, and an adjustment factor to estimate the effects of the recession. In March 2010, the International Maritime Organization (IMO) officially designated the waters within 200 miles of the North American Coast as an Emissions Control Area (ECA). Beginning August 2012, IMO requires ships that travel these waters to use fuel with a sulfur content of less than or equal to 1.0% and in 2015 the sulfur limit will be further reduced to 0.1%. Additionally, vessels built after January 1, 2016 will be required to meet the most stringent IMO Tier 3 NO_x emission levels while transiting within the 200 mile ECA zone. Outer Continental Shelf (OCS) emissions (i.e. emissions from vessels beyond the three-mile state waters line) are included in the ships emissions as well.
8. Another improvement is the development of a separate emission category for the commercial harbor craft from a new commercial harbor craft database. CARB approved a regulation to significantly reduce diesel PM and NO_x emissions from diesel-fueled engines on commercial harbor craft vessels. These vessels emit an estimated 3 tons per day of diesel PM and 70 tons per day of NO_x statewide in 2007. The harbor craft database includes emissions from crew & supply, excursion, fishing, pilot, tow boats, barge, and dredge vessels.
9. The aircraft emissions inventory is updated for the 2008 base year and the 2035 forecast year based on the latest available activity data and calculation methodologies. A total of 43 airports were identified as having aircraft operations within the District boundaries including commercial air carrier, air

taxi, general aviation, and military aircraft operations. The sources of activity data include airport operators (for several commercial and military airports), FAA's databases (i.e., Bureau of Transportation Statistics, Air Traffic Activity Data System, Terminal Area Forecast), and SCAG. For commercial air carrier operations, SCAG's 2035 forecast, which is consistent with the forecast adopted for the 2012 RTP, reflects the future aircraft fleet mix. The emissions calculation methodology is primarily based on the application of FAA's Emissions and Dispersion Modeling System (EDMS) model for airports with detailed activity data for commercial air carrier operations (by aircraft make and model). For other airports and aircraft types (i.e., general aviation, air taxi, military), the total number of landing and takeoff activity data is used in conjunction with the U.S. EPA's average emission factors for major aircraft types (e.g., general aviation, air taxi, military). For the intermediate milestone years, the emissions inventories are linearly interpolated between 2008 and 2035.

Several external adjustments to the off-road emissions are made to reflect CARB's rules and regulations and new estimates of activity. The adjustments include locomotives, large spark ignition engines and non-agricultural internal combustion engines.

Figure 3-2 shows a comparison between the off-road baseline emissions in the 2007 AQMP and the Draft Final 2012 AQMP. In general, the emissions are lower in the 2011 In-Use Off-Road Fleet Inventory model, except for 2008 SO_x emissions. The projected 2008 off-road NO_x emissions in the 2007 AQMP were 339 tons per day, while the 2008 base year off-road NO_x emissions in the Draft Final 2012 AQMP are 207 tons per day. The 2011 In-Use Off-Road Fleet Inventory emissions are lower because of the rules and regulations adopted since 2007 OFFROAD model, updated data, future growth corrections and recessionary impacts to commercial and industrial mobile equipment. The higher 2008 estimated SO_x emissions reflect a temporary stay in the implementation of the lower sulfur content marine fuel regulation for a portion of 2008.

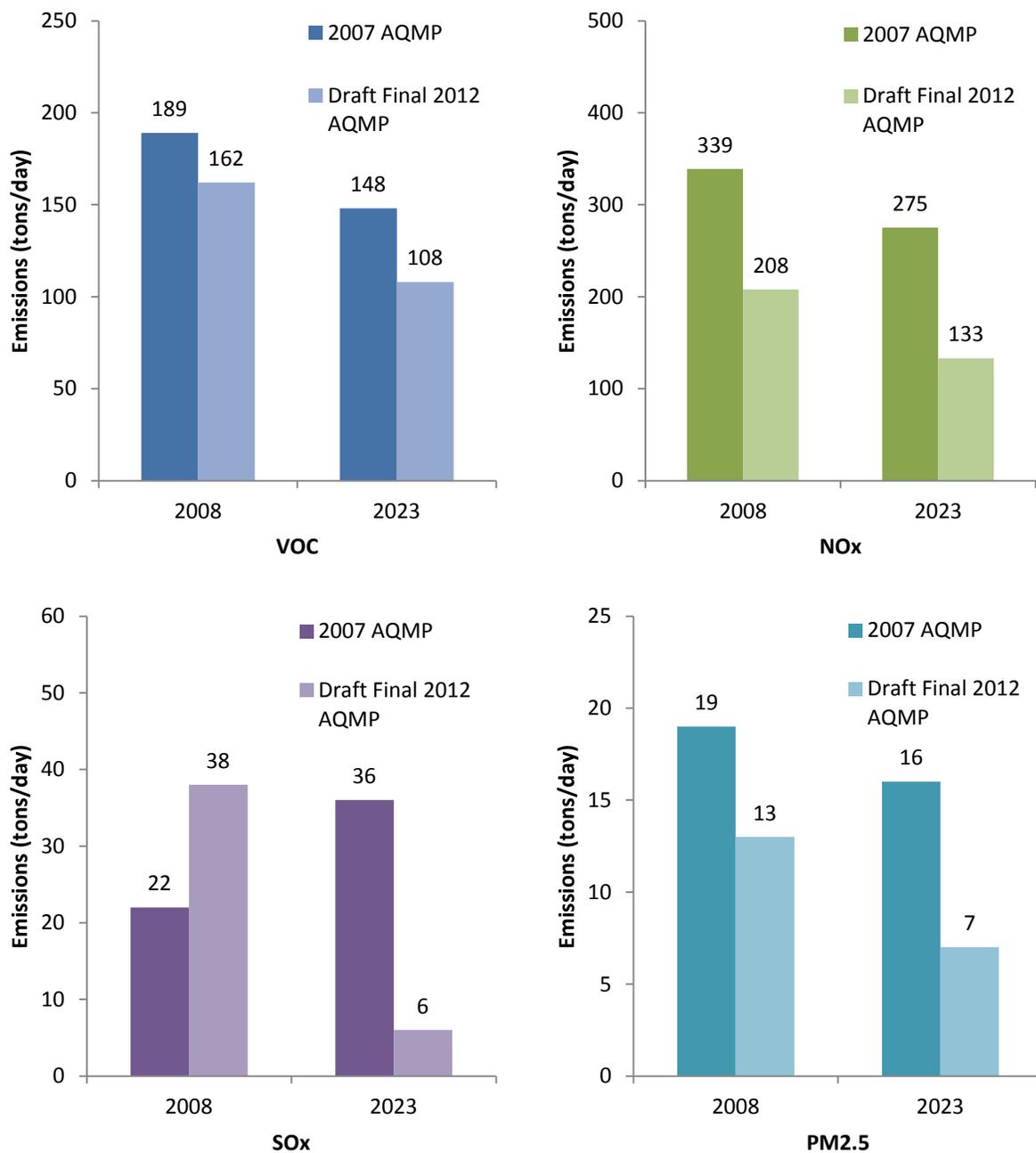


FIGURE 3-2

Comparison of Off-Road Emissions Between 2007 AQMP and Draft Final 2012 AQMP
(VOC & NOx – Summer Planning; SOx & PM2.5 – Annual Average Inventory)

Uncertainty in the Inventory

An effective AQMP relies on a complete and accurate emission inventory. Over the years, significant improvements have been made to quantify emission sources for which control measures are developed. Increased use of continuous monitoring and source tests has contributed to the improvement in point source inventories. Technical assistance to facilities and auditing of reported emissions by the District have also improved the accuracy of the emissions inventory. Area source inventories that rely on average emission factors and regional activities have inherent uncertainty. Industry-specific surveys and source-specific studies during rule development have provided much-needed refinement to the emissions estimates.

Mobile source inventories remain the greatest challenge due to continuously collected new information from the large number and types of equipment and engines. Every AQMP revision provides an opportunity to further improve the current knowledge of mobile source inventories. The Draft Final 2012 AQMP is not an exception. As described earlier, many improvements were included in EMFAC2011 and such work is still ongoing. However, it should be acknowledged that there are still areas that could be significantly improved if better data were available. Technological changes and advancement in the area of electric, hybrid, flexible fuel, fuel cell vehicles coupled with changes in future gasoline prices, all add uncertainty to the on-road emissions inventory.

It is important to note that the recent recession began in 2007, and being unforeseen, its impacts were not included in the 2007 AQMP. As the Draft Final 2012 AQMP is being developed, Southern California is still in the midst of a slow economic recovery. The impact of the recession is deep and is still being felt, and thus adds to the uncertainty in the emissions provided here. Relative to future growth, there are many challenges with making accurate projections, such as where vehicle trips will occur, the distribution between various modes of transportation (such as trucks and trains), as well as estimates for population growth and changes to the number and type of jobs. Forecasts are made with the best information available; nevertheless, they contribute to the overall uncertainty in emissions projections. Fortunately, AQMP updates are generally developed every three to four years; thereby allowing for frequent improvements to the inventories.

Gridded Emissions

For air quality modeling purposes, the region extends to Southern Kern County in the north, the Arizona border in the east, northern Mexico in the south and more than 100

miles offshore to the west. The modeling area is divided into a grid system comprised of 4 km by 4 km grid cells defined by Lambert Conformal coordinates. Both stationary and mobile source emissions are allocated to individual grid cells within this system. In general, the modeling emissions data features daily emissions. Variations in temperature, hours of operation, speed of motor vehicles, or other factors are considered in developing gridded motor vehicle emissions. The “gridded” emissions data used for both PM_{2.5} and ozone modeling applications differ from the average annual day or planning inventory emission data in two respects: (1) the modeling region covers larger geographic areas than the Basin; and (2) emissions represent day-specific instead of average or seasonal conditions. Summary of emissions inventories are generated for the PM_{2.5} and ozone modeling applications. For PM_{2.5}, the annual average day is used, which represents the characteristic of emissions that contribute to year-round particulate impacts. The summer planning inventory focuses on the warmer months (May through October) when evaporative VOC emissions play an important role in ozone formation.

BASE YEAR EMISSIONS

2008 Emission Inventory

Table 3-1A compares the annual average emissions between the 2008 base year in the Draft Final 2012 AQMP and the projected 2008 emissions in the 2007 AQMP by major source category for VOC and NO_x. Table 3-1B compares the annual average emissions between the 2008 base year in the Draft Final 2012 AQMP and the projected 2008 emissions in the 2007 AQMP for SO_x and PM_{2.5}. Due to the economic recession which began in 2007, it is expected that the more recent 2008 base year emissions estimates should be lower than the previously projected 2008 emissions. Yet, several categories show higher emissions in the 2008 base year in the Draft Final 2012 AQMP, such as fuel consumption, waste disposal, petroleum production and marketing for VOC; fuel consumption for NO_x; off-road emissions for SO_x; and industrial processes for PM_{2.5}. The reasons are as follows:

1. Fuel consumption – The emissions from commercial and industrial internal combustion engines were updated to include portable equipment emissions which were overlooked in the 2007 AQMP. The update causes increases in emissions for this category.
2. Waste disposal – Due to erroneous activity data reported by point sources in the 2007 AQMP, landfill emissions increased drastically. In addition, landfill

emission estimation methodology was revised to incorporate CARB's GHG Emission Inventory data to calculate the amount of methane being generated in 2008. Industry stakeholders have requested further evaluation of the emission factors currently used. As a result, the District staff will initiate a working group to undertake this effort.

3. Petroleum production and marketing – Two new area source categories (LPG transmission, storage tanks and pipeline cleaning and degassing) were added to the Draft Final 2012 AQMP. LPG transmission source category tracks the fugitive emissions associated with transfer and dispensing of LPG and is based on emission rates derived from the District source tests conducted in 2008 and 2011, sale volumes provided by the industry association, and category breakdowns. A total of 8.4 tons per day VOC emissions were added to the 2008 inventory. Storage tanks and pipeline cleaning and degassing source category was updated based on Rule 1149 amendments to reflect more frequent degassing events as well as the effectiveness of control techniques. During the amendment, it was determined that the actual degassing events were more than triple the amount that was estimated when the rule was originally developed. It was also assumed that once the degassing rule requirements were fulfilled, there would be no more fugitive emissions; however, a review of degassing logs indicated that sludge and product residual in the storage tanks significantly increase the emissions emanating from the storage tanks. Finally, the source category was expanded to include previously exempted tanks and pipelines. The storage tanks and pipeline source adds 1.4 tons per day VOC to the 2008 base year.
4. Off-road SO_x – CARB adopted a regulation in 2005 to set sulfur content limits on marine fuels for auxiliary diesel engines and diesel-electric engines operated on ocean-going vessels within California waters and 24 nautical miles of the California coastline. The regulation became effective January 1, 2007, and as a result the SO_x reductions were accounted for in the 2007 AQMP. However, pursuant to an injunction issued by a federal district court (district court), CARB ceased enforcing the regulation in the fall of 2007. See *Pacific Merchant Shipping Ass'n v. Thomas A. Cackette* (E.D. Cal. Aug. 30, 2007), No. Civ. S-06 2791-WBS-KJM. CARB filed an appeal with the Ninth Circuit and requested a stay of the injunction pending the appeal. As permitted under the appellate court stay, CARB decided to continue to enforce the regulation while litigation involving the regulation remained active. On May 7, 2008,

CARB issued another announcement to discontinue enforcement of the regulation pursuant to the same injunction after the Court of Appeals issued its decisions which invalidated the 2005 regulation. In the meantime, CARB staff prepared a new Ocean-Going Vessel Clean Fuel Regulation that was approved by its Board on July 24, 2008, and implementation began on July 1, 2009. The 2008 regulation includes the auxiliary engines and also the main engines and auxiliary boilers on ocean-going vessels within the same 24 nautical miles zone as the earlier auxiliary engine rule. The 2008 regulation achieves higher SO_x reductions than the original auxiliary engine rule, primarily due to regulating the main engines and auxiliary boilers in addition to the auxiliary engines.

Tables 3-2A and 3-2B show the 2008 emissions inventory by major source category. Table 3-2A shows annual average emissions, while Table 3-2B shows the summer planning inventory. Stationary sources are subdivided into point (e.g., chemical manufacturing, petroleum production, and electric utilities) and area sources (e.g., architectural coatings, residential water heaters, consumer products, and permitted sources smaller than the emission reporting threshold – generally 4 tpy). Mobile sources consist of on-road (e.g., light-duty passenger cars) and off-road sources (e.g., trains and ships). Entrained road dust is also included.

Figure 3-3 characterizes relative contributions by stationary and mobile source categories. On- and off-road sources continue to be the major contributors for each of the five pollutants. Overall, total mobile source emissions account for 59% of the VOC and 88% of the NO_x emissions for these two ozone-forming pollutants, based on the summer planning inventory. The on-road mobile category alone contributes about 33 and 59% of the VOC and NO_x emissions, respectively, and approximately 68% of the CO for the annual average inventory. For directly emitted PM_{2.5}, mobile sources represent 40% of the emissions with another 10% due to vehicle-related entrained road dust.

Within the category of stationary sources, point sources contribute more SO_x emissions than area sources. Area sources play a major role in VOC emissions, emitting about seven times more than point sources. Area sources, including sources such as commercial cooking, are the predominant source of directly emitted PM_{2.5} emissions (39%).

TABLE 3-1A

Comparison of VOC and NO_x Emissions By Major Source Category of
2008 Base Year in Draft Final 2012 AQMP and Projected 2008 in 2007 AQMP
Annual Average Inventory (tpd¹)

SOURCE CATEGORY	2007 AQMP	Draft Final 2012 AQMP	% Change	2007 AQMP	Draft Final 2012 AQMP	% Change
	VOC			NO _x		
STATIONARY SOURCES						
Fuel Combustion	7	14	+100%	30	41	+36%
Waste Disposal	8	12	+50%	2	2	0%
Cleaning and Surface Coatings	37	37	0%	0	0	0%
Petroleum Production and Marketing	32	41	+28%	0	0	0%
Industrial Processes	19	16	-16%	0	0	0%
Solvent Evaporation						
Consumer Products	97	98	+1%	0	0	0%
Architectural Coatings	23	22	-5%	0	0	0%
Others	3	2	-33%	0	0	0%
Misc. Processes	15	15	0%	26	26	0%
RECLAIM SOURCES	0	0	0%	29	23	-21%
Total Stationary Sources	241	257	+7%	87	92	+6%
MOBILE SOURCES						
On-Road Vehicles	207	209	+1%	447	462	+3%
Off-Road Vehicles	150	127	-15%	325	204	-37%
Total Mobile Sources	357	336	-6%	772	666	-14%
TOTAL	598	593	-1%	859	758	-12%

¹ Values are rounded to nearest integer.

TABLE 3-1B

Comparison of SO_x and PM_{2.5} Emissions By Major Source Category of
2008 Base Year in Draft Final 2012 AQMP and Projected 2008 in 2007 AQMP
Annual Average (tpd¹)

SOURCE CATEGORY	2007 AQMP	Draft Final 2012 AQMP	% Change	2007 AQMP	Draft Final 2012 AQMP	% Change
	SO _x			PM _{2.5}		
STATIONARY SOURCES						
Fuel Combustion	2	2	0%	6	6	0%
Waste Disposal	0	0	0%	0	0	0%
Cleaning and Surface Coatings	0	0	0%	1	1	0%
Petroleum Production and Marketing	1	1	0%	1	2	+100%
Industrial Processes	0	0	0%	5	7	+40%
Solvent Evaporation						
Consumer Products	0	0	0%	0	0	0%
Architectural Coatings	0	0	0%	0	0	0%
Others	0	0	0%	0	0	0%
Misc. Processes *	1	1	0%	52	32	-39%
RECLAIM SOURCES	12	10	-17%	0	0	0%
Total Stationary Sources	16	14	-12%	65	48	-26%
MOBILE SOURCES						
On-Road Vehicles	2	2	0%	18	19	+6%
Off-Road Vehicles	14	38 ²	+171%	18	13	-28%
Total Mobile Sources	16	40	+150%	36	32	-11%
TOTAL	32	54	+69%	101	80	-21%

¹ Values are rounded to nearest integer.

² Refer to Base Year Emissions – Off-road-Sox.

TABLE 3-2A

Summary of Emissions By Major Source Category: 2008 Base Year
Average Annual Day (tpd¹)

SOURCE CATEGORY	VOC	NO _x	CO	SO _x	PM _{2.5}
STATIONARY SOURCES					
Fuel Combustion	14	41	57	2	6
Waste Disposal	12	2	1	0	0
Cleaning and Surface Coatings	37	0	0	0	1
Petroleum Production and Marketing	41	0	5	1	2
Industrial Processes	16	0	2	0	7
Solvent Evaporation					
Consumer Products	98	0	0	0	0
Architectural Coatings	22	0	0	0	0
Others	2	0	0	0	0
Misc. Processes*	15	26	72	1	32
RECLAIM Sources	0	23	0	10	0
Total Stationary Sources	257	92	137	14	48
MOBILE SOURCES					
On-Road Vehicles	209	462	1966	2	19
Off-Road Vehicles	127	204	778	38	13
Total Mobile Sources	336	666	2743	40	32
TOTAL	593	758	2881	54	80

¹ Values are rounded to nearest integer.

TABLE 3-2B

Summary of Emissions By Major Source Category: 2008 Base Year
Summer Planning Inventory (tpd¹)

SOURCE CATEGORY	SUMMER OZONE PRECURSORS	
	VOC	NO _x
STATIONARY SOURCES		
Fuel Combustion	14	41
Waste Disposal	12	2
Cleaning and Surface Coatings	43	0
Petroleum Production and Marketing	41	0
Industrial Processes	19	0
Solvent Evaporation		
Consumer Products	99	0
Architectural Coatings	25	0
Others	2	0
Misc. Processes	9	20
RECLAIM Sources	0	24
Total Stationary Sources	264	87
MOBILE SOURCES		
On-Road Vehicles	213	426
Off-Road Vehicles	162	208
Total Mobile Sources	375	634
TOTAL	639	721

¹ Values are rounded to nearest integer.

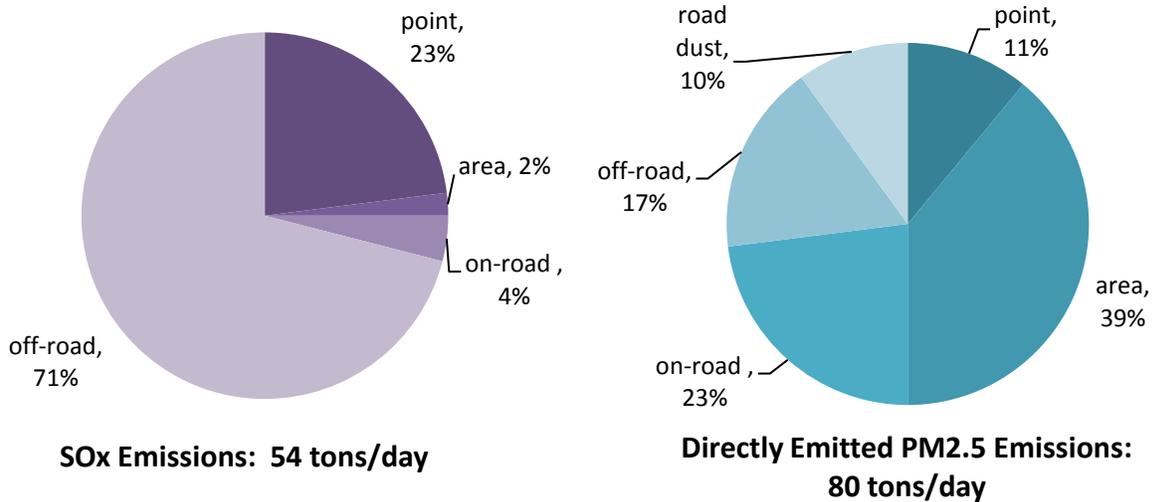
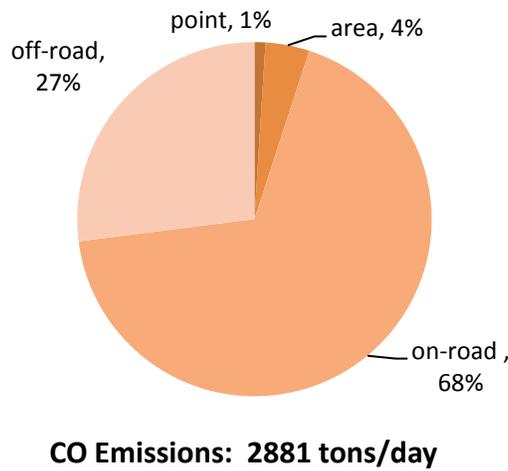
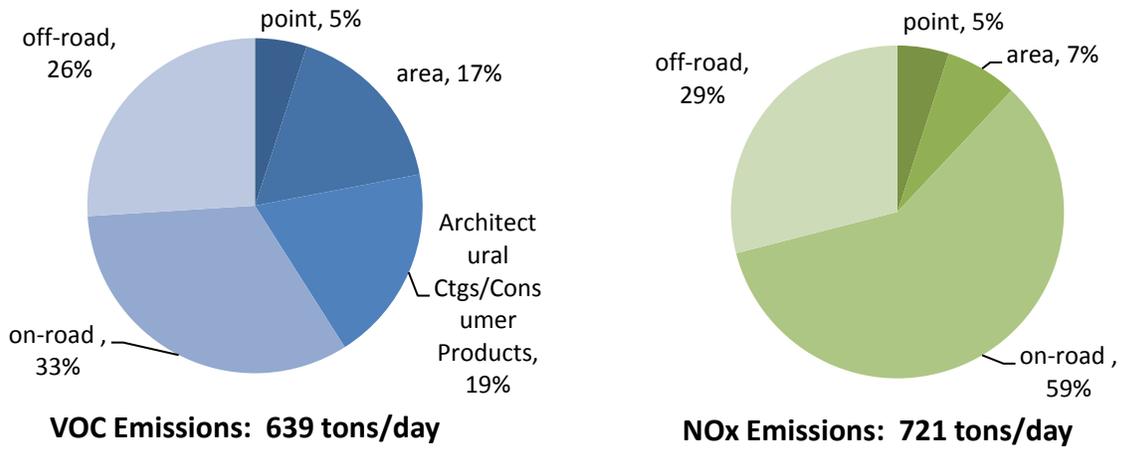


FIGURE 3-3

Relative Contribution by Source Category to 2008 Emission Inventory
(VOC & NOx – Summer Planning; CO, SOx, & PM2.5 – Annual Average Inventory)

FUTURE EMISSIONS

Data Development

The milestone years 2008, 2014, 2019, 2023, and 2030 are the years for which inventories were developed as they are relevant target years under the federal CAA and the CCAA. The base year for the attainment demonstration is 2008. 2014 is the attainment year for the federal 2006 24-hour PM_{2.5} standard without an extension, and 2019 represents the latest attainment date with a full five-year extension. The 80 ppb federal 8-hour ozone standard attainment deadline is 2023, and the new 75 ppb 8-hour ozone standard deadline is 2032. A 2030 inventory will be used to approximate this latter year.

Future stationary emissions are divided into RECLAIM and non-RECLAIM emissions. Future NO_x and SO_x emissions from RECLAIM sources are estimated based on their allocations as specified by District Rule 2002 –Allocations for NO_x and SO_x. The forecasts for non-RECLAIM emissions were derived using: (1) emissions from the 2008 base year; (2) expected controls after implementation of District rules adopted by June, 2012, and CARB rules adopted as of August 2011; and (3) activity growth in various source categories between the base and future years.

Demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry), developed by SCAG for their 2012 RTP, are used in the Draft Final 2012 AQMP. Industry growth factors for 2008, 2014, 2018, 2020, 2023, and 2030 are also provided by SCAG, and interim years are calculated by linear interpolation. Table 3-3 summarizes key socioeconomic parameters used in the Draft Final 2012 AQMP for emissions inventory development.

TABLE 3-3

Baseline Demographic Forecasts in the Draft Final 2012 AQMP

CATEGORY	2008	2023	2023 % GROWTH FROM 2008	2030	2030 % GROWTH FROM 2008
Population (Millions)	15.6	17.3	11%	18.1	16%
Housing Units (Millions)	5.1	5.7	12%	6.0	18%
Total Employment (Millions)	7.0	7.7	10%	8.1	16%
Daily VMT (Millions)	379	396	4%	421	11%

Current forecasts indicate that this region will experience a population growth of 11% between 2008 and 2023, with a 4% increase in vehicle miles traveled (VMT); and a population growth of 16% by the year 2030 with a 11% increase in VMT.

As compared to the projections in the 2007 AQMP, the current 2030 projections in the Draft Final 2012 AQMP show about 1.5 million less population (7.6% less), 900,000 less total employment (10% less), and 32 million miles less in the daily VMT forecast (7.1% less).

Summary of Baseline Emissions

Emissions data by source categories (point, area, on-road mobile and off-road mobile sources) and by pollutants are presented in Tables 3-4 through 3-7 for the years 2014, 2019, 2023, and 2030. The tables provide annual average, as well as summer planning inventories.

Without any additional controls, VOC, NO_x, and SO_x emissions are expected to decrease due to existing regulations, such as controls on off-road equipment, new vehicle standards, and the RECLAIM programs. Figure 3-4 illustrates the relative contribution to the 2023 inventory by source category. A comparison of Figures 3-3 and 3-4 indicates that the on-road mobile category continues to be a major contributor to CO and NO_x emissions. However, due to already-adopted regulations, 2023 on-road mobile sources account for: about 16% of total VOC emissions compared to 33% in 2008; about 36% of total NO_x emissions compared to 59% in 2008; and about 38% of total CO

emissions compared to 68% in 2008. Meanwhile, area sources become the major contributor to VOC emissions from 36% in 2008 to 50% in 2023. See Figures 3-5 through 3-16 for the top ten highest-ranking source categories for 2008, 2014, and 2023.

TABLE 3-4A

Summary of Emissions By Major Source Category: 2014 Baseline
Average Annual Day (tpd¹)

SOURCE CATEGORY	VOC	NOx	CO	SOx	PM2.5
STATIONARY SOURCES					
Fuel Combustion	13	27	54	2	6
Waste Disposal	12	2	1	0	0
Cleaning and Surface Coatings	39	0	0	0	2
Petroleum Production and Marketing	38	0	5	1	2
Industrial Processes	13	0	2	0	7
Solvent Evaporation					
Consumer Products	85	0	0	0	0
Architectural Coatings	15	0	0	0	0
Others	2	0	0	0	0
Misc. Processes*	17	21	102	1	33
RECLAIM Sources	0	27	0	8	0
Total Stationary Sources	234	77	164	12	50
MOBILE SOURCES					
On-Road Vehicles	117	272	1165	2	12
Off-Road Vehicles	100	157	766	4	8
Total Mobile Sources	217	429	1931	6	20
TOTAL	451	506	2095	18	70

¹ Values are rounded to nearest integer.

TABLE 3-4B

Summary of Emissions By Major Source Category: 2014 Baseline
 Summer Planning Inventory (tpd¹)

SOURCE CATEGORY	Summer Ozone Precursors	
	VOC	NO _x
Stationary Sources		
Fuel Combustion	13	28
Waste Disposal	12	2
Cleaning and Surface Coatings	45	0
Petroleum Production and Marketing	38	1
Industrial Processes	15	0
Solvent Evaporation		
Consumer Products	86	0
Architectural Coatings	18	0
Others	2	0
Misc. Processes	10	15
RECLAIM Sources	0	27
Total Stationary Sources	239	73
Mobile Sources		
On-Road Vehicles	120	251
Off-Road Vehicles	128	161
Total Mobile Sources	248	412
TOTAL	487	485

¹ Values are rounded to nearest integer.

TABLE 3-5A

Summary of Emissions By Major Source Category: 2019 Baseline
Average Annual Day (tpd¹)

SOURCE CATEGORY	VOC	NO_x	CO	SO_x	PM_{2.5}
Stationary Sources					
Fuel Combustion	14	27	56	2	6
Waste Disposal	13	2	1	1	0
Cleaning and Surface Coatings	46	0	0	0	2
Petroleum Production and Marketing	36	0	5	1	2
Industrial Processes	15	0	2	0	8
Solvent Evaporation					
Consumer Products	87	0	0	0	0
Architectural Coatings	16	0	0	0	0
Others	2	0	0	0	0
Misc. Processes*	16	18	102	1	34
RECLAIM Sources	0	27	0	6	0
Total Stationary Sources	245	74	166	11	52
Mobile Sources					
On-Road Vehicles	80	186	755	2	11
Off-Road Vehicles	90	145	795	5	7
Total Mobile Sources	170	331	1550	7	18
TOTAL	415	405	1716	18	70

¹ Values are rounded to nearest integer.

TABLE 3-5B

Summary of Emissions By Major Source Category: 2019 Baseline
 Summer Planning Inventory (tpd¹)

SOURCE CATEGORY	Summer Ozone Precursors	
	VOC	NO _x
Stationary Sources		
Fuel Combustion	14	28
Waste Disposal	13	2
Cleaning and Surface Coatings	53	0
Petroleum Production and Marketing	36	0
Industrial Processes	17	0
Solvent Evaporation		
Consumer Products	88	0
Architectural Coatings	19	0
Others	2	0
Misc. Processes	9	13
RECLAIM Sources	0	27
Total Stationary Sources	251	70
Mobile Sources		
On-Road Vehicles	83	173
Off-Road Vehicles	114	148
Total Mobile Sources	197	321
TOTAL	448	391

¹ Values are rounded to nearest integer.

TABLE 3-6A

Summary of Emissions By Major Source Category: 2023 Baseline
Average Annual Day (tpd¹)

SOURCE CATEGORY	VOC	NO_x	CO	SO_x	PM_{2.5}
Stationary Sources					
Fuel Combustion	14	27	56	2	6
Waste Disposal	14	2	1	0	0
Cleaning and Surface Coatings	49	0	0	0	2
Petroleum Production and Marketing	36	0	5	1	2
Industrial Processes	16	0	2	0	8
Solvent Evaporation					
Consumer Products	89	0	0	0	0
Architectural	17	0	0	0	0
Others	2	0	0	0	0
Misc. Processes*	16	17	102	1	35
RECLAIM Sources	0	27	0	6	0
Total Stationary Sources	253	73	166	10	53
Mobile Sources					
On-Road Vehicles	67	125	591	2	11
Off-Road Vehicles	86	130	826	6	7
Total Mobile Sources	153	255	1417	8	18
TOTAL	406	328	1583	18	71

¹ Values are rounded to nearest integer.

TABLE 3-6B

Summary of Emissions By Major Source Category: 2023 Baseline
 Summer Planning Inventory (tpd¹)

SOURCE CATEGORY	Summer Ozone Precursors	
	VOC	NOx
Stationary Sources		
Fuel Combustion	14	27
Waste Disposal	14	2
Cleaning and Surface Coatings	56	0
Petroleum Production and Marketing	37	0
Industrial Processes	17	0
Solvent Evaporation		
Consumer Products	91	0
Architectural	20	0
Others	3	0
Misc. Processes	9	13
RECLAIM Sources	0	27
Total Stationary Sources	261	69
Mobile Sources		
On-Road Vehicles	69	117
Off-Road Vehicles	108	133
Total Mobile Sources	177	250
TOTAL	438	319

¹ Values are rounded to nearest integer.

TABLE 3-7A

Summary of Emissions By Major Source Category: 2030 Baseline
Average Annual Day (tpd¹)

SOURCE CATEGORY	VOC	NO_x	CO	SO_x	PM_{2.5}
Stationary Sources					
Fuel Combustion	15	28	59	3	6
Waste Disposal	15	2	1	0	0
Cleaning and Surface Coatings	54	0	0	0	2
Petroleum Production and Marketing	38	0	5	1	2
Industrial Processes	17	0	2	0	9
Solvent Evaporation					
Consumer Products	93	0	0	0	0
Architectural	18	0	0	0	0
Others	2	0	0	0	0
Misc. Processes*	16	15	102	1	36
RECLAIM Sources	0	27	0	6	0
Total Stationary Sources	268	72	169	11	55
Mobile Sources					
On-Road Vehicles	55	101	446	2	12
Off-Road Vehicles	84	116	886	7	6
Total Mobile Sources	139	217	1332	9	18
TOTAL	407	289	1501	20	73

¹ Values are rounded to nearest integer.

TABLE 3-7B

Summary of Emissions By Major Source Category: 2030 Baseline
 Summer Planning Inventory (tpd¹)

SOURCE CATEGORY	Summer Ozone Precursors	
	VOC	NOx
Stationary Sources		
Fuel Combustion	15	29
Waste Disposal	15	2
Cleaning and Surface Coatings	62	0
Petroleum Production and Marketing	38	0
Industrial Processes	19	0
Solvent Evaporation		
Consumer Products	95	0
Architectural	20	0
Others	3	0
Misc. Processes	9	12
RECLAIM Sources	0	27
Total Stationary Sources	276	70
Mobile Sources		
On-Road Vehicles	56	95
Off-Road Vehicles	105	119
Total Mobile Sources	161	214
TOTAL	437	284

¹ Values are rounded to nearest integer.

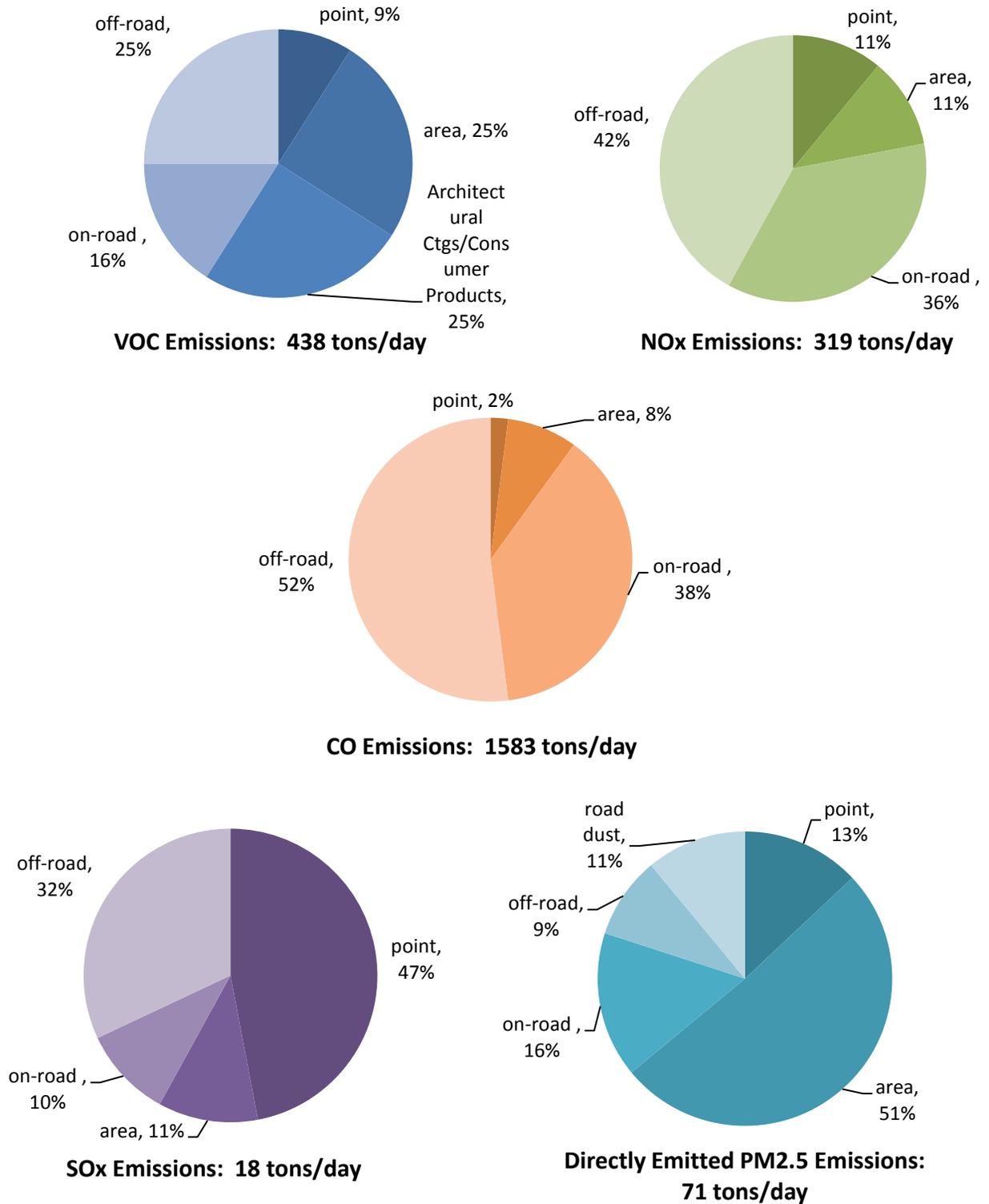


FIGURE 3-4

Relative Contribution by Source Category to 2023 Emission Inventory
(VOC & NOx – Summer Planning; CO, SOx, & PM2.5 – Annual Average Inventory)

IMPACT OF GROWTH

The Draft Final 2012 AQMP forecasts the 2030 emissions inventories “with growth” through a detailed consultation process with SCAG. The region is likely to see a 16% growth in population, 18% growth in housing units, 16% growth in employment, and 11% growth in vehicle miles traveled between 2008 and 2030. To illustrate the impact of demographic growth on emissions, year 2030 no-growth emissions were estimated by removing the growth factors from the 2030 baseline emissions. Table 3-8 presents the comparison of the projected 2030 emissions with and without growth. It should be noted that in this analysis, the benefit of potential applications of BACT under District’s Reg XIII-New Source Review (NSR) is not included. The growth impacts to year 2030 for VOC, NO_x, CO, SO_x and PM_{2.5} are 77, 76, 311, 5 and 11 tons per day respectively.

Pre-Base-Year Offsets

The District’s growth projections include pre-base year emissions, consistent with the requirements of 40 CFR § 51.165(a)(3)(i)(C)(I). To the extent offsets are required under NSR for permitted facilities to be sited or expanded in this region, pre-2008 emission credits authorized under Reg XIII can be used and are explicitly identified and accounted for in the Draft Final 2012 AQMP through growth projections, up to the amounts shown in Table 3-8. While Table 3-8 includes projected growth in certain sources not subject to NSR, the AQMP does not limit growth to individual source categories. Therefore, Table 3-8 explicitly identifies pre-base-year offsets in the amounts up to the difference between the growth and no-growth projections for the point and area source categories that are potentially subject to NSR and could potentially require the use of pre-base-year offsets. *See 57 Fed. Reg. 13, 498.*

This growth presents a formidable challenge to our air quality improvement efforts since the projected growth will offset the impressive progress made in reducing VOC and NO_x and PM_{2.5} emissions through adopted regulations. Meeting the U.S. EPA’s current and future more-stringent air quality standards will require the continuation of aggressive emissions reduction efforts from all levels of government.

TABLE 3-8
Growth Impact to 2030 Emissions* in Tons per Day

WITH GROWTH	VOC	NOX	CO	SOX	PM2.5
Point	38	33	38	9	10
Area	230	39	131	2	37
Road Dust	0	0	0	0	8
On-Road	55	101	446	2	12
Off-Road	84	116	886	7	6
Total	407	289	1501	20	73
NO GROWTH	VOC	NOX	CO	SOX	PM2.5
Point	29	32	33	8	8
Area	188	28	117	1	32
Road Dust	0	0	0	0	8
On-Road	49	82	398	2	10
Off-Road	64	71	642	4	4
Total	330	213	1190	15	62
IMPACT OF GROWTH	VOC	NOX	CO	SOX	PM2.5
Point	9	1	5	1	2
Area	42	11	14	1	5
Road Dust	0	0	0	0	0
On-Road	6	19	47	0	2
Off-Road	20	45	245	3	2
Total	77	76	311	5	11

*Annual Average Inventory

TOP TEN SOURCE CATEGORIES (2008, 2014, 2023)

The rankings of the top ten source contributors to the emissions inventories for VOC, NOx, SOx and PM2.5 are listed and briefly discussed in this section. The 2023 summer planning inventory for VOC and NOx, along with the 2008, 2014 and 2023 annual average inventory for VOC, NOx, SOx and PM2.5 are shown in the figures 3-5 to 3-16. These source categories are fairly broad and are intended for illustration purposes only.

Table 3-9 lists the top ten categories for each of the three inventory years for VOCs. Two of top five categories are on-road mobile sources in the 2008 inventory, but none of the on-road categories are found in the top five categories for 2023. This demonstrates the effect of more-stringent on-road standards in the future. Table 3-9 shows that consumer products, off-road equipment, and recreational boats remain as high-emitting categories over time. The top 10 categories account for 78% of the total VOC inventory in 2008 and 71% in 2023.

TABLE 3-9

Top Ten Ranking Emitters for VOC Emissions (Annual Average: 2008, 2014, and 2023)

	2008	2014	2023
1	Consumer Products	Consumer Products	Consumer Products
2	Passenger Cars	Off-Road Equipment	Off-Road Equipment
3	Off-Road Equipment	Passenger Cars	Petroleum Marketing
4	Light-Duty Trucks	Petroleum Marketing	Coatings & Related Processes
5	Recreational Boats	Light-Duty Trucks	Recreational Boats
6	Petroleum Marketing	Recreational Boats	Light-Duty Trucks
7	Medium-Duty Trucks	Coatings & Related Processes	Passenger Cars
8	Architectural Coatings	Medium-Duty Trucks	Architectural Coatings
9	Coatings & Related Processes	Architectural Coatings	Medium-Duty Trucks
10	Heavy-Duty Gasoline Trucks	Degreasing	Degreasing

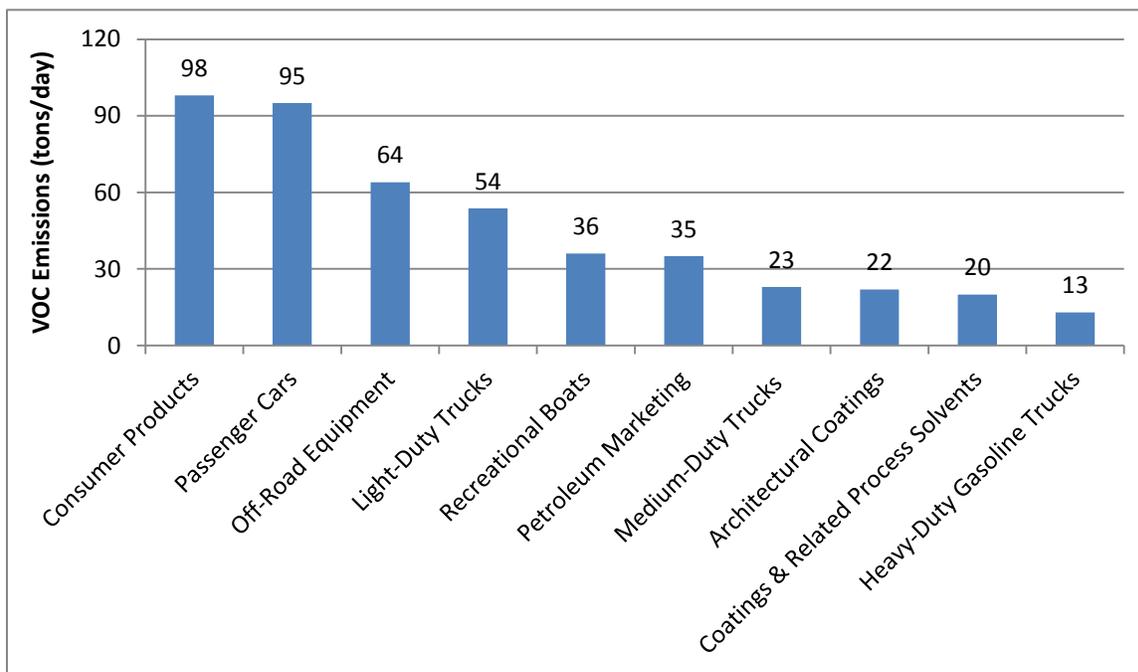


FIGURE 3-5

Top Ten Emitter Categories for VOC in 2008 (Annual Average)

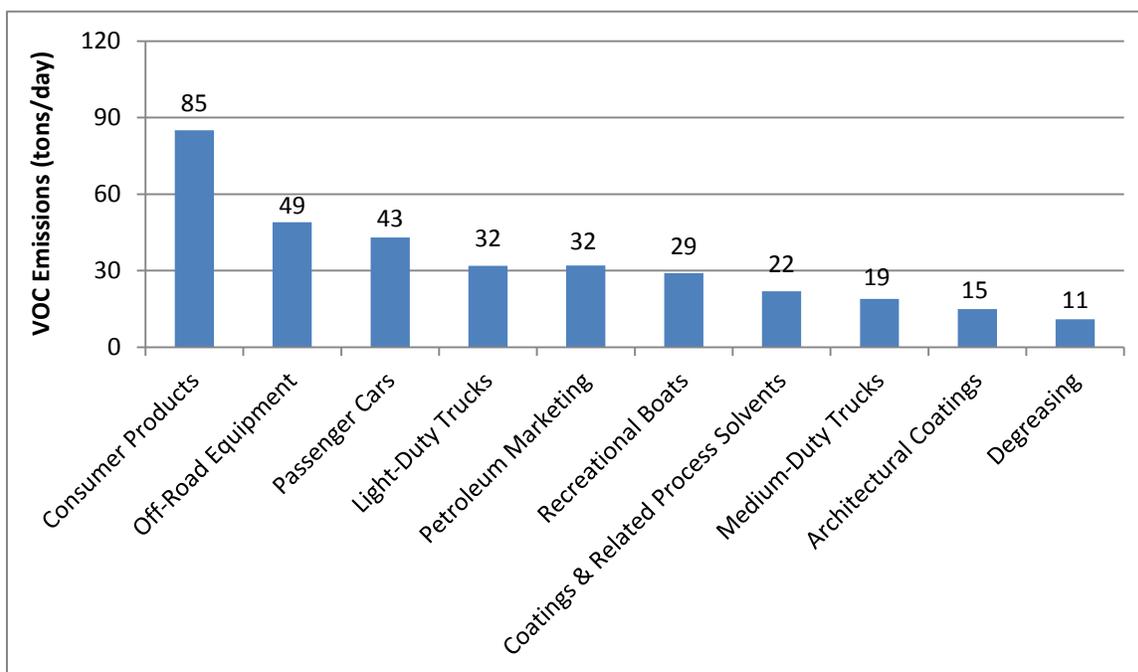


FIGURE 3-6

Top Ten Emitter Categories for VOC in 2014 (Annual Average)

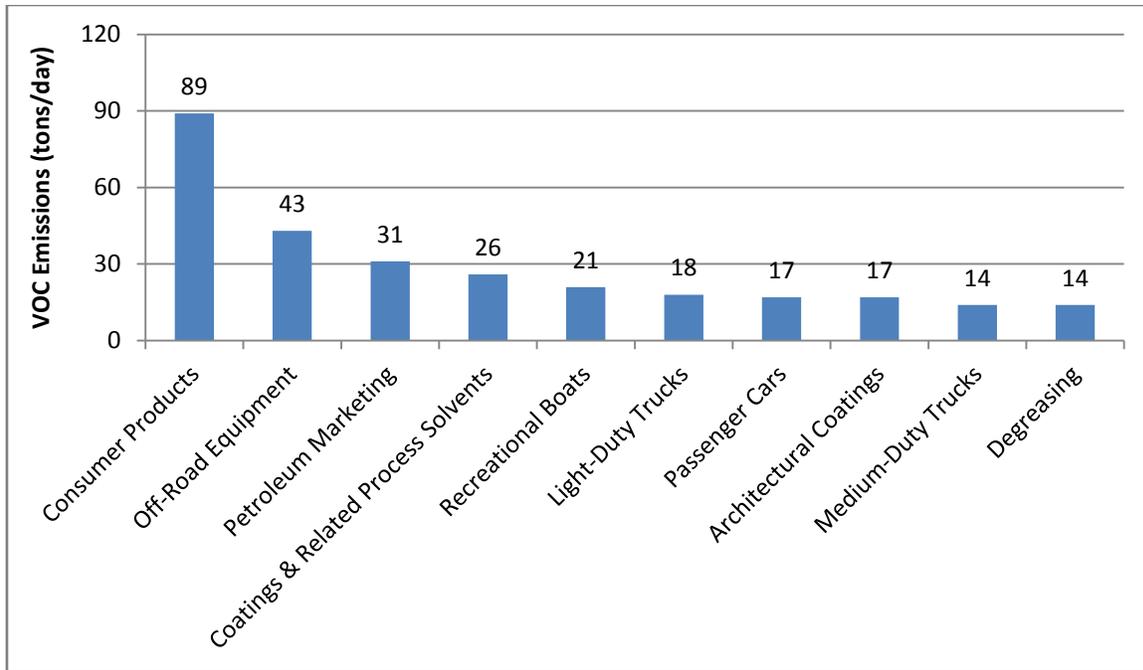


FIGURE 3-7A

Top Ten Emitter Categories for VOC in 2023 (Annual Average)

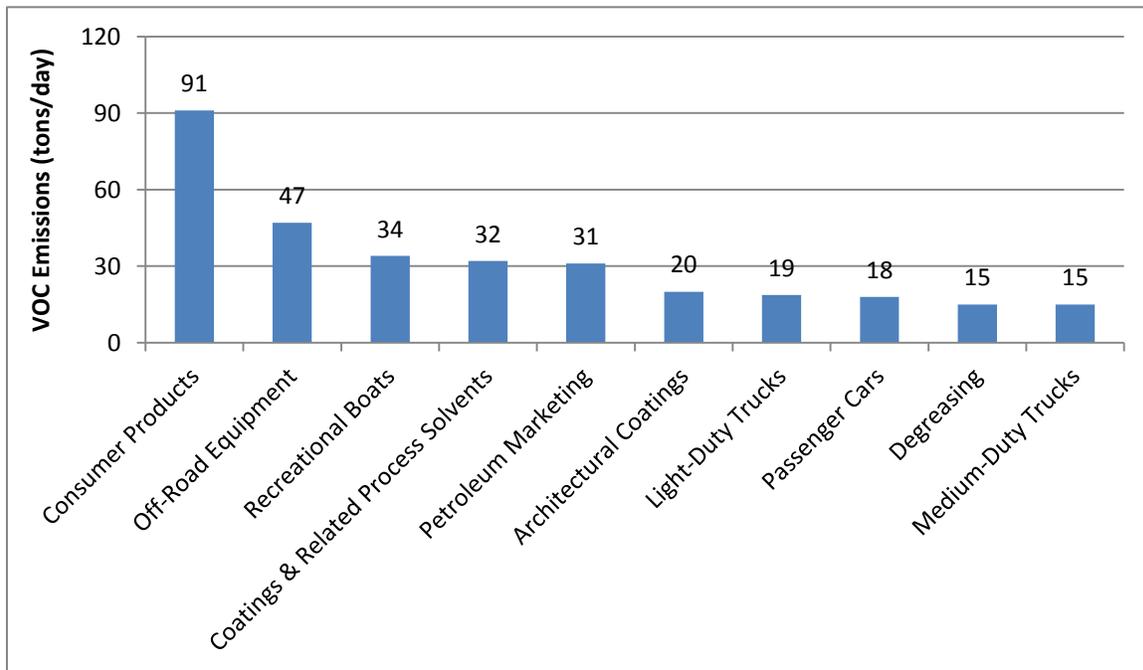


FIGURE 3-7B

Top Ten Emitter Categories for VOC in 2023 (Summer Planning)

Table 3-10 shows the top ten categories for NO_x emissions in each of the three years. Mobile source categories remain the predominant contributor to NO_x emissions. Heavy-duty diesel trucks and off-road equipment make the top two on the list for all three years. NO_x RECLAIM and residential fuel combustion are the two non-mobile categories which make it to the top ten list. The top ten categories account for 87% of the total NO_x inventory in 2008, and 78% in 2023.

TABLE 3-10

Top Ten Ranking Emitters for NO_x Emissions (Annual Average: 2008, 2014, and 2023)

	2008	2014	2023
1	Heavy-Duty Diesel Trucks	Heavy-Duty Diesel Trucks	Heavy-Duty Diesel Trucks
2	Off-Road Equipment	Off-Road Equipment	Off-Road Equipment
3	Passenger Cars	Ships & Commercial Boats	Ships & Commercial Boats
4	Light-Duty Trucks	Passenger Cars	NO _x RECLAIM
5	Ships & Commercial Boats	Light-Duty Trucks	Locomotives
6	Medium-Duty Trucks	Medium-Duty Trucks	Aircraft
7	Heavy-Duty Gasoline Trucks	NO _x RECLAIM	Residential Fuel Combustion
8	Locomotives	Heavy-Duty Gasoline Trucks	Heavy-Duty Gasoline Trucks
9	Residential Fuel Combustion	Locomotives	Passenger Cars
10	NO _x RECLAIM	Residential Fuel Combustion	Light-Duty Trucks

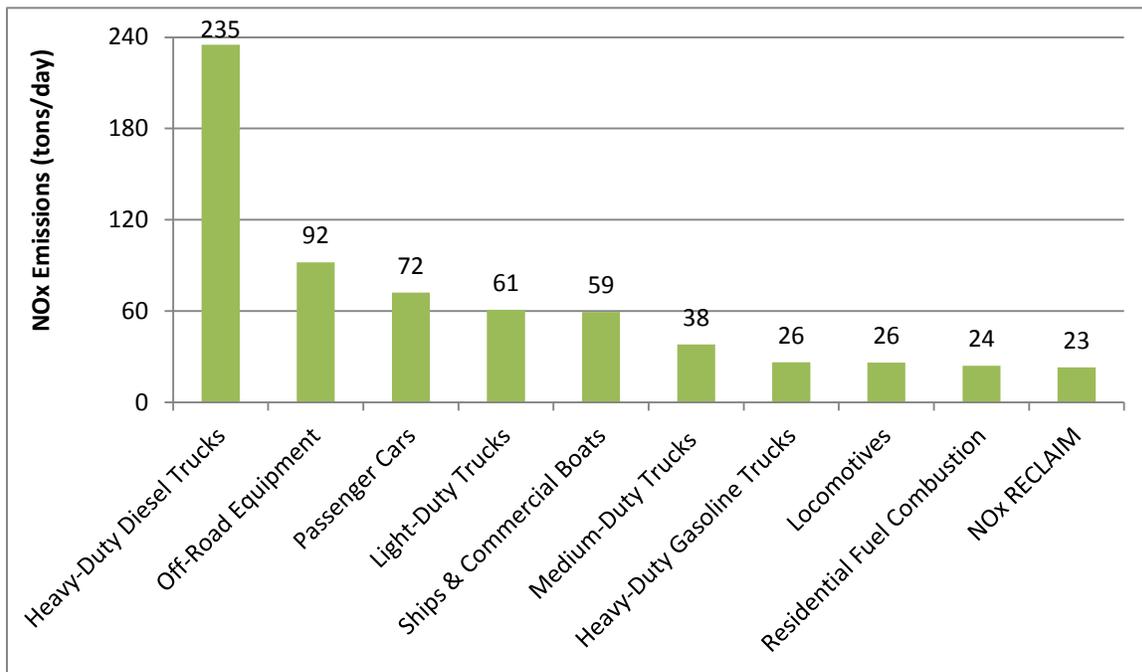


FIGURE 3-8

Top Ten Emitter Categories for NOx in 2008 (Annual Average)

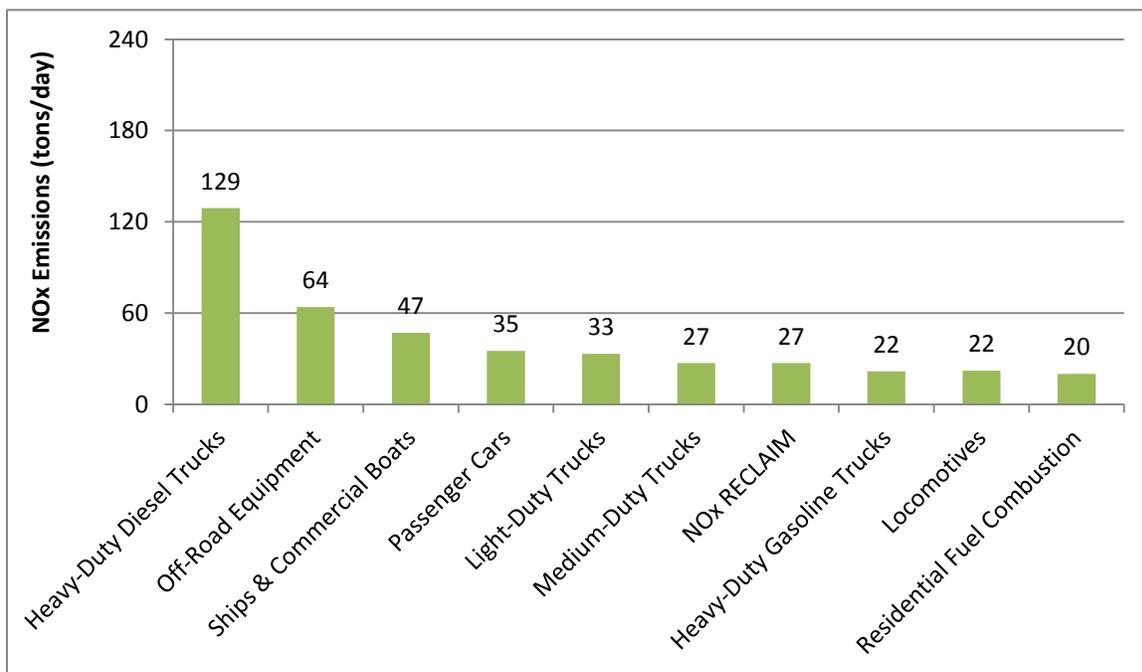


FIGURE 3-9

Top Ten Emitter Categories for NOx in 2014 (Annual Average)

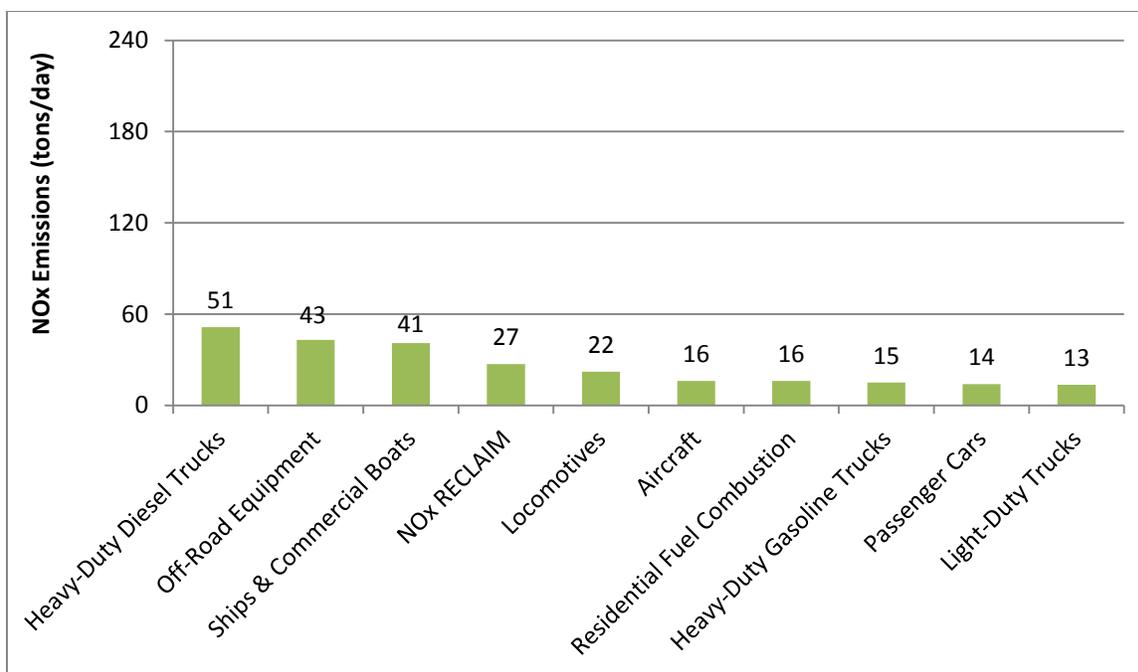


FIGURE 3-10A

Top Ten Emitter Categories for NOx in 2023 (Annual Average)

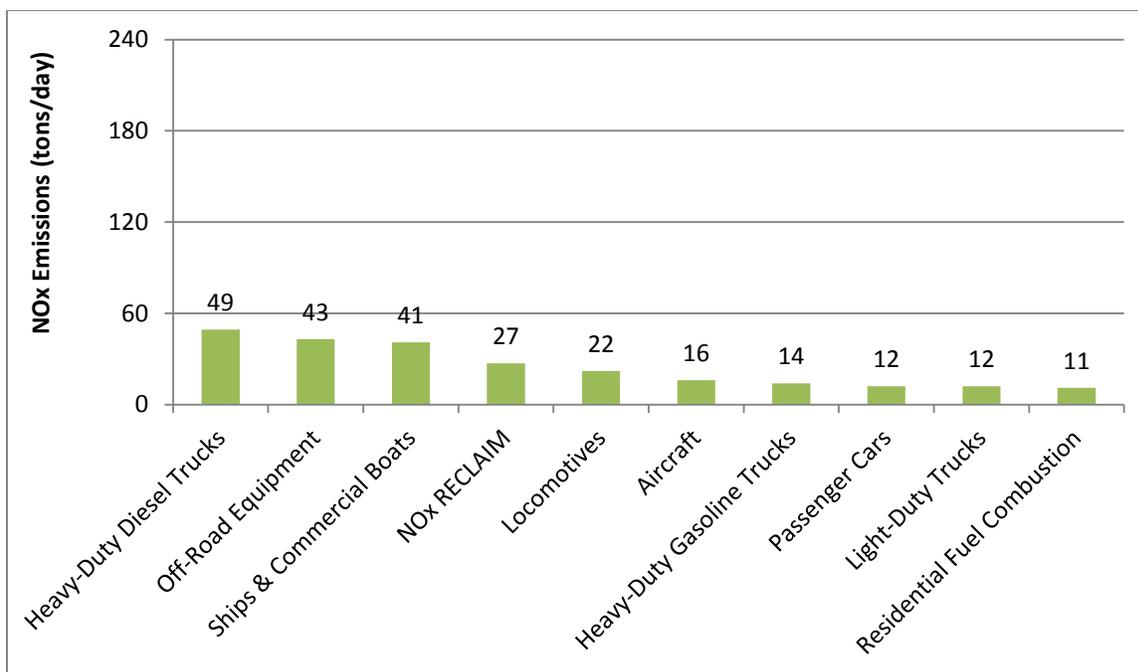


FIGURE 3-10B

Top Ten Emitter Categories for NOx in 2023 (Summer Planning)

Table 3-11 shows the top source categories for SO_x emissions in the years 2008, 2014 and 2023. The emissions level of SO_x is relatively low. Therefore, only the categories that emit more than 0.5 tons per day of SO_x are ranked and listed. The top five high emitting source categories remain the same in 2008 and 2023. Ships & Commercial Boats and SO_x RECLAIM emissions are the most significant contributors. The top categories represent 93% of the total SO_x inventory in 2008 and 81% in 2023.

TABLE 3-11

Top Emitter Categories for SO_x Emissions (Annual: 2008, 2014, 2023) over 0.5 tpd

	2008	2014	2023
1	Ships & Commercial Boats	SO _x RECLAIM	SO _x RECLAIM
2	SO _x RECLAIM	Ships and Commercial Boats	Ships & Commercial Boats
3	Aircraft	Aircraft	Aircraft
4	Service and Commercial Combustion	Service and Commercial Combustion	Service and Commercial Combustion
5	Passenger Cars	Passenger Cars	Passenger Cars
6	Petroleum Refining	Petroleum Refining	Manufacturing and Industrial Combustion
7	--	Manufacturing and Industrial Combustion	Petroleum Refining
8	--	Light-Duty Trucks	--

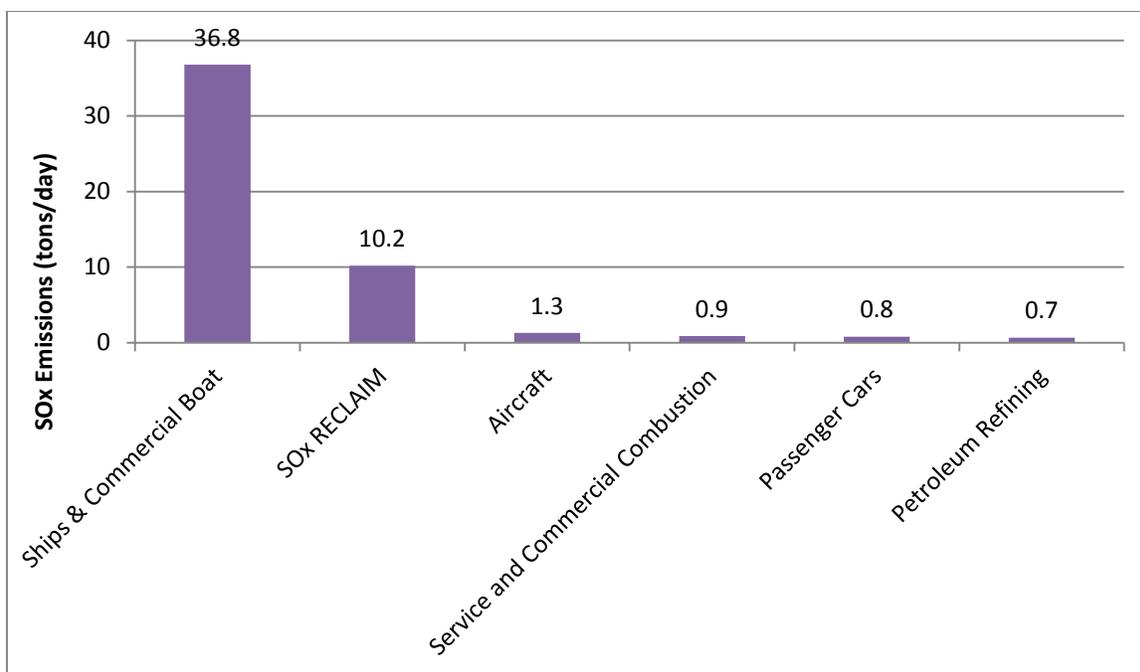


FIGURE 3-11

Top Emitter Categories for SO_x Over 0.5 tpd in 2008 (Annual Average)

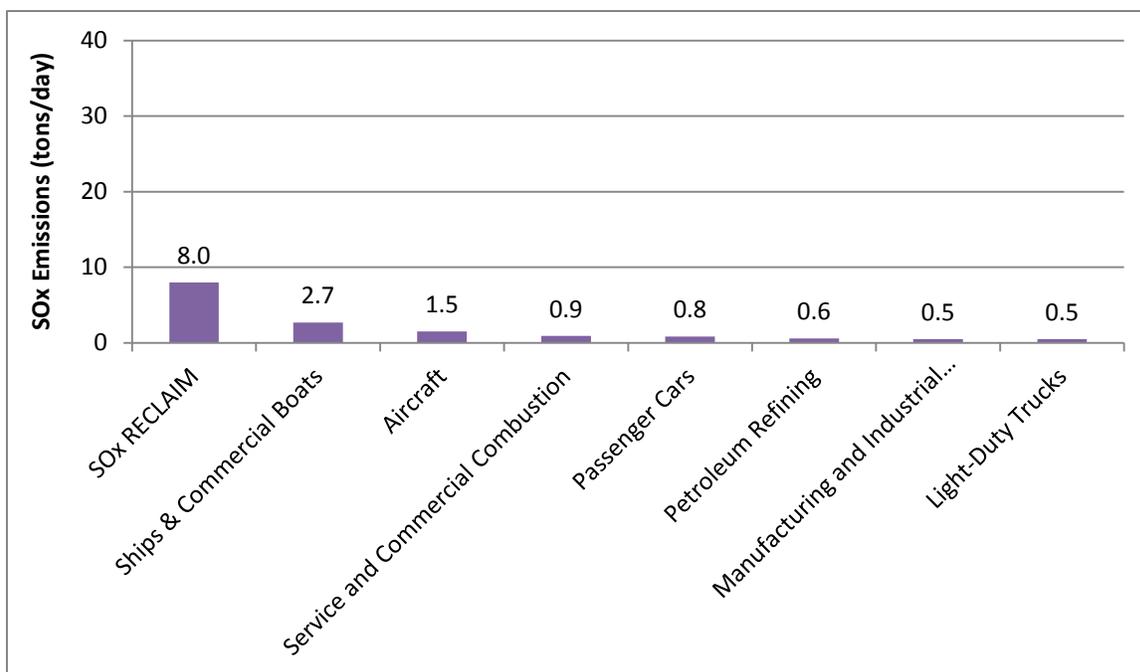


FIGURE 3-12

Top Emitter Categories for SO_x Over 0.5 tpd in 2014 (Annual)

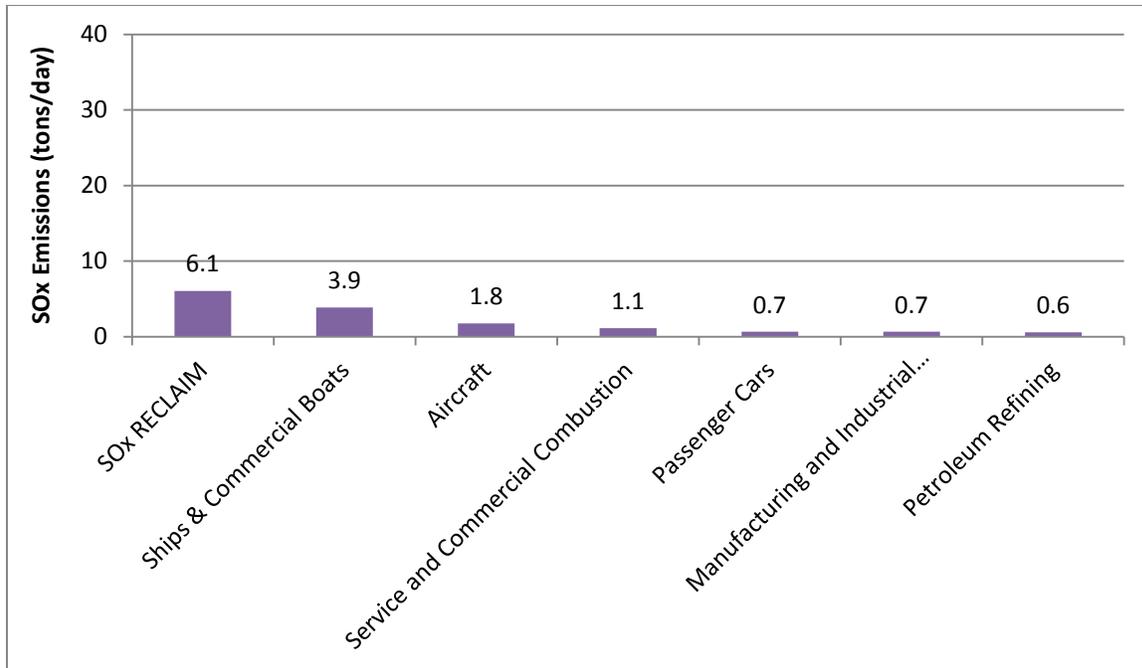


FIGURE 3-13

Top Emitter Categories for SO_x Over 0.5 tpd in 2023 (Annual)

Table 3-12 shows the top ten source categories in each of the three years for directly emitted PM_{2.5}. Commercial cooking, paved road dust, and residential fuel combustion are the top three highest emitting categories in both 2008 and 2023. The top ten categories represent 71% of the total directly emitted PM_{2.5} inventory in 2008 and 70% in 2023.

TABLE 3-12

Top Ten Ranking Emitters for Directly Emitted PM_{2.5} Emissions (Annual: 2008, 2014, 2023),
from Highest to Lowest

	2008	2014	2023
1	Commercial Cooking	Commercial Cooking	Commercial Cooking
2	Heavy-Duty Diesel Trucks	Residential Fuel Combustion	Paved Road Dust
3	Residential Fuel Combustion	Paved Road Dust	Residential Fuel Combustion
4	Paved Road Dust	Waste Burning and Disposal	Waste Burning and Disposal
5	Off-Road Equipment	Passenger Cars	Passenger Cars
6	Passenger Cars	Off-Road Equipment	Mineral Processes
7	Ships & Commercial Boats	Heavy-Duty Diesel Trucks	Wood and Paper
8	Mineral Processes	Mineral Processes	Off-Road Equipment
9	Light-Duty Trucks	Wood and Paper	Construction and Demolition
10	Wood and Paper	Construction and Demolition	Heavy-Duty Diesel Trucks

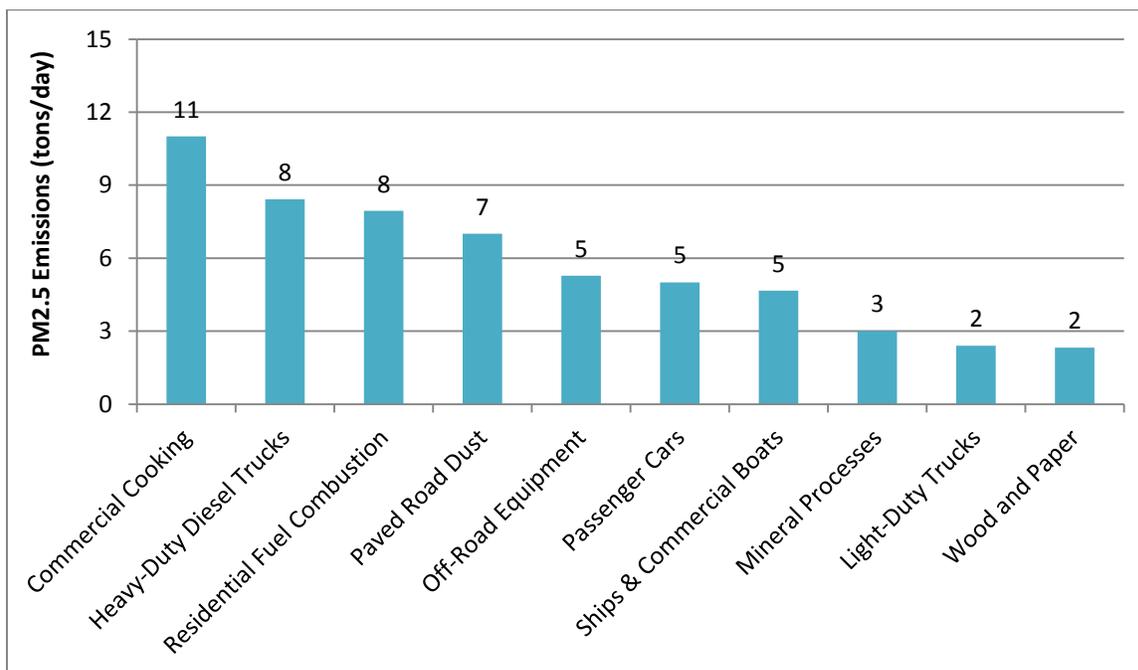


FIGURE 3-14

Top Ten Emitter Categories for Directly Emitted PM2.5 in 2008 (Annual)

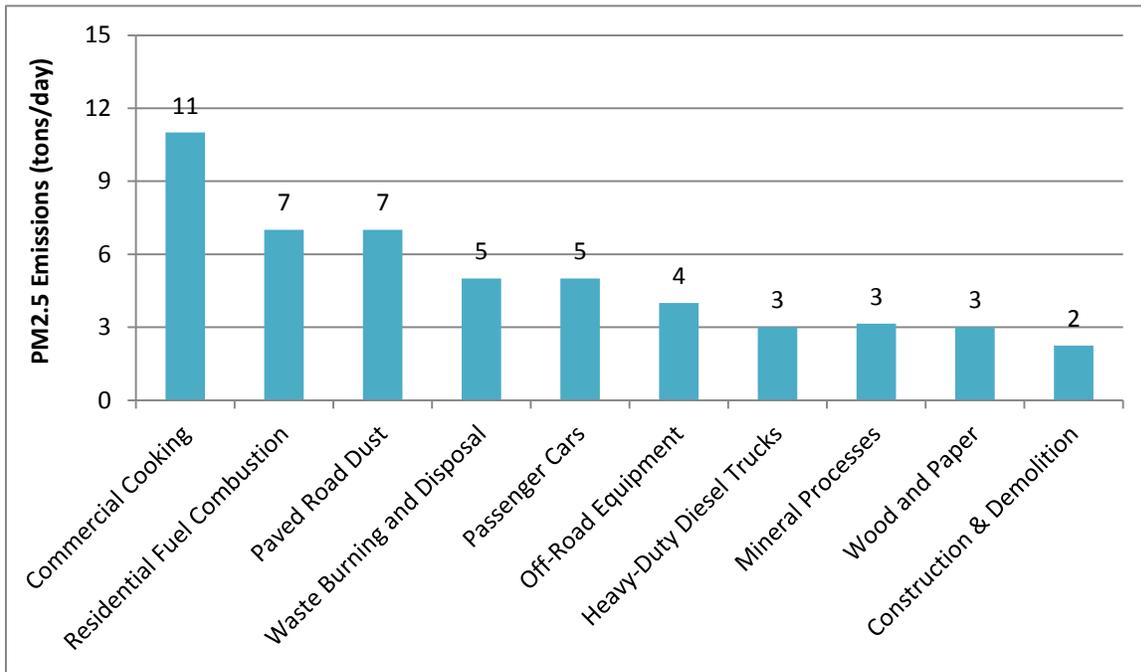


FIGURE 3-15

Top Ten Emitter Categories for Directly Emitted PM2.5 in 2014 (Annual)

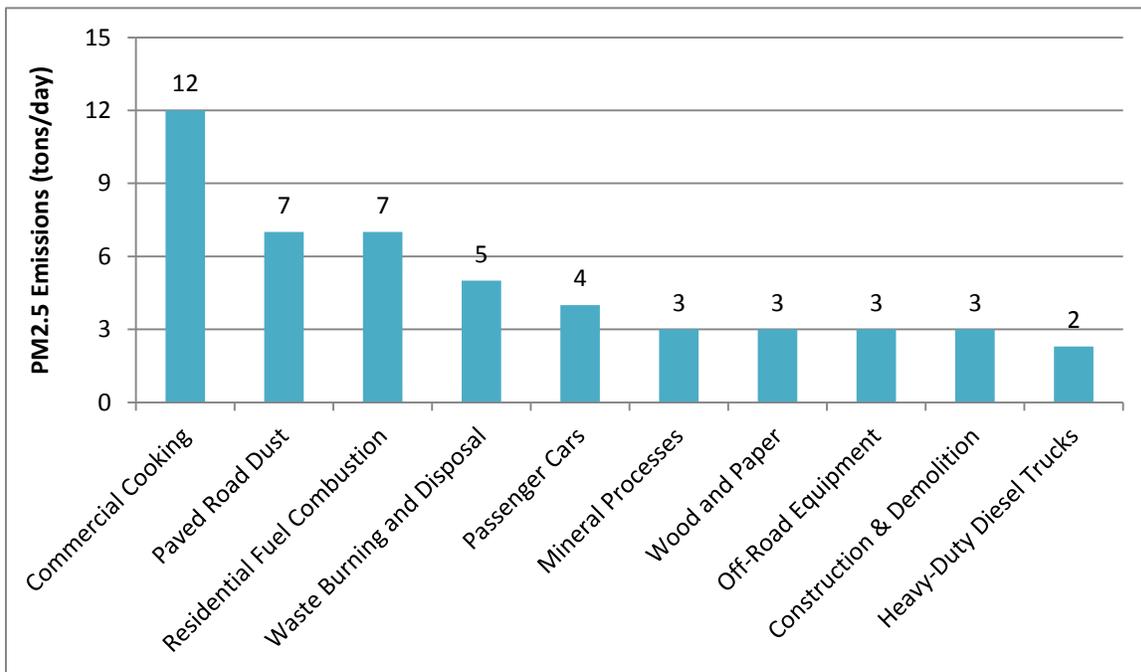
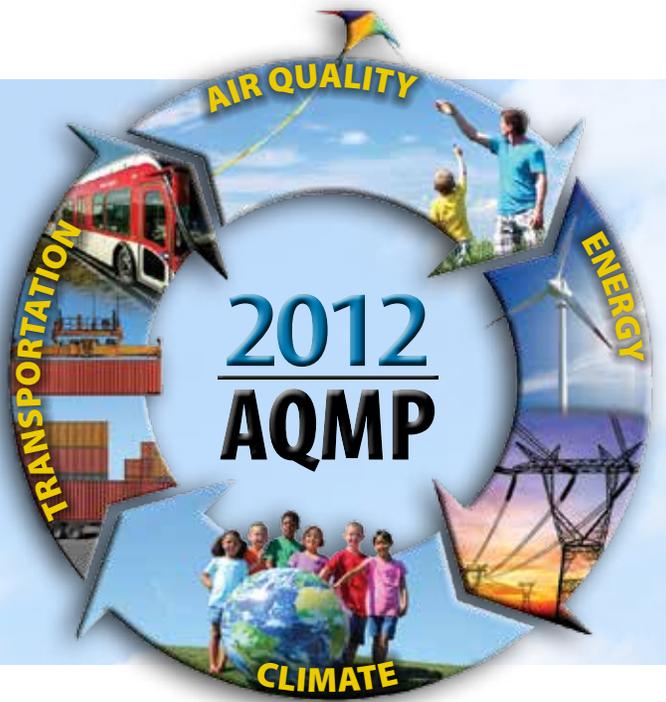


FIGURE 3-16

Top Ten Emitter Categories for Directly Emitted PM2.5 in 2023 (Annual)



Chapter 4

Control Strategy and Implementation

South Coast Air Quality Management District
Cleaning the air that we breathe...



CHAPTER 4

CONTROL STRATEGY AND IMPLEMENTATION

Introduction

Overall Attainment Strategy

Proposed PM2.5 Short-term Control Measures

Proposed PM2.5 Contingency Measures

SCAG's Regional Transportation Strategy and Transportation Control Measures

Proposed 8-hour Ozone Measures

District's SIP Emission Reduction Commitment

Overall Emission Reductions

Implementation

INTRODUCTION

The overall control strategy in the Draft Final 2012 AQMP provides a path to achieving emission reductions and air quality goals. Implementation of the Draft Final 2012 AQMP will be based on a series of control measures and strategies that vary by source type (i.e., stationary or mobile) as well as by the pollutant that is being targeted. Although great strides have been made in air pollution control technologies and emission reduction programs, air quality goals cannot be achieved without significant further emission reductions. The 2012 AQMP is designed to achieve the 2006 24-hour PM_{2.5} standard by 2014. In addition, the sheer magnitude of emission reductions needed for the attainment of the 8-hour ozone national ambient air quality standards (NAAQS) by 2023 and 2032 poses a tremendous challenge to the South Coast Air Basin. This challenge requires an aggressive control strategy and close collaboration with federal, state, and regional governments, local agencies, businesses, and the public. This chapter outlines the proposed control strategy and implementation schedule for the Draft Final 2012 AQMP as required to achieve the air quality goals in the Basin.

OVERALL ATTAINMENT STRATEGY

The overall control strategy for this Plan is designed to meet applicable federal and state requirements, including attainment of ambient air quality standards. The focus of the Draft Final 2012 AQMP is to demonstrate attainment of the federal 2006 24-hour PM_{2.5} ambient air quality standard by the 2014 attainment date, as well as an update to further define measures to meet the federal and state 8-hour ozone standards. The attainment demonstration for the new 8-hour ozone standard (75 ppb) will be addressed in the 2015 ozone plan.

The Draft Final 2012 AQMP provides base year emissions and future baseline emission projections (see Chapter 3 and Appendix III). In doing so, the Draft Final 2012 AQMP relies upon the most recent planning assumptions and the best available information including: CARB's latest emission factors (EMFAC2011) for the on-road mobile source emissions inventory; CARB's 2011 in-use fleet inventory for the off-road mobile source emission inventory; the latest point source inventory; updated area source inventories; and SCAG's forecast growth assumptions based on its recent 2012 Regional Transportation Plan. The baseline emission projections provide a snapshot of the future air quality conditions, including the effects from already adopted rules and regulations, but without a proposed control strategy.

Air quality modeling (see Chapter 5 and Appendix V) is conducted to determine the Basin’s “carrying capacity,” which is the allowable level of emissions to meet the standards. The remaining emissions above the carrying capacity are the amount of emissions that must be reduced in order to achieve the standards. To meet the targeted carrying capacity emissions level, a control strategy has been developed.

The development of the control strategy entails integrated planning to identify, to the extent feasible, co-benefit opportunities in achieving multi-pollutant reductions to meet standards with multiple deadlines. As such, control measures for attainment of one pollutant standard can assist in the attainment of another pollutant standard. For example, some control measures chosen to reduce criteria pollutants can also result in the reduction of greenhouse gases (GHG) and/or toxic emissions. In doing so, implementation of the Draft Final 2012 AQMP control strategy could also assist in reaching the GHG target goals in the AB32 Scoping Plan or the air quality goals in CARB’s Freight Transport Plan.

The control measures were chosen based on technical and economic feasibility, as well as other factors such as promoting fair share responsibility and maximizing private/public partnerships. Table 4-1 provides an overview of the criteria used in evaluating and selecting feasible control measures, in no particular order.

TABLE 4-1

Criteria for Evaluating 2012 AQMP Control Measures (not ranked by priority)

CRITERIA	DESCRIPTION
Cost-Effectiveness	The cost of a control measure to reduce air pollution by one ton [cost includes purchasing, installing, operating and maintaining the control technology].
Emission Reduction Potential	The total amount of pollution that a control measure can actually reduce.
Enforceability	The ability to ensure that polluters comply with a control measure.
Legal Authority	Ability of the District or other adopting agency to implement the measure or the likelihood that local governments and agencies will cooperate to approve a control measure.
Public Acceptability	The likelihood that the public will cooperate in the implementation of a control measure that applies to members of the public.
Rate of Emission Reduction	The time it will take for a control measure to reduce a certain amount of air pollution.
Technological Feasibility	The likelihood that the technology for a control measure will be available as anticipated.

For the Draft Final 2012 AQMP control measure development, District staff conducted an AQMP Technology Symposium in September 2011 to solicit new control concepts and innovative ideas from industry experts, professional consultants, and government specialists. Internal staff suggestions and external recommendations assisted in identifying additional control measures and assessing control measure feasibility. Since the adoption of the 2007 AQMP, the District has made significant strides in achieving further emission reductions from stationary sources. Table 1-2 in Chapter 1 provides a list of rules adopted by the District since adoption of the 2007 AQMP as well as the SIP commitment and the emission reductions achieved for each rule. The proposed control strategy in the Draft Final 2012 AQMP includes some revised and partially implemented measures from the 2007 AQMP, and new measures deemed feasible and necessary to provide additional control opportunities to achieve the air quality standards.

The Draft Final 2012 AQMP is proposing a control strategy that includes emission reductions from both stationary and mobile sources. The proposed stationary source control measures in the Draft Final 2012 AQMP are based on implementation of all feasible control measures through the application of available cleaner technologies, best management practices, incentive programs, as well as development and implementation of zero- and near-zero technologies and control methods. The stationary source control measures presented in the Plan are proposed to further reduce emissions from both point sources (permitted facilities) and area sources (generally small and non-permitted) in addition to smaller permitted sources with emissions less than the reporting threshold in the District's Annual Emissions Reporting Program). The basic principles followed in developing the District's stationary source control measures include: 1) identify PM_{2.5}, ammonia and/or NO_x reduction opportunities and maximize reductions by the 2014 attainment date, and 2) initiate programs or rule making activities for VOC and further NO_x control strategies aiming at maximum reductions by the 2023 timeframe to further implement the ozone plan for the 1997 8-hour ozone standard.

The mobile source strategy includes actions seeking further emission reductions from both on-road and off-road mobile sources, such as accelerated penetration of zero- and near-zero emission vehicles and early retirement of older vehicles. In addition, the mobile source strategy includes research and development of advanced control technologies from various mobile sources. Some of the proposed actions need to be

implemented by several agencies that currently have the statutory authority to implement such measures. For more details about the responsibilities of the other agencies, refer to the last section of this chapter under Implementation.

The Draft Final 2012 AQMP relies on a comprehensive and integrated control approach aimed at achieving the 2006 24-hour PM_{2.5} standard by the 2014 attainment date through implementation of short-term 24-hour PM_{2.5} control measures. For each control measure, the District will seek to achieve the maximum reduction potential that is technically feasible and cost-effective. The overall control strategy provides for attainment of the 2006 24-hour PM_{2.5} standard, with additional ozone measures to further implement the ozone plan for the 8-hour ozone standard.

The following sections provide an overview of the two-part control strategy.

24-Hour PM_{2.5} Strategy

In December 2009, the U.S. EPA designated the Basin as nonattainment for the 2006 24-hour PM_{2.5} NAAQS, and required attainment of the standard by 2014. To develop the Plan's required control strategy for meeting state and federal requirements, an iterative process of technology/strategy review and ambient air quality modeling is utilized. The emission inventories for nonattainment areas include base year (2008) and future years' emissions through the attainment year (see Chapter 3 for detail of the inventory) which include emissions reductions achieved by already-adopted measures. The remaining emissions target is initially defined utilizing air quality modeling that will achieve the ambient air quality standards based on reductions from all sources. Control measures based on existing technologies and advancements are then evaluated to determine their effectiveness in meeting this remaining emissions target. Further modeling analyses are conducted using the actual emissions reductions achieved based on the technology forecast. Ultimately an overall emissions target (i.e., carrying capacity) is determined for achieving the ambient air quality standards and for which controls have been proposed.

Modeling Results

In accordance with U.S. EPA guidelines, the District modeled air quality based on emission reductions achieved due to already-adopted and implemented rules at the federal, state and local levels. This analysis provided the air quality improvements that such programs are projected to offer for the nonattainment area. Future air quality projections for 24-hour PM_{2.5} concentrations as shown in Chapter 5 show an

air quality improvement over time. There are many factors (e.g., current regulations, fleet turnover, etc.) contributing to the downward trend of 24-hour PM_{2.5} levels, but the reductions from already adopted regulations are not enough to meet the attainment date of 2014 at all monitoring stations. The U.S. EPA does allow an area that cannot meet the standard by the attainment date, based on the severity of its nonattainment problem and feasibility of pollution control measures, to request an extension of the initial attainment date for a period of up to five years. As demonstrated in Chapter 5, the inclusion of the control strategy in combination with already adopted measures will enable the region to achieve attainment by 2014.

Sensitivity Analysis

There are five major contributors resulting in the formation of PM_{2.5} including NO_x, SO_x, VOC, directly emitted PM_{2.5}, and ammonia. Various combinations of reductions of these pollutants could provide a path to achieve clean air standards. It is useful to weigh the value in tons per day of emissions reductions relative to ambient concentration improvements of PM_{2.5}, since different pollutant emissions contribute differently to overall PM_{2.5} levels. The Final 2007 AQMP established a set of factors relating regional per ton precursor emissions reductions to microgram per cubic meter improvements of ambient PM_{2.5} for the annual average concentration. The current CMAQ model simulations provide a similar set of factors, but this time related to 24-hour average PM_{2.5}. For 24-hour average PM_{2.5}, the simulations determined that VOC emissions reductions have the lowest benefit in terms of micrograms per cubic meter ambient PM_{2.5} reduced per ton of emissions reduction, a third of NO_x's effectiveness. The analysis further indicated that SO_x emissions were about 7.8 times more effective than NO_x, and that directly emitted PM_{2.5} is approximately 14.8 times more effective than NO_x. It is important to note that the contribution of ammonia emissions is embedded as a component of the SO_x and NO_x factors, since ammonium nitrate and ammonium sulfate are the resultant particulate compounds formed in the ambient chemical process.

Basin-wide and Episodic Short-Term PM_{2.5} Measures

The Basin-wide 24-hour PM_{2.5} attainment strategy is primarily focused on directly-emitted PM_{2.5} and NO_x reductions which can be feasibly achieved by the attainment date of 2014. Direct PM_{2.5} emissions can be substantially reduced by episodically curtailing residential wood burning and open burning from agricultural or prescribed (e.g., brush clearing) sources. NO_x is a precursor to both PM_{2.5} and ozone, and thus NO_x reductions are preferred since they are also needed for ozone. Thus, further

NO_x reductions from RECLAIM facilities are being proposed as a contingency measure if attainment of the 24-hour PM_{2.5} standard is not achieved by 2014. The Basin-wide control strategy also includes a backstop measure for indirect sources at the ports, initiation of control technology assessments, and a measure focused on education and outreach.

8-hour Ozone Strategy

Although the Basin is projected to meet the 2006 24-hour PM_{2.5} standards by the applicable attainment deadlines with the strategy discussed above, significant challenges remain in meeting the federal ozone standards. The next AQMP in 2015 will include a more detailed analysis to demonstrate attainment of the 1997 and 2008 8-hour ozone standards, but it is prudent for both the District and stakeholders to immediately begin development of control strategies for ozone given the looming 2023 deadline. The District will pursue actions that can be implemented over the next two to three years to work towards meeting the 8-hour ozone standards. Ozone reduction strategies and programs need to be continued and accelerated to ensure that the air basin will meet the 8-hour ozone standards by 2024 and 2032. Proposed measures to reduce ozone include emission reductions from coatings, consumer products, and RECLAIM facilities as well as early transitions to cleaner technologies.

To ultimately achieve the ozone ambient air quality standards, significant additional emissions reductions will be necessary from a variety of sources, including those primarily under the jurisdiction of CARB (e.g., on-road motor vehicles, off-road equipment, and consumer products) and U.S. EPA (e.g., aircraft, ships, trains, and pre-empted off-road equipment). Without an adequate and fair-share level of reductions from all sources, the emission reduction burden would unfairly be shifted to sources that have already been doing their part for clean air. Moreover, the District will continue to use its available regulatory authority to further control mobile source emissions where federal or State actions do not meet regional needs.

Overall, the Draft Final 2012 AQMP includes 22 stationary and 17 mobile source measures. The following seven sections discuss the control measures, SIP commitments, overall emission reductions and implementation as outlined below:

- Proposed Short-term PM_{2.5} Control Measures (see Appendix IV-A for detailed descriptions of the District's stationary source control measures)

- Proposed PM_{2.5} Contingency Measures (see Chapter 6 for a detailed discussion of the contingency requirements)
- SCAG's Regional Transportation Strategy and Transportation Control Measures (see Appendix IV-C for detailed descriptions of the regional transportation strategy and control measures)
- Proposed 8-hour Ozone Measures (see Appendix IV-A for detailed descriptions of the District's stationary source control measures and Appendix IV-B for detailed descriptions of the District's mobile source measures)
- District's SIP Emission Reduction Commitment
- Overall Emission Reductions
- Implementation

PROPOSED PM_{2.5} SHORT-TERM CONTROL MEASURES

The proposed short-term PM_{2.5} control measures include stationary source control measures, episodic controls, technology assessments, an indirect source measure and one education measure. As noted earlier in this chapter, a public process to solicit input assisted District staff in developing and proposing feasible control measures and strategies that could be adopted and implemented in the short-term. The assessment considered whether adoption and implementation of control measures could reasonably take place prior to 2014 resulting in attainment of the 2006 24-hour PM_{2.5} standard of 35 µg/m³ by the 2014 attainment year. Each short-term PM_{2.5} control measure was evaluated to determine the potential emission reductions that could be achieved. In some cases, only a range of possible emissions reductions could be determined, and for some others, the magnitude of potential reductions cannot be determined at this time.

Table 4-2 provides a list of the District's short-term PM_{2.5} measures along with the anticipated adoption date, implementation date and emissions reduction. The measures target a variety of source categories: Combustion Sources (CMB), PM Sources (BCM), Indirect Sources (IND), Educational Programs (EDU) and Multiple Component Sources (MCS).

TABLE 4-2

List of District's Adoption/Implementation Dates and Estimated Emission Reductions from Short-Term PM_{2.5} Control Measures

NUMBER	TITLE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
CMB-01	Further NO _x Reductions from RECLAIM [NO _x] –Phase I (Contingency)	2013	2014	2-3 ^a
BCM-01	Further Reductions from Residential Wood Burning Devices [PM _{2.5}]	2013	2013-2014	7.1 ^b
BCM-02	Further Reductions from Open Burning [PM _{2.5}]	2013	2013-2014	4.6 ^c
BCM-03 (formerly BCM-05)	Emission Reductions from Under-Fired Charbroilers [PM _{2.5}]	Phase I – 2013 (Tech Assessment) Phase II - TBD	TBD	1 ^d
BCM-04	Further Ammonia Reductions from Livestock Waste [NH ₃]	Phase I – 2013-2014 (Tech Assessment) Phase II - TBD	TBD	TBD ^e
IND -01 (formerly MOB-03)	Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources [NO _x , SO _x , PM _{2.5}]	2013	12 months after trigger	N/A ^f
EDU-01 (formerly MCS-02, MCS-03)	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]	Ongoing	Ongoing	N/A ^f
MCS-01 (formerly MCS-07)	Application of All Feasible Measures Assessment [All Pollutants]	Ongoing	Ongoing	TBD ^e

- Emission reductions are included in the SIP as a contingency measure.
- Winter average day reductions based on episodic conditions and 75 percent compliance rate.
- Reductions based on episodic day conditions.
- Will submit into SIP once technically feasible and cost effective options are confirmed.
- TBD are reductions to be determined once the technical assessment is complete, and inventory and control approach are identified.
- N/A are reductions that cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs) or if the measure is designed to ensure reductions that have been assumed to occur will in fact occur.

Each control measure type relies on a number of control methods. Table 4-3 provides the types of proposed short-term measures and their typical corresponding control methods.

TABLE 4-3
Proposed Short-Term Measure Control Methods

SOURCE CATEGORY	CONTROL METHOD
Combustion Sources	<ul style="list-style-type: none"> • Add-On Controls • Market Incentives • Process Improvement • Improved Energy Efficiency
Best Available Control Measures for Fugitive Ammonia Sources	<ul style="list-style-type: none"> • Best Management Practices • Best Available Control Technology • Process Improvement
Multiple Component Sources	<ul style="list-style-type: none"> • Geographic Controls • Process Modifications and Improvements • Add-On Controls • Best Management Practices • Best Available Control Technology • Market Incentives • Energy Efficiency and Conservation
Indirect Source	<ul style="list-style-type: none"> • Emission Control Plans • Contractual Requirements • Tariffs, Incentives/Disincentives
Educational Programs	<ul style="list-style-type: none"> • Increased Awareness • Technical Assistance

The following text provides a brief description of the District's short-term measures.

Combustion Sources

This category includes a control measure that further reduces NO_x emissions from RECLAIM facilities.

CMB-01 – FURTHER NO_x REDUCTIONS FROM RECLAIM (PHASE I):

This proposed control measure is a contingency measure to be automatically triggered if the 24-hour PM_{2.5} standard is not met by the 2014 attainment date. The control measure will seek further reductions of 2 tpd of NO_x allocations if triggered. In addition, staff would seek to identify appropriate approaches during rulemaking to

implement the allocation shaving methodology. The control measure has the ability to produce co-benefits in the reduction of PM_{2.5} and ozone.

PM Sources

This category includes four control measures, including episodic curtailment of residential wood burning and opening burning, PM_{2.5} emission reductions from under-fired charbroilers and ammonia emission reductions from livestock waste. The under-fired charbroiler measure has been carried over from the 2007 AQMP.

BCM-01 - FURTHER REDUCTIONS FROM RESIDENTIAL WOOD BURNING DEVICES: The purpose of this measure would be to seek further PM_{2.5} emissions reductions from residential wood burning fireplaces and wood stoves whenever key areas in the South Coast Air Basin are forecast to approach the federal 24-hour PM_{2.5} standard. A review of other California air district regulations has indicated that the most appropriate amendment to the existing AQMD wood smoke control program would be to decrease the mandatory wood burning curtailment forecast threshold from 35 µg/m³ to a more conservative 30 µg/m³. In addition to the existing sub-regional curtailment program of Rule 445 (based on areas forecast to exceed the existing PM_{2.5} standard), this measure would implement a curtailment that would apply Basin-wide whenever a PM_{2.5} level of greater than 30 µg/m³ is forecast at any monitoring station, which has recorded violations of the design value for the current PM_{2.5} 24-hour standard of 35 µg/m³ for either of the two previous three-year design value periods. Lowering the wood burning curtailment forecast threshold and applying the curtailment to the entire Basin when triggered could potentially reduce Basin-wide ambient PM_{2.5} concentrations on these episodic no-burn days by about 7.1 tons per winter day (assuming 75% rule effectiveness).

BCM-02 - FURTHER REDUCTIONS FROM OPEN BURNING: Rule 444 outlines the criteria and guidelines for agricultural and prescribed burning, as well as training burns, to minimize PM emissions and smoke in a manner that is consistent with state and federal laws. Agricultural burning is open burning of vegetative materials produced from the growing and harvesting of crops. Prescribed burning is a planned open burning of vegetative materials, usually conducted by a fire protection agency and/or department of forestry, to promote a healthier habitat for plants and animals, to prevent plant disease and pests, and to reduce the risk of wild fires. Training burns are hands-on instructional events conducted by fire protection agencies on methods of preventing and/or suppressing fire. Rule 444 currently contains requirements that a no-burn day may be called under a combination of

geographical, meteorological, and air quality conditions. This control measure would potentially increase the number of no-burn days by establishing an additional criteria for no-burn during episodic days as described in control measure BCM-01 by implementing a curtailment that would apply Basin-wide whenever a PM_{2.5} level of greater than 30 µg/m³ is forecast at any monitoring station which has recorded violations of the design value for the current PM_{2.5} 24-hour standard of 35 µg/m³ for either of the two previous three-year design value periods. Enhancing the open burning restrictions with this new threshold criteria and applying a curtailment to the entire Basin could potentially reduce Basin-wide ambient PM_{2.5} concentrations on these episodic no-burn days by about 4.6 tons per winter day. Since the burning would likely be shifted to other days, the total annual emissions would remain the same, but would not occur on days where high PM_{2.5} levels are forecast.

BCM-03 - EMISSION REDUCTIONS FROM UNDER-FIRED CHARBROILERS: This proposed measure seeks emission reductions by potentially requiring new and/or existing medium to large volume restaurants with under-fired charbroilers to install control devices meeting a minimum efficiency requirement. Under-fired charbroilers are responsible for the majority of emissions from restaurant operations – 84 percent of PM and 71 percent of VOC emissions. Several control options are currently being evaluated and tested including electrostatic precipitators (ESP), high efficiency particulate arresting (HEPA) filters, wet scrubbers, and thermal oxidizers. Under-fired charbroilers are one of the largest unregulated sources of directly emitted PM. A technical assessment of potential control technologies is currently ongoing at University of California, Riverside (CE-CERT), to evaluate the efficiency and the cost-effectiveness of various control devices for the capture and control of filterable and/or condensable forms of PM from under-fired charbroilers. The Bay Area AQMD adopted a rule for commercial cooking equipment that controls both chain-driven and under-fired charbroilers. The Bay Area measure will be evaluated to meet the all feasible measures requirement. Technical and economic feasibility, as well as affordability of controls, particularly for existing restaurants relative to retrofit installation and operation/maintenance, will be considered in conjunction with any future rule development to establish requirements for under-fired charbroilers.

BCM-04 – FURTHER AMMONIA REDUCTIONS FROM LIVESTOCK WASTE: This measure seeks to reduce ammonia emissions from livestock operations with emphasis on dairies. Existing Rule 1127 – Emission Reductions from Livestock Waste requires best management practices for dairies and specific

requirements regarding manure removal, handling, and composting; however, the rule does not focus on fresh manure, which is one of the largest dairy sources of ammonia emissions. An assessment will be conducted to evaluate the use of sodium bisulfate (SBS) at local dairies to evaluate the technical and economic feasibility of its application, as well as potential impacts to ground water, and the health and safety of both workers and dairy stock. Reducing pH level in manure through the application of acidulant additives (acidifier), such as SBS, is one of the potential mitigations for ammonia. SBS is currently being considered for use in animal housing areas where high concentrations of fresh manure are located. Research indicates that best results occur when SBS is used on “hot spots”. SBS can also be applied to manure stock piles and at fencelines, and upon scraping manure to reduce ammonia spiking from the leftover remnants of manure and urine. SBS application may be required seasonally or episodically during times when high ambient PM_{2.5} levels are forecast.

Multiple Component Sources

There is one short-term control measure for all feasible measures.

MCS-01: APPLICATION OF ALL FEASIBLE MEASURES ASSESSMENT:

This control measure is to address the state law requirement for all feasible measures for ozone. Existing rules and regulations for pollutants such as VOC, NO_x, SO_x and PM reflect current best available retrofit control technology (BARCT). However, BARCT continually evolves as new technology becomes available that is feasible and cost-effective. Through this proposed control measure, the District would commit to the adoption and implementation of the new retrofit control technology standards. Finally, staff will review actions taken by other air districts for applicability in our region.

Indirect Sources

This category includes a proposed control measure carried over from the 2007 AQMP (formerly MOB-03) that establishes a backstop measure for indirect sources of emissions at ports.

IND-01- BACKSTOP MEASURE FOR INDIRECT SOURCES OF EMISSIONS FROM PORTS AND PORT-RELATED SOURCES: The goal of this measure is to ensure that NO_x, SO_x and PM_{2.5} emissions reductions from port-related sources are sufficient to attain the 24-hr federal PM_{2.5} ambient air quality

standard. If emission levels projected to result from the current regulatory requirements and voluntary reduction strategies specified by the Ports are not realized, the 24-hr federal PM_{2.5} ambient air quality standard may not be achieved. This control measure is designed to ensure that the necessary emission reductions from port-related sources projected in the 2012 AQMP milestone years are achieved or if it is later determined through a SIP amendment that additional region-wide reductions are needed due to the change in Basin-wide carrying capacity for PM_{2.5} attainment. In this case, the ports will be required to further reduce their emissions on a “fair-share” basis.

Educational Programs

There is one proposed educational program within this category.

EDU-01: FURTHER CRITERIA POLLUTANT REDUCTIONS FROM EDUCATION, OUTREACH AND INCENTIVES: This proposed control measure seeks to provide educational outreach and incentives for consumers to contribute to clean air efforts. Examples include the usage of energy efficient products, new lighting technology, “super compliant” coatings, tree planting, and the use of lighter colored roofing and paving materials which reduce energy usage by lowering the ambient temperature. In addition, this proposed measure intends to increase the effectiveness of energy conservation programs through public education and awareness as to the environmental and economic benefits of conservation. Educational and incentive tools to be used include social comparison applications (comparing your personal environmental impacts with other individuals), social media, and public/private partnerships.

PROPOSED PM_{2.5} CONTINGENCY MEASURES

Pursuant to CAA section 172(c)(9), contingency measures are emission reduction measures that are to be automatically triggered and implemented if an area fails to attain the national ambient air quality standard by the applicable attainment date, or fails to make reasonable further progress (RFP) toward attainment. Further detailed descriptions of contingency requirements can be found in Chapter 6 – Clean Air Act Requirements. As discussed in Chapter 6 and consistent with U.S. EPA guidance, the District is proposing to use excess air quality improvement from the proposed control strategy, as well as potential NO_x reductions from CMB-01 listed above, to demonstrate compliance with this federal requirement.

SCAG’s REGIONAL TRANSPORTATION STRATEGY AND TRANSPORTATION CONTROL MEASURES

The Southern California Association of Governments (SCAG), the Metropolitan Planning Organization (MPO) for Southern California, is mandated to comply with federal and state transportation and air quality regulations. Federal transportation law authorizes federal funding for highway, highway safety, transit, and other surface transportation programs. The federal CAA establishes air quality standards and planning requirements for various criteria air pollutants.

Transportation conformity is required under CAA Section 176(c) to ensure that federally supported highway and transit project activities “conform to” the purpose of the SIP. Conformity currently applies to areas that are designated non-attainment, and those re-designated to attainment after 1990 (“maintenance areas” with plans developed under CAA Section 175[A]) for the specific transportation-related criteria pollutants. Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS. The transportation conformity regulation is found in 40 CFR Part 93.

Pursuant to California Health and Safety Code section 40460, SCAG has the responsibility of preparing and approving the portions of the AQMP relating to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. The District combines its portion of the Plan with those prepared by SCAG.

The transportation strategy and transportation control measures (TCMs), included as part of the 2012 PM_{2.5} AQMP and SIP for the South Coast Air Basin, are based on SCAG’s adopted 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and 2011 Federal Transportation Improvement Program (FTIP). This was developed in consultation with federal, state and local transportation and air quality planning agencies and other stakeholders.

The Regional Transportation Strategy and Transportation Control Measures portion of the 2012 AQMP/SIP consists of the following three related sections.

Section I. Linking Regional Transportation Planning to Air Quality Planning

As required by federal and state laws, SCAG is responsible for ensuring that the regional transportation plan, program, and projects are supportive of the goals and objectives of AQMPs/SIPs. SCAG is also required to develop demographic projections and a regional transportation strategy and control measures for the AQMPs/SIPs.

The RTP/SCS, updated every four years, is a long-range regional transportation plan that provides a vision for transportation investments throughout the SCAG Region. The 2012-2035 RTP/SCS also integrates land use and transportation planning to achieve regional greenhouse gas (GHG) reduction targets set by ARB pursuant to SB375.

SCAG also develops the biennial FTIP. The FTIP is a multimodal program of capital improvement projects to be implemented over a six year period. The FTIP implements the programs and projects in the RTP/SCS.

Section II. Regional Transportation Strategy and Transportation Control Measures

The SCAG Region faces daunting mobility, air quality, and transportation funding challenges. Under the guidance of the goals and objectives adopted by SCAG's Regional Council, the 2012-2035 RTP/SCS was developed to provide a blueprint to integrate land use and transportation strategies to help achieve a coordinated and balanced regional transportation system. The 2012-2035 RTP/SCS represents the culmination of more than two years of work involving dozens of public agencies, 191 cities, hundreds of local, county, regional and state officials, the business community, environmental groups, as well as various nonprofit organizations. The 2012-2035 RTP/SCS was formally adopted by the SCAG Regional Council on April 4, 2012.

The 2012-2035 RTP/SCS contains a host of improvements to every component of the regional multimodal transportation system including:

- Active transportation (non-motorized transportation, such as biking and walking)
- Transportation demand management (TDM)
- Transportation system management (TSM)
- Transit

- Passenger and high-speed rail
- Goods movement
- Aviation and airport ground access
- Highways
- Arterials
- Operations and maintenance

Included within these transportation system improvements are TCM projects that reduce vehicle use or change traffic flow or congestion conditions. TCMs include the following three main categories of transportation improvement projects and programs:

- High occupancy vehicle (HOV) measures,
- Transit and systems management measures, and
- Information-based transportation strategies.

New to this cycle of the RTP is the inclusion of the SCS as required by SB 375. The primary goal of the SCS is to provide a vision for future growth in Southern California that will decrease per capita GHG emissions from passenger vehicles. However, the strategies contained in the 2012-2035 RTP/SCS will produce benefits for the region far beyond simply reducing GHG emissions. The SCS integrates the transportation network and related strategies with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. The regional vision of the SCS maximizes current voluntary local efforts that support the goals of SB 375. The SCS focuses the majority of new housing and job growth in high-quality transit areas and other opportunity areas on existing main streets, in downtowns, and commercial corridors, resulting in an improved jobs-housing balance and more opportunity for transit-oriented development. In addition, SCAG is a strategic partner in a regional effort to accelerate fleet conversion to near-zero and zero-emission transportation technologies, including planning for the expansion of alternative-fuel infrastructure to accommodate the anticipated increase in alternative fueled vehicles.

Section III. Reasonably Available Control Measure (RACM) Analysis for Transportation Control Measures

As required by the CAA, a RACM analysis must be included as part of the overall control strategy in the AQMP/SIP to ensure that all potential control measures are evaluated for implementation and that justification is provided for those measures

that are not implemented. Appendix IV-C contains the RACM TCM component for the Basin's 24-hour PM_{2.5} control strategy. In accordance with U.S. EPA procedures, this analysis considers TCMs in the 2012-2035 RTP/SCS, measures identified by the CAA, and relevant measures adopted in other non-attainment areas of the country. Based on this comprehensive review, it is determined that the TCMs being implemented in the Basin are inclusive of all TCM RACM. None of the candidate measures reviewed and determined to be infeasible meets the criteria for RACM implementation.

The emission benefits associated with the RTP/SCS are reflected in the 2012 AQMP projected emissions. The transportation strategy is estimated to reduce 0.4 ton per day of NO_x and 0.1 ton per day VOC in 2014. The estimated emissions benefits of future TCM projects in 2014 are reductions of 0.7 ton per day of NO_x, 0.3 ton per day of VOC, and 0.1 ton per day of PM_{2.5}.

For a detailed discussion of the regional transportation strategy, refer to Appendix IV-C: Regional Transportation Strategy and Control Measures.

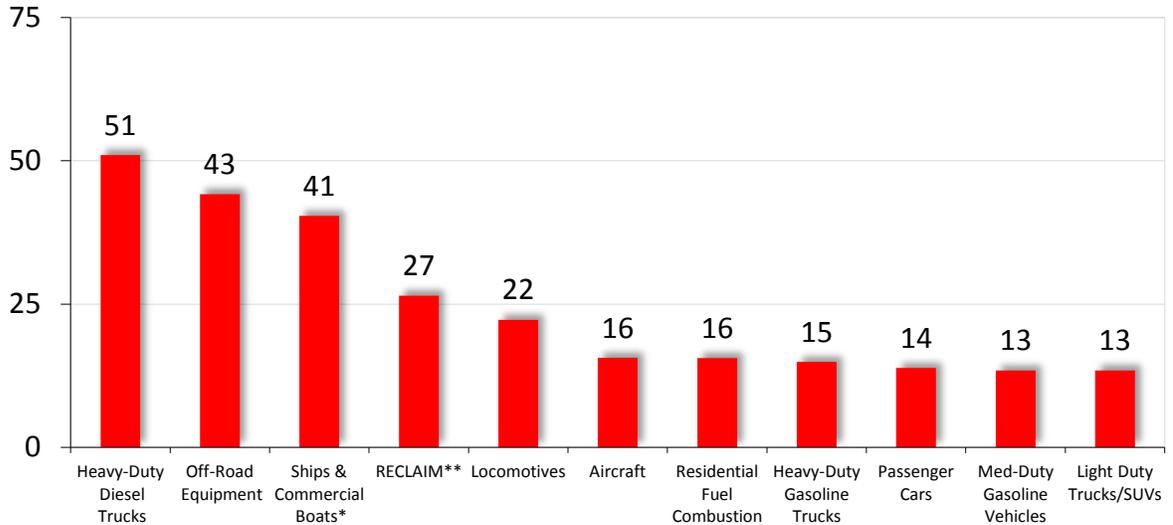
PROPOSED 8-HOUR OZONE MEASURES (TO REDUCE EMISSIONS ASSOCIATED WITH CAA SECTION 182(e)(5) MEASURES)

The 2007 State Implementation Plan (SIP) for the 8-hour ozone NAAQS contains commitments for emission reductions that rely on advancement of technologies, as authorized under Section 182(e)(5) of the federal Clean Air Act. These measures, which have come to be known as the "black box," account for a substantial portion of the NO_x emission reductions needed to attain the federal ozone standards – over 200 tons/day. The deadlines to reduce ozone concentrations in the region are 2023 (to attain the 80 ppb NAAQS), and 2032 (to attain 75 ppb NAAQS)¹. Attaining these standards will require substantial reductions in emissions of NO_x well beyond reductions resulting from current rules, programs, and commercially available technologies. Given the relatively large size of the "black box" measures, it is important to continue to reduce the reliance on Section 182(e)(5) long-term emissions reductions as ozone attainment dates approach. To this end, all feasible

¹ The attainment deadline for the 75 ppb standard (adopted in 2008) for an extreme non-attainment area is December 31, 2032.

ozone control measures are included in this Draft Final 2012 AQMP as an update to the previously approved 2007 8-hour ozone SIP.

Mobile sources emit over 80 percent of regional NO_x and therefore must be the largest part of the solution. As provided in Figure 4-1, on-road truck categories are projected to comprise the single largest contributor to regional NO_x in 2023. Other equipment involved in goods movement, such as marine vessels, locomotives and aircraft, are also substantial NO_x sources.



*Oceangoing vessels = 32 tons/day

**RECLAIM: 320 largest stationary sources, including all refineries and power plants

FIGURE 4-1

Top NO_x Emissions Categories and Corresponding NO_x Emissions (tons per day) in 2023 in the South Coast Air Basin, Annual Average Day

Figure 4-2 shows projections indicating that the region must reduce regional NO_x emissions by about 65% by 2023, and 75% by 2032, to attain the 8-hour ozone NAAQS as required by federal law.

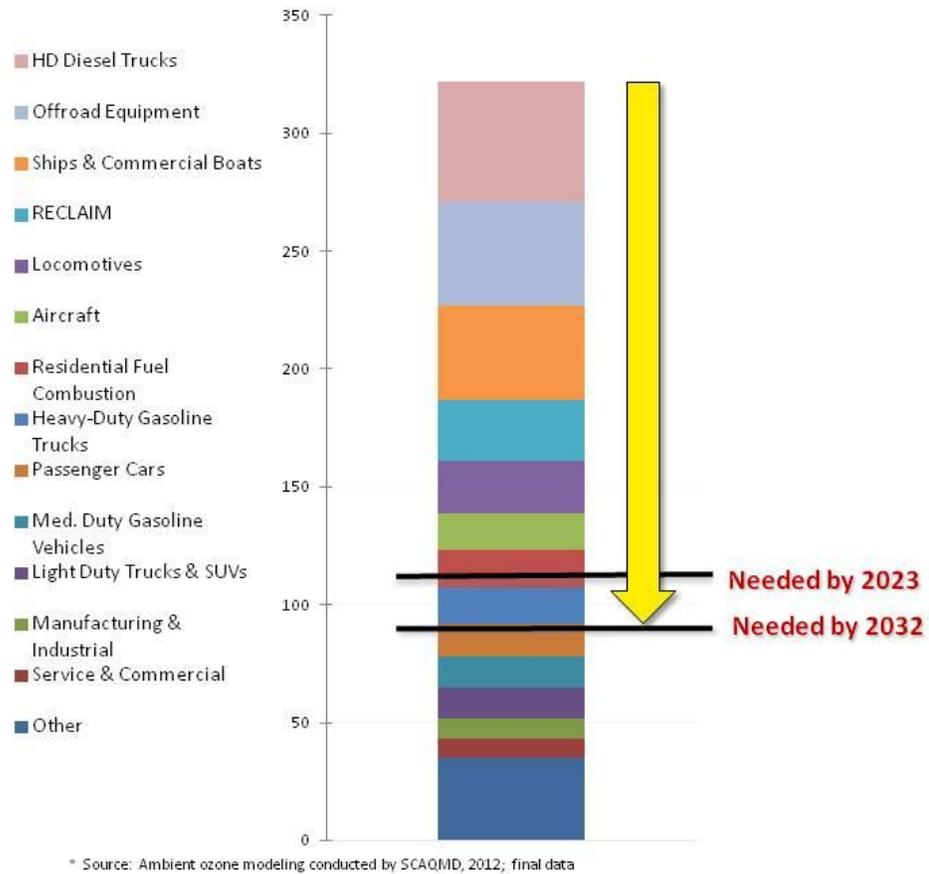


FIGURE 4-2
 Needed NOx Emission Reductions to Achieve
 Federal 8-Hour Ozone Ambient Air Quality Standards

Since most significant emission sources are already controlled by over 90%, attainment of the ozone standards will require broad deployment of zero- and near-zero² emission technologies in the 2023 to 2032 timeframe. On-land transportation sources such as trucks, locomotives, and cargo handling equipment have technological potential to achieve zero- and near-zero emission levels. Current and potential technologies include hybrid-electric, battery-electric, and hydrogen fuel cell

² The term “near-zero emissions” refers to emissions approaching zero and will be delineated for individual source categories through the process of developing the Air Quality Management Plan/State Implementation Plan and subsequent control measures. Based on current analyses, on-land transportation sources will need to achieve zero emissions where possible, and otherwise will need to be substantially below adopted emission standards — including standards with future effective dates. Near-zero emissions technologies can help meet this need, particularly if they support a path toward zero emissions (e.g. electric/fossil fuel hybrids with all-electric range).

on-road vehicle technologies. New types of hybrids could also serve long-term needs while providing additional fuel diversity. These could include, for example, natural gas-electric hybrid technologies for on-road and other applications, particularly if coupled with improved after-treatment technologies. Equipment powered solely by alternative fuels such as natural gas may also play a long-term role in some applications, if those applications are found to pose technological barriers to achieving zero or near-zero emissions. Even in such applications, however, substantial additional emission reductions will be needed through development of new, advanced after-treatment technologies. In addition, alternative fuels will likely play a transitional near-term role. Alternative fuels such as natural gas have historically helped the region make progress toward attaining air quality standards, and -- while not achieving zero or near-zero NO_x emission levels -- they are generally cleaner than conventional fuels. Given the region's need to attain air quality standards in a few short years, alternative fueled engines will continue to play a role. Finally, we emphasize that air quality regulatory agencies have traditionally set policies and requirements that are performance based and technology and fuel neutral -- a policy that the District intends to continue. In short, all technologies and fuels should be able to compete on equal footing to meet environmental needs.

While there has been much progress in developing and deploying transportation technologies with zero- and near-zero emissions (particularly for light-duty vehicles and passenger transit), additional technology development, demonstration and commercialization will be required prior to broad deployment in freight and other applications. This section describes a path to evaluate, develop, demonstrate, fund and deploy such technologies for land-based transportation sources. It also proposes near-term measures to accelerate fleet turnover to the lowest emission units, and require deployment of zero-emission technologies where most feasible.

The District staff believes that a combination of regulatory actions and public funding is the most effective means of achieving these emission reductions. Voluntary incentive programs such as the Carl Moyer Program can help to accelerate turnover to the cleanest commercially available equipment. A majority of the on-road and off-road measures proposed are based on existing funding programs implemented by the District or the California Air Resources Board. However, several of the existing funding programs will sunset in the 2014 – 2015 timeframe. Continued funding beyond 2015 will be needed to reduce the emissions associated with the black box. Developing, demonstrating and deploying new technologies will require public/private partnerships and, in some cases, regulatory actions.

The measures described in this section are a relatively small down payment on the total emission reductions needed to attain the current NAAQS for ozone. The measures proposed in this section and further discussed in Appendix IV-A and IV-B are feasible steps that must commence in the near-term to establish a path toward a broader transition to the technologies that will be needed to attain federal air quality standards. Between now and 2015, the additional measures needed to attain both the 75 and 80 ppb ozone NAAQS will be fleshed out in greater detail as required under the federal Clean Air Act as part of the next AQMP revision (see Chapters 5 and 6 for further discussions). Given the magnitude of needed emission reductions, and the time remaining until attainment deadlines, it is important that progress and momentum to identify, develop, and deploy needed technologies be sustained and accelerated.

The District staff recognizes these are very difficult policy choices the Basin is facing. Transitioning over the next 10 to 20 years to cleaner transportation technologies will involve major costs and effects on the economy. However, adopting sufficient plan measures to attain the ozone air quality standard by 2024 is required by federal law and therefore, failing to do so is not an acceptable public policy. Such failure would also risk adverse health consequences highlighted in recent health studies, not to mention the potential adverse economic impacts on the region due to potential federal sanctions. The following sections summarize the measures to help reduce the emissions associated with the “black box” (Section 182(e)(5)) measures. More detailed discussions are provided in Appendix IV-A and IV-B.

Proposed Stationary Source 8-hour Ozone Measures

The proposed stationary source ozone measures are designed to assist in the attainment of the 8-hour ozone standard. The measures target a number of source categories including Coatings and Solvents (CTS), Combustion Sources (CMB), Petroleum Operations and Fugitive VOC Emissions (FUG), Multiple Component Sources (MCS), Incentive Programs (INC) and Educational Programs (EDU). There are 16 stationary source measures with the majority anticipated to be adopted in the next 2-3 years and implemented after 2015. Table 4-4 provides a list of the District’s 8-hour ozone measures for stationary sources along with the anticipated adoption date, implementation date and emission reduction.

TABLE 4-4

List of the District’s Adoption/Implementation Dates and Estimated Emission Reductions from Stationary Source 8-hour Ozone Measures

NUMBER	TITLE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
CTS-01	Further VOC Reductions from Architectural Coatings (R1113) [VOC]	2015 - 2016	2018 – 2020	2-4
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]	2013 - 2016	2015 – 2018	1-2
CTS-03	Further VOC Reductions from Mold Release Products [VOC]	2014	2016	0.8 – 2
CTS-04	Further VOC Reductions from Consumer Products [VOC]	2013 - 2015	2018	N/A ^a
CMB-01	Further NOx Reductions from RECLAIM [NOx] – Phase II	2015	2020	1-2 ^b
CMB-02	NOx Reductions from Biogas Flares [NOx]	2015	Beginning 2017	Pending ^c
CMB-03	Reductions from Commercial Space Heating [NOx]	Phase I – 2014 (Tech Assessment) Phase II - 2016	Beginning 2018	0.18 by 2023 0.6 (total)
FUG-01	VOC Reductions from Vacuum Trucks [VOC]	2014	2016	1 ^d
FUG-02	Emission Reduction from LPG Transfer and Dispensing [VOC] – Phase II	2015	2017	1-2
FUG-03	Further Reductions from Fugitive VOC Emissions [VOC]	2015 -2016	2017-2018	1-2
MCS-01	Application of All Feasible Measures Assessment [All Pollutants]	Ongoing	Ongoing	TBD ^e
MCS-02	Further Emission Reductions from Greenwaste Processing (Chipping and Grinding Operations not associated with composting) [VOC]	2015	2016	1 ^d

TABLE 4-4 (concluded)

List of the District’s Adoption/Implementation Dates and Estimated Emission Reductions from Stationary Source 8-hour Ozone Measures

NUMBER	TITLE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
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MCS-03 (formerly MCS-06)	Improved Start-up, Shutdown and Turnaround Procedures [All Pollutants]	Phase I – 2012 (<i>Tech Assessment</i>) Phase II - TBD	Phase I – 2013 (<i>Tech Assessment</i>) Phase II – TBD	TBD ^e
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx]	2014	Within 12 months after funding availability	TBD ^e
INC-02	Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies [All Pollutants]	2014-2015	Beginning 2015	N/A ^a
EDU-01 (formerly MCS-02, MCS-03)	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]	Ongoing	Ongoing	N/A ^a

- a. N/A are reductions that cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs) or if the measure is designed to ensure reductions that have been assumed to occur will in fact occur.
- b. If Control Measure CMB-01, RECLAIM Phase I, contingency measure emission reductions are not triggered and implemented, Phase II will target a cumulative 3-5 TPD of NOx emission reductions.
- c. Pending because emission reductions will be provided prior to the Final Draft.
- d. Reductions submitted in SIP once emission inventories are included in the SIP.
- e. TBD are reductions to be determined once the inventory and control approach are identified.

Each control measure type typically relies on a number of control methods. Table 4-5 provides the types of proposed short-term measures and their typical corresponding control methods.

TABLE 4-5
Proposed Short-Term Measure Control Methods

SOURCE CATEGORY	CONTROL METHOD
Coatings and Solvents	<ul style="list-style-type: none"> • Reformulation • Higher Transfer Efficiency • Process Improvements • Add-On Controls • Alternative Coating and Solvent Application Methods • Market Incentives • Improved Housekeeping Practices
Combustion Sources	<ul style="list-style-type: none"> • Add-On Controls • Market Incentives • Process Improvement • Improved Energy Efficiency
Petroleum Operations and Fugitive VOC Emissions	<ul style="list-style-type: none"> • Process Modifications • Add-On Controls Systems • Market Incentives • Enhanced Inspection and Maintenance • Improved Vapor Recovery Systems • Good Management Practices
Multiple Component Sources	<ul style="list-style-type: none"> • Process Modifications and Improvements • Add-On Controls • Best Management Practices • Best Available Control Technology • Market Incentives • Energy Efficiency and Conservation
Incentive Programs	<ul style="list-style-type: none"> • Funding • Investment in Clean Technologies • Private/Public Partnerships
Educational Programs	<ul style="list-style-type: none"> • Increased Awareness • Technical Assistance

The following text provides a brief description of the proposed stationary source 8-hour ozone measures.

Coatings and Solvents

The category of coatings and solvents is primarily targeted at reducing VOC emissions from these VOC-containing products. This category includes four proposed control measures that are based on additional emission reductions from architectural coatings; miscellaneous coatings, solvents, adhesives and lubricants; mold release products; and consumer products with low vapor pressure used by commercial and institutional facilities regulated by CARB.

CTS-01 – FURTHER VOC REDUCTIONS FROM ARCHITECTURAL COATINGS: The District adopted Rule 1113 – Architectural Coatings, in 1977 and it has since undergone numerous amendments. This proposed control measure seeks to reduce the VOC emissions from large volume coating categories such as flat, non-flat and primer, sealer, undercoaters (PSU) and from phasing out the currently exempt use of high-VOC architectural coatings sold in one liter containers or smaller. Additional emission reductions could be achieved from the application of architectural coatings by use of application techniques with greater transfer efficiency. Such transfer efficiency improvements could be achieved through the use of a laser paint targeting system, which has been shown to improve transfer efficiency on average by 30% over equipment not using a targeting system, depending on the size, shape and configuration of the substrate. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule.

CTS-02 – FURTHER VOC REDUCTIONS FROM MISCELLANEOUS COATINGS, ADHESIVES, SOLVENTS, AND LUBRICANTS: This control measure seeks VOC emission reductions by focusing on select coating, adhesive, solvent and lubricant categories by further limiting the allowable VOC content in formulations. Examples of the categories to be considered include but are not limited to, coatings used in aerospace applications; adhesives used in a variety of sealing applications; solvents for graffiti abatement activities; and lubricants used as metalworking fluids to reduce heat and friction to prolong life of the tool, improve product quality and carry away debris. Reductions would be achieved by lowering the VOC content of the coatings, adhesives and lubricants. For solvents, reductions could be achieved with the use of alternative low-VOC products or non-VOC product/equipment at industrial facilities. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule.

CTS-03 – FURTHER VOC REDUCTION FROM MOLD RELEASE

PRODUCTS: Metal, fiberglass, composite and plastic products are often manufactured using molds which form the product into a particular configuration. Mold release agents are used to ensure that the parts, as they are made, can be released easily and quickly from the molds. These agents often contain VOC solvent carriers and may also contain toxic components like toluene and xylene. Mold release products are also used for concrete stamping operations to keep the mold from adhering to the fresh concrete. Residential and commercial concrete stamping is a rapidly growing industry, and overall VOC emissions are estimated to be significant. This control measure seeks to reduce emissions from mold release products on metal, fiberglass, composite and plastic products, as well as concrete stamping operations, by requiring the use of low-VOC mold release products.

CTS-04 - FURTHER VOC REDUCTION FROM CONSUMER PRODUCTS:

This measure seeks to revise the exemption for low vapor pressure solvents in CARB's consumer products regulation, which exempts low vapor pressure volatile organic compounds (LVP-VOC) from counting towards the compliance obligation for consumer product VOC limits. Recent testing conducted by the District on institutional cleaners found that traditionally formulated consumer products may contain significant amounts of LVP-VOC solvents. In some cases, such as certain multipurpose solvents, the products were 100 percent LVP-VOC solvents. Further testing indicated that many of the LVP-VOC solvents evaporate nearly as quickly as the traditional solvents they were meant to replace and have Maximum Incremental Reactivity (MIR) values well above the threshold considered to be non-reactive, currently based on ethane. Therefore, an evaluation of the continued need for use of LVP-VOC solvents in certain categories is warranted.

Combustion Sources

This category includes three proposed measures for stationary combustion equipment. There is one control measure that further reduces NO_x emissions from RECLAIM facilities. A second proposed measure seeks a reduction from biogas flares, and a third proposed control measure seeks to reduce NO_x emissions from commercial space heaters.

CMB-01 – FURTHER NOX REDUCTIONS FROM RECLAIM (PHASE II):

This proposed control measure will seek further reductions of 1-2 tpd in NO_x allocations by the year 2020. This phase of control is to implement periodic BARCT evaluation as required under the state law. If Control Measure CMB-01, RECLAIM

Phase I, contingency measure emission reductions are not triggered and implemented, Phase II will target a cumulative 3-5 TPD of NO_x emission reductions. The control measure has the ability to produce co-benefits in the reduction of PM_{2.5} and ozone.

CMB-02 – NO_x REDUCTIONS FROM BIOGAS FLARES: There are no source-specific rules regulating NO_x emissions from biogas flares. Flare NO_x emissions are regulated through new source review and BACT. This control measure proposes that, consistent with the all feasible measures measure, older biogas flares be gradually replaced with flares that meet current BACT. Strategies that minimize flaring and associated emissions can also be considered as alternative control options.

CMB-03 – REDUCTIONS FROM COMMERCIAL SPACE HEATING: This control measure applies to natural gas-fired commercial space heaters used for comfort heating. SCAQMD Rule 1111 - NO_x Emissions from Natural Gas-Fired Fan Type Central Furnaces, regulates space heaters with input rates less than 175,000 Btu/hr. This measure proposes to establish a NO_x emission limit for new space heaters for commercial applications, which can be achieved through the use of low-NO_x burners or other technologies.

Petroleum Operations and Fugitive VOC Emissions

This category pertains primarily to operations and materials associated with the petroleum, chemical, and other industries. Within this category, there is one proposed control measure targeting fugitive VOC emissions with improved leak detection and repair. Other proposed measures include reductions from vacuum truck venting, and propane transfer and dispensing.

FUG-01 – VOC REDUCTIONS FROM VACUUM TRUCKS: This control measure seeks to reduce emissions from the venting of vacuum trucks. Emissions from such operations can be further reduced through the utilization of control technologies, including but not limited to, carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers and liquid scrubbers. Additionally, implementation of a leak detection and repair (LDAR) program may further reduce fugitive emissions.

FUG-02 - EMISSION REDUCTION FROM LPG TRANSFER AND DISPENSING: The District recently adopted Rule 1177 - Liquefied Petroleum Gas (LPG) Transfer and Dispensing (June 2012). The rule requires use of low-emission

fixed liquid level gauges or equivalent alternatives during filling of LPG-containing tanks and cylinders, use of low-emission connectors, routine leak checks and repairs of LPG transfer and dispensing equipment. The purpose of this control measure is to reduce fugitive VOC emissions associated with the transfer and dispensing of LPG by expanding rule applicability to include LPG transfer and dispensing at currently exempted facilities such as refineries, marine terminals, natural gas processing plants and pipeline transfer stations, as well as facilities that conduct fill-by-weight techniques.

FUG-03 – FURTHER REDUCTIONS FROM FUGITIVE VOC EMISSIONS:

This control measure seeks to broaden the applicability of improved leak detection and repair (LDAR) programs to remove additional fugitive VOC emissions. Areas for further study may include, but are not limited to, Rule 1142 - Marine Vessel Tank Operations, and wastewater separators. This control measure would explore the opportunity of incorporating a recently developed advanced optical gas imaging technology to detect leaks (Smart LDAR) to more easily identify and repair leaks in a manner that is less time consuming and labor intensive. Additionally, vapor recovery systems are currently required to be 95% control efficient. In an effort to further reduce emissions from these operations, this control measure would explore opportunities and the feasibility of further improving the collection/control efficiency of existing control systems resulting in additional VOC reductions.

Multiple Component Sources

There are a total of three stationary source 8-hour ozone measures proposed in this category. The first measure seeks reductions of all feasible measures after such an assessment is made. Another measure seeks further emission reductions from greenwaste processing, which is chipping and grinding not associated with composting. The third measure seeks to minimize emissions during equipment startup and shutdown and to reduce emissions by applying the state requirement of all feasible control measures.

MCS-01 – APPLICATION OF ALL FEASIBLE MEASURES ASSESSMENT:

This control measure is to address the state law requirement for all feasible measures for ozone. Existing rules and regulations for pollutants such as VOC, NO_x, SO_x and PM reflect current best available retrofit control technology (BARCT). However, BARCT continually evolves as new technology becomes available that is feasible and cost-effective. Through this proposed control measure, the District would commit to the adoption and implementation of the new retrofit control technology

standards. Finally, staff will review actions taken by other air districts for applicability in our region.

MCS-02 - FURTHER EMISSION REDUCTIONS FROM GREENWASTE PROCESSING (CHIPPING AND GRINDING NOT ASSOCIATED WITH COMPOSTING): Chipped or ground greenwaste and/or wood waste has a potential to emit VOCs when being stockpiled or land-applied for various purposes. Chipping and grinding is a process to mechanically reduce the size of greenwaste and wood waste. The District rules currently establish best management practices (BMPs) for greenwaste composting and related operations under Rule 1133.1 – Chipping and Grinding Activities, and Rule 1133.3 – Greenwaste Composting Operations. During rule development, stakeholders raised the need to develop a holistic approach to identifying and accounting for emissions from all greenwaste streams and reducing potential emissions from greenwaste material handling operations at chipping and grinding facilities and other related facilities, and not just the ones associated with composting operations. This control measure would seek to establish additional Best Management Practices (BMPs) for handling processed or unprocessed greenwaste material by greenwaste processors, haulers, and operators who inappropriately stockpile material or directly apply the material to land. The implementation of the control measure would be in two phases. First, the existing database would be reviewed to refine the greenwaste material inventory, and second, staff would potentially develop a rule to incorporate technically feasible and cost-effective BMPs or controls.

MCS-03 - IMPROVED START-UP, SHUTDOWN AND TURNAROUND PROCEDURES: This proposed control measure seeks to reduce emissions during equipment startup, shutdown, and turnaround. Opportunities for further reducing emissions from start-up, shut-down and turnaround activities potentially may exist at refineries as well as other industries. Examples of possible areas for improvement may include best management practices, better engineering and equipment design, diverting or eliminating process streams that are vented to flares, and installation of redundant equipment to increase operational reliability. This measure will be implemented through a two-phase effort to first collect/refine emissions and related data and then, based on the data collected, assess viable controls, if appropriate.

Incentive Programs

There are two proposed incentive programs within this category. The first program seeks to provide incentives for new and existing facilities to install and operate clean,

more-efficient combustion equipment beyond what is currently required. The second program provides expedited permitting processing and development of applicable CEQA documentation if a company manufactures zero or near-zero emission technology.

INC-01: ECONOMIC INCENTIVE PROGRAMS TO ADOPT ZERO AND NEAR-ZERO TECHNOLOGIES: The primary objective of this measure is to develop programs that promote and encourage adoption and installation of cleaner, more-efficient combustion equipment with a focus on zero and near-zero technologies, such as boilers, water heaters and commercial space heating, through economic incentive programs, subject to the availability of public funding. Incentives may include grants for new purchases of equipment as well as loan programs in areas where long-term cost savings from increased efficiency are achieved.

INC-02: EXPEDITED PERMITTING AND CEQA PREPARATION FACILITATING THE MANUFACTURING OF ZERO AND NEAR-ZERO TECHNOLOGIES: This proposed measure is aimed at providing incentives for companies to manufacture zero and near-zero emission technologies locally, thus populating the market, potentially lowering the purchase cost, and increasing demand. With availability and usage of such technologies, air quality benefits will be achieved. This proposed measure focuses on two elements: 1) process the required air permit(s) in an expedited procedure; and 2) prioritize the preparation, circulation and certification of the applicable CEQA document. A stakeholder process will be initiated to design the program and collaborate with other existing District or local programs.

Educational Programs

There is one proposed educational program within this category.

EDU-01: FURTHER CRITERIA POLLUTANT REDUCTIONS FROM EDUCATION, OUTREACH AND INCENTIVES: This proposed control measure seeks to provide educational outreach and incentives for consumers to contribute to clean air efforts. Examples include the usage of energy efficient products, new lighting technology, “super compliant” coatings, tree planting, and the use of lighter colored roofing and paving materials which reduce energy usage by lowering the ambient temperature. In addition, this proposed measure intends to increase the effectiveness of energy conservation programs through public education and

awareness as to the environmental effects and benefits from conservation. Finally, educational and incentive tools to be used include comparison of energy usage and efficiency, social media, public/private partnerships.

Proposed Mobile Source 8-hour Ozone Measures

Depending on the mobile source sector and the proposed control approach, District staff analyzed the need to accelerate the penetration of cleaner engine technologies. The proposed mobile source 8-hour ozone measures are based upon a variety of control technologies that are commercially available and/or technologically feasible to implement in the next several years. The focus of these measures includes accelerated retrofits or replacement of existing vehicles or equipment, acceleration of vehicle turnover through voluntary vehicle retirement programs, and greater use of cleaner fuels in the near-term. In the longer-term, in order to attain the federal ozone ambient air quality standard, there is a need to increase the penetration and deployment of near-zero and zero-emission vehicles such as plug-in hybrids, battery-electric, and fuel cells, even further use of cleaner fuels (either alternative fuels or new formulations of gasoline and diesel fuels), and additional emission reductions from locomotive and aircraft engines.

Ten measures are proposed as actions to reduce mobile source emissions and seven additional measures are proposed to accelerate the development and deployment of near-zero and zero-emission technologies for goods movement related sources and off-road equipment. The measures call for greater emission reductions through accelerated turnover of older vehicles to the cleanest vehicles currently available and increased penetration of commercially-available near-zero and zero-emission technologies through existing incentives programs.

Drawing upon the recent draft “Vision for Clean Air: A Framework for Air Quality and Climate Planning” (or Vision), a document produced jointly between the District staff, the California Air Resources Board, and the San Joaquin Valley Air Pollution Control District, seven measures are proposed to further the development of zero- and near-zero emission technologies for on-road and off-road mobile sources. The draft Vision document discusses the need to accelerate deployment of the cleanest combustion technologies and zero- and near-zero emission technologies earlier to meet federal ambient air quality standards and long-term climate goals. The document provides actions for several key transportation sectors and off-road equipment.

Partial-zero and zero-emission technologies are rapidly being introduced into the on-road light- and medium-duty vehicle categories in large part due to the CARB Low Emission Vehicle (LEV) and the Zero-Emission Vehicle (ZEV) Regulations. In addition, next-generation electric hybrid trucks are being commercialized for light-heavy and medium-heavy heavy-duty on-road vehicles. However, additional research and demonstration are needed to commercialize zero- and near-zero emission technologies for the heavier heavy-duty vehicles (with gross vehicle weight ratings greater than 26,000 lbs.).

For many of the off-road mobile sources such as locomotives, cargo handling equipment, commercial harbor craft, and off-road equipment, some form of “all zero-emission range” is feasible to demonstrate and implement beginning in the latter part of this decade. For other sectors such as marine vessels and aircraft, the development of cleaner combustion technologies beyond existing emission standards will be needed. The Vision document provides a broad discussion of the potential zero- and near-zero technologies or cleaner combustion technologies that could be demonstrated in the near-term. The potential technologies are discussed further in each of the “ADV” measures. A summary of the 17 measures is provided in Table 4-6.

TABLE 4-6

List of Adoption/Implementation Dates and Estimated Emission Reductions from Mobile Source 8-hour Ozone Measures

ON-ROAD MOBILE SOURCES					
Number	Title	Adoption	Implementation Period	Implementing Agency	Reduction (tpd) by 2023
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Vehicles [VOC, NOx, PM]	N/A	Ongoing	CARB, SCAQMD	TBD ^a
ONRD-02	Accelerated Retirement of Older Light- and Medium-Duty Vehicles [VOC, NOx, PM]	N/A	Ongoing	CARB, Bureau of Automotive Repair, SCAQMD	TBD ^a
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Light-Heavy- and Medium-Heavy-Duty Vehicles [NOx, PM]	N/A	Ongoing	CARB, SCAQMD	TBD ^a

TABLE 4-6 (continued)

List of Adoption/Implementation Dates and Estimated Emission Reductions
from Mobile Source 8-hour Ozone Measures

ON-ROAD MOBILE SOURCES					
Number	Title	Adoption	Implementation Period	Implementing Agency	Reduction (tpd) by 2023
ONRD-04	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]	2014	2015-2023	CARB, SCAQMD	TBD ^{a,b}
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NOx, PM]	2014	2015-2020	CARB	0.75 [NOx] 0.025 [PM2.5]
OFF-ROAD MOBILE SOURCES					
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment [NOx]	N/A	Ongoing	SCAQMD	7.5
OFFRD-02	Further Emission Reductions from Freight Locomotives [NOx, PM]	Ongoing	2015 – 2023	CARB, U.S. EPA, San Pedro Bay Ports	12.7 [NOx] ^c 0.32 [PM2.5] ^c
OFFRD-03	Further Emission Reductions from Passenger Locomotives [NOx, PM]	Ongoing	Beginning 2014-2023	SoCal Regional Rail Authority	3.0 [NOx] ^d 0.06 [PM2.5] ^d
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels While at Berth [NOx, SOx, PM]	2014	Ongoing	San Pedro Bay Ports, CARB, SCAQMD	TBD ^a
OFFRD-05	Emission Reductions from Ocean-Going Marine Vessels [NOx]	N/A	Ongoing	San Pedro Bay Ports, CARB, U.S. EPA	TBD ^a
ADVANCED CONTROL TECHNOLOGIES					
ADV-01	Actions for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles [NOx]	N/A	2012 and on	SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA	TBD ^e
ADV-02	Actions for the Deployment of Zero- and Near-Zero Emission Locomotives [NOx]	N/A	2012 and on	SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA	TBD ^e

TABLE 4-6 (concluded)

List of Adoption/Implementation Dates and Estimated Emission Reductions from Mobile Source 8-hour Ozone Measures

ADVANCED CONTROL TECHNOLOGIES					
Number	Title	Adoption	Implementation Period	Implementing Agency	Reduction (tpd) by 2023
ADV-03	Actions for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment [NOx]	N/A	2012 and on	SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA	TBD ^e
ADV-04	Actions for the Deployment of Cleaner Commercial Harborcraft [NOx]	N/A	2012 and on	SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA	TBD ^e
ADV-05	Actions for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx]	N/A	2012 and on	SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA	TBD ^e
ADV-06	Actions for the Deployment of Cleaner Off-Road Equipment [NOx]	N/A	2012 and on	SCAQMD, CARB, U.S. EPA	TBD ^e
ADV-07	Actions for the Deployment of Cleaner Aircraft Engines [NOx]	N/A	2012 and on	SCAQMD, CARB, FAA, U.S. EPA	TBD ^e

- a. Emission reductions will be determined after projects are identified and implemented.
- b. Reductions achieved locally in Mira Loma region.
- c. Emission reductions provided are updated from the 2007 SIP values reflecting a revised future year base emission levels. The reductions are not included in the 2012 AQMP SIP submittal
- d. Submitted into the SIP once technically feasible and cost effective options are confirmed.
- e. Emission reduction will be quantified after projects are demonstrated.

On-Road Mobile Source Measures

Five on-road mobile source control measures are proposed. The first two measures focus on on-road light- and medium-duty vehicles operating in the South Coast Air Basin. By 2023, it is estimated that about 12 million vehicles will be operating in the Basin. The first measure would implement programs to accelerate the penetration and deployment of partial zero-emission and zero-emission vehicles in the light- and medium-duty vehicles categories. The second control measure would seek to accelerate retirement of older gasoline and diesel powered vehicles up to 8,500 gross

vehicle weight (GVW). These vehicles include passenger cars, sports utility vehicles, vans, and light duty pick-up trucks.

The remaining three measures focus on heavy-duty vehicles. The first of these measures seeks additional emission reductions from the early deployment of partial zero-emission and zero-emission light- and medium-heavy-duty vehicles with gross vehicle weights between 8,501 pounds to 26,000 pounds. The second control measure for heavy-duty vehicles seeks additional emissions reductions from older, pre-2010 heavy-duty vehicles beyond the emission reductions targeted in CARB's Truck and Bus Regulation. Additional emission reductions could be achieved if an additional percentage of the oldest, pre-2010 heavy duty vehicles not subject to the Truck and Bus Regulation are targeted. The fifth on-road measure seeks emission reductions at near-dock railyards through the deployment of zero-emission heavy-duty vehicles. District staff is recommending a minimum funding level of \$85 million per year for incentives to implement on-road mobile source measures.

Off-Road Mobile Source Measures

Five control measures that seek further emission reductions from off-road mobile sources and industrial equipment are proposed. Transportation sources such as aircraft, locomotives, and marine vessels are associated with anticipated economic growth not only in the Basin, but also nationwide. These sources are principally regulated by federal and state agencies. In addition, certain local actions can result in emission reductions beyond the emissions standard setting authority of the state and U.S. EPA. The first measure calls for the continuation of the Surplus Off-Road Opt-In for NO_x (SOON) provision of the statewide In-Use Off-Road Diesel Fleet Regulation beyond 2014. The SOON provision implemented to-date has realized additional NO_x reductions beyond the statewide regulation. The second and third measures call for additional emission reductions from freight and passenger locomotives. The fourth measure seeks additional emission reductions from ocean-going vessels while at berth. The fifth measure recognizes the efforts that the Ports of Los Angeles and Long Beach are implementing to incentivize Tier 2 and Tier 3 ocean-going vessels to call at the ports. District staff is recommending a minimum funding level of \$30 million per year for incentives to implement off-road mobile source measures.

Actions to Deploy Advanced Control Technologies

Seven additional measures are proposed to deploy the cleanest control technologies as early as possible and to foster the development and deployment of near-zero and zero-emission technologies. Many of these actions have already begun. However, additional research and development will be needed that will lead to commercial deployment of control technologies that achieve emission levels below current adopted emission standards. Other near-zero and zero-emission technologies that are commercially available will require infrastructure development to facilitate their deployment.

The term “near-zero” technology is not defined in these actions. The term’s specific meaning could depend on the source category and feasible technologies. The actions needed to deploy zero-emission technologies, “near-zero” emission technologies, and the next generation of cleaner combustion engines will be discussed in the development of the proposed measures and future AQMPs. To initiate the development of cleaner engines (either through in-cylinder or after-treatment controls or in combination with hybrid systems that lead to further criteria pollutant emission reductions), District staff is proposing that optional NO_x standards be adopted. Having such optional standards will facilitate the early development of cleaner technologies and assist to deploy these technologies as soon as possible. They would be set by the level of emission reductions commercially achievable in the near-term. Several of the technologies to achieve emission levels lower than current standards, or zero-emission levels, are currently available and are potentially transferrable to various vehicle vocations and in-use applications. However, further research and demonstration are needed for many of these technologies to evaluate their performance prior to commercialization. Each measure contains a timeline for actions to bring about the zero-emission or cleaner technologies.

The District staff, U.S. Department of Energy, U.S. Environmental Protection Agency, Federal Aviation Administration, California Air Resources Board, California Energy Commission, engine manufacturers, advanced engine control developers, and electric hybrid systems developers have been discussing potential technologies to further reduce engine exhaust emissions or eliminate exhaust emissions entirely. Public forums such as technology symposiums will be used to solicit public input on technology development as part of the proposed actions.

The following text provides a brief description of the District staff's proposed mobile source measures:

ONRD-01 – ACCELERATED PENETRATION OF PARTIAL ZERO-EMISSION AND ZERO EMISSION VEHICLES: This measure proposes to continue incentives for the purchase of zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode. The state Clean Vehicle Rebate Pilot (CVRP) program is proposed to continue from 2015 to 2023 with a proposed funding for up to \$5,000 per vehicle. The proposed measure seeks to provide funding assistance for up to 1,000 zero-emission or partial-zero emission vehicles per year.

ONRD-02 – ACCELERATED RETIREMENT OF OLDER LIGHT- AND MEDIUM-DUTY VEHICLES: This proposed measure calls for promoting the permanent retirement of older eligible vehicles through financial incentives currently offered through local funding incentive programs and the AB 118 Enhanced Fleet Modernization Program (EFMP). The proposed measure seeks to retire up to 2,000 older light- and medium-duty vehicles (up to 8,500 lbs gross vehicle weight) per year. Funding incentives of up to \$2,500 per vehicle are proposed for the scrapping of the vehicle, which may include a replacement voucher for a newer or new vehicle.

ONRD-03 – ACCELERATED PENETRATION OF PARTIAL ZERO-EMISSION AND ZERO-EMISSION LIGHT-HEAVY- AND MEDIUM-HEAVY-DUTY VEHICLES: The objective of the proposed action is to accelerate the introduction of advanced hybrid and zero-emission technologies for Class 4 through 6 heavy-duty vehicles. The state is currently implementing a Hybrid Vehicle Incentives Project (HVIP) program to promote zero-emission and hybrid heavy-duty vehicles. The proposed measure seeks to continue the program from 2015 to 2023 to deploy up to 1,000 zero- and partial-zero emission vehicles per year with up to \$25,000 funding assistance per vehicle. Zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode would be given the highest priority.

ONRD-04 – ACCELERATED RETIREMENT OF OLDER ON-ROAD HEAVY-DUTY VEHICLES: This proposed measure seeks to replace up to 1,000 heavy-duty vehicles per year with newer or new vehicles that at a minimum, meet the 2010 on-road heavy-duty NO_x exhaust emissions standard of 0.2 g/bhp-hr. Given that exceedances of the 24-hour PM_{2.5} air quality standard occur in the Mira Loma region, priority will be placed on replacing older diesel trucks that operate primarily

at the warehouse and distribution centers located in the Mira Loma area. Funding assistance of up to \$35,000 per vehicle is proposed and the level of funding will depend upon the NO_x emissions certification level of the replacement vehicle. In addition, a provision similar to the Surplus Off-Road Option for NO_x (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation will be sought to ensure that additional NO_x emission reduction benefits are achieved.

ONRD-05 – FURTHER EMISSION REDUCTIONS FROM HEAVY-DUTY VEHICLES SERVING NEAR-DOCK RAILYARDS: This proposed control measure calls for a requirement that any cargo container moved between the Ports of Los Angeles and Long Beach to the nearby railyards (the Intermodal Container Transfer Facility and the proposed Southern California International Gateway) be with zero-emission technologies. The measure would be fully implemented by 2020 through the deployment of zero-emission trucks or any alternative zero-emission container movement system such as a fixed guideway system. The measure calls for CARB to either adopt a new regulation or amend an existing regulation to require such deployment by 2020. To the extent the measure can feasibly be extended beyond near-dock railyards, this would be considered for adoption by CARB.

OFFRD-01 – EXTENSION OF THE SOON PROVISION FOR CONSTRUCTION/INDUSTRIAL EQUIPMENT: This measure seeks to continue the Surplus Off-Road Option for NO_x (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation beyond 2014 through the 2023 timeframe. In order to implement the SOON program in this timeframe, funding of up to \$30 million per year would be sought to help fund the repower or replacement of older Tier 0 and Tier 1 equipment, with reductions that are considered surplus to the statewide regulation with Tier 4 or cleaner engines.

OFFRD-02 – FURTHER EMISSION REDUCTIONS FROM FREIGHT LOCOMOTIVES: The proposed control measure is to meet the commitment in the 2007 SIP for the accelerated use of Tier 4 locomotives in the South Coast Air Basin. The measure calls for CARB to seek further emission reductions from freight locomotives through enforceable mechanisms within its authority to achieve 95 percent or greater introduction of Tier 4 locomotives by 2023.

OFFRD-03 – FURTHER EMISSION REDUCTIONS FROM PASSENGER LOCOMOTIVES: This measure recognizes the recent actions by the Southern California Regional Rail Authority (SCRRA or Metrolink) to consider replacement of their existing Tier 0 passenger locomotives with Tier 4 locomotives. The SCRRA

adopted a plan that contains a schedule to replace their older existing passenger locomotives with Tier 4 locomotives by 2017. More recently, SCRRRA released a Request for Quotes on the cost of new or newly manufactured passenger locomotives with locomotive engines that meet Tier 4 emission levels.

OFFRD-04 – FURTHER EMISSION REDUCTIONS FROM OCEAN-GOING MARINE VESSELS WHILE AT BERTH: This measure seeks additional emission reductions from ocean-going marine vessels while at berth. The actions would affect ocean-going vessels that are not subject to the statewide Shorepower Regulation or vessel calls that are considered surplus to the statewide regulation. The measure seeks at a minimum to have an additional 25 percent of vessel calls beyond the statewide regulation to deploy shorepower technologies or alternative forms of emissions reduction as early as possible. Such actions could be implemented through additional incentives programs or through the San Pedro Bay Ports as part of the implementation of the Ports Clean Air Action Plan.

OFFRD-05 – EMISSION REDUCTIONS FROM OCEAN-GOING MARINE VESSELS: This measure recognizes the recent actions at the Ports of Los Angeles and Long Beach to initiate an incentives program for cleaner ocean-going vessels to call at the ports. The program has been initiated as part of the San Pedro Bay Ports Clean Air Action Plan. The program will provide financial incentives for cleaner Tier 2 and Tier 3 ocean-going vessels to call at the ports. This measure also recognizes the need to monitor progress under such programs and augment them as necessary to ensure sufficient results. The program will be monitored on annual basis and, if necessary, any adjustments to the program will be made.

ADV-01 –ACTIONS FOR THE DEPLOYMENT OF ZERO- AND NEAR-ZERO EMISSION ON-ROAD HEAVY-DUTY VEHICLES: This measure would continue the efforts underway to develop zero-emission and near-zero emission technologies for on-road heavy-duty vehicle applications. Such technologies include, but not limited to, fuel cell, battery-electric, hybrid-electric with all electric range, and overhead catenary systems. Hybrid-electric systems incorporate an engine powered by conventional fuels or alternative fuels such as natural gas. The actions provided in the proposed measure are based on the SCAG 2012 Regional Transportation Plan.

ADV-02 –ACTIONS FOR THE DEPLOYMENT OF ZERO- AND NEAR-ZERO EMISSION LOCOMOTIVES: This measure calls for the development and deployment of zero-emission and near-zero emission technologies for

locomotives. Such technologies include overhead catenary systems, hybrid locomotives that have some portion of their operation in an “all electric range” mode, and alternative forms of external power such as a battery tender car. The actions provided in the proposed measure are based on the SCAG 2012 Regional Transportation Plan. The zero-emission technologies could apply to freight and passenger locomotives.

ADV-03 –ACTIONS FOR THE DEPLOYMENT OF ZERO- AND NEAR-ZERO EMISSION CARGO HANDLING EQUIPMENT: This measure recognizes the actions underway to develop and deploy zero- and near-zero emission technologies for various cargo handling equipment. The San Pedro Bay Ports are currently demonstrating battery-electric yard tractors. In addition, battery-electric, fuel cell, and hybridized systems could be deployed on smaller cargo handling equipment. In addition, the use of alternative fuels for conventional combustion engines could potentially result in greater emissions benefits.

ADV-04 –ACTIONS FOR THE DEPLOYMENT OF CLEANER EMISSION COMMERCIAL HARBORCRAFT: Several commercial harbor craft operators have begun deployment of hybrid systems in their harbor craft to further reduce criteria pollutant emissions and improve fuel efficiency. Other cleaner technologies include the use of alternative fuels, retrofit of existing older marine engines with selective catalytic converters, and diesel particulate filters. This measure recognizes several efforts between the District and the Ports of Los Angeles and Long Beach to further demonstrate control technologies that could be deployed on commercial harbor craft that could go beyond the statewide Harbor Craft Regulation.

ADV-05 –ACTIONS FOR THE DEPLOYMENT OF CLEANER OCEAN-GOING MARINE VESSELS: The Ports of Los Angeles and Long Beach, CARB, and the District have sponsored research and demonstration of various control technologies to further reduce emissions from ocean-going vessels. In addition, the San Pedro Bay Ports Clean Air Action Plan contains a measure to further demonstrate such technologies on ocean-going vessels. This measure recognizes many of these efforts and the need to further demonstrate retrofit technologies on existing ocean-going vessels.

ADV-06 –ACTIONS FOR THE DEPLOYMENT OF CLEANER OFF-ROAD EQUIPMENT: The District, Mobile Source Air Pollution Reduction Review Committee (MSRC), and CARB have been conducting an off-road “showcase” program for retrofit technologies to further reduce emissions from older off-road

equipment. In addition, several major off-road engine manufacturers are investigating the potential use of hybrid systems to further reduce criteria pollutant and greenhouse gas emissions. Potential advanced technologies include hybrid systems that utilize batteries, fuel cells, or plug-in capabilities, which could result in lower emissions compared to Tier 4 emission levels when combined with future Tier 4 compliant engines. The measure is implemented by the District, CARB and U.S. EPA.

ADV-07 –ACTIONS FOR THE DEPLOYMENT OF CLEANER AIRCRAFT ENGINES: This measure recognizes the efforts of the Federal Aviation Administration’s Continuous Lower Energy, Emissions and Noise (CLEEN) Program. The goal of the CLEEN Program is the development of new aircraft engines that potentially can be up to 60 percent cleaner in NO_x emissions than current aircraft engines. The actions under this measure are to continue the development of cleaner aircraft engines and work with the airlines and local airport authorities to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin.

DISTRICT’S SIP EMISSION REDUCTION COMMITMENT

The SIP commitment of the Draft Final 2012 AQMP is structured into two components. Reductions from adopted rules and reductions from the 2012 AQMP control measures are divided into commitments for the 24-hr PM_{2.5} SIP and the 8-hour ozone SIP. Taken together, these reductions are relied upon to demonstrate expeditious progress and attainment of the federal 24-hr PM_{2.5} standard, and implemented to reduce the black box commitment for the 8-hour ozone standard. The following sections first describe the methodology for SIP emission reduction calculations and the creditable SIP reductions, then describe what procedures will be followed to ensure fulfillment of the commitment.

SIP Emission Reduction Tracking

For purposes of tracking progress in emission reductions, the baseline emissions for the year 2014 (annual average) and 2023 (planning inventory) in the Draft Final 2012 AQMP will be used, regardless of any subsequent new inventory information that reflects more recent knowledge. This is to ensure that the same “currency” is used in measuring progress as was used in designing the Plan. This will provide a fair and equitable measurement of progress. Therefore, it makes no difference whether

progress is measured by emission reductions or remaining emissions for a source category. However, the most recent emission inventory information at the time of rule development will continue to be used for calculating reductions, and assessing cost-effectiveness and socioeconomic impacts of the proposed rule. Therefore, for future rulemaking activity, both the most recent and AQMP inventories will be reported.

Any non-mandatory emissions reductions achieved beyond the existing District regulations are creditable only if they are also SIP-enforceable. Therefore, in certain instances, the District may have to adopt regulations to reflect the existing industry practices in order to claim SIP reduction credit, with the understanding that there may not be additional reductions beyond what has already occurred. Exceptions can be made where reductions are real, quantifiable, surplus to the Draft Final 2012 AQMP baseline inventories, and enforceable through other State and/or federal regulations. Also, any emissions inventory revisions, which have gone through a peer review and public review process, can also be SIP creditable.

Reductions from Adopted Rules

A number of control measures contained in the 2007 AQMP have been adopted as rules. These adopted rules and their projected emission reductions become assumptions in developing AQMP's future year inventories. Although they are not part of the control strategy in the Draft Final 2012 AQMP, continued implementation of those rules is essential in achieving clean air goals and maintaining the attainment demonstration. Table 1-2 of Chapter 1 lists the rules adopted by the District since the adoption of the 2007 AQMP and their expected emission reductions.

Reductions from District's Stationary Source Control Measures

For purposes of implementing an approved SIP, the District is committed to adopt and implement control measures that will achieve, in aggregate, emission reductions specified in Tables 4-7 and 4-8 to demonstrate expeditious implementation of measures toward meeting the federal 2006 24-hr PM_{2.5} standard and the 1997 8-hour ozone standard, respectively. Emission reductions achieved in excess of the amount committed to in a given year can be applied to the emission reduction commitments of subsequent years. The District is committed to adopt the control measures in Tables 4-2 and 4-4 unless these measures or a portion thereof are found infeasible and other substitute measures that can achieve equivalent reductions in the same

adoption or implementation timeframes are adopted. Findings of infeasibility will be made at a regularly scheduled meeting of the District Governing Board with proper public notification. For purposes of the SIP commitment, infeasibility means that the proposed control technology is not reasonably likely to be available by the implementation date in question, or achievement of the emission reductions by that date is not cost-effective. It should be noted that the reductions in Tables 4-7 and 4-8 are committed only to the extent needed to achieve attainment by 2014 and if any substitution is needed, the alternative measures will need to achieve the same emission reductions or air quality benefit. The District acknowledges that this commitment is enforceable under Section 304(f) of the federal Clean Air Act. U.S. EPA will not credit SIP reductions unless the control measures are adopted and approved into the SIP at the time of their action on the plan.

Adoption and Implementation of District's Stationary Source Control Measures

As a partial response to concerns raised by the regulated community that costly controls may be required to meet the SIP obligations, the District proposes to establish a threshold of \$16,500 per ton of VOC and \$22,500 per ton of NO_x reduction for tiered levels of analysis. Specifically, proposed rules with an average cost-effectiveness above the threshold will trigger a more rigorous average cost-effectiveness, incremental cost-effectiveness, and socioeconomic impact analysis. A public review and decision process will be instituted to seek lower cost alternatives. In addition, the District staff, with input from stakeholders, will attempt to develop viable control alternatives within the industry source categories that a rule is intended to regulate. If it is determined that control alternatives within the industry source category are not feasible, staff will perform an evaluation of the control measure as described in the next paragraph. Viable alternatives shall be reviewed by the District Governing Board at a public meeting no less than 90 days prior to rule adoption and any needed direction will be given back to staff for further analysis. During this review process, incremental cost-effectiveness scenarios and methodology will be specified, and industry-specific affordability issues will be identified as well as possible alternative control measures. The District Governing Board may adopt the original or an alternative that is consistent with state and federal law. In addition, staff shall include in all set hearing items a notification that proposed rules do or do not exceed the cost threshold.

Adoption and Implementation of Alternative/Substitute Measures

Under the Draft Final 2012 AQMP, the District will be allowed to substitute District stationary source measures in Tables 4-2 and 4-4 with other measures, provided the overall equivalent emission reductions by the adoption and implementation dates in Tables 4-2 and 4-4 are maintained and the applicable measure in Tables 4-2 and 4-4 is deemed infeasible. In order to provide meaningful public participation, when new control concepts are introduced for rule development, the District is committed to provide advanced public notification beyond its regulatory requirements (i.e., through its Rule Forecast Report). The District will also report quantitatively on the AQMP's implementation progress annually at its regularly scheduled Governing Board meetings. Included in the reports will be any new control measures being proposed or measures, or portions thereof, that have been found to be infeasible and the basis of such finding. In addition, at the beginning of the year, any significant emission reduction related rules to be considered would be listed in the Board's Rule Forecast Report. Upon any finding of a new feasible control measure to substitute for a measure deemed infeasible, rule development will be completed no later than 12 months from the adoption date of the control measure substituted, and implementation of the new measure will occur no later than two years from the final implementation date of the measure substituted. The existing rule development outreach efforts such as public workshops, stakeholder working group meetings or public consultation meetings will continue to solicit public input. In addition, if additional technical analysis, including source testing, indicates that actual emissions are less than previously estimated, the reductions would then be creditable toward SIP commitments. In order for reductions from improved emission calculation methodologies to be SIP creditable, a public review process will also be instituted to solicit comments and make appropriate revisions, if necessary.

TABLE 4-7
 24-Hr PM_{2.5} SIP Basin-wide Emission Reductions Commitment
 to be Achieved Through the District's Regulatory Programs
 (2014, Average Annual Day, tons per day)

YEAR	VOC		PM _{2.5}		NO _x		SO _x	
	Based on Adoption Date	Based on Imple. Date ^a	Based on Adoption Date	Based on Imple. Date ^a	Based on Adoption Date	Based on Imple. Date ^a	Based on Adoption Date	Based on Imple. Date ^a
2013	---	---	11.7 ^b	---	---	---	---	---
2014	---	---	---	11.7 ^b	---	---	---	---
TOTAL			11.7^b	11.7^b				

^a Represents the final, full implementation date; typically a rule contains multiple implementation dates.

^b Represents winter episodic emissions.

TABLE 4-8
 2007 Ozone SIP Emission Reductions Commitment to be Achieved Through the District's
 Stationary and Mobile Source Regulatory Programs
 (2023, Planning Inventory, tons per day)

YEAR	VOC		NO _x	
	Based on Adoption Date	Based on Implementation Date ^a	Based on Adoption Date	Based on Implementation Date ^a
2013	---	---	7.5	---
2014	0.80	---	---	---
2015	1	---	3	---
2016	4	0.8	0.2	---
2017	---	1	---	---
2018	---	2	---	0.2
2019	---	---	---	---
2020	---	2	---	3
2021	---	---	---	---
2022	---	---	---	---
2023	---	---	---	7.5
TOTAL	5.8	5.8	10.7	10.7

^a Represents the final, full implementation date; typically a rule contains multiple implementation dates.

TABLE 4-9

Emission Reductions Commitment to be Achieved Through CARB's Regulatory Programs
(2023, Planning Inventory, tons per day)

YEAR	NOx	
	Based on Adoption Date	Based on Implementation Date ^a
2013		---
2014	0.75	---
2015	---	---
2016	---	---
2017	---	---
2018	---	---
2019	---	---
2020	---	0.75
2021	---	---
2022	---	---
2023	---	
TOTAL	0.75	0.75

^a Represents the final, full implementation date; typically a rule contains multiple implementation dates.

OVERALL EMISSION REDUCTIONS

A summary of emission reductions for the proposed control measures for the years 2014 and 2023 is provided in Tables 4-10 through 4-11. These reductions reflect the emission reductions associated with implementation of control measures under local, State, and federal jurisdiction. Emission reductions represent the difference between the projected baseline and the remaining emissions. Table 4-10 identifies projected reductions based on the annual average inventory for directly emitted PM_{2.5} and its precursors (NO_x, and SO_x), and VOC for basin-wide stationary and mobile control measures. It represents the level of control needed to achieve the federal 2006 24-hr PM_{2.5} standard by 2014. For attainment of the 1997 ozone standard by 2023, Table 4-11 identifies projected reductions based on the summer planning inventory for VOC and NO_x emissions as an ongoing effort to reduce reliance on the Section 182(e)(5) measures in the 2007 AQMP.

TABLE 4-10

Emission Reductions for 2014 Based on Average Annual Emissions Inventory
(tons per day)

SOURCES	VOC	NOx	SOx	PM2.5
Year 2014 Baseline ¹	451	506	18	70
Adjustments to Baseline ²	0.28	16	---	0.46
Emission Reductions:				
Stationary Sources	---	---	---	12 ³
Mobile Sources	---	---	---	---
TOTAL Reductions (all measures)	---	---	---	12 ³
2014 Remaining Emissions	451	490	18	58

¹Emission assumptions from SCAG's 2012 Regional Transportation Plan are already reflected in the AQMP baseline, including TCMs.

²Emissions reductions from executed contracts under mobile source incentive programs (Proposition 1B, Carl Moyer, AB1493)

³Based on episodic winter day.

TABLE 4-11

Emission Reductions for 2023 Based on
Summer Planning Inventory (tons per day)

SOURCES	VOC	NOx
Year 2023 Baseline ¹	438	319
Emission Reductions:		
Stationary Sources	6	3
Mobile Sources	---	8
TOTAL Reductions (all measures)	6	11
2023 Remaining Emissions	432	308

¹Emission assumptions from SCAG's 2012 Regional Transportation Plan are already reflected in the AQMP baseline, including TCMs.

IMPLEMENTATION

Achieving clean air objectives requires the effective and timely implementation of the control measures. Similar to approaches taken by previous AQMPs, the SIP commitment is to bring each control measure for regulatory consideration in a specified time frame. The time frame is based on the ability to implement certain

control strategies that will result in the reductions necessary to demonstrate attainment by the required attainment date. There is a commitment to achieve a total emission reduction target, with the ability to substitute for control measures deemed infeasible, so long as equivalent reductions are met by other means. These measures are also designed to satisfy the federal Clean Air Act requirement of Reasonably Available Control Technologies [Section 172(c)], and the California Clean Air Act requirement of Best Available Retrofit Control Technologies (BARCT) [Health and Safety Code Section 40440(b)(1)].

The adoption and implementation schedule of the control measures proposed in the Draft Final 2012 AQMP can be found in Tables 4-2, 4-4 and 4-6. Multiple agencies are necessary for implementation of the mobile source ozone measures in Table 4-6. This section describes each agency's area of responsibility.

Responsible Agencies

Implementation of the control strategies requires a cooperative partnership of governmental agencies at the federal, state, regional and local level. These agencies form the four cornerstones from which implementation programs will evolve.

At the federal level, the U.S. EPA and sometimes other agencies are charged with reducing emissions from federally controlled sources such as commercial aircraft, trains, marine vessels, and other sources. At the state level, CARB is primarily responsible for reducing emissions from motor vehicles and consumer products.

At the regional level, the District is responsible for the overall development and implementation of the AQMP. The District is specifically authorized to reduce the emissions from stationary, point, and some area sources such as coatings and industrial solvents. Emission reductions are also sought through funding programs designed to accelerate vehicle turnover and the purchase of cleaner vehicles. In addition, the District regulates indirect sources under Health and Safety Code Sections 40716 (a)(1) and 40440(b)(3). As a means of achieving further emission reductions, the District may seek additional authority to regulate sources that have not been completely under the District's jurisdiction in the past such as marine vessels, consumer products, and other on-road and off-road sources. The District implements its responsibilities with participation from the regulated community through an extensive rule development and implementation program. This approach maximizes the input of those parties affected by the proposed rule through consultation meetings, public workshops, and ongoing working groups.

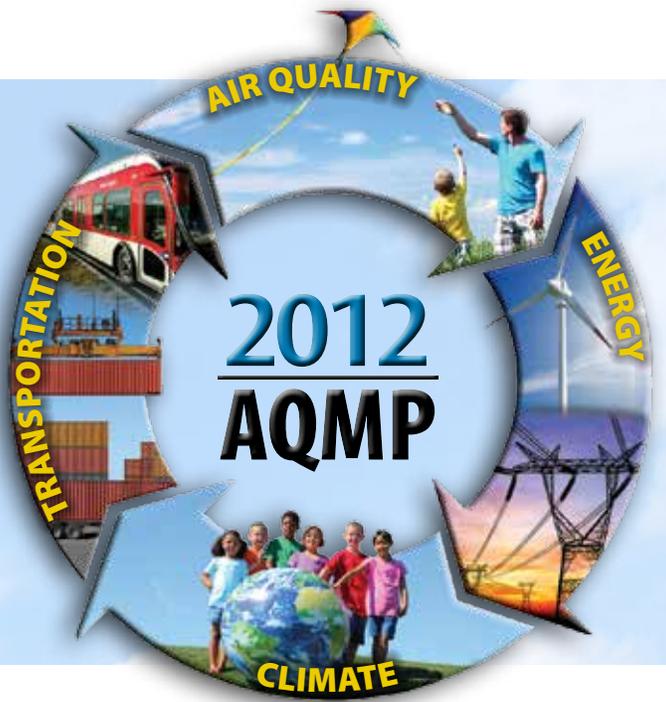
At the regional level, the Southern California Association of Governments (SCAG) assists sub-regional and local governments in playing a formative role in the air quality elements of transportation planning. In addition, local governments serve an important role in developing and implementing the transportation control measures that are included in the Draft Final 2012 AQMP. SCAG is responsible for providing the socioeconomic forecast (e.g., population and growth forecasts) upon which the Plan is based. SCAG also provides assessments for conformity of regionally significant transportation projects with the overall Plan and is responsible for the adoption of the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP) which include growth assumptions and transportation improvement projects that could have significant air quality impacts, and transportation control measures as required by the CAA.

Table 4-12 list the responsibilities of the key agencies involved in the implementation of the 2012 AQMP.

TABLE 4-12

Agencies Responsible for Implementation
of the 2012 AQMP for the South Coast Air Basin

AGENCY	PRINCIPAL RESPONSIBILITIES
U.S. EPA	<ul style="list-style-type: none"> • Mobile vehicle emission standards; • Airplanes, trains, and ships; • New off-road construction & farm equipment below 175 hp
CARB	<ul style="list-style-type: none"> • On-road/Off-road vehicles (emission standards and in-use fleets as authorized under Section 209(e) of the Clean Air Act) • Motor vehicle fuels; • Consumer products
SCAQMD	<ul style="list-style-type: none"> • Stationary (e.g., industrial/commercial) and area sources; • Indirect sources; • Certain mobile sources (e.g., in-use fleet regulations, incentives for accelerated vehicle turnover, reduction in average vehicle ridership, etc.)
SCAG	<ul style="list-style-type: none"> • Conformity assessments for Regional Transportation Plan and other transportation projects; • Regional Transportation Improvement Program; • Transportation Control Measures
Local Government	<ul style="list-style-type: none"> • Transportation and local government actions (i.e., land use approvals & ports); • Transportation facilities



Chapter 5 **Future Air Quality**

South Coast Air Quality Management District
Cleaning the air that we breathe...



CHAPTER 5

FUTURE AIR QUALITY

Introduction

Background

Modeling Approach

Future Air Quality

Additional Modeling Analyses

Summary and Conclusions

INTRODUCTION

Air quality modeling is an integral part of the planning process to achieve clean air. The attainment demonstrations provided in this Draft Final 2012 AQMP reflect the updated baseline emissions estimates, new technical information, enhanced air quality modeling techniques, and the control strategy provided in Chapter 4 for 24-hour PM_{2.5}. Projections for progress towards meeting the annual PM_{2.5} standard by 2014 and the 1997 8-hour ozone standard by 2023 are also presented in this chapter. These latter two requirements are addressed in the 2007 AQMP.

The Basin is currently designated nonattainment for PM_{2.5}, and extreme nonattainment for ozone. The District's goal is to develop an integrated control strategy which: 1) ensures that ambient air quality standards for all criteria pollutants are met by the established deadlines in the federal Clean Air Act (CAA); and 2) achieves an expeditious rate of progress towards attaining the state air quality standards. The overall control strategy is designed so that efforts to achieve the standard for one criteria pollutant do not cause unnecessary deterioration of another. A two-step modeling process which is consistent with the approach used in the 2007 AQMP has been conducted for the Draft Final 2012 AQMP. First, future year 24-hour PM_{2.5} levels are simulated for 2014 and 2019 to determine the earliest possible date of attainment. If attainment cannot be demonstrated by 2014, U.S. EPA can grant up to an additional five years to demonstrate attainment of the 24-hour standard. However, the length of the extension is contingent upon the earliest year beyond 2014 that the 24-hour average PM_{2.5} standard can be achieved implementing all feasible control measures.

BACKGROUND

During the development of the 2007 AQMP, the District convened a panel of seven experts to independently review the regional air quality modeling. The consensus of the panel was for the District to move to the more current state-of-the-art dispersion platforms and chemistry modules. In keeping with the recommendations of the expert panel as well as the Scientific Technical Modeling Peer Review Committee, the Draft Final 2012 AQMP has continued to move forward to incorporate the current state-of-the-art modeling platforms to conduct regional modeling analyses in support of the PM_{2.5} attainment demonstrations and ozone update. The Draft Final 2012 AQMP PM_{2.5} attainment demonstration has been developed using the U.S. EPA supported Community Multiscale Air Quality (CMAQ) (version 4.7) modeling platform with SAPRC99 chemistry, and the Weather Research and Forecasting Model (WRF) (version 3.3) meteorological fields. Supporting PM_{2.5} and ozone simulations were also conducted

using the most current and publicly available version of CAMx (version 5.3), which also used SAPRC99 chemistry and WRF meteorology, to ensure smooth transition from the CAMx platform used in the 2007 AQMP to CMAQ. The model analyses were conducted on an expanded domain, with increased resolution in the vertical structure, and a finer 4 km grid size.

Detailed information on the modeling approach, data gathering, model development and enhancement, model application, and interpretation of results is presented in Appendix V. The following sections summarize the results of the 24-hour PM_{2.5} attainment demonstration modeling effort and provide an update to the annual PM_{2.5} and future projected Basin ozone levels given new emissions, design values and modeling tools.

MODELING APPROACH

Design Values and Relative Response Factors (RRF)

As first employed in the 2007 AQMP, the Draft Final 2012 AQMP modeling approach to demonstrate attainment of the air quality standards relies heavily on the use of design values and relative response factors (RRF) to translate regional modeling simulation output to the form of the air quality standard. Both PM_{2.5} and ozone have standards that require three consecutive years of monitored data, averaged according to the form of the standard to derive a design value, to assess compliance. The 24-hour PM_{2.5} design value is determined from the three-year average of the 98th percentile of all 24-hour concentrations sampled at a monitoring site. The annual PM_{2.5} design value is based on quarterly average PM_{2.5} concentrations, averaged by year, for a three-year period. In the case of ozone, compliance with the standard is determined from a three-year average of the 4th highest daily ozone 8-hour average concentration.

Design Value Selection

U.S. EPA guidance recommends the use of multiple year averages of design values, where appropriate, to dampen the effects of single year anomalies to the air quality trend due to factors such as adverse or favorable meteorology or radical changes in the local emissions profile. The trend in the Basin 24-hour PM_{2.5} design values, determined from routinely monitored Federal Reference Monitoring (FRM), from 2001 through 2011 (Figure 5-1) depicts sharp reductions in concentrations over the period. The 24-hour PM_{2.5} design value for 2001 was 76 µg/m³ while the 2008 design value (based on data from 2006, 2007 and 2008) is 53 µg/m³. Furthermore, the most current design value computed for 2011 has been reduced to 38 µg/m³. The annual PM_{2.5} design value has demonstrated a reduction of 13.6 µg/m³ over the 10-year period from 2001 through

2011. In each case, the trend in PM2.5 is steadily moving in the direction of air quality improvement. The trend of Basin ozone design values is presented in Figure 5-2. The design values have averaged a reduction of approximately three parts per billion over the 14-year period; however the most recent design value (107 ppb) continues to exceed the 1997 8-hour ozone standard (80 ppb) by 34 percent and the 2006 ozone standard by 43 percent (75 ppb).

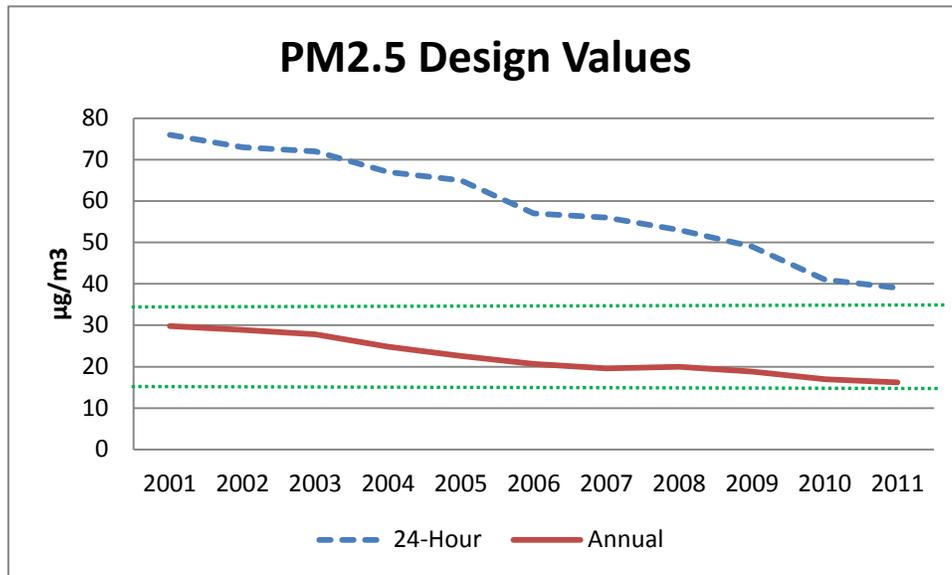


FIGURE 5-1

South Coast Air Basin 24-Hour Average and Annual PM2.5 Design Values
 Note: Each value represents the 3-year average of the highest annual average PM2.5 concentration

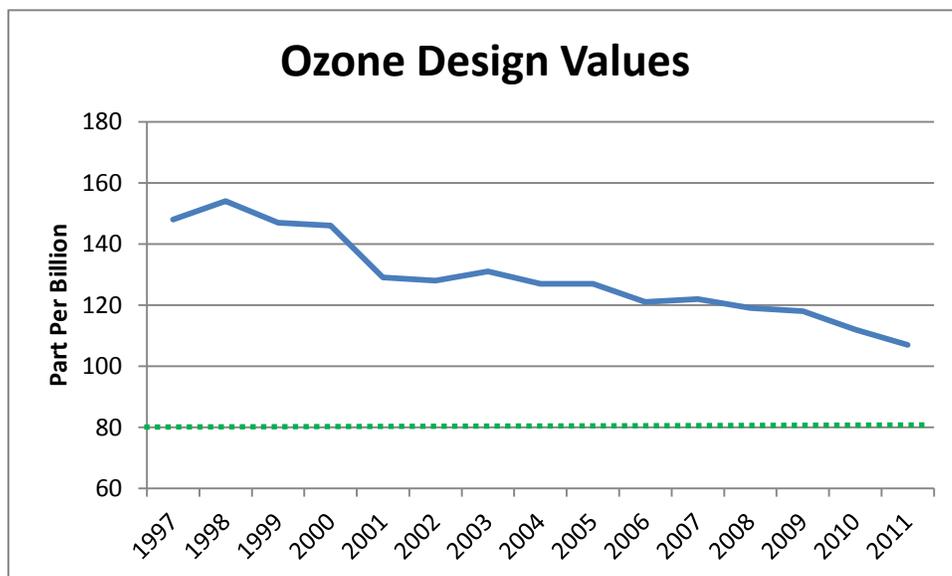


FIGURE 5-2

South Coast Air Basin 8-Hour Average Ozone Design Values

Note: Each value represents the 3-year average of the 4th highest 8-Hour Average Ozone concentration

The Draft Final 2012 AQMP relies on a set of five years of particulate data centered on 2008, the base year selected for the emissions inventory development and the anchor year for the future year PM_{2.5} projections. In July, 2010, U.S. EPA proposed revisions to the 24-hour PM_{2.5} modeling attainment demonstration guidance. The new guidance suggests using five years of data, but instead of directly using quarterly calculated design values, the procedure requires the top 8 daily PM_{2.5} concentrations days in each quarter to reconstruct the annual 98th percentile. The logic in the analysis is twofold: by selecting the top 8 values in each quarter the 98th percentile concentration is guaranteed to be included in the calculation. Second, the analysis projects future year concentrations for each of the 32 days in a year (160 days over five years) to test the response of future year 24-hour PM_{2.5} to the proposed control strategy. Since the 32 days in each year include different meteorological conditions and particulate species profiles it is expected those individual days will respond independently to the projected future year emissions profile and that a new distribution of PM_{2.5} concentrations will result. Overall, the process is more robust in that the analysis is examining the impact of the control strategy implementation for a total of 160 days, covering a wide variety of potential meteorology and emissions combinations.

Table 5-1 provides the weighted 2008 annual and 24-hour average PM_{2.5} design values for the Basin.

TABLE 5-1

2008 Weighted 24-Hour PM_{2.5} Design Values ($\mu\text{g}/\text{m}^3$)

MONITORING SITE	24-HOURS
Anaheim	35.0
Los Angeles	40.1
Fontana	45.6
North Long Beach	34.4
South Long Beach	33.4
Mira Loma	47.9
Rubidoux	44.1

Relative Response Factors and Future Year Design Values

To bridge the gap between air quality model output evaluation and applicability to the health-based air quality standards, U.S. EPA guidance has proposed the use of relative response factors (RRF). The RRF concept was first used in the 2007 AQMP modeling

attainment demonstrations. The RRF is simply a ratio of future year predicted air quality with the control strategy fully implemented to the simulated air quality in the base year. The mechanics of the attainment demonstration are pollutant and averaging period specific. For 24-hour PM_{2.5}, the top 10 percentile of modeled concentrations in each quarter of the simulation year are used to determine the quarterly RRFs. For the annual average PM_{2.5}, the quarterly average RRFs are used for the future year projections. For the 8-hour average ozone simulations, the aggregated response of multiple episode days to the implementation of the control strategy is used to develop an averaged RRF for projecting a future year design value. Simply stated, the future year design value is estimated by multiplying the non-dimensional RRF by the base year design value. Thus, the simulated improvement in air quality, based on multiple meteorological episodes, is translated as a metric that directly determines compliance in the form of the standard.

The modeling analyses described in this chapter use the RRF and design value approach to demonstrate future year attainment of the standards.

PM_{2.5} Modeling

Within the Basin, PM_{2.5} particles are either directly emitted into the atmosphere (primary particles), or are formed through atmospheric chemical reactions from precursor gases (secondary particles). Primary PM_{2.5} includes road dust, diesel soot, combustion products, and other sources of fine particles. Secondary products, such as sulfates, nitrates, and complex carbon compounds are formed from reactions with oxides of sulfur, oxides of nitrogen, VOCs, and ammonia.

The Draft Final 2012 AQMP employs the CMAQ air quality modeling platform with SAPRC99 chemistry and WRF meteorology as the primary tool used to demonstrate future year attainment of the 24-hour average PM_{2.5} standard. A detailed discussion of the features of the CMAQ approach is presented in Appendix V. The analysis was also conducted using the CAMx modeling platform using the “one atmosphere” approach comprised of the SAPRC99 gas phased chemistry and a static two-mode particle size aerosol module as the particulate modeling platform. Parallel testing was conducted to evaluate the CMAQ performance against CAMx and the results indicated that the two model/chemistry packages had similar performance. The CAMx results are provided in Appendix V as a component of the weight of evidence discussion.

The Draft Final 2012 modeling attainment demonstrations using the CMAQ (and CAMx) platform were conducted in a vastly expanded modeling domain compared with the analysis conducted for the 2007 AQMP modeling attainment demonstration. In this analysis, the PM_{2.5} and ozone base and future simulations were modeled

simultaneously. The simulations were conducted using a Lambert Conformal grid projection where the western boundary of the domain was extended to 084 UTM, over 100 miles west of the ports of Los Angeles and Long Beach. The eastern boundary extended beyond the Colorado river while the northern and southern boundaries of the domain extend to the San Joaquin Valley and the Northern portions of Mexico (3543 UTM). The grid size has been reduced from 5 kilometers squared to 4 kilometers squared and the vertical resolution has been increased from 11 to 18 layers.

The final WRF meteorological fields were generated for the identical domain, layer structure and grid size. The WRF simulations were initialized from National Centers for Environmental Prediction (NCEP) analyses and run for 3-day increments with the option for four dimensional data assimilation (FDDA). Horizontal and vertical boundary conditions were designated using a “U.S. EPA clean boundary profile.”

PM_{2.5} data measured as individual species at six-sites in the AQMD air monitoring network during 2008 provided the characterization for evaluation and validation of the CMAQ annual and episodic modeling. The six sites include the historical PM_{2.5} maximum location (Riverside- Rubidoux), the stations experiencing many of the highest county concentrations (among the 4-county jurisdiction including Fontana, North Long Beach and Anaheim) and source oriented key monitoring sites addressing goods movement (South Long Beach) and mobile source impacts (Central Los Angeles). It is important to note that the close proximity of Mira Loma to Rubidoux and the common in-Basin air flow and transport patterns enable the use of the Rubidoux speciated data as representative of the particulate speciation at Mira Loma. Both sites are directly downwind of the dairy production areas in Chino and the warehouse distribution centers located in the northwestern corner of Riverside County. Speciated data monitored at the selected sites for 2006-2007 and 2009-2010 were analyzed to corroborate the applicability of using the 2008 profiles.

Day-specific point source emissions were extracted from the District stationary source and RECLAIM inventories. Mobile source emissions included weekday, Saturday and Sunday profiles based on CARB’s EMFAC2011 emissions model, CALTRANS weigh-in-motion profiles, and vehicle population data and transportation analysis zone (TAZ) data provided by SCAG. The mobile source data and selected area source data were subjected to daily temperature corrections to account for enhanced evaporative emissions on warmer days. Gridded daily biogenic VOC emissions were provided by CARB using BEIGIS biogenic emissions model. The simulations benefited from enhancements made to the emissions inventory including an updated ammonia inventory, improved emissions characterization that split organic compounds into coarse, fine and primary

particulate categories, and updated spatial allocation of primary paved road dust emissions.

Model performance was evaluated against speciated particulate PM_{2.5} air quality data for ammonium, nitrates, sulfates, secondary organic matter, elemental carbon, primary and total particulate mass for the six monitoring sites (Rubidoux, Central Los Angeles, Anaheim, South Long Beach, Long Beach, and Fontana).

The following section summarizes the PM_{2.5} modeling approach conducted in preparation for this Plan. Details of the PM_{2.5} modeling are presented in Appendix V.

24-Hour PM_{2.5} Modeling Approach

CMAQ simulations were conducted for each day in 2008. The simulations included 8784 consecutive hours from which daily 24-hour average PM_{2.5} concentrations (0000-2300 hours) were calculated. A set of RRFs were generated for each future year simulation. RRFs were generated for the ammonium ion (NH₄), nitrate ion (NO₃), sulfate ion (SO₄), organic carbon (OC), elemental carbon (EC) and a combined grouping of crustal, sea salts and metals (Others). A total of 24 RRFs were generated for each future year simulation (4 seasons and 6 monitoring sites).

Future year concentrations of the six component species were calculated by applying the model generated quarterly RRFs to the speciated 24-hour PM_{2.5} (FRM) data, sorted by quarter, for each of the five years used in the design value calculation. The 32 days in each year were then re-ranked to establish a new 98th percentile concentration. The resulting future year 98th percentile concentrations for the five years were subjected to weighted averaging for the attainment demonstration.

In this chapter, future year PM_{2.5} 24-hour average design values are presented for 2014, and 2019 to (1) demonstrate the future baseline concentrations if no further controls are implemented; (2) identify the amount of air quality improvement needed to advance the attainment date to 2014; and (3) confirm the attainment demonstration given the proposed PM_{2.5} control strategy. In addition, Appendix V will include a discussion and demonstration that attainment will be satisfied for the entire modeling domain.

Weight of Evidence

PM_{2.5} modeling guidance strongly recommends the use of corroborating evidence to support the future year attainment demonstration. The weight of evidence demonstration for the Draft Final 2012 AQMP includes brief discussions of the observed 24-hour

PM2.5, emissions trends, and future year PM2.5 predictions. Detailed discussions of all model results and the weight of evidence demonstration are provided in Appendix V.

FUTURE AIR QUALITY

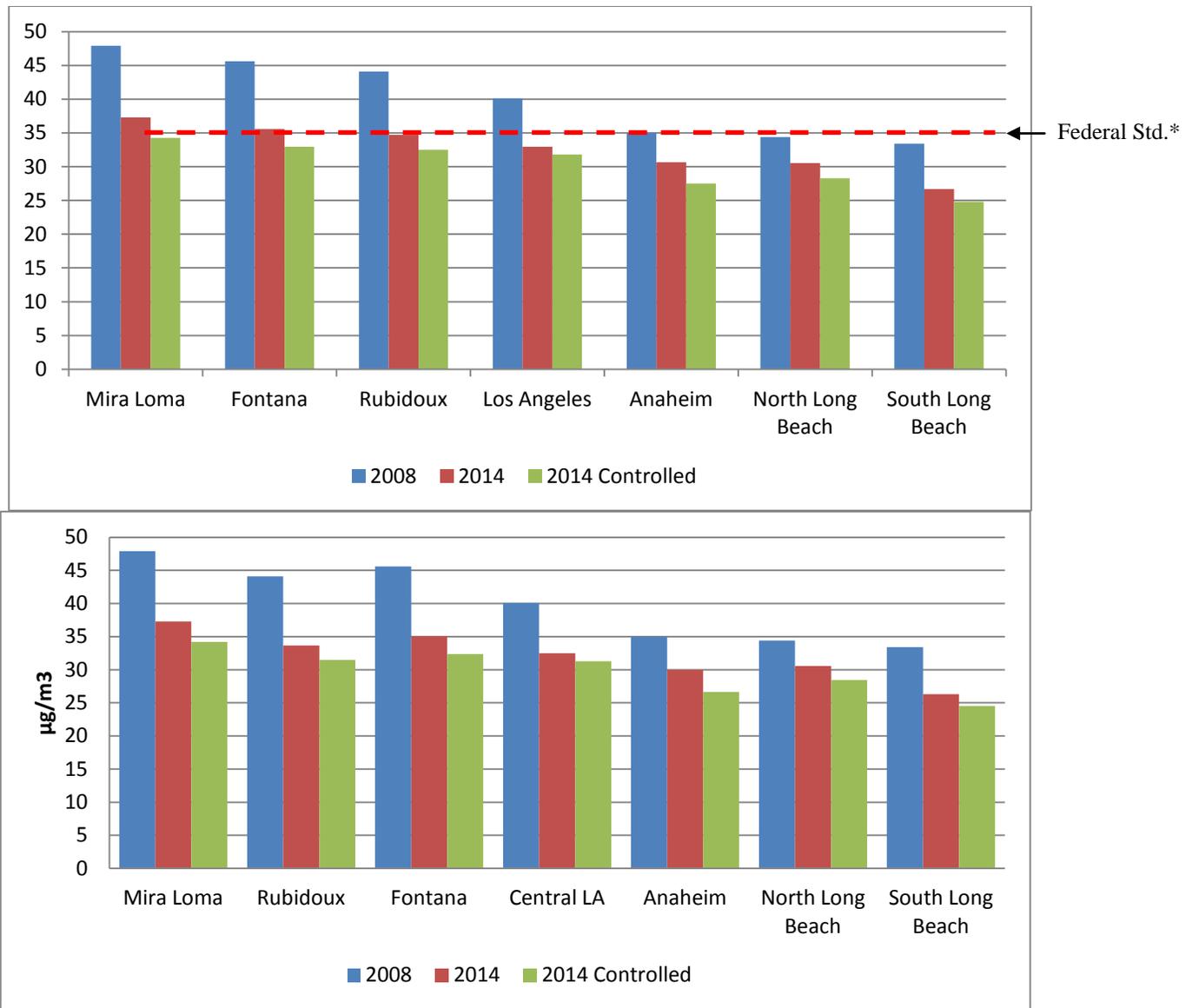
Under the federal Clean Air Act, the Basin must comply with the federal PM2.5 air quality standards by December, 2014 [Section 172(a)(2)(A)]. An extension of up-to five years (until 2019) could be granted if attainment cannot be demonstrated any earlier with all feasible control measures incorporated.

24-Hour PM2.5

A simulation of 2014 baseline emissions was conducted to substantiate the severity of the 24-hour PM2.5 problem in the Basin. The simulation used the projected emissions for 2014 which included all adopted control measures that will be implemented prior to and during 2014, including mobile source incentive projects under contract (Proposition 1B and Carl Moyer Programs). The resulting 2014 future-year Basin design value ($37.3\mu\text{g}/\text{m}^3$) failed to meet the federal standard. As a consequence additional controls are needed.

Simulation of the 2019 baseline emissions indicates that the Basin PM2.5 will attain the federal 24-hour PM2.5 standard in 2019 without additional controls. With the control program in place, the 24-hour PM2.5 simulations project that the 2014 design value will be $34.3\mu\text{g}/\text{m}^3$ and that the attainment date will advance from 2019 to 2014.

Figure 5-3 depicts future 24-hour PM2.5 air quality projections at the Basin design site (Mira Loma) and six PM2.5 monitoring sites having comprehensive particulate species characterization. Shown in the figure, are the base year design values for 2008 along with projections for 2014 with and without control measures in place. All of the sites with the exception of Mira Loma will meet the 24-hour PM2.5 standard by 2014 without additional controls. With implementation of the control measures, all sites in the Basin demonstrate attainment.



*No such state standard.

FIGURE 5-3

Maximum 24-Hour Average PM2.5 Design Concentrations:
2008 Baseline, 2014 and 2014 Controlled

Spatial Projections of PM2.5 Design Values

Figure 5-4 provides a perspective of the Basin-wide spatial extent of 24-hour PM2.5 impacts in the base year 2008, with all adopted rules and measures implemented. Figures 5-5 and 5-6 provide a Basin-wide perspective of the spatial extent of 24-hour PM2.5 future impacts for baseline 2014 emissions and 2014 with the proposed control program in place. With no additional controls, several areas around the northwestern portion of Riverside and southwestern portion of San Bernardino Counties depict grid

cells with weighted PM_{2.5} 24-hour design values exceeding 35 $\mu\text{g}/\text{m}^3$. By 2014, the number of grid cells with concentrations exceeding the federal standard is restricted to a small region surrounding the Mira Loma monitoring station in northwestern Riverside County. With the control program fully implemented in 2014, the Basin does not exhibit any grid cells exceeding the federal standard.

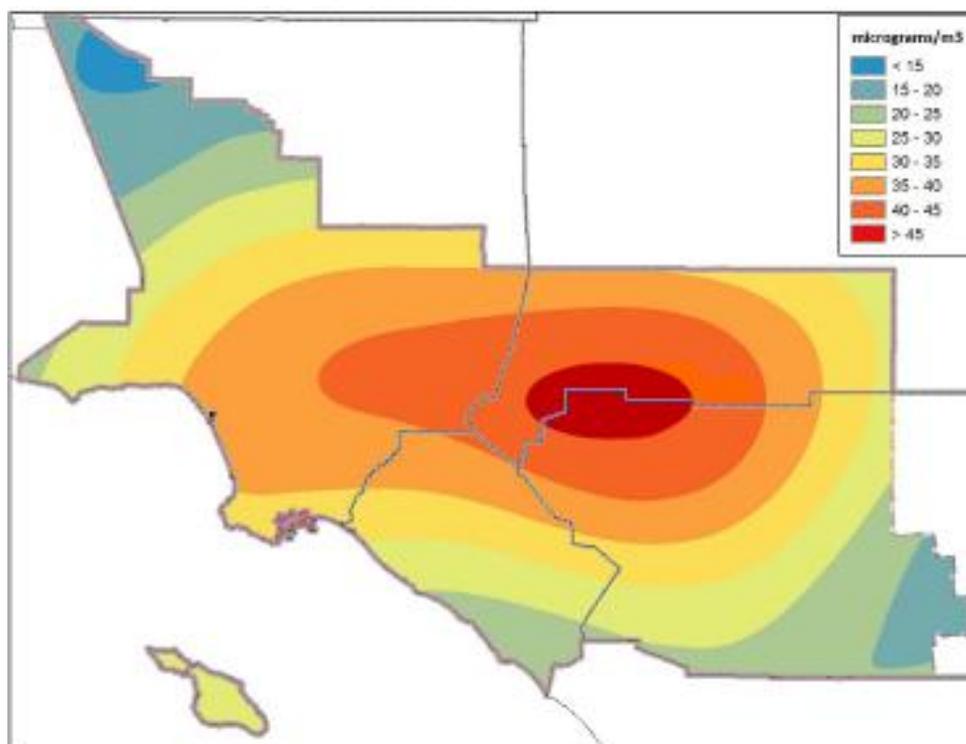


FIGURE 5-4

2008 Baseline 24-Hour PM_{2.5} Design Concentrations ($\mu\text{g}/\text{m}^3$)

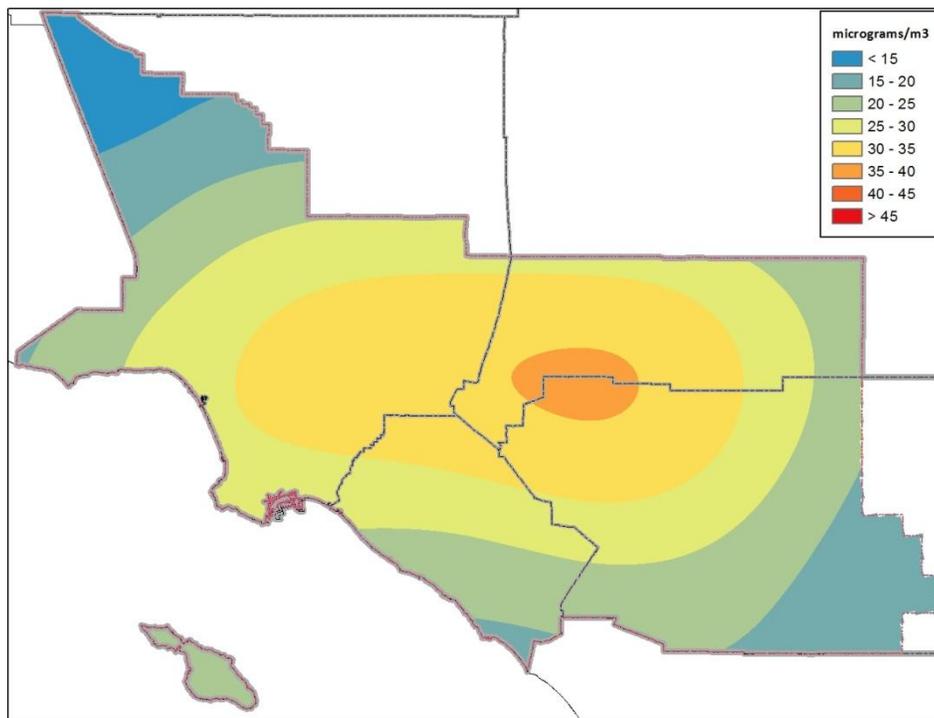


FIGURE 5-5

2014 Baseline 24-Hour PM_{2.5} Design Concentrations (µg/m³)

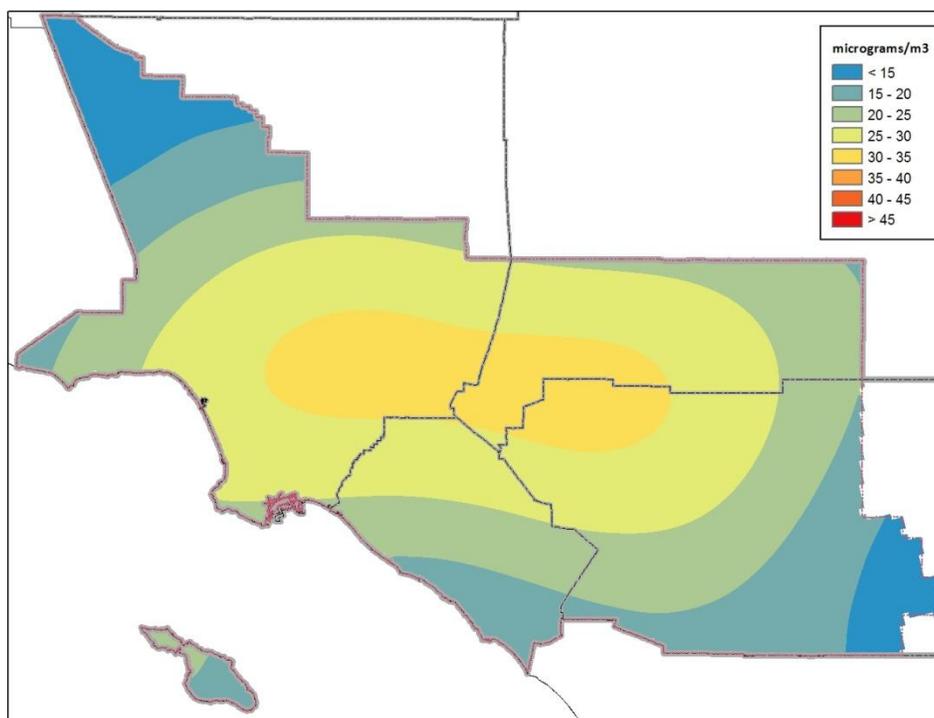


FIGURE 5-6

2014 Controlled 24-Hour PM_{2.5} Design Concentrations (µg/m³)

Weight of Evidence Discussion

The weight of evidence discussion focuses on the trends of 24-hour PM_{2.5} and key precursor emissions to provide justification and confidence that the Basin will meet the federal standard by 2014.

Figure 5-7 depicts the long term trend of observed Basin 24-hour average PM_{2.5} design values with the CMAQ projected design value for 2014. Also superimposed on the graph is the linear best-fit trend line for the observed 24-hour average PM_{2.5} design values. The observed trend depicts a steady 49 percent decrease in observed design value concentrations between 2001 and 2011. The rate of improvement is just under 4 µg/m³ per year. If the trend is extended beyond 2011, the projection suggests attainment of the PM_{2.5} 24-hour standard in 2013, one year earlier than determined by the attainment demonstration. While the straight-line future year approximation is aggressive in its projection, it offers insight to the effectiveness of the ongoing control program and is consistent with the attainment demonstration.

Figures 5-8 depicts the long term trend of Basin NO_x emissions for the same period. Figure 5-9 provides the corresponding emissions trend for directly emitted PM_{2.5}. Base year NO_x inventories between 2002 (from the 2007 AQMP) and 2008 experienced a 31 percent reduction while directly emitted PM_{2.5} experienced a 19 percent reduction over the 6-year period. The Basin 24-hour average PM_{2.5} design value experienced a concurrent 27 percent reduction between 2002 and 2008. The projected trend of NO_x emissions indicates that the PM_{2.5} precursor associated with the formation of nitrate will continue to be reduced through 2019 by an additional 48 percent. Similarly, the projected trend of directly emitted PM_{2.5} projects a more moderate reduction of 13 percent through 2019. However, as discussed in the 2007 AQMP and in a later section of this chapter, directly emitted PM_{2.5} is a more effective contributor to the formation of ambient PM_{2.5} compared to NO_x. While the projected NO_x and direct PM_{2.5} emissions trends decrease at a reduced rate between 2012 and 2019, it is clearly evident that the overall significant reductions will continue to result in lower nitrate, elemental carbon and direct particulate contributions to 24-hour PM_{2.5} design values.

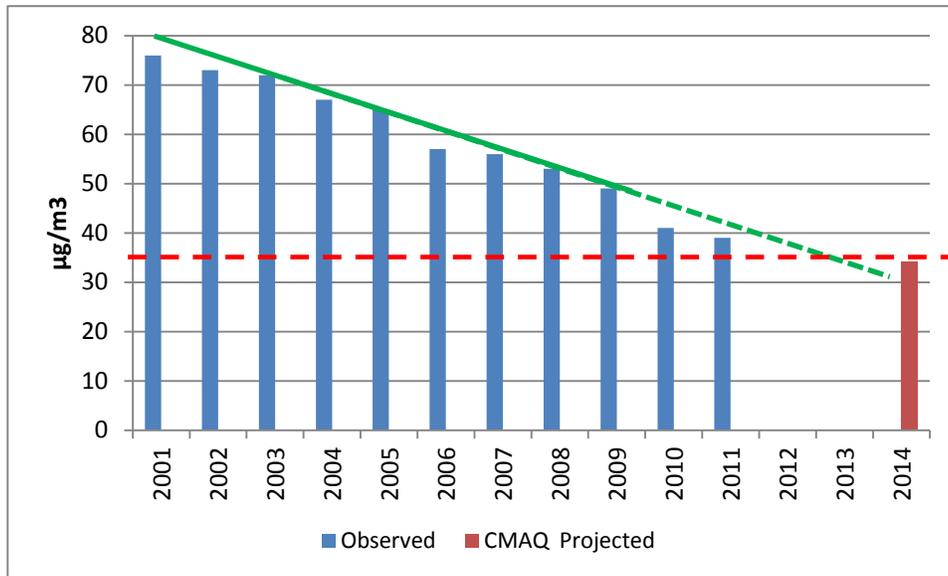


FIGURE 5-7
 Basin Observed and CMAQ Projected
 Future Year PM2.5 Design Concentrations (µg/m³)

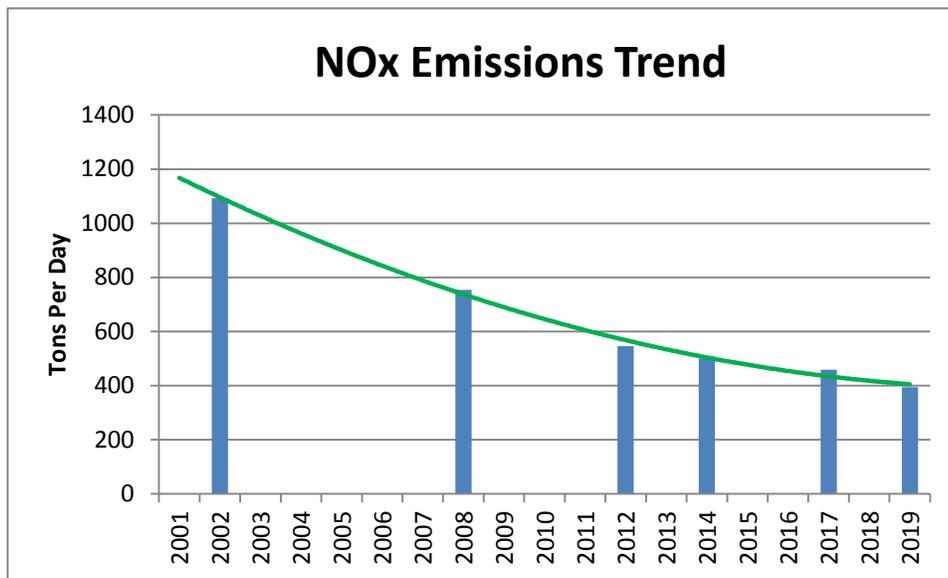
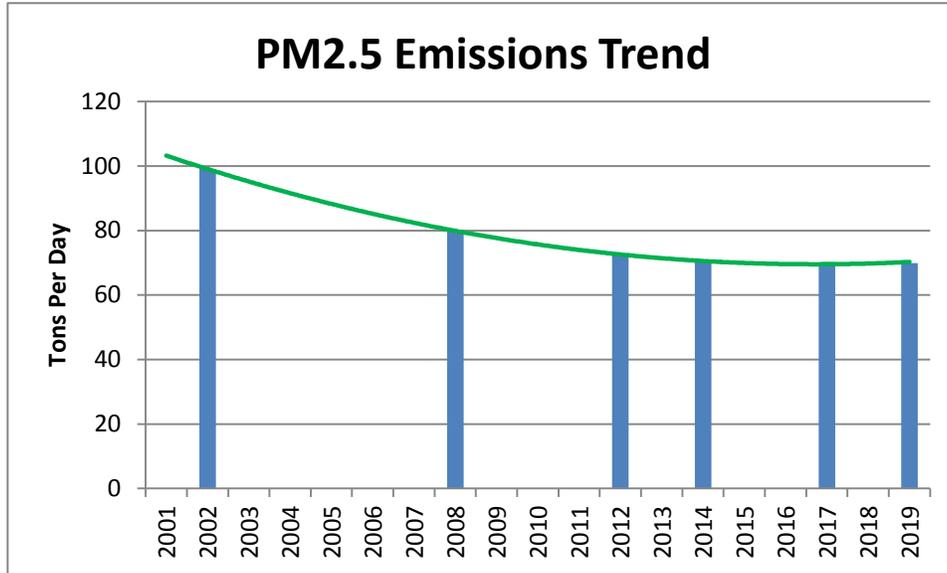


FIGURE 5-8
 Trend of Basin NOx Emissions (Controlled)

**FIGURE 5-9**

Trend of Basin PM2.5 Emissions (Controlled)

Control Strategy Choices

PM2.5 has five major precursors that contribute to the development of the ambient aerosol including ammonia, NO_x, SO_x, VOC, and directly emitted PM2.5. Various combinations of reductions in these pollutants could all provide a path to clean air. The 24-hour PM2.5 attainment strategy presented in this Draft Final 2012 AQMP relies on a dual approach to first demonstrate attainment of the federal standard by 2019 and then focuses on controls that will be most effective in reducing PM2.5 to accelerate attainment to the earliest extent. The 2007 AQMP control measures since implemented will result in substantial reductions of SO_x, direct PM2.5, VOC and NO_x emissions. Newly proposed short-term measures, discussed in Chapter 4, will provide additional regional emissions reductions targeting directly emitted PM2.5 and NO_x.

It is useful to weigh the value of the precursor emissions reductions (on a per ton basis) to microgram per cubic meter improvements in ambient PM2.5 levels. As presented in the weight of evidence discussion, trends of PM2.5 and NO_x emissions suggest a direct response between lower emissions and improving air quality. The Final 2007 AQMP established a set of factors to relate regional per ton precursor emissions reductions to PM2.5 air quality improvements based on the annual average concentration. The Draft Final 2012 AQMP CMAQ simulations provided a similar set of factors, but this time directed at 24-hour PM2.5. The analysis determined that VOC emissions reductions have the lowest return in terms of micrograms reduced per ton reduction, one third of the benefit of NO_x reductions. SO_x emissions were about eight times more effective than

NO_x reductions. However, directly emitted PM_{2.5} reductions were approximately 15 times more effective than NO_x reductions. It is important to note that the contribution of ammonia emissions is embedded as a component of the SO_x and NO_x factors since ammonium nitrate and ammonium sulfate are the resultant particulates formed in the ambient chemical process. Table 5-2 summarizes the relative importance of precursor emissions reductions to 24-hour PM_{2.5} air quality improvements based on the analysis. . (A comprehensive discussion of the emission reduction factors is presented in Attachment 8 of Appendix V of this document). Emission reductions due to existing programs and implementation of the 2012 AQMP control measures will result in projected 24-hour PM_{2.5} concentrations throughout the Basin that meet the standard by 2014 at all locations. Basin-wide curtailment of wood burning and open burning when the PM_{2.5} air quality is projected to exceed 30 µg/m³ in Mira Loma will effectively accelerate attainment at Mira Loma from 2019 to 2014. Table 5-3 lists the mix of the four primary precursor's emissions reductions targeted for the staged control measure implementation approach.

TABLE 5-2

Relative Contributions of Precursor Emissions Reductions to Simulated Controlled Future-Year 24-hour PM_{2.5} Concentrations

PRECURSOR	PM _{2.5} COMPONENT (µg/m ³)	STANDARDIZED CONTRIBUTION TO AMBIENT PM _{2.5} MASS
VOC	Organic Carbon	Factor of 0.3
NO _x	Nitrate	Factor of 1
SO _x	Sulfate	Factor of 7.8
PM _{2.5}	Elemental Carbon & Others	Factor of 14.8

TABLE 5-3

Draft Final 2012 AQMP
24-hour PM_{2.5} Attainment Strategy
Allowable Emissions (TPD)

YEAR	SCENARIO	VOC	NO _x	SO _x	PM _{2.5}
2014	Baseline	451	506	18	70
2014	Controlled	451	490	18	58*

*Winter episodic day emissions

ADDITIONAL MODELING ANALYSES

As a component of the Draft Final 2012 AQMP, concurrent simulations were also conducted to update and assess the impacts to annual average PM_{2.5} and 8-hour ozone given the new modeling platform and emissions inventory. This update provides a confirmation that the control strategy will continue to move air quality expeditiously towards attainment of the relevant standards.

Annual PM_{2.5}

Annual PM_{2.5} Modeling Approach

The Draft Final 2012 AQMP annual PM_{2.5} modeling employs the same approach to estimating the future year annual PM_{2.5} as was described in the 2007 AQMP attainment demonstrations. Future year PM_{2.5} annual average air quality is determined using site

and species specific quarterly averaged RRFs applied to the weighted quarterly average 2008 PM_{2.5} design values per U.S. EPA guidance documents.

In this application, CMAQ and WRF were used to simulate 2008 meteorological and air quality to determine Basin annual average PM_{2.5} concentrations. The future year attainment demonstration was analyzed for 2015, the target set by the federal CAA. The 2014 simulation relies on implementation of all adopted rules and measures through 2014. This enables a full year-long demonstration based on a control strategy that would be fully implemented by January 1, 2015. It is important to note that the use of the quarterly design values for a 5-year period centered around 2008 (listed in Table 5-4) continue to be used in the projection of the future year annual average PM_{2.5} concentrations. The future year design reflects the weighted quarterly average concentration calculated from the projections over five years (20 quarters).

TABLE 5-4

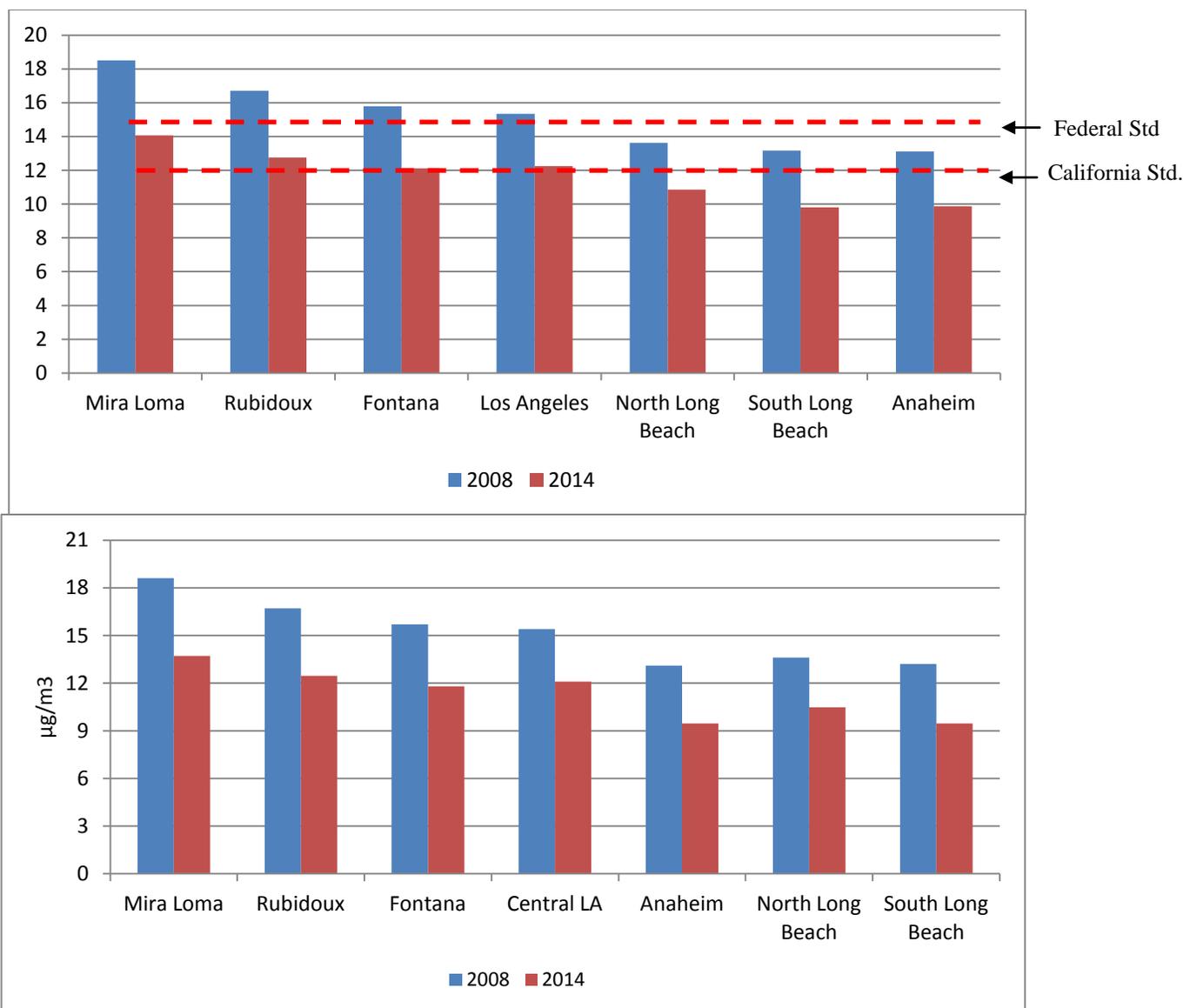
2008 Weighted Annual PM_{2.5} Design Values* (µg/m³)

MONITORING SITE	ANNUAL*
Anaheim	13.1
Los Angeles	15.4
Fontana	15.7
North Long Beach	13.6
South Long Beach	13.2
Mira Loma	18.6
Rubidoux	16.7

* Calculated based on quarterly observed data between 2006 – 2010

Future Annual PM_{2.5} Air Quality

The projections for the annual state and federal standards are shown in Figure 5-10. All areas will be in attainment of the federal annual standard (15.0 µg/m³) by 2014. The 2014 design value is projected to be 9 percent below the federal standard. However, as shown in Figure 5-10, the Draft Final 2012 AQMP does not achieve the California standard of 12 µg/m³ by 2014. Additional controls would be needed to meet the California annual PM_{2.5} standard.

**FIGURE 5-10**

Annual Average PM_{2.5} Design Concentrations:
2008 and 2014 Controlled

Ozone Modeling

The 2007 AQMP provided a comprehensive 8-hour ozone analysis that demonstrated future year attainment of the 1997 federal ozone standard (80 ppb) by 2023 with implementation of short-term measures and CAA Section 182(e)(5) long term emissions reductions. The analysis concluded that NO_x emissions needed to be reduced approximately 76 percent and VOC 22 percent from the 2023 baseline in order to demonstrate attainment. The 2023 base year VOC and NO_x summer planning emissions inventories included 536 and 506 TPD, respectively.

As presented in Chapter 3, the Draft Final 2012 AQMP controlled 2023 emissions of both precursor pollutants are estimated to be lower than the 2023 baseline established in the 2007 AQMP. The 2023 baseline VOC and NO_x emission summer planning emissions have been revised to 438 and 319 TPD, respectively. The emissions revision incorporated changes made to the on-road truck and off-road equipment categories that resulted from CARB rulemaking. The new emissions inventory also reflects the impact of the economic slowdown and revisions to regional growth estimates. As a consequence, it is important to revisit the projections of 2023 baseline ozone to investigate the impact of the inventory revision on the attainment demonstration and equally important, what is the impact on the size of the proposed long term NO_x emissions reduction commitment.

Ozone Representativeness

As a component of the PM_{2.5} attainment demonstration, the CMAQ modeling provided Basin-wide ozone air quality simulations for each hour in 2008. Past ozone attainment demonstrations evaluated a set of days characterized by restrictive meteorology or episodes occurring during concurrent intensive field monitoring programs. Of great importance, these episodic periods needed to be rated in terms of how representative they were in reference to the ozone standard being evaluated. For the now revoked 1-hour ozone standard, the attainment demonstration focused on a limited number of days closely matching the annual design value. Typically, the analysis addressed fewer than 5 days of simulations. The 2007 AQMP was the first to address the 8-hour ozone standard and the use of the RRFs in the future year ozone projection. To provide a robust characterization of the RRFs for use in the attainment demonstration, the analysis simulated 36 days. The ozone modeling guidance recommends that a minimum of 5-days of simulations meeting modeling acceptance criteria be used in a future year RRF calculation, but recommends incorporating as many days as possible to fully capture both the meteorological variations in the ozone season and the response of ozone formation for different daily emissions profiles.

This update to the future year ozone projection focuses on 91 days of ozone air quality observed during June through August 2008. During this period, seven well defined multiday ozone episodes occurred in the Basin with 75 total days having daily Basin-wide maximum concentrations of 80 ppb or higher. More importantly, when adjusted by a normalized meteorological potential using a regression based weighting covering 30-years of data (1998-2010), summarized in the 2003 AQMP, 8 days during the 2008 period were ranked above the 95th percentile in the long term distribution and another 19 were ranked between the 90th and 94th percentile.

Figure 5-11 depicts the time series of the daily Basin 8-hour maximum and Crestline (the Basin design station) daily maximum 8-hour ozone air quality during the three month period in 2008. The seven primary meteorological episodes which occur primarily between mid June and August are highlighted in the figure. It is important to note that the analysis not only focused on the seven periods or Crestline specifically. All station days meeting the acceptance criteria for calculating a daily RRF were included in the analysis. Several locations in the San Bernardino and Riverside Valleys exhibit similar transport and daily patterns of ozone formation as Crestline. The peak Basin 2008 8-hour average ozone concentration was observed at Santa Clarita on August 2nd at a value of 131 ppb, along a distinctly different transport route.

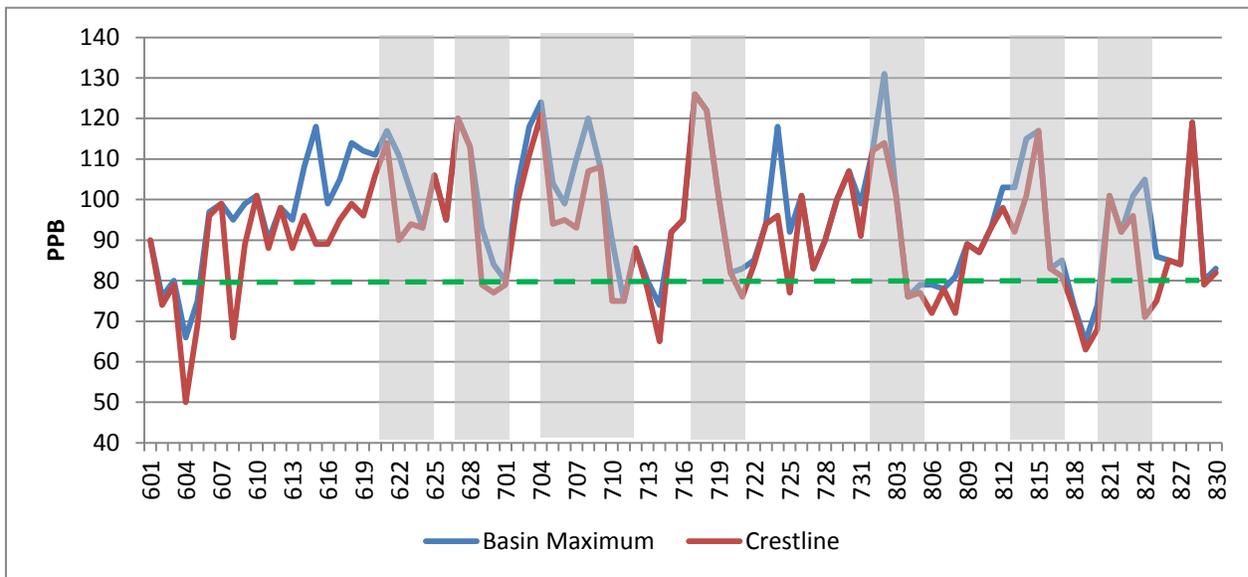


FIGURE 5-11

Observed Basin and Crestline Daily Maximum 8-Hr Average Ozone Concentrations

(Shaded areas indicate multiple day regional ozone episodes)

Overall, the 91-day period provides a robust description of the 2008 ozone-meteorological season. Table 5-4 lists the number of days each Basin station exceeded the 8-hour ozone standard during the June through August 2008 period. Also listed in Table 5-4 are the 2008, 5-year weighted design values used in the future year ozone projections.

TABLE 5-4

2008 Basin Weighted Design Values* and Number of Days Daily Maximum Concentrations Exceeded 80 ppb

STATION	2008 5-YEAR WEIGHTED DESIGN (PPB)	NUMBER OF DAYS IN 2008 WITH OBSERVED 8-HR AVERAGE MAXIMUM OZONE > 80 PPB
Azusa	94	16
Burbank	88	10
Reseda	94	16
Pomona	97	19
Pasadena	90	7
Santa Clarita	101	41
Glendora	106	26
Rubidoux	101	39
Perris	104	47
Lake Elsinore	99	39
Banning Airport	102	49
Upland	106	31
Crestline	116	66
Fontana	107	36
San Bernardino	109	46
Redlands	109	50

*Stations having design values greater than 80 ppb

Ozone Modeling Approach

The ozone modeling approach used in this update follows the same criteria employed for the 2007 AQMP attainment demonstration. Briefly, the set of 91 days from June 1 through August 30, 2008, simulated as a subset of the annual PM_{2.5} simulations, were analyzed to determine daily 8-hour average maximum ozone for the 2008 and 2023 emissions inventories. A separate 2023 simulation was conducted to assess future year ozone with VOC and NO_x emissions specified at the levels defined by the 2007 AQMP attainment demonstration carrying capacity (420 TPD VOC and 114 TPD NO_x). Finally, a set of simulations with incremental VOC and NO_x emissions reductions from 2023 baseline emissions was generated to create ozone isopleths for each station in the Basin. The ozone isopleths provide updated guidance to the determination of the future

control strategy, particularly in light of the challenge in meeting the current 75 ppb standard which will require an attainment demonstration to be submitted to U.S. EPA in 2015.

The ozone RRFs were calculated using the ratio methodology described for the PM_{2.5} modeling. Individual station day inclusion in the analysis was determined by three basic criteria: (1) the observed ozone concentration had to be ± 30 percent of the station's weighted design value; (2) the absolute prediction accuracy of the base 2008 simulation for that day was required to be within 20 percent; and (3) the observed daily maximum concentration needed to be greater than 84 ppb. The criteria were designed to eliminate extreme values from entering the analysis and to only focus on station days where model performance met the long-standing criteria for acceptance used in previous attainment demonstrations. Finally, only station days where ozone exceeded the 84 ppb threshold established to demonstrate attainment of the 1997 ozone standard, as specified in the U.S. EPA Modeling Attainment Guidance Document, were included in the analysis.

Future Ozone Air Quality

Table 5-5 summarizes the results of the updated ozone simulations. Included for general comparison are the 2023 ozone baseline and 2023 controlled ozone projections from the 2007 AQMP ozone attainment demonstration modeling analysis approved by U.S. EPA as part of the SIP. The Draft Final 2012 AQMP baseline ozone simulations reflect the changes made to the 2023 baseline inventory. The Draft Final 2012 summer planning inventory has a higher ratio between VOC and NO_x emissions, 1.39 vs. 1.05, although total tonnages of both precursor emissions are lower than presented in the 2007 AQMP. The higher VOC to NO_x ratio is indicative of a more reactive pollutant mix with average projected ozone design concentrations 9 percent higher than previously projected. One implication of this simulation is that moderate VOC emissions reductions in the years between 2014 and 2023 will benefit regional ozone concentrations. Yet, the projected 2023 baseline design value of 108 ppb continues to exceed the federal standard by 35 percent. With the implementation of the Draft Final 2012 AQMP short term control measures and the Section 185(e)(5) long-term control measures, (defined in this update as the difference between the Draft Final 2012 AQMP 2023 base year VOC and NO_x emissions and the corresponding Basin 2007 AQMP ozone attainment demonstration carrying capacity), projected regional ozone design values closely match those defined in the 2007 AQMP ozone attainment demonstration. Regardless, it will still require a 64 percent reduction in NO_x emissions and an additional 3 percent reduction in VOC emissions to attain the 1997 ozone standard.

With controls in place, the updated analysis corroborates the approved 2007 AQMP ozone attainment demonstration in that it is expected that all stations in the Basin will meet the federal 8-hour ozone standard. The east Basin stations in the San Bernardino Valley continue to have among the highest projected 8-hour controlled design values for this update. The 2023 controlled ozone design value at Glendora is also projected to exceed 80 ppb, but all stations show attainment with the federal 8-hour ozone standard (≤ 84 ppb). Glendora, Upland, Fontana and San Bernardino are downwind receptors along the primary wind transport route that moves precursor emissions and developing ozone eastward by the daily sea breeze. The higher projected design value at Glendora reflects the higher VOC to NO_x ratio observed in the baseline inventory relative to the 2007 AQMP 2023 baseline inventory. The 2023 controlled design value at Glendora for the Draft Final 2012 AQMP actually represents a greater response to emissions reductions than in the 2007 AQMP attainment demonstration. Future year projections of ozone for this update along the northerly transport route through the San Fernando Valley indicate that the ozone design value in the Santa Clarita Valley will be approximately 15 percent below the standard.

TABLE 5-5

Model-Predicted 8-Hour Ozone Concentrations

LOCATION	2007 OZONE SIP-2023 BASELINE DESIGN (PPB)	2007 OZONE SIP-2023 CONTROLLED DESIGN (PPB)	DRAFT FINAL 2012 AQMP-UPDATED 2023* BASELINE DESIGN (PPB)	DRAFT FINAL 2012 AQMP- UPDATED* 2023*CONTROLLED DESIGN (PPB)
Azusa	82	80**	95	77
Burbank	86	70**	88	72
Reseda	86	68	90	73
Pomona	85	75	100	80
Pasadena	78	74**	92	76
Santa Clarita	95	74	94	73
Glendora	91	79	107	84
Riverside	92	78	100	77
Perris	94	78***	88	66
Lake Elsinore	80	64	85	66
Banning	88	70	94	73
Upland	92	78	106	83
Crestline	100	83	107	81
Fontana	97	81	104	81
San	92	78	108	83

Bernardino				
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TABLE 5-5 (concluded)

Model-Predicted 8-Hour Ozone Concentrations

LOCATION	2007 OZONE SIP-2023 BASELINE DESIGN (PPB)	2007 OZONE SIP-2023 CONTROLLED DESIGN (PPB)	DRAFT FINAL 2012 AQMP- UPDATED 2023* BASELINE DESIGN (PPB)	DRAFT FINAL 2012 AQMP- UPDATED* 2023*CONTROLLED DESIGN (PPB)
Redlands	98	81	103	77

* Informational purpose only based on draft emissions inventories and across-the-board reductions.

** Based on the city-station specific RRF's determined from the 19 episode day average.

*** Based on the average of the RRF's determined from the stations meeting the criteria having more than 5 episode days.

Note: Attainment with the 1997 Federal 8-hour ozone standard requires 84 ppb or less

Spatial Projections of 8-Hour Ozone Design Values

The spatial distribution of ozone design values for the 2008 base year is shown in Figure 5-12. Future year ozone air quality projections for 2024 with and without implementation of all control measures are presented in Figures 5-13 and 5-14. The predicted ozone concentrations will be significantly reduced in the future years in all parts of the Basin with the implementation of proposed control measures in the South Coast Air Basin.

Appendix V provides base year model performance statistics, grid level spatial plots of simulated ozone (base cases and future year controlled) as well as weight of evidence discussions to support the modeling attainment demonstration.

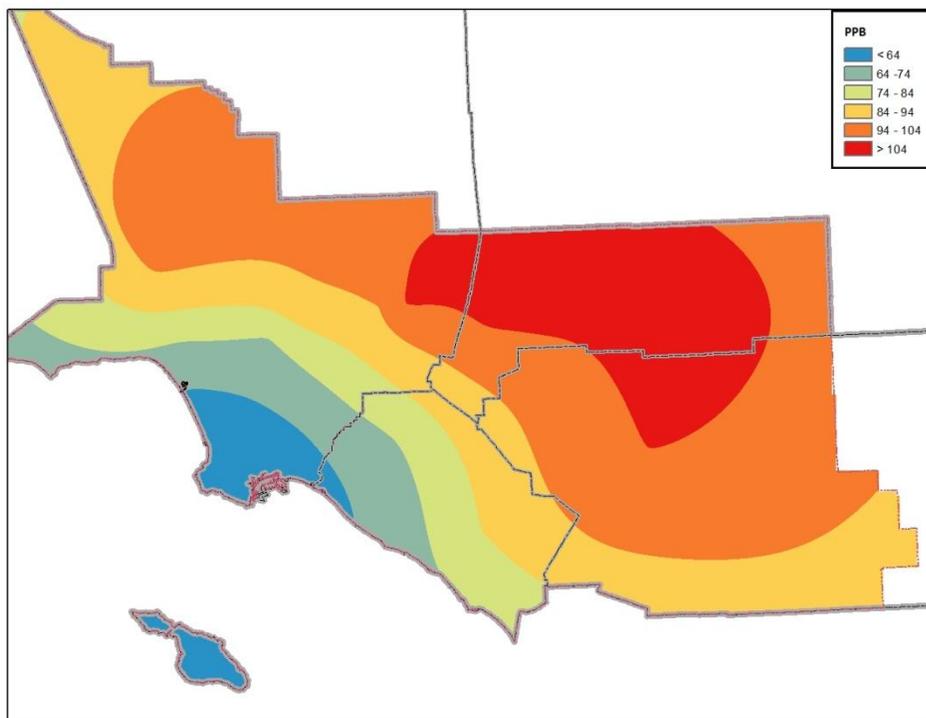


FIGURE 5-12

2008 Baseline 8-Hour Ozone Design Concentrations (ppb)

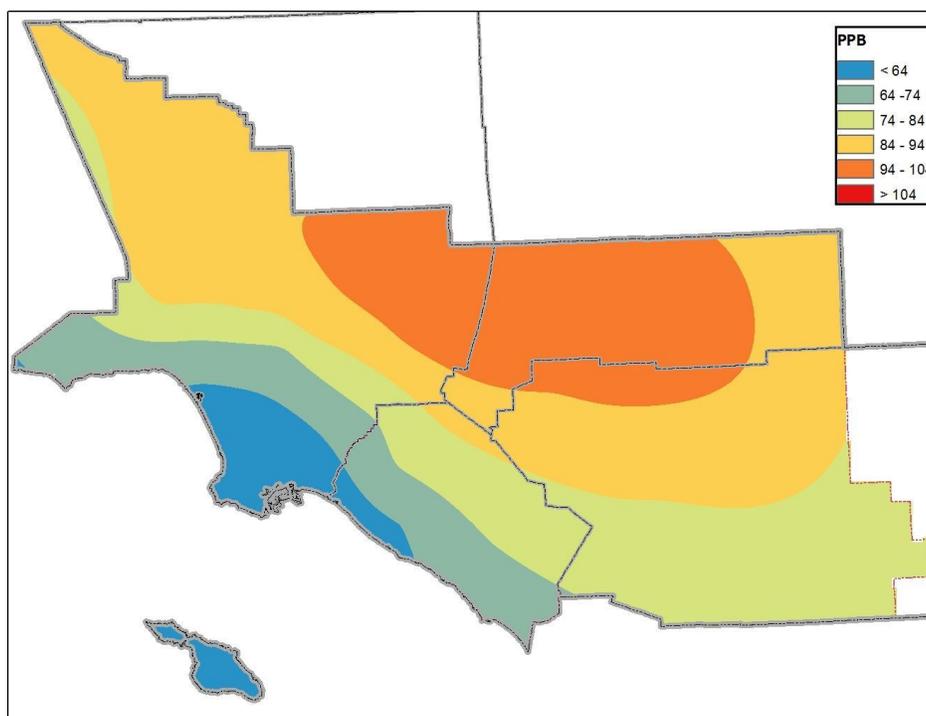


FIGURE 5-13

Model-Predicted 2023 Baseline 8-Hour Ozone Design Concentrations (ppb)

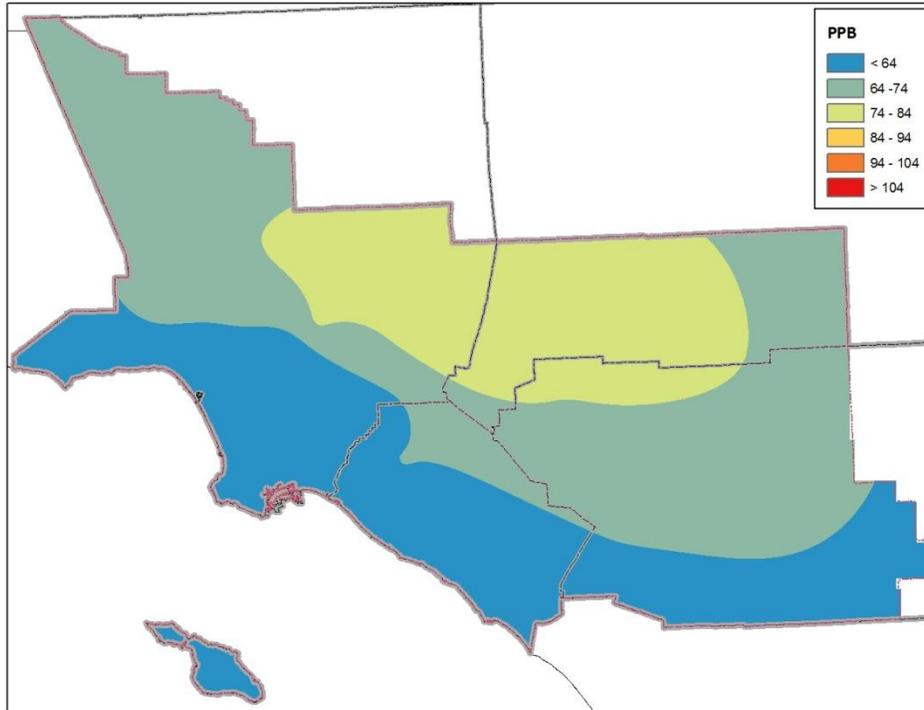


FIGURE 5-14

Model-Predicted 2023 Controlled 8-Hour Ozone Design Concentrations (ppb)

A First Look at Attaining the 2006 8-Hour Ozone Standard

In 2006, the U.S. EPA lowered the federal 8-hour ozone standard to 75 ppb. Recent 8-hour ozone rule implementation guidance requires that a SIP revision with an updated attainment demonstration and control strategy be submitted to U.S. EPA no later than December 2015. The Basin has been designated as an extreme non-attainment area for the new standard, consistent with the classification of the 80 ppb standard. Thus, the deadline for attainment of the 75 ppb standard is 2032, 8-years after the attainment date for the previous 80 ppb federal standard in 2024. It is critical to conduct preliminary analyses to assess the need for potential adjustments to the overall control strategy considering this new standard and deadline

The preliminary projections, based upon a modeling evaluation of how VOC and NO_x reductions affect the Basin's ozone levels (ozone "isopleths") indicates that that a 75 percent reduction in NO_x emissions beyond the 2023 baseline is needed to meet the 75 ppb level in 2032. The resulting 2032 Basin NO_x carrying capacity could be as low as to 85 tpd. Further discussion of the ozone isopleths and a glance at the potential impact to the control strategy and carrying capacity for potential future revisions to the 8-hour ozone standard is presented in Chapter 8.

SUMMARY AND CONCLUSIONS

Figure 5-15 shows the 2008 observed and model-predicted regional peak concentrations for 24-hour average and annual PM_{2.5} as percentages of the most stringent federal standard, for 2014. The federal 24-hour and annual PM_{2.5} standards are predicted to be met in 2014 with implementation of the Draft Final 2012 AQMP control strategy. The California annual PM_{2.5} standard will not be attained before 2019. (See Figure 5-16).

Given the changes made to the modeling platform, the number of episodes evaluated, and the distinct changes in the projected Draft Final 2012 AQMP 2023 baseline inventory, projected 8-hour ozone design values with implementation of the short- and long-term controls are very consistent with those presented in the 2007 AQMP attainment demonstration. Again, an approximate 65 percent reduction in NO_x emissions in 2023 will be required to meet the 1997 80 ppb standard by 2024.

The challenges of meeting potential future standards for 8-hour ozone and a proposed federal annual PM_{2.5} standard between 12 and 13 µg/m³ are discussed in Chapter 8 of this document.

The challenge of future year attainment of proposed revisions to the federal annual PM_{2.5} standard at a value between 12 and 13 µg/m³ are discussed in Chapter 8 of the Draft Final 2012 AQMP.

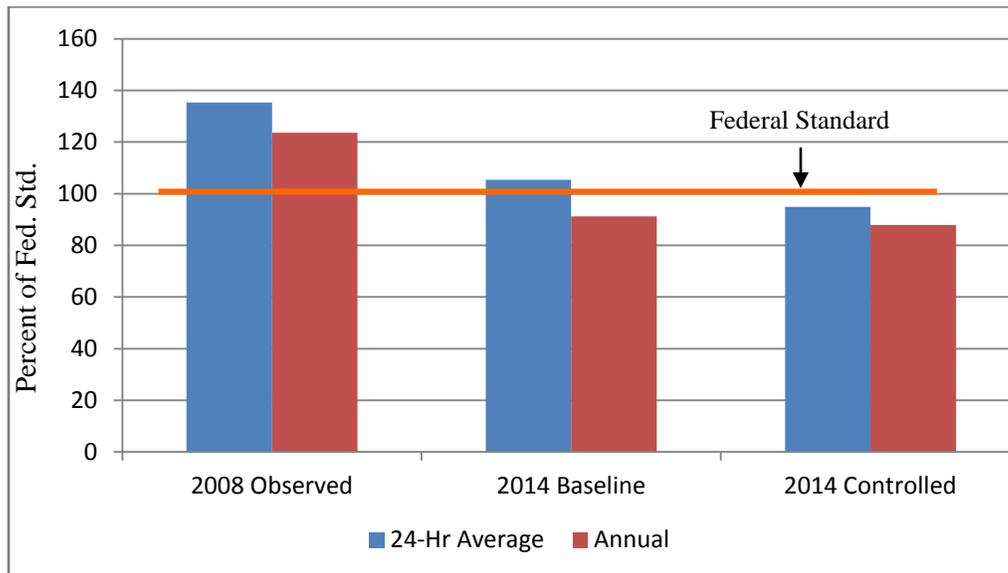


FIGURE 5-15

Projection of Future Air Quality in the Basin in Comparison with the Federal Standards.

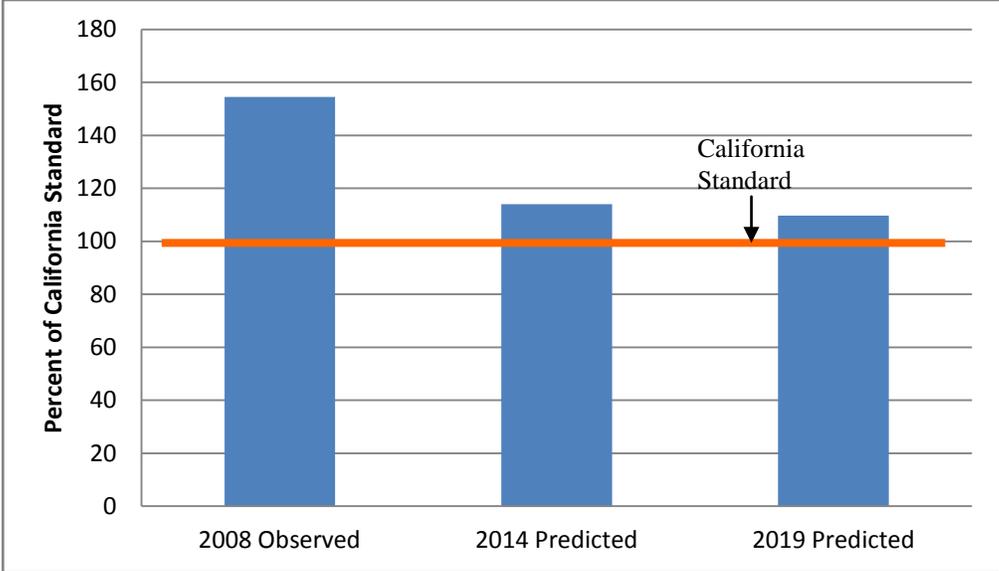
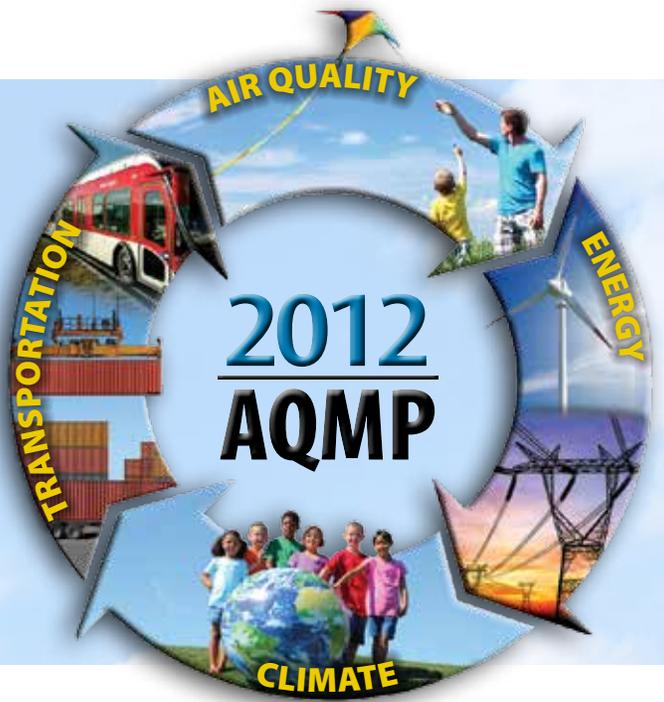


FIGURE 5-16

Projection of Future PM2.5 in the Basin in Comparison with California State Standard



Chapter 6
**Federal and State
Clean Air Act Requirements**

South Coast Air Quality Management District

Cleaning the air that we breathe...



CHAPTER 6

FEDERAL & STATE CLEAN AIR ACT REQUIREMENTS

Introduction

Specific 24-Hour PM_{2.5} Planning Requirements

Federal Air Quality Standards for Fine Particulates

Federal Clean Air Act Requirements

California Clean Air Act Requirements

Transportation Conformity Budgets

INTRODUCTION

The purpose of the 2012 revision to the AQMP for the South Coast Air Basin is to set forth a comprehensive program that will assist in leading the Basin and those portions of the Salton Sea Air Basin under the District's jurisdiction into compliance with all federal and state air quality planning requirements. Specifically, the Draft Final 2012 AQMP is designed to satisfy the SIP submittal requirements of the federal CAA to demonstrate attainment of the 24-hour PM_{2.5} ambient air quality standards, the California CAA triennial update requirements, and the District's commitment to update transportation emission budgets based on the latest approved motor vehicle emissions model and planning assumptions. Specific information related to the air quality and planning requirements for portions of the Salton Sea Air Basin under the District's jurisdiction are included in the Draft Final 2012 AQMP and can be found in Chapter 7 – Current and Future Air Quality – Desert Nonattainment Area. The 2012 AQMP will be submitted to U.S. EPA as SIP revisions once approved by the District's Governing Board and CARB.

SPECIFIC 24-HOUR PM_{2.5} PLANNING REQUIREMENTS

In November 1990, Congress enacted a series of amendments to the CAA intended to intensify air pollution control efforts across the nation. One of the primary goals of the 1990 CAA Amendments was to overhaul the planning provisions for those areas not currently meeting the NAAQS. The CAA identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to attain or to meet interim milestones. There are several sets of general planning requirements, both for nonattainment areas [Section 172(c)] and for implementation plans in general [Section 110(a)(2)]. These requirements are listed and briefly described in Chapter 1 (Tables 1-4 and 1-5). The general provisions apply to all applicable criteria pollutants unless superseded by pollutant-specific requirements. The following sections discuss the federal CAA requirements for the 24-hour PM_{2.5} standards.

FEDERAL AIR QUALITY STANDARDS FOR FINE PARTICULATES

The U.S. EPA promulgated the National Ambient Air Quality Standards for Fine Particles (PM_{2.5}) in July 1997. Following legal actions, the standards were eventually upheld in March 2002. The annual standard was set at a level of 15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), based on the 3-year average of annual mean PM_{2.5} concentrations. The 24-hour standard was set at a level of 65 $\mu\text{g}/\text{m}^3$ based on the 3-year average of the

98th percentile of 24-hour concentrations. U.S. EPA issued designations in December 2004, which became effective on April 5, 2005.

In January 2006, U.S. EPA proposed to lower the 24-hour PM_{2.5} standard. On September 21, 2006, U.S. EPA signed the “Final Revisions to the NAAQS for Particulate Matter.” In promulgating the new standards, U.S. EPA followed an elaborate review process which led to the conclusion that existing standards for particulates were not adequate to protect public health. The studies indicated that for PM_{2.5}, short-term exposures at levels below the 24-hour standard of 65 µg/m³ were found to cause acute health effects, including asthma attacks and breathing and respiratory problems. As a result, the U.S. EPA established a new, lower 24-hour average standard for PM_{2.5} at 35 µg/m³. No changes were made to the existing annual PM_{2.5} standard which remained at 15 µg/m³ as discussed in Chapter 2. On June 14, 2012, U.S. EPA proposed revisions to this annual standard. The annual component of the standard was set to provide protection against typical day-to-day exposures as well as longer-term exposures, while the daily standard protects against more extreme short-term events. For the 2006 24-hour PM_{2.5} standard, the form of the standard continues to be based on the 98th percentile of 24-hour PM_{2.5} concentrations measured in a year (averaged over three years) at the monitoring site with the highest measured values in an area. This form of the standard was set to be health protective while providing a more stable metric to facilitate effective control programs. Table 6-1 summarizes the U.S. EPA’s PM_{2.5} standards.

TABLE 6-1

U.S. EPA’s PM_{2.5} Standards

	1997 STANDARDS		2006 STANDARDS	
	Annual	24-Hour	Annual	24-Hour
PM_{2.5}	15 µg/m ³ Annual arithmetic mean, averaged over 3 years	65 µg/m ³ 24-hour average, 98th percentile, averaged over 3 years	15 µg/m ³ Annual arithmetic mean, averaged over 3 years	35 µg/m ³ 24-hour average, 98th percentile, averaged over 3 years

On December 14, 2009, the U.S. EPA designated the Basin as nonattainment for the 2006 24-hour PM_{2.5} NAAQS. A SIP revision is due to U.S. EPA no later than three years from the effective date of designation, December 14, 2012, demonstrating attainment with the standard by 2014. Under Section 172 of the CAA, U.S. EPA may grant an area an extension of the initial attainment date for a period of up to five years.

With implementation of all feasible measures as outlined in this Plan, the Basin will demonstrate attainment with the 24-hour PM_{2.5} standard by 2014, so no extension is being requested.

FEDERAL CLEAN AIR ACT REQUIREMENTS

For areas such as the Basin that are classified nonattainment for the 2006 24-hour PM_{2.5} NAAQS, Section 172 of subpart 1 of the CAA applies. Section 172(c) requires states with nonattainment areas to submit an attainment demonstration. Section 172(c)(2) requires that nonattainment areas demonstrate Reasonable Further Progress (RFP). Under subpart I of the CAA, all nonattainment area SIPs must include contingency measures. Section 172(c)(1) of the CAA requires nonattainment areas to provide for implementation of all reasonably available control measures (RACM) as expeditiously as possible, including the adoption of reasonably available control technology (RACT). Section 172 of the CAA requires the implementation of a new source review program including the use of “lowest achievable emission rate” for major sources referred to under state law as “Best Available Control Technology” (BACT) for major sources of PM_{2.5} and precursor emissions (i.e., precursors of secondary particulates).

This section describes how the Draft Final 2012 AQMP meets the 2006 24-hour PM_{2.5} planning requirements for the Basin. The requirements specifically addressed for the Basin are:

1. Attainment demonstration and modeling [Section 172(a)(2)(A)];
2. Reasonable further progress [Section 172(c)(2)];
3. Reasonably available control technology (RACT) and Reasonably available control measures (RACM) [Section 172(c)(1)] ;
4. New source review (NSR) [Sections 172(c)(4) and (5)];
5. Contingency measures [Section 172(c)(9)]; and
6. Transportation control measures (as RACM).

Attainment Demonstration and Modeling

Under the CAA Section 172(a)(2)(A), each attainment plan should demonstrate that the area will attain the NAAQS “as expeditiously as practicable,” but no later than five years from the effective date of the designation of the area. If attainment within five years is considered impracticable due to the severity of an area’s air quality problem and the lack

of available control measures, the state may propose an attainment date of more than five years but not more than ten years from designation.

This attainment demonstration consists of: (1) technical analyses that locate, identify, and quantify sources of emissions that contribute to violations of the PM_{2.5} standard; (2) analysis of future year emission reductions and air quality improvement resulting from adopted and proposed control measures; (3) proposed emission reduction measures with schedules for implementation; and (4) analysis supporting the region's proposed attainment date by performing a detailed modeling analysis. Chapter 3 and Appendix III of the Draft Final 2012 AQMP present base year and future year emissions inventories in the Basin, while Chapter 4 and Appendix IV provide descriptions of the proposed control measures, the resulting emissions reductions, and schedules for implementation of each measure. The detailed modeling analysis and attainment demonstration are summarized in Chapter 5 and documented in Appendix V.

Reasonable Further Progress (RFP)

The CAA requires SIPs for most nonattainment areas to demonstrate reasonable further progress (RFP) towards attainment through emission reductions phased in from the time of the SIP submission until the attainment date time frame. The RFP requirements in the CAA are intended to ensure that there are sufficient PM_{2.5} and precursor emission reductions in each nonattainment area to attain the 2006 24-hour PM_{2.5} NAAQS by December 14, 2014.

Per CAA Section 171(1), RFP is defined as “such annual incremental reductions in emissions of the relevant air pollutant as are required by this part or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date.” As stated in subsequent federal regulation, the goal of the RFP requirements is for areas to achieve generally linear progress toward attainment. To determine RFP for the 2006 24-hour PM_{2.5} attainment date, the plan should rely only on emission reductions achieved from sources within the nonattainment area.

Section 172(c)(2) of the CAA requires that nonattainment area plans show ongoing annual incremental emissions reductions toward attainment, which is commonly expressed in terms of benchmark emissions levels or air quality targets to be achieved by certain interim milestone years. The U.S. EPA recommends that the RFP inventories include direct PM_{2.5}, and also PM precursors (such as SO_x, NO_x, and VOCs) that have been determined to be significant.

40 CFR 51.1009 requires any area that submits an approvable demonstration for an attainment date of more than five years from the effective date of designation to also submit an RFP plan. The Draft Final 2012 AQMP demonstrates attainment with the 24-hour PM_{2.5} standard in 2014, which is five years from the 2009 designation date. Therefore, no separate RFP plan is required.

Reasonably Available Control Measures (RACM) and Reasonably Available Control Technology (RACT) Requirements

Section 172(c)(1) of the CAA requires nonattainment areas to

Provide for the implementation of all reasonably available control measures as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology) and shall provide for attainment of the national primary ambient air quality standards.

The District staff has completed its RACM analysis as presented in Appendix VI of the Draft Final 2012 AQMP.

The U.S. EPA provided further guidance on the RACM in the preamble and the final “Clean Air Fine Particle Implementation Rule” to implement the 1997 PM_{2.5} NAAQS which were published in the Federal Register on November 1, 2005 and April 25, 2007, respectively.^{1, 2} The U.S. EPA’s long-standing interpretation of the RACM provision stated in the 1997 PM_{2.5} Implementation Rule is that the non-attainment air districts should consider all candidate measures that are available and technologically and economically feasible to implement within the non-attainment areas, including any measures that have been suggested; however, the districts are not obligated to adopt all measures, but should demonstrate that there are no additional reasonable measures available that would advance the attainment date by at least one year or contribute to reasonable further progress (RFP) for the area.

With regard to the identification of emission reduction programs, the U.S. EPA recommends that non-attainment air districts first identify the emission reduction programs that have already been implemented at the federal level and by other states and local air districts. Next, the U.S. EPA recommends that the air districts examine additional RACM/RACTs adopted for other non-attainment areas to attain the ambient air quality standards as expeditiously as practicable. The U.S. EPA also recommends the

¹ See 70FR 65984 (November 1, 2005)

² See 72FR 20586 (April 25, 2007)

air districts evaluate potential measures for sources of direct PM_{2.5}, SO_x and NO_x first. VOC and ammonia are only considered if the area determines that they significantly contribute to the PM_{2.5} concentration in the non-attainment area (otherwise they are pressured not to significantly contribute). The PM_{2.5} Implementation Rule also requires that the air districts establish RACM/RACT emission standards that take into consideration the condensable fraction of direct PM_{2.5} emissions after January 1, 2011. In addition, the U.S. EPA recognizes that each non-attainment area has its own profile of emitting sources, and thus neither requires specific RACM/RACT to be implemented in every non-attainment area, nor includes a specific source size threshold for the RACM/RACT analysis.

A RACM/RACT demonstration must be provided within the SIP. For areas projected to attain within five years of designation, a limited RACM/RACT analysis including the review of available reasonable measures, the estimation of potential emission reductions, and the evaluation of the time needed to implement these measures is sufficient. The areas that cannot reach attainment within five years must conduct a thorough RACM/RACT analysis to demonstrate that sufficient control measures could not be adopted and implemented cumulatively in a practical manner in order to reach attainment at least one year earlier.

In regard to economic feasibility, the U.S. EPA did not propose a fixed dollar per ton cost threshold and recommended that air districts to include health benefits in the cost analysis. As indicated in the preamble of the 1997 PM_{2.5} Implementation Rule:

In regard to economic feasibility, U.S. EPA is not proposing a fixed dollar per ton cost threshold for RACM, just as it is not doing so for RACT...Where the severity of the non-attainment problem makes reductions more imperative or where essential reductions are more difficult to achieve, the acceptable cost of achieving those reductions could increase. In addition, we believe that in determining what are economically feasible emission reduction levels, the States should also consider the collective health benefits that can be realized in the area due to projected improvements.

Subsequently, on March 2, 2012, the U.S. EPA issued a memorandum to confirm that the overall framework and policy approach stated in the PM_{2.5} Implementation Rule for the 1997 PM_{2.5} standards continues to be relevant and appropriate for addressing the 2006 24-hour PM_{2.5} standards.

As described in Appendix VI, the District has concluded that all District rules fulfilled RACT for the 2006 24-hour PM_{2.5} standard. In addition, pursuant to California Health

and Safety Code Section 39614 (SB 656), the District evaluated a statewide list of feasible and cost-effective control measures to reduce directly emitted PM_{2.5} and its potential precursor emissions (e.g., NO_x, SO_x, VOCs, and ammonia). The District has concluded that for the majority of stationary and area source categories, the District was identified as having the most stringent rules in California (see Appendix VI). Under the RACM guidelines, transportation control measures must be included in the analysis. Consequently, SCAG has completed a RACM determination for transportation control measures in the Draft Final 2012 AQMP, included in Appendix IV-C.

New Source Review

New source review (NSR) for major and in some cases minor sources of PM_{2.5} and its precursors are presently addressed through the District's NSR and RECLAIM programs (Regulations XIII and XX). In particular, Rule 1325 has been adopted to satisfy NSR requirements for major sources of directly-emitted PM_{2.5}.

Contingency Measures

Contingency Measure Requirements

Section 172(c)(9) of the CAA requires that SIPs include contingency measures.

Such plan shall provide for the implementation of specific measures to be undertaken if the area fails to make reasonable further progress, or to attain the national primary ambient air quality standard by the attainment date applicable under this part. Such measures shall be included in the plan revision as contingency measures to take effect in any such case without further action by the State or the Administrator.

In subsequent NAAQS implementation regulations and SIP approvals/disapprovals published in the Federal Register, U.S. EPA has repeatedly reaffirmed that SIP contingency measures:

1. Must be fully adopted rules or control measures that are ready to be implemented, without significant additional action (or only minimal action) by the State, as expeditiously as practicable upon a determination by U.S. EPA that the area has failed to achieve, or maintain reasonable further progress, or attain the NAAQS by the applicable statutory attainment date (40 CFR § 51.1012, 73 FR 29184)
2. Must be measures not relied on in the plan to demonstrate RFP or attainment for the time period in which they serve as contingency measures and should provide SIP-creditable emissions reductions equivalent to one year of RFP, based on "generally

linear” progress towards achieving the overall level of reductions needed to demonstrate attainment (76 FR 69947, 73 FR 29184)

3. Should contain trigger mechanisms and specify a schedule for their implementation (72 FR 20642)

Furthermore, U.S. EPA has issued guidance that the contingency measure requirement could be satisfied with already adopted control measures, provided that the controls are above and beyond what is needed to demonstrate attainment with the NAAQS (76 FR 57891).

U.S. EPA guidance provides that contingency measures may be implemented early, i.e., prior to the milestone or attainment date. Consistent with this policy, States are allowed to use excess reductions from already adopted measures to meet the CAA sections 172(c)(9) and 182(c)(9) contingency measures requirement. This is because the purpose of contingency measures is to provide extra reductions that are not relied on for RFP or attainment, and that will provide a cushion while the plan is being revised to fully address the failure to meet the required milestone. Nothing in the CAA precludes a State from implementing such measures before they are triggered.

Thus, an already adopted control measure with an implementation date prior to the milestone year or attainment year would obviate the need for an automatic trigger mechanism.

Air Quality Improvement Scenario

The U.S. EPA Guidance Memo issued March 2, 2012, “Implementation Guidance for the 2006 24-Hour Fine Particle (PM_{2.5}) National Ambient Air Quality Standard (NAAQS)”, provides the following discussion of contingency measures:

The preamble of the 2007 PM_{2.5} Implementation Rule (see 79 FR 20642-20645) notes that contingency measures "should provide for emission reductions equivalent to about one year of reductions needed for reasonable further progress (RFP)." The term "one year of reductions needed for RFP" requires clarification. This phrase may be confusing because all areas technically are not required to develop a separate RFP plan under the 2007 PM_{2.5} Implementation Rule. The basic concept is that an area's set of contingency measures should provide for an amount of emission reductions that would achieve "one year's worth" of air quality improvement proportional to the overall amount of air quality improvement to be achieved by the area's attainment plan; or alternatively, an amount of emission reductions (for all pollutants subject to control measures in the attainment plan) that would achieve one year's worth of emission reductions proportional to the overall amount of emission

reductions needed to show attainment. Contingency measures can include measures that achieve emission reductions from outside the nonattainment area as well as from within the nonattainment area, provided that the measures produce the appropriate air quality impact within the nonattainment area.

The U.S. EPA believes a similar interpretation of the contingency measures requirements under section 172(c)(9) would be appropriate for the 2006 24-hour PM_{2.5} NAAQS.

The March 2, 2012 memo then provides an example describing two methods for determining the required magnitude of emissions reductions to be potentially achieved by implementation of contingency measures:

Assume that the state analysis uses a 2008 base year emissions inventory and a future year projection inventory for 2014. To demonstrate attainment, the area needs to reduce its air quality concentration from 41ug/m³ in 2008 to 35 ug/m³ in 2014, equal to a rate of change of 1 ug/m³ per year. The attainment plan demonstrates that this level of air quality improvement would be achieved by reducing emissions between 2008 and 2014 by the following amounts: 1,200 tons of PM_{2.5}; 6,000 tons of NO_x; and 6,000 tons of SO₂.

Thus, the target level for contingency measures for the area could be identified in two ways:

- 1) The area would need to provide an air quality improvement of 1 ug/m³ in the area, based on an adequate technical demonstration provided in the state plan. The emission reductions to be achieved by the contingency measures can be from any one or a combination of all pollutants addressed in the attainment plan, provided that the state plan shows that the cumulative effect of the adopted contingency measures would result in a 1 ug/m³ improvement in the fine particle concentration in the nonattainment area; and*
- 2) The contingency measures for the area would be one-sixth (or approximately 17%) of the overall emission reductions needed between 2008 and 2014 to show attainment. In this example, these amounts would be the following: 200 tons of PM_{2.5}; 1,000 tons of NO_x; and 1,000 tons of SO₂.*

The two approaches are explicitly mentioned in regulatory form at 40 CFR § 51.1009:

- (g) The RFP plan due three years after designation must demonstrate that emissions for the milestone year are either:*

- (1) At levels that are roughly equivalent to the benchmark emission levels for direct PM_{2.5} emissions and each PM_{2.5} attainment plan precursor to be addressed in the plan; or*
- (2) At levels included in an alternative scenario that is projected to result in a generally equivalent improvement in air quality by the milestone year as would be achieved under the benchmark RFP plan.*

- (h) The equivalence of an alternative scenario to the corresponding benchmark plan must be determined by comparing the expected air quality changes of the two scenarios at the design value monitor location. This comparison must use the information developed for the attainment plan to assess the relationship between emissions reductions of the direct PM_{2.5} emissions and each PM_{2.5} attainment plan precursor addressed in the attainment strategy and the ambient air quality improvement for the associated ambient species.*

The first method in the example and the alternative scenario in the regulation, 40 CFR § 51.1009 (g)(2), base the required amount of contingency measure emission reductions on one year's worth of air quality improvements. The most accurate way of demonstrating that the emissions reductions will lead to air quality improvements is through air quality modeling such as that used in the attainment demonstration (40 CFR § 51.1009 (h) above). If the model results show the required air quality improvements, then the emissions reductions included in the model input are therefore shown to be sufficient to achieve those air quality improvements. The second method in the example, and (g)(1) in the regulation, is based solely on emission reductions, without a direct demonstration that there will be a corresponding improvement in air quality.

Logically, the method based on air quality is more robust than the method based solely on emissions reductions in that it demonstrates that emissions reductions will in fact lead to corresponding air quality improvements, which is the ultimate goal of the CAA and the SIP. The second method relying on overall emissions reductions alone does not account for the spatial and temporal variation of emissions, nor does it account for where and when the reductions will occur. As the relationship between emissions reductions and resulting air quality improvements is complex and not always linear, relying solely on prescribed emission reductions may not ensure that the desired air quality improvements will result when and where they are needed. Therefore, determining the magnitude of reductions required for contingency measures based on air quality improvements, derived from a modeling demonstration, is more effective in achieving the objective of this CAA requirement.

Magnitude of Contingency Measure Air Quality Improvements

The example for determining the required magnitude of air quality improvement to be achieved by contingency measures provided in the March 2, 2012 guidance memo uses the attainment demonstration base year as the base year in the calculation (2008). This is based on the memo's statement that "*contingency measures should provide for an amount of emission reductions that would achieve 'one year's worth' of air quality improvement proportional to the overall amount of air quality improvement to be achieved by the area's attainment plan.* The original preamble (79 FR 20642-20645) states that contingency measures "*should provide for emission reductions equivalent to about one year of reductions needed for reasonable further progress (RFP).*" The term "reasonable further progress" is defined in Section 171(1) of the CAA as "*such annual incremental reductions in emissions of the relevant air pollutant as are required by this part or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable NAAQS by the applicable date.*"

40 CFR 51.1009 is explicit on how emissions reductions for RFP are to be calculated. In essence, the calculation is a linear interpolation between base-year emissions and attainment-year (full implementation) emissions. The Plan must then show that emissions or air quality in the milestone year (or attainment year) are "roughly equivalent" or "generally equivalent" to the RFP benchmark. As stated earlier in this chapter, given the 2014 attainment year, there are no interim milestone RFP requirements. The contingency measure requirements, therefore, only apply to the 2014 attainment year. In 2014, contingency measures must provide for about one year's worth of reductions or air quality improvement, proportional to the overall amount of air quality improvement to be achieved by the area's attainment plan.

The 2008 base year design value in the 24-hour PM_{2.5} attainment demonstration is 47.9 µg/m³, and the 2014 attainment year design value must be less than 35.5 µg/m³ (see Chapter 5). Linear progress towards attainment over the six year period yields one year's worth of air quality improvements equal to approximately 2 µg/m³. Thus, contingency measures should provide for approximately 2 µg/m³ of air quality improvements to be automatically implemented in 2015 if the Basin fails to attain the 24-hour PM_{2.5} standard in 2014.

Satisfying the Contingency Measure Requirements

As stated above, the contingency measure requirement can be satisfied by already adopted measures resulting in air quality improvements above and beyond those needed

for attainment. Since the attainment demonstration need only show an attainment year concentration below $35.5 \mu\text{g}/\text{m}^3$, any measures leading to improvement in air quality beyond this level can serve as contingency measures. As shown in Chapter 5, the attainment demonstration yields a 2014 design value of $34.28 \mu\text{g}/\text{m}^3$. The excess air quality improvement is therefore approximately $1.2 \mu\text{g}/\text{m}^3$.

In addition to these air quality improvements beyond those needed for attainment, an additional contingency measure is proposed that will result in emissions reductions beyond those needed for attainment in 2014. Control Measure CMB-01 Phase I seeks to achieve an additional two tons per day of NO_x emissions reductions from the RECLAIM market if the Basin fails to achieve the standard by the 2014 attainment date. CMB-01 Phase I is scheduled for near-term adoption and includes the appropriate automatic trigger mechanism and implementation schedule consistent with CAA contingency measure requirements. Taken together with the $1.2 \mu\text{g}/\text{m}^3$ of excess air quality improvement described above, this represents a sufficient margin of “about one year’s of progress” and “generally linear” progress to satisfy the contingency measure requirements. Note that based on the most recent air quality data at the design value site, Mira Loma, the actual measured air quality is already better (by over $4 \mu\text{g}/\text{m}^3$ in 2011) than that projected by modeling based on linear interpolation between base year and attainment year.

To address U.S. EPA’s comments regarding contingency measures, the excess air quality improvements beyond those needed to demonstrate attainment should also be expressed in terms of emissions reductions. This will facilitate their enforceability and any future needs to substitute emissions reductions from alternate measures to satisfy contingency measure requirements. For this purpose, Table 6-2 explicitly identifies the portions of emissions reductions from proposed measures that are designated as contingency measures. Table 6-2 also includes the total equivalent basin-wide NO_x emissions reductions based on the PM_{2.5} formation potential ratios described in Chapter 5.

TABLE 6-2

Emissions Reductions for Contingency Measures (2014)

MEASURE	ASSOCIATED EMISSIONS REDUCTIONS FROM CONTINGENCY MEASURES (TONS/DAY)
BCM-01 – Residential Wood Burning ^{1,2}	2.84(PM2.5)
BCM-02 – Open Burning ^{1,2}	1.84(PM2.5)
CMB-01 – NO _x reductions from RECLAIM	2 (NO _x)
Total	71 (NO _{x(e)}) ³

¹40% of the reductions from these measures, as shown in Table 4-2, are designated for contingency purposes.

² Episodic emissions reductions occurring on burning curtailment days.

³ NO_x equivalent emissions based on PM2.5 formation potentials described in Chapter 5 (Table 5-2). The PM2.5:NO_x ratio is 14.83:1.

Transportation Control Measures

As part of the requirement to demonstrate that RACM has been implemented, transportation control measures meeting the CAA requirements must be included in the plan. Updated transportation control measures included in this plan attainment of the federal 2006 24-hour PM2.5 standard are described in Appendix IV-C – Regional Transportation Strategy & Control Measures.

Section 182(d)(1)(A) of the CAA requires the District to include transportation control strategies (TCS) and transportation control measures (TCM) in its plans for ozone that offset any growth in emissions from growth in vehicle trips and vehicle miles traveled. Such control measures must be developed in accordance with the guidelines listed in Section 108(f) of the CAA. The programs listed in Section 108(f) of the CAA include, but are not limited to, public transit improvement projects, traffic flow improvement

projects, the construction of high occupancy vehicle (HOV) facilities and other mobile source emission reduction programs. While this is not an ozone plan, TCMs may be required if they are RACM.³ TCMs have been developed for the Draft Final 2012 AQMP and are described in Appendix IV-C. TCMs in the Draft Final 2012 AQMP include the capital-based and non-capital-based facilities, projects and programs contained in the Regional Transportation Plan (RTP) and programmed through the Regional Transportation Implementation Plan (RTIP) process. As an additional measure to reduce mobile source emissions, Section 182(d)(1)(B) of the CAA allows the implementation of employer-based trip reduction programs that are aimed at improving the average vehicle occupancy (AVO) rates. As an alternative to trip reduction programs, Section 182(d)(1)(B) also allows the substitution of these programs with alternative programs that achieve equivalent emission reductions. Rule 2202 - On-Road Motor Vehicle Mitigation Options, adopted in December 1995, was developed to comply with CAA Section 182(d)(1)(B).

CALIFORNIA CLEAN AIR ACT REQUIREMENTS

The Basin is designated as nonattainment with the State ambient air quality standards for both PM10 and PM2.5. The California Clean Air Act (CCAA) requires that a plan for attaining the ozone standard be reviewed, and revised as necessary, every three years (Health & Safety Code § 40925). The Draft Final 2012 AQMP satisfies this triennial update requirement. The CCAA established a number of legal mandates to facilitate achieving health-based state air quality standards at the earliest practicable date. The following CCAA requirements do not directly apply to particulate matter plans but are addressed for ozone in the remainder of this chapter:

- (1) Demonstrate the overall effectiveness of the air quality program;
- (2) Reduce nonattainment pollutants at a rate of 5% per year, or include all feasible measures and an expeditious adoption schedule;
- (3) Reduce Population Exposure to severe nonattainment pollutants according to a prescribed schedule; and
- (4) Rank control measures by cost-effectiveness.

³ The District will in the future take actions as required to satisfy ozone TCM provisions when so directed by U.S. EPA.

Plan Effectiveness

The CCAA requires, beginning on December 31, 1994 and every three years thereafter, that the District assess its progress toward attainment of the state ambient air quality standards [Health & Safety Code § 40924(b)] and that this assessment be incorporated into the District's triennial plan revision. To demonstrate the effectiveness of the District's program, air quality trends since 1990 depicting maximum pollutant concentrations are provided in Figure 6-2. While this statute does not apply to particulate matter, it is useful to discuss progress towards attainment of the PM10 and PM2.5 standards. Basin maximum annual average PM10 concentrations have decreased continuously since 1990 from a high of nearly 80 $\mu\text{g}/\text{m}^3$ to a 2011 level of just above 41 $\mu\text{g}/\text{m}^3$. PM2.5 annual concentrations have decreased nearly 50% since 1999 to a 2011 level of 15.3 $\mu\text{g}/\text{m}^3$. The State annual standards are 20 $\mu\text{g}/\text{m}^3$ and 12 $\mu\text{g}/\text{m}^3$ for PM10 and PM2.5, respectively.

1-hour ozone concentrations have decreased about 50% since 1990 to a 2011 level of 0.16 ppm. 8-hour ozone concentrations have also decreased continuously from 1990 levels of 0.194 ppm to 2011 levels of 0.136. The State annual standards are 0.09 ppm and 0.07 ppm for 1-hour ozone and 8-hour ozone, respectively.

NO₂ and CO air quality have also improved substantially since 1990. NO₂ and CO metrics are not shown since the Basin currently meets all state and federal NO₂ and CO standards. A comprehensive discussion of local air quality trends can be found in Chapter 2 and Appendix II – Current Air Quality.

Basin Air Quality Trends

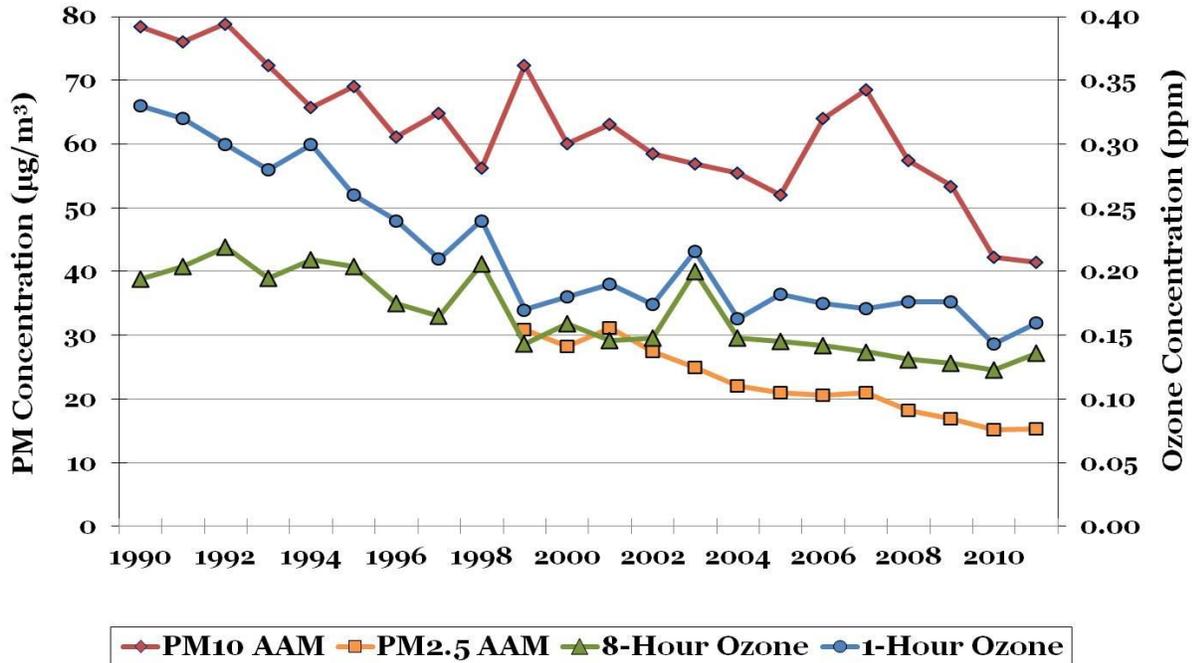


FIGURE 6-2

Ozone, PM10, and PM2.5 Trends Since 1990

Emission Reductions

The CCAA requires that each district plan be designed to achieve a reduction in district-wide emissions of 5% or more per year for each covered non-attainment pollutant or its precursors, averaged every consecutive three-year period (Health & Safety Code § 40914). This requirement does not apply to particulate matter, but does apply to ozone. If this cannot be achieved, a plan may instead show that it has implemented all feasible measures as expeditiously as possible. Nevertheless, all feasible measures should be implemented for particulate matter in order to assure attainment as expeditiously as practicable.

It is not practical nor does the federal CAA require an air district to develop an emissions inventory for every year between the base year and attainment year; therefore, consecutive three-year averages have not been explicitly calculated. Furthermore, based on the emissions projections provided in Chapter 3, 5% or more of reductions per year

cannot be achieved for all pollutants and precursors with all feasible measures implemented. As discussed earlier in this chapter with respect to the RACM / RACT analysis, this Plan implements all available feasible measures as expeditiously as possible.

Population Exposure

The CCAA also requires a reduction in overall population exposure to criteria pollutants. Specifically, exposure to the designated severe nonattainment pollutants (i.e., ozone) above standards must be reduced by at least:

- (1) 25 percent by December 31, 1994;
- (2) 40 percent by December 31, 1997; and
- (3) 50 percent by December 31, 2000.

Reductions are to be calculated based on per-capita exposure and the severity of the exceedances. For the Basin, this provision is applicable to ozone [Health & Safety Code § 40920(c)]. The definition of exposure is the number of persons exposed to a specific pollutant concentration level above the State standard times the number of hours exposed. The per-capita exposure is the population exposure (units of pphm-persons-hours) divided by the total population. This requirement for the specific milestone years listed in the CCAA has been shown to have already been satisfied in previous AQMPs.

Cost Effectiveness Ranking

The CCAA requires that each plan revision shall include an assessment of the cost effectiveness of available and proposed control measures and contain a list which ranks the control measures from the least cost-effective to the most cost-effective. Table 6-3 provides a list of stationary source control measures for the 24-hour PM_{2.5} standard ranked by cost-effectiveness. Tables 6-4 and 6-5 provide a list of stationary and mobile source control measures for ozone ranked by cost-effectiveness.

In developing an adoption and implementation schedule for a specific control measure, the District shall consider the relative cost effectiveness of the measure as well as other factors including, but not limited to, technological feasibility, total emission reduction potential, the rate of reduction, public acceptability, and enforceability (Health & Safety Code § 40922). These requirements also do not apply to particulate matter, but provide useful information. The PM_{2.5} control strategy and implementation schedule is provided in Chapter 4.

TABLE 6-3

Cost-Effectiveness Ranking of District's Stationary Source Control Measures for
PM_{2.5}^{a,b}

MEASURE NUMBER	DESCRIPTION	DOLLARS/TON ^{a,b}	RANKING BY COST EFFECTIVENESS
BCM-01	Further Reductions from Residential Wood Burning Devices [PM _{2.5}]	Minimal	1
BCM-02	Further Reductions from Open Burning [PM _{2.5}]	Minimal	1
CMB-01	Further NO _x Reductions from RECLAIM [NO _x] –Phase I	\$7950/ton	2
BCM-03 (formerly BCM-05)	Emission Reductions from Under-Fired Charbroilers [PM _{2.5}]	\$15,000/ton ^c	3
BCM-04	Further Ammonia Reductions from Livestock Waste [NH ₃]	TBD ^d	
IND -01 (formerly MOB-03)	Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources [NO _x , SO _x , PM _{2.5}]	N/A ^e	
EDU-01 (formerly MCS-02, MCS-03)	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]*	N/A ^e	
MCS-01 (formerly MCS-07)	Application of All Feasible Measures Assessment [All Pollutants]	TBD ^d	

^a The cost-effectiveness values of these measures are based on the Discount Cash Flow methodology and 4% real interest rate.

^b Where a range exists, the ranking was done based on the low end of the range.

^c preliminary estimate, actual cost-effectiveness will be determined by the Phase I technology assessment.

^d TBD – emissions reductions and costs to be determined once the inventory and control approach are identified

^e N/A – emissions reductions and costs cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs) or if the measure is designed to ensure reductions that have been assumed to occur will in fact occur.

TABLE 6-4Cost-Effectiveness Ranking of Stationary Source Control Measures for Ozone^{a,b}

MEASURE NUMBER	DESCRIPTION	DOLLARS/TON ^{a,b}	RANKING BY COST EFFECTIVENESS
FUG-01	Further VOC Reductions from Vacuum Trucks [VOC]	\$3,000/ton	1
CTS-03	Further VOC Reductions from Mold Release Products [VOC]	\$4,000-\$8,000/ton	2
FUG-02	Emission Reduction from LPG Transfer and Dispensing [VOC] – <i>Phase II</i>	\$4,000-\$10,000/ton	3
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]	\$8,000-\$12,000/ton	4
CTS-04	Further VOC Reductions from Consumer Products [VOC]	<\$10,000/ton	5
CTS-01	Further VOC Reductions from Architectural Coatings (R1113) [VOC]	\$10,000-\$20,000/ton	6
FUG-03	Further VOC Reductions from Fugitive VOC Emissions [VOC]	\$11,000/ton	7
CMB-01	Further NOx Reductions from RECLAIM [NOx] – <i>Phase II</i>	\$16,000/ton	8
CMB-02	NOx Reductions from Biogas Flares [NOx]	\$20,000/ton	9
CMB-03	Reductions from Commercial Space Heating [NOx]	\$20,000/ton	9
MCS-01 (formerly MCS-07)	Application of All Feasible Measures Assessment [All Pollutants]	TBD ^c	
MCS-02	Further Emission Reductions from Green Waste Processing (Chipping and Grinding Operations not associated with composting) [VOC]	TBD ^c	
MCS-03 (formerly MCS-06)	Improved Start-up, Shutdown and Turnaround Procedures [All Pollutants]	TBD ^c	
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx]	TBD ^c	
INC-02	Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies [All Pollutants]	N/A ^d	
EDU-01 (formerly MCS-02, MCS-03)	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]*	N/A ^d	

^a The cost-effectiveness values of these measures are based on the Discount Cash Flow methodology and 4% real interest rate.

^b Where a range exists, the ranking was done based on the low end of the range.

^c TBD – emissions reductions and costs to be determined once the inventory and control approach are identified

^d N/A – emissions reductions and costs cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs)

TABLE 6-5
 Cost-Effectiveness Ranking of Mobile Source Control Measures for
 Ozone ^{a,b}

MEASURE NUMBER	DESCRIPTION	DOLLARS/TON ^{a,b}	RANKING BY COST EFFECTIVENESS
OFFRD-03	Further Emission Reductions from Passenger Locomotives [NOx, PM]	\$5,000/ton	1
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment [NOx]	\$11,000/ton	2
OFFRD-02	Further Emission Reductions from Freight Locomotives [NOx, PM]	TBD ^{b, d}	
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NOx, PM]	TBD ^b	
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Vehicles [VOC, NOx, PM]	TBD ^{b, c}	
ONRD-02	Accelerated Retirement of Older Light- and Medium-Duty Vehicles [VOC, NOx, PM]	TBD ^{b, c}	
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Light-Heavy- and Medium-Heavy-Duty Vehicles [NOx, PM]	TBD ^{b, c}	
ONRD-04	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]	TBD ^{b, c}	
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels While at Berth [NOx, PM]	TBD ^{b, c}	
OFFRD-05	Emission Reductions from Ocean-Going Marine Vessels [NOx]	TBD ^{b, c}	

^a The cost-effectiveness values of these measures are based on the Discount Cash Flow methodology and 4% real interest rate.

^b Emissions reductions and costs will be determined after projects are identified and implemented. See Appendix IV-B for cost information for specific measures.

^c Voluntary incentive programs

^d This measure was included in the 2007 Ozone SIP and is included in the Draft Final 2012 AQMP with updated technical information.

TRANSPORTATION CONFORMITY BUDGETS

The Draft Final 2012 AQMP sets forth the strategy for achieving the 2006 24-hour PM_{2.5} and 8-hour ozone standards. For on-road mobile sources, Section 176(c) of the CAA requires that transportation plans and programs do not cause or contribute to any new violation of a standard, increase the frequency or severity of any existing violation,

or delay the timely attainment of the air quality standards. Therefore, on-road mobile sources must "conform" to the attainment demonstration contained in the SIP.

U.S. EPA's transportation conformity rule, found in 40 CFR parts 51 and 93, details the requirements for establishing motor vehicle emissions budgets in SIPs for the purpose of ensuring the conformity of transportation plans and programs with the SIP attainment demonstration. The on-road motor vehicle emissions budgets act as a "ceiling" for future on-road mobile source emissions. Exceedances of the budget indicate an inconsistency with the SIP, and could lead to a conformity "lapse" and its related consequences if not corrected before the next conformity deadline (e.g., during a lapse, certain categories of transportation projects cannot proceed). As required by the CAA, a comparison of regional on-road mobile source emissions to these budgets will occur during the periodic updates of regional transportation plans and programs.

The on-road motor vehicle emissions estimates for the Draft Final 2012 AQMP were analyzed using CARB's EMFAC2011 emission factors for the transportation activity data provided by Southern California Association of Governments (SCAG) from their adopted 2012 Regional Transportation Plan (2012 RTP). For the Draft Final 2012 AQMP, on-road motor vehicle emissions budgets are provided in Table 6-6 for 2014. The PM_{2.5} emissions budgets for PM_{2.5}, and the PM_{2.5} precursors, VOC and NO_x, are derived from the annual average inventory.

This approach is consistent with U.S. EPA's transportation conformity rule, which provides that if emissions budgets rely on new control measures, these measures must be specified in the SIP and the emissions reductions from each control measure must be quantified and supported by agency commitments for adoption and implementation schedules. Moreover, the rule provides that conformity analyses by transportation agencies may not take credit for measures which have not been implemented unless the measures are "projects, programs, or activities" in the SIP supported by written implementation commitments by the responsible agencies (40 CFR 93.122(a)(3)). The emissions budgets for PM_{2.5} are provided for the 2014 attainment year. However, since transportation analyses are needed beyond the attainment dates, the carrying capacities for the PM_{2.5} attainment demonstration also serve as the budgets for future years. For transportation conformity analysis a trading mechanism can be established based on the PM_{2.5} forming potential developed through the modeling analysis for the emission budgets for various pollutants in SCAB.

TABLE 6-6

2014 Motor Vehicle Emissions Budgets: PM2.5
(Annual Average - Tons Per Day)*

VOC	2014
Baseline Inventory	115.6
Mobile Source Emission Budget**	116
NOx	2014
Baseline Inventory	263.0
Mobile Source Emission Budget**	263
PM2.5	2014
Baseline Inventory	11.9
Re-entrained Road Dust (paved)	7.09
Re-entrained Road Dust (unpaved)	0.58
Road Construction Dust	0.25
Adjusted Inventory	19.8
Mobile Source Emission Budget**	20

	VOC	NOx	PM2.5
Baseline Inventory	115.6	263	11.9
PM2.5: Re-entrained Road Dust	--	--	7.09
PM2.5 Re-entrained Road Dust	--	--	0.58
Road Construction Dust	--	--	0.25
Adjusted Inventory	--	--	19.8
2014 Mobile Source Emission Budget**	116	263	20

* Derived based on EMFAC2011 and external adjustments associated with on-road mobile source incentive programs (Proposition 1B, Carl Moyer, AB1493). 2014 budget is applicable to all future years beyond 2014.

** Rounded up to the nearest whole number

In the Draft Final 2012 AQMP the approximate weighting ratios of the precursor emissions for 24-hour PM_{2.5} formation in equivalent tons per day of NO_x are: VOC: 0.3 (reducing one ton of VOC is equivalent to reducing 0.3 ton of NO_x), NO_x: 1.0, and PM_{2.5}: 14.8 (i.e., reducing one ton of PM_{2.5} is equivalent to reducing 14.8 tons of NO_x). This mechanism allows emissions below the budget for one pollutant to be used to supplement another pollutant exceeding the budget based on the ratios established herein. Clear documentation of the calculations used in the trading should be included in the conformity analysis. This trading approach is consistent with what U.S. EPA approved in 2011 the revisions to the 2007 PM_{2.5} SIP where the precursor substitution methodology was established.

The basic trading ratios are defined by the 24-hour PM_{2.5} regional modeling attainment demonstration. Briefly, NO_x emissions reductions are scaled to the reduction of Basin ammonium nitrate (including water bonding). Similarly, reductions of VOC are scaled to changes in the organic carbon species while reductions in directly emitted particulates are scaled to the projected changes in the elemental carbon and “others” portions of the PM_{2.5} mass. Table 6-7 summarizes the trading equivalencies in TPD:

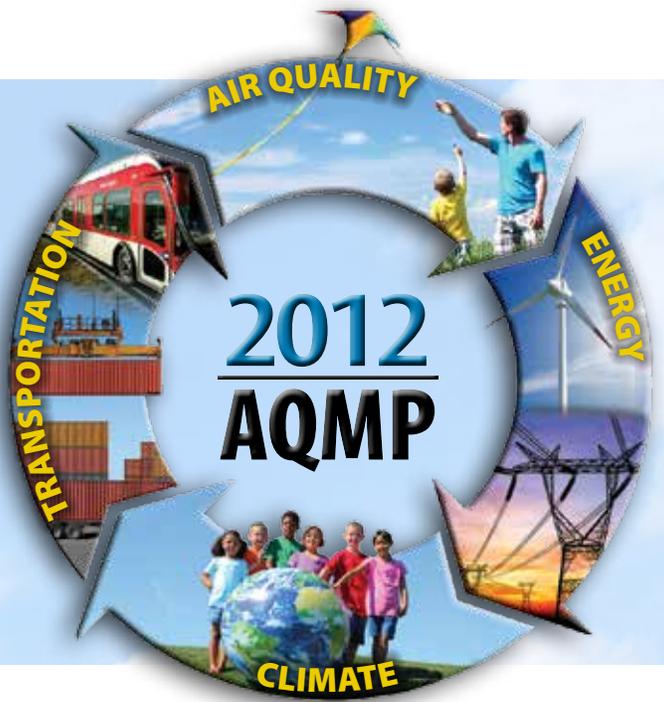
TABLE 6-7

Trading Equivalencies for PM2.5 Motor Vehicle Emissions Budgets

ONE TON OF	IS EQUIVALENT IN TERMS OF PM2.5 FORMATION TO THIS MANY TONS OF		
	NO _x :	VOC:	PM2.5:
NO _x	1	3.151	0.067
VOC	0.317	1	0.021
PM2.5	14.833	46.792	1

An example of how the trading mechanism would work follows: If the amount of NO_x calculated exceeds the budget by 0.75 TPD then that overage could be offset by trading 2.36 TPD of excess VOC emissions reductions (e.g. $3.151 \text{ VOC}/1 \text{ ton of NO}_x \times 0.75 \text{ TPD NO}_x \text{ required} = 2.36 \text{ TPD VOC}$). In this case, “excess” VOC emission reductions would be those beyond what are needed to meet the VOC budget. Similarly 0.050 TPD of directly emitted PM2.5 emissions below the budgeted amount could also be traded to the NO_x emissions category and subtracted from the NO_x total to allow NO_x to meet its budget. In other words, the trading mechanism can be multi-pollutant and multi-directions. It should be noted that the trading calculations are performed prior to the final rounding to demonstrate conformity with the budgets.

It is also important to note that the ratios and equivalencies are targeted for a 2014 application. Ratios beyond 2017 would need to be adjusted based on the projected emissions and regional modeling analyses. A comprehensive discussion of the calculation of the trading ratios is provided in Attachment 8 of Appendix V of this document.



Chapter 7
**Current and Future Air Quality –
Desert Nonattainment Areas**

South Coast Air Quality Management District

Cleaning the air that we breathe...



CHAPTER 7

CURRENT AND FUTURE AIR QUALITY – DESERT NONATTAINMENT AREAS

Introduction

Air Quality Setting

Future Air Quality

Conclusions

INTRODUCTION

The District has jurisdiction over the South Coast Air Basin and the desert portion of Riverside County in the Salton Sea Air Basin. Figure 7-1 shows a map of the area and topography. The Coachella Valley, located in the desert portion of Riverside County does not exceed the federal standard for PM_{2.5}. However, it exceeds the PM₁₀ federal standard on days when high wind events cause transport of windblown dust from both disturbed and natural desert areas (these days can be flagged as exceptional events¹ under U.S. EPA regulations). Also, the Coachella Valley exceeds the federal 8-hour ozone standards, both the 1997 standard (0.08 ppm, or 80 ppb) and the lower 2008 standard (0.075 ppm, or 75 ppb). For both ozone standards, the Coachella Valley is classified as a “severe” ozone nonattainment area. This chapter summarizes the current air quality setting for the Coachella Valley and the most recent updates to the attainment status.

While the 2007 AQMP addressed and satisfied the Clean Air Act (CAA) planning requirements for the Coachella Valley, the 2012 AQMP specifically addresses CAA planning requirements for the 24-hour PM_{2.5} standard in the South Coast Air Basin and not in the Coachella Valley, which is designated by U.S. EPA as unclassifiable/attainment of this standard. Since the Coachella Valley is not in attainment of the federal 8-hour ozone standards, this chapter will address the current status of ozone air quality and provide the latest projections of future ozone levels, based on the latest emissions inventories and modeling efforts. However, the 2007 AQMP adequately addressed and satisfied the CAA planning requirements for ozone in the Coachella Valley, and this chapter is for information only. This AQMP confirms that with the latest emissions and modeling projections, the strategy toward attainment of the federal ozone standards in the Coachella Valley remains effective.

On April 18, 2003, U.S. EPA approved the Coachella Valley State Implementation Plan (2003 CVSIP), which addressed future year attainment of the PM₁₀ standards and incorporated the latest mobile source emissions model results and planning assumptions. Over the past five years, annual average PM₁₀ concentrations have met the levels of the revoked federal annual standard (50 µg/m³), and peak 24-hour

¹The U.S. EPA Exceptional Events Rule, *Treatment of Data Influence by Exceptional Events*, became effective May 21, 2007. The previous U.S. EPA *Natural Events Policy* for Particulate Matter was issued on May 30, 1996. Under the Exceptional Events Rule, U.S. EPA allows certain data to be flagged in the U.S. EPA Air Quality System (AQS) database and not considered for NAAQS attainment status when that data is influenced by exceptional events, such as high winds, wildfires, volcanoes, or some cultural events (Independence Day fireworks) that meet strict requirements.

average PM10 concentrations have not exceeded the current federal standard (150 µg/m³). The Coachella Valley is currently eligible for redesignation as attainment (after high-wind natural events were flagged under the Exceptional Events Rule). Requests have been made to U.S. EPA to redesignate the Coachella Valley and South Coast Air Basin as attainment for PM10; the redesignations are still pending at this time². Since the 2012 AQMP does not include new modeling efforts for PM10, future projections for Coachella Valley PM10 levels in the 2003 CVSIP are still applicable.

Like the South Coast Air Basin, the Coachella Valley is a rapidly growing area, as shown in Table 7-1. By 2030, the population in the Coachella Valley is projected to more than double that of 2000. On a percentage basis, the Coachella Valley growth exceeds that of the Basin. This population growth is taken into account in the emissions projections for future years, used to demonstrate attainment of the air quality standards.

TABLE 7-1

Historic Population and Projections for South Coast Air Basin and Coachella Valley

AREA	1980	1990	2000	2010	2020	2030
South Coast Air Basin	10,500,000	13,022,000	14,681,000	15,759,412	16,901,492	18,129,690
Coachella Valley	139,000	267,000	320,892	439,357	558,321	710,430

² U.S. EPA has requested additional temporary PM10 monitoring in the southeastern Coachella Valley to further assess windblown dust in that area; this project is currently ongoing.

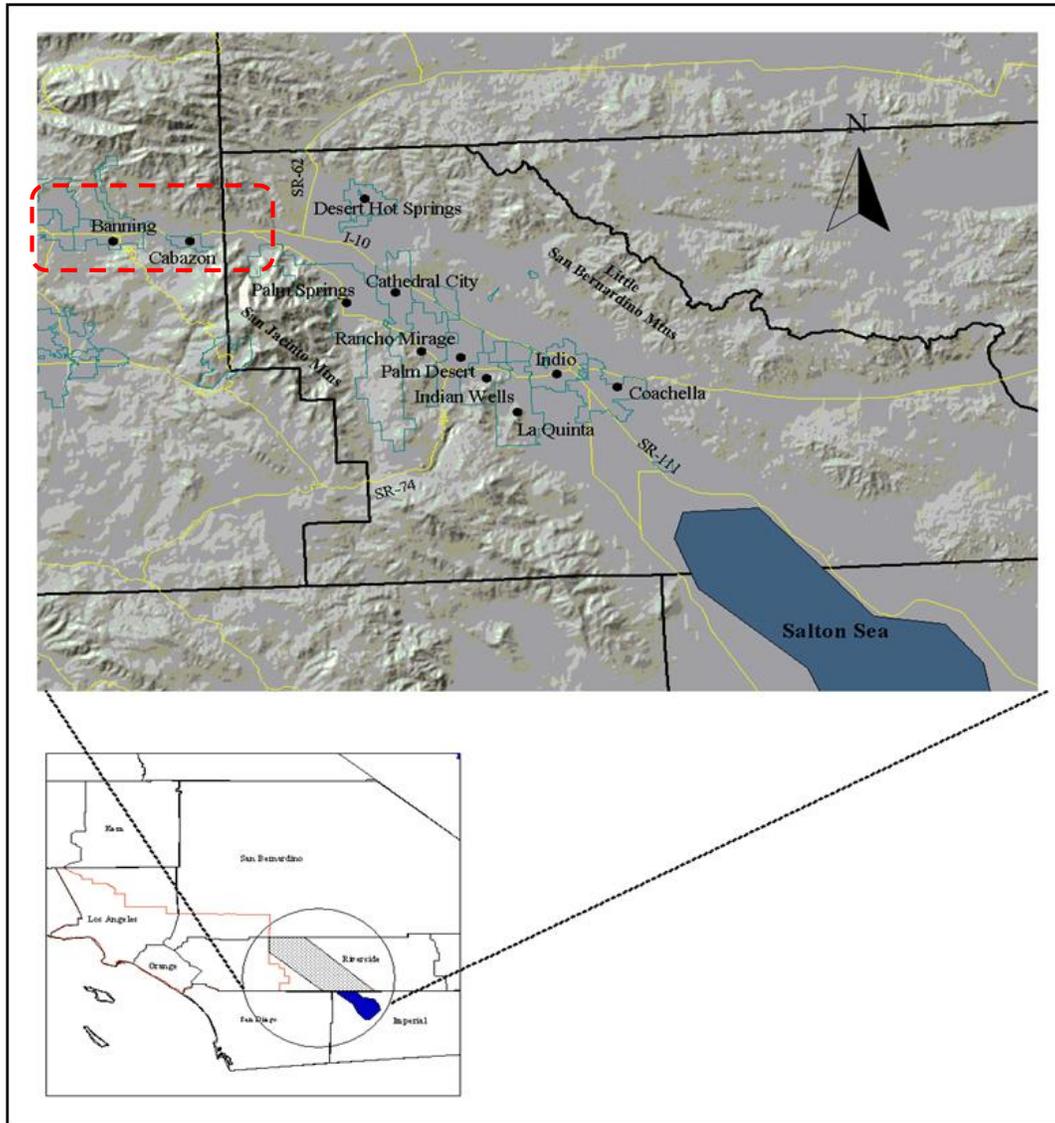


FIGURE 7-1

Location and Topography of the Coachella Valley
(Dashed red box indicates the San Gorgonio Pass;
AQMD Coachella Valley air monitoring stations at Palm Springs and Indio)

AIR QUALITY SETTING

Air Quality Summary

In 2011, the District monitored air quality at two permanent locations in the Riverside county portion of the Salton Sea Air Basin (SSAB), both in the Coachella Valley. One air monitoring station (Palm Springs) is located closer to the San Gorgonio Pass,

predominantly downwind of the densely populated Basin. The other station (Indio) is located further into the Coachella Valley, on the predominant downwind side of the main population areas of the Coachella Valley. A summary of the recent and historic air pollution data collected in the Coachella Valley is included in Appendix II. Information on the health effects associated with criteria air pollutants are summarized in Chapter 2 and detailed in Appendix I.

Attainment Status

In 2011, air pollutant concentrations in the Coachella Valley exceeded state and federal standards for both ozone and PM₁₀. However, the two days that exceeded the federal 24-hour PM₁₀ standard were associated with high-wind natural events and have been flagged in the U.S. EPA Air Quality System (AQS) database to be excluded for comparison to the National Ambient Air Quality Standards (NAAQS), as allowed by the U.S. EPA Exceptional Events Rule. After application of the U.S. EPA Exceptional Event Rule (and its predecessor, the Natural Events Policy) to high wind natural events in the Coachella Valley, no days since the mid-1990s have exceeded the federal 24-hour PM₁₀ standard at Indio or Palm Springs. As a result, the District requested that U.S. EPA redesignate the Coachella Valley from nonattainment to attainment of the PM₁₀ NAAQS. Further action by U.S. EPA on this request is still pending. The current federal NAAQS attainment designations for the Coachella Valley are presented in Table 7-2.

The maximum concentrations of ozone, PM_{2.5}, PM₁₀, nitrogen dioxide (NO₂), carbon monoxide (CO), and sulfate (SO₄²⁻) recorded at these locations in 2011 are shown in Figure 7-2, as percentages of the state and federal standards. Figure 7-3 shows the Coachella Valley design value³ for ozone, PM_{2.5} and PM₁₀ for the 3-year period 2009-2011, as percentages of the current and revoked federal standards.

³ A design value is a statistic that describes the air quality status of a given area relative to the level and form of the National Ambient Air Quality Standards (NAAQS). For most criteria pollutants, the design value is a 3-year average and takes into account the form of the short-term standard (e.g., 98th percentile, fourth high value, etc.).

TABLE 7-2

National Ambient Air Quality Standards (NAAQS) Attainment Status
Coachella Valley Portion of the Salton Sea Air Basin

CRITERIA POLLUTANT	AVERAGING TIME	DESIGNATION ^{a)}	ATTAINMENT DATE ^{b)}
1979 1-Hour Ozone ^{c)}	1-Hour (0.12 ppm)	Nonattainment (Severe-17)	11/15/2007 (not timely attained) ^{c)}
1997 8-Hour Ozone ^{d)}	8-Hour (0.08 ppm)	Nonattainment (Severe-15)	6/15/2019
2008 8-Hour Ozone	8-Hour (0.075 ppm)	Nonattainment (Severe-15)	12/31/2027
CO	1-Hour (35 ppm) 8-Hour (9 ppm)	Unclassifiable/Attainment	Unclassifiable/Attainment
NO₂ ^{e)}	1-Hour (100 ppb)	Unclassifiable/Attainment	Unclassifiable/Attainment
	Annual (0.053 ppm)	Unclassifiable/Attainment	Unclassifiable/Attainment
SO₂ ^{f)}	1-Hour (75 ppb)	Designations Pending	Designations Pending
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	Unclassifiable/Attainment
PM₁₀	24-hour (150 µg/m ³)	Nonattainment (Serious) ^{g)}	12/31/2006 (redesignation request submitted) ^{g)}
PM_{2.5}	24-Hour (35 µg/m ³) Annual (15.0 µg/m ³)	Unclassifiable/Attainment	Unclassifiable/Attainment
Lead	3-Months Rolling (0.15 µg/m ³)	Unclassifiable/Attainment	Unclassifiable/Attainment

- a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable
- b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration
- c) 1-hour ozone standard (0.13 ppm) was revoked, effective June 15, 2005; the Southeast Desert Modified Air Quality Management Area, including the Coachella Valley, did not attain this standard based on 2005-2007 data and has some continuing obligations under the former standard (latest 2009-2011 data shows attainment)
- d) 1997 8-hour ozone standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the 1997 ozone standard and most related implementation rules remain in place until the 1997 standard is revoked by U.S. EPA
- e) New NO₂ 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO₂ standard retained
- f) The 1971 Annual and 24-hour SO₂ standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO₂ 1-hour standard. Area designations expected in 2012 with Unclassifiable /Attainment designation likely for SSAB Coachella Valley
- g) Annual PM₁₀ standard was revoked, effective December 18, 2006; redesignation request to Attainment of the 24-hour PM₁₀ standard is pending with U.S. EPA

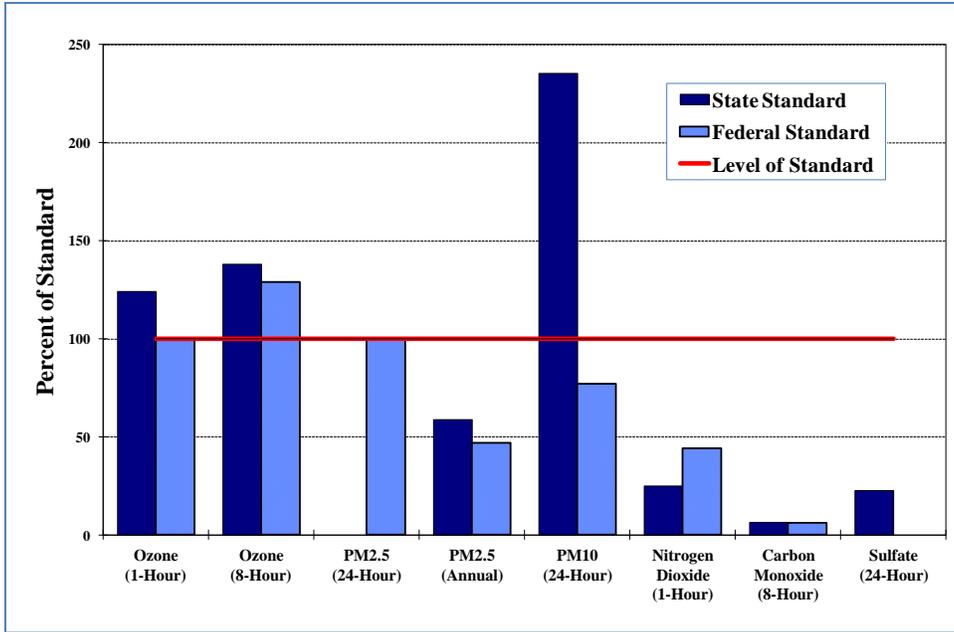


FIGURE 7-2

Coachella Valley 2011 Maximum Pollutant Concentrations as Percent of State and Federal Standards

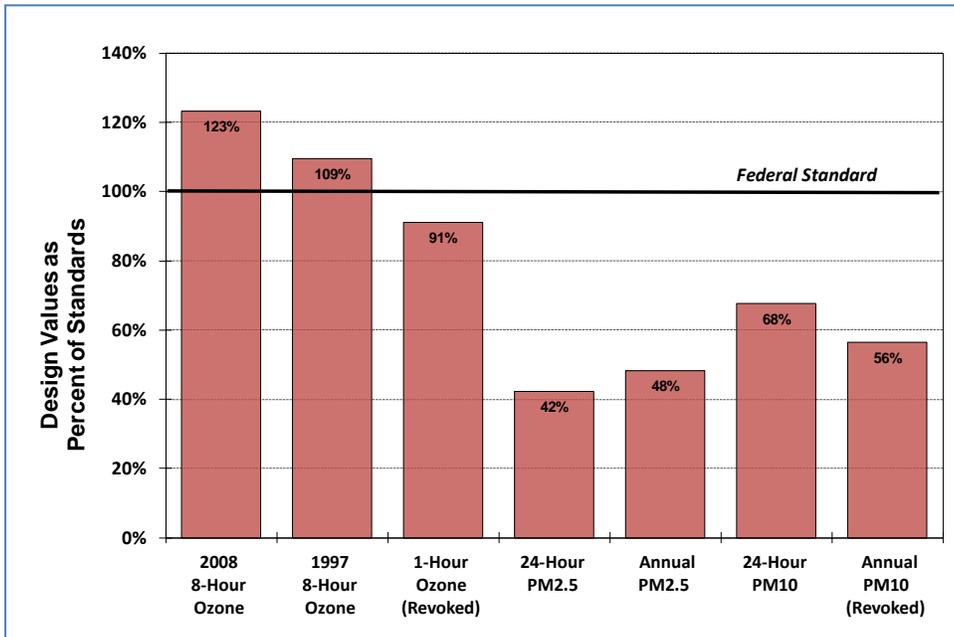


FIGURE 7-3

Coachella Valley 3-Year (2009-2011) Design Values as Percent of Federal Standards

PM10

PM10 is measured daily at both Indio and Palm Springs by supplementing the (primary) 1-in-3-day Federal Reference Method (FRM) filter sampling at Indio and the 1-in-6-day FRM at Palm Springs with (secondary) continuous hourly Federal Equivalent Method (FEM) measurements at both stations.

Although exceedances of the ozone standard in the Coachella Valley area are due to the transport of ozone from the densely populated areas of the upwind Basin, the same cannot be said for PM10 exceedances. PM10 in the Coachella Valley is primarily due to locally generated sources of fugitive dust (e.g., construction activities, re-entrained dust from paved and unpaved road travel, and natural wind-blown sources) and not as a result of secondary PM generated from precursor gaseous emissions. The Coachella Valley is subject to frequent high winds that generate wind-blown sand and dust, leading to high episodic PM10 concentrations, especially from disturbed soil and natural desert blowsand areas. PM10 is the only pollutant which has sometimes reached higher concentrations in the SSAB than in the Basin. On some of the high days, transport of wind-generated dust and sand occurs with relatively light winds in the Coachella Valley, when deeply entrained dust from desert thunderstorm outflows travels to the Coachella Valley from the desert areas of southeastern California, Arizona, Nevada or northern Mexico. All days in recent years that exceeded the 24-hour federal PM10 standard at Indio or Palm Springs would not have exceeded except for the contribution of windblown dust and sand due to strong winds in the upwind source area (high-wind natural events).

In 2011, two high-wind exceptional events occurred in the Coachella Valley that caused high 24-hour PM10 concentrations (397 and 344 $\mu\text{g}/\text{m}^3$, at Palm Springs and Indio, respectively on July 3; 375 and 265 $\mu\text{g}/\text{m}^3$ at Indio and Palm Springs, respectively on August 28). Both of these days had high PM10 due to strong outflows from thunderstorms over Arizona and northern Mexico that deeply entrained dust and sand and transported it to the Coachella Valley. They have been flagged as high-wind exceptional events in accordance with the U.S. EPA Exceptional Events Rule, with further documentation and U.S. EPA concurrence pending. After flagging these high-wind natural events, the federal 24-hour and former annual PM10 standards were not exceeded in the Riverside County part of the SSAB in 2011. Therefore, the maximum 24-hour and annual average PM10 concentrations were 120 $\mu\text{g}/\text{m}^3$ and 32.6 $\mu\text{g}/\text{m}^3$, 77 percent and 65 percent of the current 24-hour federal PM10

standard ($150 \mu\text{g}/\text{m}^3$) and the revoked annual federal standard ($50 \mu\text{g}/\text{m}^3$), respectively.

When considering the form of the federal PM10 standards, after taking the exceptional events into account, the 3-year (2009-2011) design values for the Coachella Valley are 68 percent of the 24-hour PM10 NAAQS and 56 percent of the revoked annual PM10 NAAQS. For the year 2011 and without the two exceptional events included, the Coachella Valley maximum 24-hour average PM10 concentration ($120 \mu\text{g}/\text{m}^3$) was 77 percent of the federal 24-hour PM10 standard ($150 \mu\text{g}/\text{m}^3$) and 238 percent of the state 24-hour standard ($50 \mu\text{g}/\text{m}^3$). The annual average PM10 concentration ($32.6 \mu\text{g}/\text{m}^3$) was 65 percent of the revoked federal annual PM10 standard ($50 \mu\text{g}/\text{m}^3$) and 151 percent of the state annual PM10 standard ($20 \mu\text{g}/\text{m}^3$).

In 2011, the state 24-hour PM10 standard ($50 \mu\text{g}/\text{m}^3$) was exceeded on a maximum of 19 days (21 days if the high-wind events are included) in the Coachella Valley, which is 5.2 percent of the sampling days (FRM and FEM data combined). The state annual standard ($20 \mu\text{g}/\text{m}^3$) was also exceeded. The maximum annual average PM10 concentration was 151 percent of the state standard. Figure 7-4 shows the trend of the annual average PM10 concentrations in the Coachella Valley for the station showing the highest PM10 measurements from 1990 through 2011.

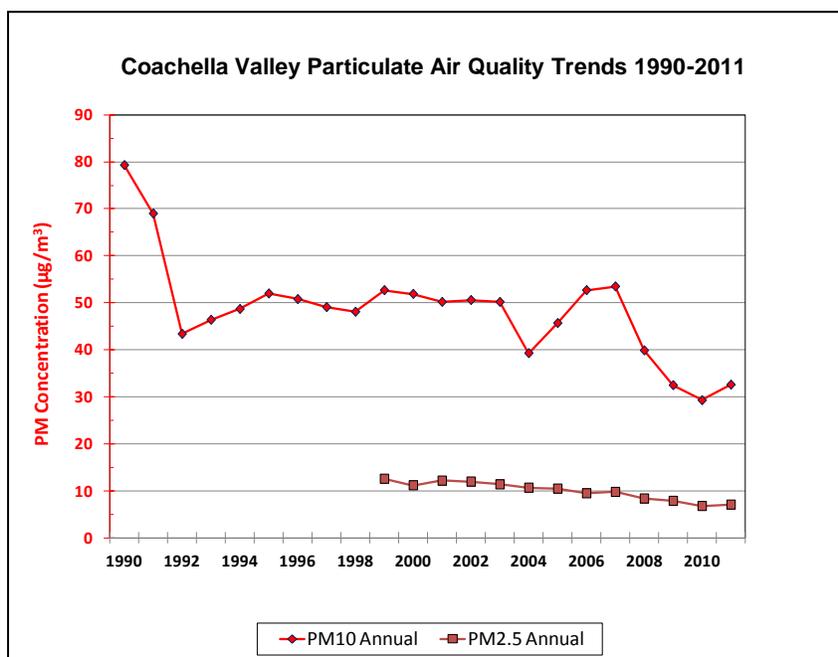


FIGURE 7-4

Coachella Valley Trend of Annual Average PM2.5 and PM10, 1990-2011

PM2.5

PM2.5 has been measured in Coachella Valley since 1999 when the District began PM2.5 monitoring. It has remained relatively low compared to the South Coast Air Basin due to fewer combustion sources and the increased vertical mixing and horizontal dispersion in the desert area. In 2011, federal PM2.5 standards (35 $\mu\text{g}/\text{m}^3$ 24-hour and 15.0 $\mu\text{g}/\text{m}^3$ annual) were not exceeded at either of the two Coachella Valley air monitoring sites. The Coachella Valley maximum 24-hour average and annual average concentrations recorded in 2011 (35.4 $\mu\text{g}/\text{m}^3$ and 7.2 $\mu\text{g}/\text{m}^3$) were, respectively, 99.7 percent and 48 percent of the federal 24-hour and annual standards. While not technically exceeding the 24-hour federal standard (with rounding, a value of at least 35.5 is needed to exceed the NAAQS), the relatively high 24-hour concentration of 35.4 $\mu\text{g}/\text{m}^3$ was unusual for the Coachella Valley and occurred at Indio on one of the exceptional event days that had extremely high PM10. The second highest 24-hour PM2.5 average for the Coachella Valley was 26.3 $\mu\text{g}/\text{m}^3$ (74 percent of the federal standard), at Palm Springs. When looking at the 3-year design value (2009-2011) that considers the form of the federal standard, the Coachella Valley PM2.5 design value is 42 percent of the PM2.5 24-hour standard and 48 percent of the annual standard.

The annual PM2.5 state standard (12.0 $\mu\text{g}/\text{m}^3$) was not exceeded in the Coachella Valley, with the maximum annual average of 7.2 $\mu\text{g}/\text{m}^3$ (at Palm Springs) at 60 percent of the standard. This gives insight that the Coachella Valley will also be in attainment of the proposed new annual PM2.5 federal standard that will be between 12.0 and 13.0 $\mu\text{g}/\text{m}^3$ (proposed June 14, 2012). Figure 7-4 (above) shows the trend of the annual average PM2.5 concentrations in the Coachella Valley for the station measuring the highest PM2.5 from 1990 through 2011.

Ozone (O₃)

Atmospheric ozone in the Riverside county portion of SSAB is both directly transported from the Basin and formed photochemically from precursors emitted upwind. These precursors are emitted in greatest quantity in the coastal and central Los Angeles County areas of the Basin. The Basin's prevailing sea breeze causes polluted air to be transported inland. As the air is being transported inland, ozone is formed, with peak concentrations occurring in the inland valleys of the Basin, extending from eastern San Fernando Valley through the San Gabriel Valley into the Riverside-San Bernardino area and the adjacent mountains. As the air is transported

still further inland into the desert areas, ozone concentrations typically decrease due to dilution, although ozone standards can be exceeded.

In 2011, the former 1-hour federal ozone standard level was not exceeded in the Coachella Valley. The maximum 1-hour concentration measured was 0.124 ppm, just below (99 percent) the former 1-hour federal standard (0.125 ppm is required to exceed). The 1997 8-hour federal ozone standard (0.08 ppm) was exceeded on 18 days. The most recent (2008) and more stringent 8-hour federal standard (0.075 ppm) was exceeded on 54 days. The maximum 8-hour ozone concentration was 0.098 ppm (129 percent of the 2008 standard and 115 percent of the 1997 standard). Ozone concentrations and the number of days exceeding the federal ozone standard are greatest in summer, with no exceedances during the winter months.

The 1-hour and 8-hour state ozone standards were exceeded on 25 days and 78 days, respectively, in the Coachella Valley in 2011. The 1-hour ozone health advisory level (0.15 ppm) has not been exceeded in the Coachella Valley area since 1999. No 1-hour Stage 1 episode levels (0.20 ppm) have been recorded in the Coachella Valley area since 1989.

Figure 7-5 shows the trend of the annual highest ozone concentrations (1-hour and 8-hour averages) measured in the Coachella Valley between 1990 and 2011. Figure 7-6 shows the annual number of days exceeding federal ozone standards at Coachella Valley monitoring sites for the years 1990-2011.

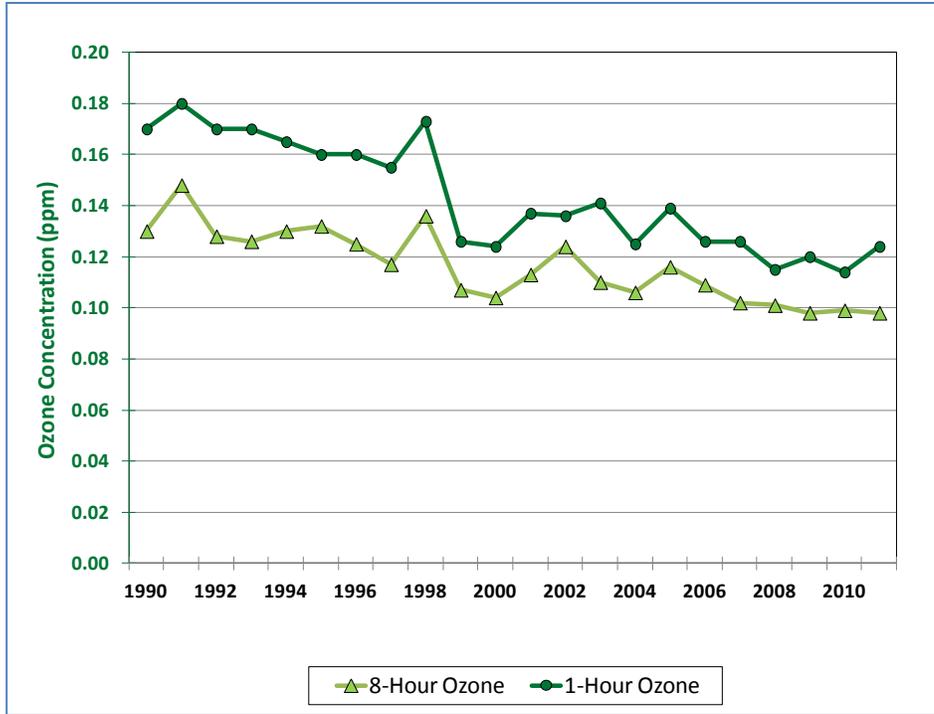


FIGURE 7-5

Trends of Coachella Valley Maximum 1-hour and 8-hour Ozone Concentrations, 1990-2011

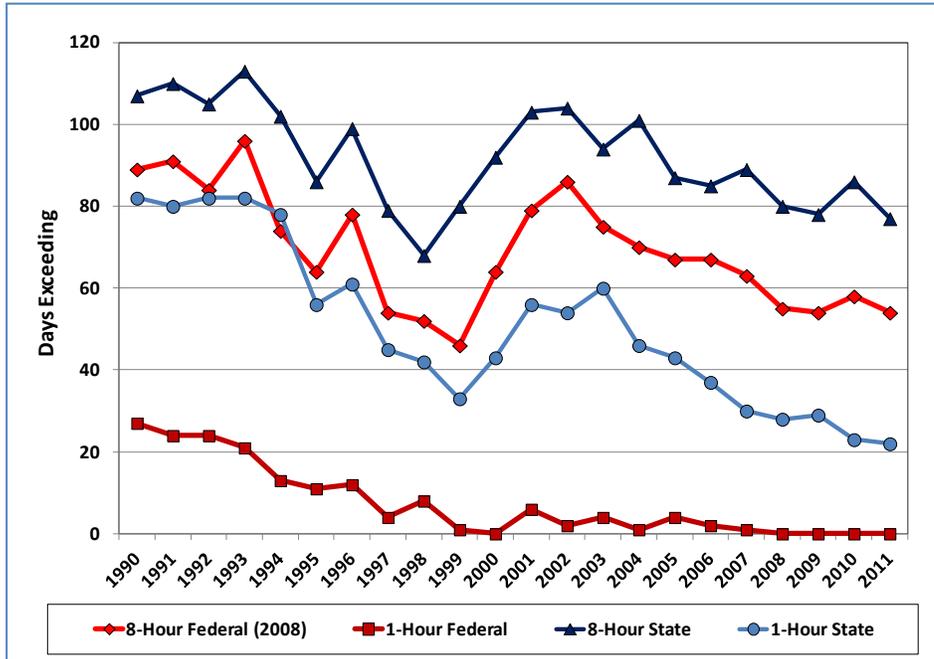


FIGURE 7-6

Coachella Valley Federal and State Ozone Trends, 1990-2011
(Number of Days Exceeding Standards)

Other Criteria Pollutants

Carbon monoxide (CO) was measured at one Coachella Valley air monitoring station (Palm Springs) in 2011. Neither the federal nor state standards were exceeded. The maximum 8-hour average CO concentration recorded in 2011 (0.6 ppm) was less than 7 percent of both the federal and state standards. The maximum 1-hour CO concentration (3.0 ppm) was 8 percent of the federal and 15 percent of the state 1-hour CO standards. Historical carbon monoxide air quality and trends in the Riverside county SSAB area show that the area has not exceeded the federal CO standards in nearly three decades.

Nitrogen dioxide (NO₂) was measured at one station in the Coachella Valley in 2011. The maximum annual average NO₂ concentration (8.0 ppb) was approximately 15 percent of the federal annual standard and 27 percent of the state annual standard. The maximum 1-hour average concentration (44.7 ppb) was 44 percent of the new (2010) federal and 25 percent of the state 1-hour standard.

Sulfur dioxide (SO₂) concentrations were not measured in the Riverside County SSAB in 2011. Historical measurements have shown SO₂ concentrations to be well below the state and federal standards and there are no significant emissions sources in the Coachella Valley.

Sulfate (SO₄²⁻) from PM₁₀ was measured at one station in the Coachella Valley in 2011. The maximum 24-hour average sulfate concentration was 5.7 µg/m³ (23 percent of the 25 µg/m³ state sulfate standard). There is no federal sulfate standard.

Lead (Pb) concentrations were not measured at either of the two Coachella Valley air monitoring stations in 2011. Measurements in past years have shown concentrations to be less than the state and federal standards and no major sources of lead emissions are located in the Coachella Valley.

Pollutant Transport

The pollutant transport pathway from the South Coast Air Basin to the Salton Sea Air Basin is through the San Geronio Pass (sometimes referred to as the Banning Pass) to the Coachella Valley.⁴ The transport pathway to the Coachella Valley is well documented and this phenomenon has been studied considerably in the past. An experiment to study this transport pathway concluded that the South Coast Air

⁴ Keith, R.W. 1980. A Climatological Air Quality Profile: California's South Coast Air Basin. Staff Report, South Coast Air Quality Management District.

Basin was the source of the observed high oxidant levels in the Coachella Valley.⁵ Transport from Anaheim to Palm Springs was directly identified with an inert sulfur hexafluoride tracer release.⁶ A comprehensive study of transport from the South Coast Air Basin to the Salton Sea Air Basin confirmed the ozone transport pathways to the Coachella Valley.⁷

Ozone pollutant transport to the Coachella Valley can be demonstrated by examining averaged ozone concentration by time of day for various stations along the transport corridor from Los Angeles County to the Coachella Valley. Figure 7-7 shows the diurnal distribution of averaged 1-hour ozone concentrations for the May-October smog season, by hour for 2011. The Coachella Valley transport route is represented, starting at Central Los Angeles in the main emissions source region and passing through Riverside-Rubidoux and Banning and finally through San Geronio Pass to Palm Springs in the Coachella Valley. Near the source regions, ozone peaks occur just after at mid-day (1:00 to 2:00 p.m. Pacific Standard Time, PST), on average, during the peak of incoming solar radiation and therefore the peak of ozone production. Downwind of the source region, ozone peaks occur later in the day as ozone and ozone precursors are transported downwind and photochemical reactions continue. At Palm Springs, ozone concentration peaks occur between 5:00 and 6:00 p.m. PST. If this peak were locally generated, it would be occurring closer to near mid-day, as it is seen in the major source areas of the South Coast Air Basin, and not in the late afternoon or early evening, as is seen at Palm Springs.

⁵ Kauper, E.K. 1971. Coachella Valley Air Quality Study. Final Report, Pollution Res. & Control Corp., Riverside County Contract & U.S. Public Health Service Grant No. 69-A-0610 RI.

⁶ Drivas, P.J., and F.H. Shair. 1974. A Tracer Study of Pollutant Transport in the Los Angeles Area. Atmos. Environ. 8: 1155-1163.

⁷ Smith, T.B., et al. 1983. The Impact of Transport from the South Coast Air Basin on Ozone Levels in the Southeast Desert Air Basin. CARB Research Library Report No. ARB-R-83-183. ARB Contract to MRI/Caltech.

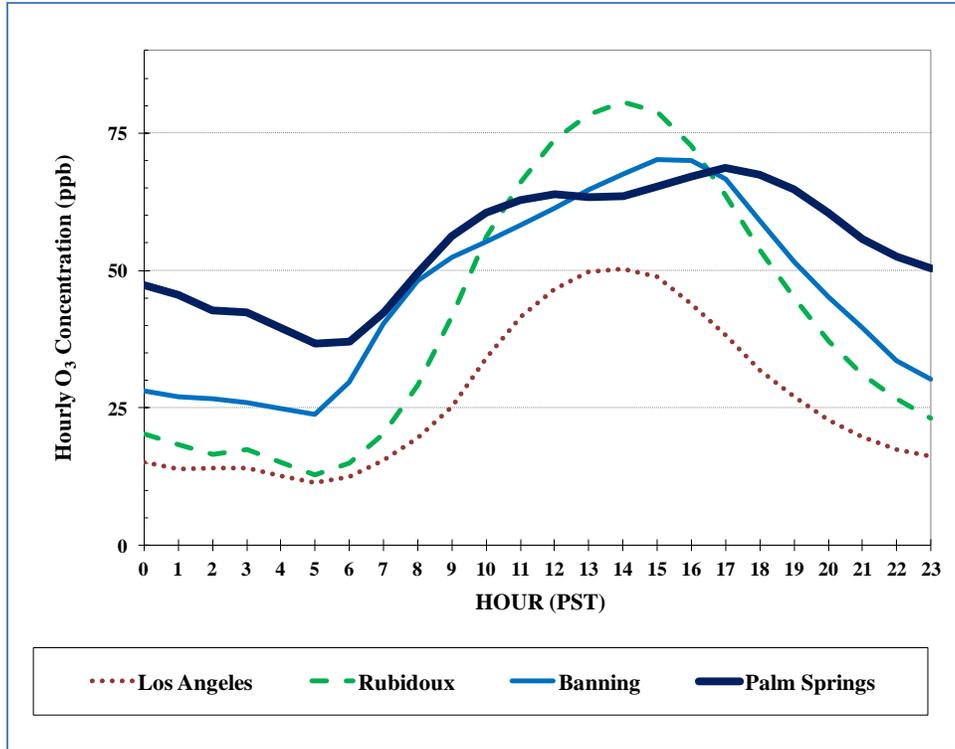


FIGURE 7-7

Diurnal Profile of 2011 Hourly Ozone Concentrations
along the Coachella Valley Transport Route

(Hours in Pacific Standard Time, Averaged for the May-October Ozone Season by Hour)

Palm Springs also exhibits an early ozone concentration increase that is not seen in the South Coast Air Basin near the main emissions source areas (i.e., Los Angeles and Rubidoux). The stations in the South Coast have more local NO_x emissions (mostly from mobile sources) to help scavenge the ozone after dark when the ozone production photochemistry ceases. The Coachella Valley has limited local NO_x emissions to help scavenge the ozone at night. This elevated overnight ozone contributes to an early morning bump in the Coachella Valley ozone concentrations, starting around 8 a.m., with the ample sunlight and strong overnight temperature inversions in the desert. Ozone concentrations in this area reach an initial peak before noon and then drop slightly with increased mixing in the early afternoon, before climbing to the daily peak as the normal onshore flow reaches the Coachella Valley through the San Gorgonio Pass, transporting new ozone from the South Coast Air Basin.

Emissions Inventories

For illustrative purposes only, Table 7-3A shows base year (2008) and future-year emission inventories for the Coachella Valley, based on the AQMP inventory methodology as described in Appendix III. Emissions, in tons per day, of volatile organic compounds (VOC), oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), PM₁₀, PM_{2.5} and ammonia (NH₃) are shown. Table 7-3B adds the Coachella Valley emissions for the Competitive Power Ventures, LLC (CPV) Sentinel power plant, as it is projected to be operational in Desert Hot Springs in 2014 and after. The corresponding inventories for the South Coast Air Basin are shown for comparison in Table 7-3C. The South Coast Air Basin emissions, typically upwind of the Coachella Valley, overwhelm the locally-generated emissions. Depending on the pollutant, emissions in the South Coast Air Basin are 10 to over 350 times greater than emissions in the Coachella Valley. It is clear that improved air quality in the Coachella Valley depends on reduced emissions in the South Coast Air Basin. This is further illustrated by the trends in ozone air quality described earlier.

TABLE 7-3A

Coachella Valley Annual Average Emissions for Base Year (2008) and Future Years

COACHELLA VALLEY EMISSIONS (TONS/DAY)							
YEAR	VOC	NOx	CO	SOx	PM10	PM2.5	NH₃
2008	15.60	32.27	76.13	0.14	17.13	3.92	2.55
2012	13.34	23.62	64.38	0.14	15.33	3.49	2.46
2014	13.25	21.89	60.72	0.15	17.23	3.48	2.46
2017	13.39	19.06	56.59	0.17	19.61	3.75	2.41
2019	13.38	16.73	53.66	0.18	20.97	3.86	2.38
2020	13.39	15.72	53.15	0.18	21.57	3.92	2.39
2023	14.12	13.22	52.85	0.20	23.25	4.18	2.37
2030	16.08	12.65	56.99	0.24	26.62	4.73	2.39
2035	16.24	13.15	60.01	0.27	28.17	4.90	2.40

TABLE 7-3B

Coachella Valley Annual Average Emissions for Base Year (2008) and Future Years with the CPV Sentinel Power Plant Emissions starting in 2014

COACHELLA VALLEY EMISSIONS (TONS/DAY) WITH CPV SENTINEL POWER PLANT							
YEAR	VOC	NOx	CO	SOx	PM10	PM2.5	NH₃
2008	15.60	32.27	76.13	0.14	17.13	3.92	2.55
2012	13.34	23.62	64.38	0.14	15.33	3.49	2.46
2014	13.37	22.28	61.26	0.17	17.43	3.68	2.46
2017	13.51	19.45	57.13	0.19	19.81	3.95	2.41
2019	13.50	17.12	54.20	0.20	21.17	4.06	2.38
2020	13.51	16.11	53.69	0.20	21.77	4.12	2.39
2023	14.24	13.61	53.39	0.22	23.45	4.38	2.37
2030	16.20	13.04	57.53	0.26	26.82	4.93	2.39
2035	16.36	13.54	60.55	0.29	28.37	5.10	2.40

TABLE 7-3C

South Coast Air Basin Annual Average Emissions for Base Year (2008) and Future Years

SOUTH COAST AIR BASIN EMISSIONS (TONS/DAY)							
Year	VOC	NO_x	CO	SO_x	PM10	PM2.5	NH₃
2008	592.71	757.25	2880.52	54.24	167.22	79.83	108.59
2012	478.92	550.00	2306.35	23.93	154.73	71.76	102.92
2014	451.11	506.22	2094.59	18.40	155.34	69.89	102.13
2017	427.43	451.63	1867.07	18.05	158.99	70.26	99.62
2019	414.70	404.93	1715.54	17.61	161.24	70.18	97.76
2020	411.66	385.03	1675.50	17.60	162.58	70.29	97.15
2023	405.85	328.14	1583.20	18.12	164.33	70.69	95.72
2030	406.72	289.27	1501.25	20.00	171.47	73.19	97.31
2035	386.80	285.84	1473.01	21.76	173.40	72.85	96.65

FUTURE AIR QUALITY

In the 2007 AQMP and the subsequent SIP submittal, the District requested that U.S. EPA redesignate the Riverside County portion of the Salton Sea Air Basin from “Serious” nonattainment to “Severe-15” and extend the attainment date of the 1997 8-hour ozone standard (80 ppb) to 2019. This Severe-15 nonattainment redesignation was approved by U.S. EPA and subsequently applied to the nonattainment designation for the new 2008 8-hour ozone standard (75 ppb), for a new attainment date of December 31, 2027. This chapter is intended to update the progress toward attainment of the current ambient air quality standards; it is not an update to the Ozone SIP attainment demonstration. A new Ozone SIP attainment demonstration for the 2008 ozone standard will be required to be submitted to U.S. EPA in 2015.

The CAA requires that ozone nonattainment areas designated as serious and above use a regional photochemical model to demonstrate attainment. To meet this requirement, the Community Multi-scale Air Quality (CMAQ) modeling system is used in this analysis for the Coachella Valley. To provide further confidence with the CMAQ model and to establish consistency with the 2007 AQMP, comparisons were also made with the Comprehensive Air Quality Model with Extensions (CAMx), with comparable results. The complete AQMD modeling system and its application is described in detail in Chapter 5 and Appendix V, along with base and future year results, sensitivity analyses and performance evaluations. To develop relative response factors (RRFs) to project future air quality, CMAQ was run using a full 3-month period (June, July and August of 2008; 91 days) during the peak of the ozone season. During this period, seven well-defined, multi-day high ozone episodes occurred that ranked high in terms of meteorological potential for ozone production. Of the modeled days in 2008, the 1997 8-hour federal ozone standard was exceeded on 75 days in the South Coast Air Basin and 19 days in the Coachella Valley.

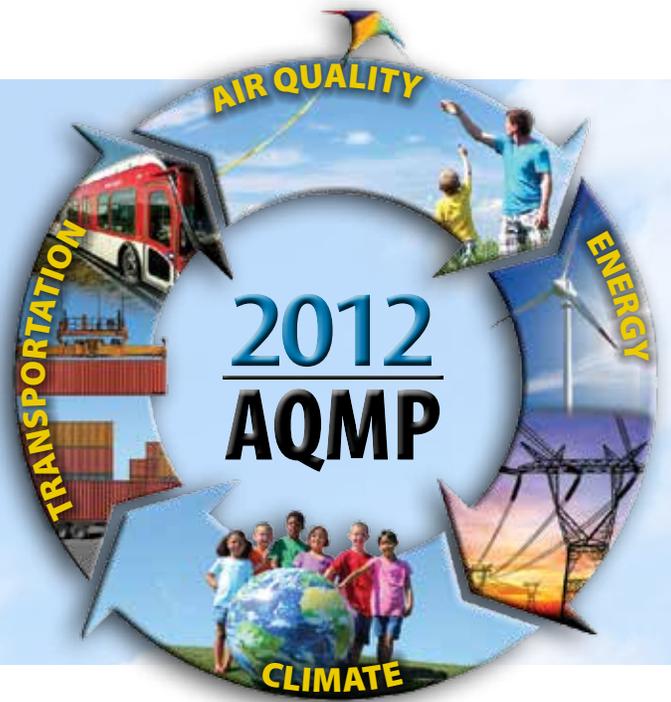
The 8-hour average ozone design values (based on a 5-year weighted average as recommended in U.S. EPA modeling guidance) for the Coachella Valley air quality stations, Palm Springs and Indio, in base year 2008 were 96 ppb and 86 ppb, respectively. The baseline emissions inventory assumes no further control beyond existing rules and regulations. Between 2008 and 2019, controls are being implemented in the South Coast Air Basin to reduce emissions.

The results of the CMAQ model simulations and corresponding RRFs using the baseline emissions for 2019 project a maximum 8-hour concentration in the Coachella Valley of 84 ppb, meeting the 1997 federal ozone standard. The CMAQ simulations of the future year ozone using the baseline regional emissions indicate that the 2008

federal 8-hour ozone standard (75 ppb) will not be attained in the Coachella Valley by the 2027 attainment date. However, using the Draft Final 2012 AQMP controlled emissions inventory, the Coachella Valley attains the 2008 federal ozone standard by 2024, in advance of the required attainment date. Further details of the future-year air quality projections in South Coast Air Basin and the Coachella Valley are presented in Appendix V.

CONCLUSIONS

With the Severe-15 ozone nonattainment designation, the Coachella Valley attainment date for the 1997 8-hour federal ozone attainment date is in 2019. Modeling simulations of the ozone episodes indicate that the 1997 federal 8-hour standard will be attained in the Coachella Valley in 2019 with no additional emissions controls. The attainment date for the more stringent 2008 8-hour federal ozone standard is 2027. With future emissions controls in place in the South Coast Air Basin, the 2008 federal 8-hour federal ozone standard will be attained in the Coachella Valley by 2024, three years in advance of the attainment date for that standard. Future emissions reductions implemented in the South Coast Air Basin will ensure timely attainment of existing standards, and also help to achieve potentially more stringent PM_{2.5} and ozone standards in the future.



Chapter 8

Looking Beyond Current Requirements

South Coast Air Quality Management District

Cleaning the air that we breathe...



CHAPTER 8

LOOKING BEYOND CURRENT REQUIREMENTS

Introduction

Potential Changes in the Federal Ozone Standard

Implications of a New Ozone Standard for the Basin

1-Hour Ozone Requirements

Proposed Changes to the Federal Particulate Matter Standards

Implications of the Proposed New PM_{2.5} Standards for the Basin

INTRODUCTION

This Chapter presents additional analyses which are not legally required, but are presented here for informational purposes to initiate stakeholder discussion on future air quality planning and to place the 2012 AQMP in context of long-range transformation needed for this region to meet the health-based air quality standards and provide cobenefits to GHG and air toxic reductions, energy security, and mobility.

POTENTIAL CHANGES IN THE FEDERAL OZONE STANDARD

The Clean Air Act (CAA) requires U.S. EPA to periodically review the existing air quality standards in light of the findings of new and emerging epidemiological and health studies. The CAA sets up a 5-year review cycle for the national ambient air quality standards. The current cycle for ozone began in 2008, and U.S. EPA will revisit the most recent standards in 2013. The Clean Air Scientific Advisory Committee (CASAC) has already begun a new and forthcoming scientific review in preparation of the 2013 review of the ozone standards and U.S. EPA expects to propose potential revisions to the ozone standard in the fall of 2013 and finalize any revisions to the standard in 2014. Based on the previous recommendations by CASAC and the previous reviews and proposals by U.S. EPA, it is anticipated that the 8-hour ozone standard may be lowered to a level between 0.060 ppm and 0.070 ppm (60 – 70 ppb). If finalized in 2014, designations would follow in 2015, and the new attainment date (for extreme non-attainment areas such as the Basin) would be in the 2035 time frame.

IMPLICATIONS OF A NEW OZONE STANDARD FOR THE BASIN

Based on the modeling results presented in Chapter 5 and Appendix V, the Basin can demonstrate attainment with the existing federal 8-hour ozone standards by the corresponding attainment deadlines (2023 and 2032) only by using a provision of the federal CAA Section 182(e)(5) that allows credit for emissions reductions from future improvements in control techniques and technologies. The projected ozone isopleths for the average 8-hour ozone design values at Crestline monitoring station are shown in Figure 8-1 for illustration purpose. The upper right corner represents the projected VOC and NO_x emissions inventory in 2023 with full implementation of all adopted control measures (baseline). Moving down and left on the figure corresponds to relative emissions reductions of NO_x (down) and VOC (left). The curved lines within the figure signify the projected 8-hour ozone design value resulting from those emissions reductions.

Figure 8-1 demonstrates that in order to meet the 80 ppb ozone level in 2023, an approximate 65% reduction (35% remaining) in NO_x emissions will be necessary beyond already adopted measures. VOC reductions are not as effective as NO_x reductions, but concurrent 60% VOC reductions would reduce the needed NO_x reductions to about 60%. Figure 8-1 also indicates that a 75% reduction in NO_x emissions is needed to meet the 75 ppb level in 2032. A full discussion of the emissions reductions needed to meet current ozone standards is included in Chapter 5 and Appendix V.

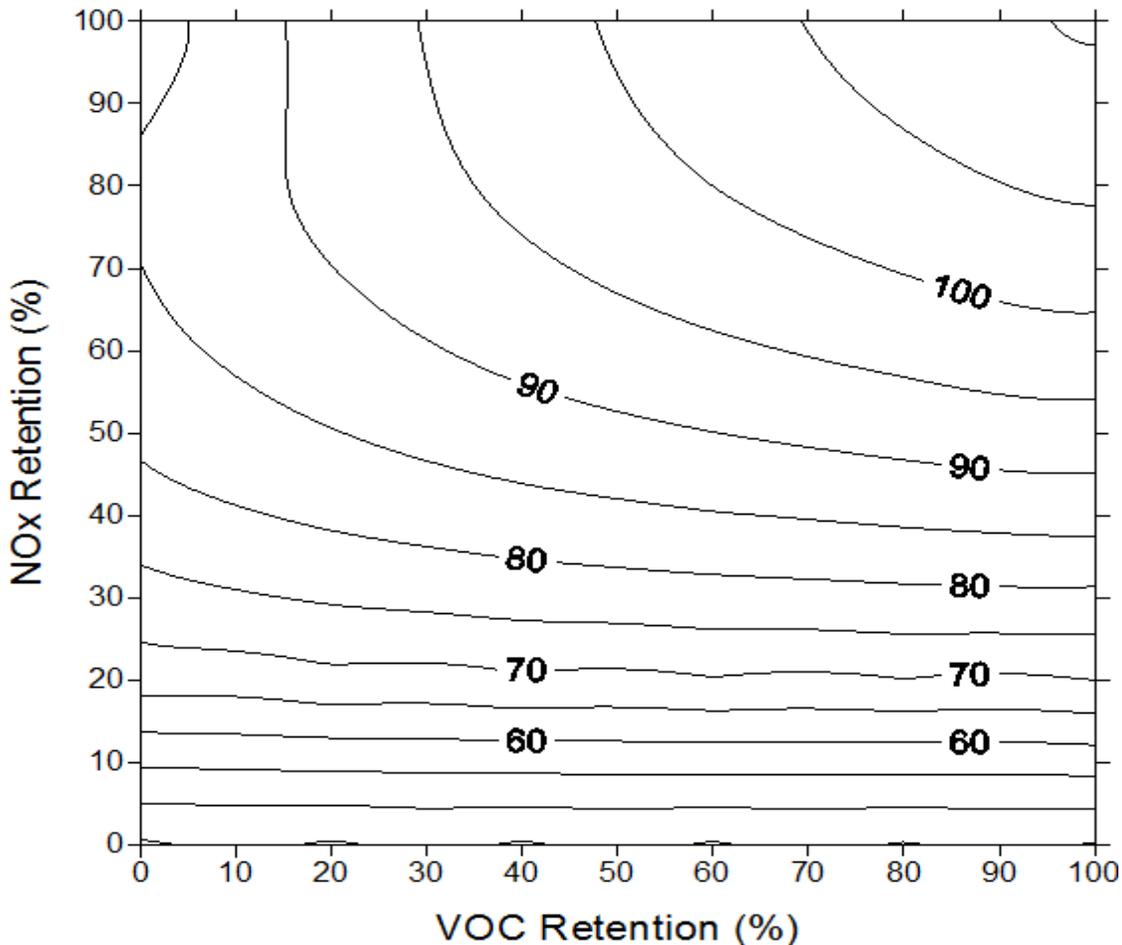


FIGURE 8-1
 2023 Preliminary 8-hour Average Ozone Basin Design Value Isopleths
 at Crestline Monitoring Station

As stated above, it is anticipated that the 8-hour ozone standard may be lowered to a level between 60 and 70 ppb. Therefore, in order to demonstrate attainment in the 2035

time frame, an additional 80% to 88% NO_x emissions reduction below 2023 baseline would be needed. Assuming the 75 ppb standard is met in 2032 with a 75% NO_x reduction below 2023 baseline helps to illustrate the significant difference between a new 60 ppb 8-hour ozone standard and a 70 ppb standard. A 70 ppb standard represents an approximate 20% NO_x reduction between 2032 and 2035, while a 60 ppb standard requires a 50% NO_x reduction in that three year time span. A standard at 60 ppb is also within 12 ppb of the Basin background level of ozone, which has been estimated to be about 48 ppb by modeling the Basin with all man-made sources removed. Figure 8-1 also demonstrates that the effectiveness of NO_x emission reductions continues to be most effective at these lower ozone levels. It would be the greatest air quality challenge the region has ever faced relative to achieving additional NO_x emission reductions necessary to demonstrate attainment with these potential new standards and would further necessitate transformational technologies with zero or near-zero combustion emissions.

1-HOUR OZONE REQUIREMENTS

The federal 1-hour ozone standard was revoked when the 8-hour standard was established. U.S. EPA guidance indicated that while certain planning requirements remained in effect, a new SIP would not be required if an area failed to attain the standard by the attainment date. However, a recent court decision has led U.S. EPA to propose an action requiring a new 1-hour ozone attainment demonstration for the South Coast Basin. The attainment demonstration would be due within 12 months of publication of the final action. The attainment demonstration would have to show attainment within 5 years with a potential 5-year extension, which would be a similar timeframe as is required for the 1997 8-hr ozone standard (deadline of 2023). However, many new technical issues such as modeling for the attainment demonstration and other CAA requirements would require U.S. EPA's guidance, since the previous preambles and guidelines are no longer directly applicable. Based on previous modeling estimates, the control strategies that are needed to attain the 8-hour ozone standard are nearly identical to those that would be needed to attain the 1-hour ozone standard.

PROPOSED CHANGES TO THE FEDERAL PARTICULATE MATTER STANDARDS

The U.S. EPA revoked the annual PM₁₀ standard of 50 µg/m³ and lowered the 24-hour PM_{2.5} standard from 65 µg/m³ to 35 µg/m³, effective December 17, 2006. At the time,

no changes were made to the existing 24-hour PM₁₀ standard of 150 µg/m³ and the annual PM_{2.5} standard of 15 µg/m³. As part of the requirements of the CAA, every five years, the U.S. EPA must review the ambient air quality standards and propose revisions, if necessary, to “protect public health with an adequate margin of safety,” based on the latest, best-available, science. Under a court order, the U.S. EPA was directed to propose updated standards no later than June 14, 2012. In response to that court order, the U.S. EPA proposed updated national ambient air quality standards for PM_{2.5} on June 14, 2012. U.S. EPA and the litigants have agreed to a proposed consent decree that would require U.S. EPA to issue final standards by December 14, 2012. These proposed revisions to the PM standards also respond to a court remand of two of the existing PM_{2.5} standards, which standards were issued in 2006.

The CAA requires U.S. EPA to set two types of outdoor air quality standards: primary standards, meant to protect public health, and secondary ambient air quality standards, meant to protect the public against adverse environmental effects. When setting air quality standards, the air quality statistics used to determine if an area meets the standard must also be specified. This is known as the “form” of the standard.

The new PM NAAQS rule proposed on June 14, 2012 includes the following:

- **Annual PM_{2.5} standard:** The proposed rule will strengthen the annual PM_{2.5} standard by lowering the level from 15 µg/m³ to a level within the range of 12 µg/m³ to 13 µg/m³. U.S. EPA is also seeking comment and input on alternative levels for the annual PM_{2.5} standard, down to 11 µg/m³. The form of the standard would be unchanged and would be based on the three-year average of an area’s annual average PM_{2.5} concentrations. The current annual PM_{2.5} standard has been in place since 1997.
- **24-hour PM_{2.5} standard:** U.S. EPA is proposing to retain the existing standard of 35 µg/m³ and the current form of the standard, which continues to be based on the 98th percentile of 24-hour PM_{2.5} concentrations measured in a year (averaged over three years) at the monitoring site with the highest measured values in an area. The current 24-hour PM_{2.5} standard has been in place since 2006.
- **24-hour PM₁₀ standard:** U.S. EPA is proposing to retain the existing standard of 150 µg/m³ and the current form of the standard, which continues to be based on the maximum concentrations measured in a year (averaged over three years) at

the monitoring site with the highest measured values in an area. The current 24-hour PM10 standard has been in place since 1987.

Particle pollution causes haze and visibility degradation in cities and some of the country's national parks. Additionally, nitrate and sulfate particles can contribute to acid rain formation, which affects the acidity in water bodies, streams, and rivers, impacting the flora and fauna which rely on those waters for survival. Currently, the secondary PM10 and PM2.5 standards are the same as the primary PM10 and PM2.5 standards, respectively. For secondary standards, the proposed rule includes the following:

- **24-hour PM2.5 secondary standard:** U.S. EPA is proposing to add a 24-hour secondary standard for PM2.5 to protect visibility in urban areas. This standard would be measured in “deciviews”, similar to what is used in the U.S. EPA’s Regional Haze Program. Two alternative levels are being proposed – 30 deciviews and 28 deciviews. The U.S. EPA would calculate a “visibility index” value, using data from fine particle samples that have been analyzed to determine their chemical composition, along with information on the relative humidity of the area. The form of the standard would be the three year average of the 90th percentile of 24-hour visibility index values in one year. U.S. EPA is also seeking additional comment and input on an alternative level, down to 25 deciviews, along with comments on alternate averaging times.
- **Retention of all other secondary standards:** U.S. EPA is proposing to retain all other secondary standards such that they are identical to the primary standards, as discussed previously.

In addition to these revisions, the U.S. EPA is also proposing to revise the public air quality reporting convention, the Air Quality Index (AQI), for PM2.5 by setting the 100 value of the index at the level of the current 24-hour PM2.5 standard, which is 35 µg/m³.

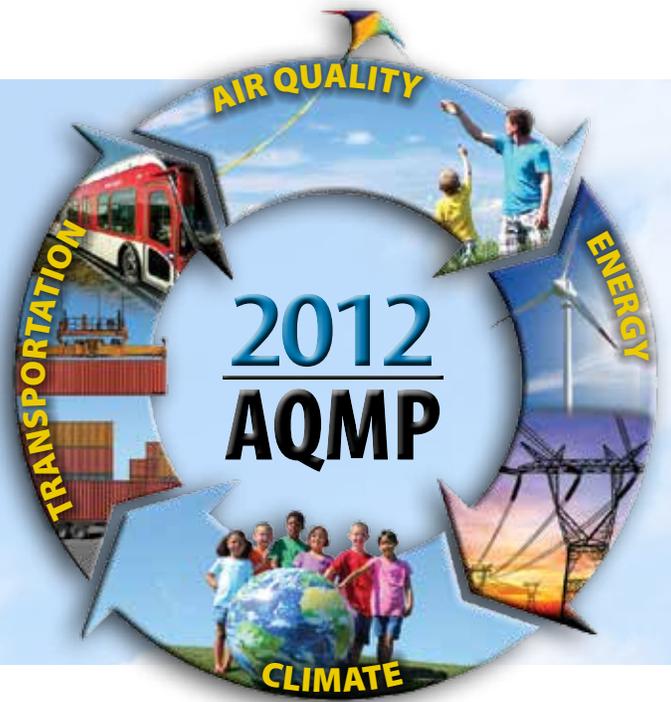
Fine particles come from a variety of sources, including vehicles, and are also formed when emissions from vehicles and other sources undergo atmospheric reactions. The U.S. EPA has proposed changes to the PM2.5 monitoring requirements by including for the first time a requirement for PM2.5 monitoring along heavily traveled roadways in large urban areas. The required monitors, to be located at near-road monitoring sites measuring nitrogen dioxide and carbon monoxide, would have to be operational no later than January 1, 2015.

U.S. EPA anticipates making attainment/nonattainment designations of the new annual PM_{2.5} standard by December 2014, with those designations likely becoming effective in early 2015. States would have until 2020 to meet the new PM_{2.5} NAAQS, with up to a 5-year extension to 2025.

IMPLICATIONS OF THE PROPOSED NEW PM_{2.5} STANDARDS FOR THE BASIN

As presented above, U.S. EPA's proposed rule would strengthen the annual PM_{2.5} standard by lowering the level from 15 µg/m³ to a level within the range of 12 µg/m³ to 13 µg/m³. Based on the baseline modeling performed in Chapter 5, it is projected that the annual PM_{2.5} design value in 2023 will be 13.0 µg/m³ and will occur at the Mira Loma air monitoring station. Thus, the Basin should be able to demonstrate attainment with a 13 µg/m³ NAAQS with already adopted control measures by 2023. With the proposed measures in the Draft Final 2012 AQMP, it may be possible to advance attainment to an earlier date. While the proposed episodic measures are designed to address the 24-hour PM_{2.5} standard, they will also help to achieve annual standards. Alternatively, if the standard is set lower at 12 µg/m³, additional controls may be necessary to demonstrate attainment with the standard by 2025. Whether additional emissions reductions are needed to demonstrate attainment with the potential new primary annual PM_{2.5} NAAQS will depend largely on the level of the standard and other factors, such as economic growth or unfavorable weather. It should also be noted NO_x controls needed for attainment of the 8-hr ozone standard of 80 ppb by 2023 will assist in the attainment of the annual PM_{2.5} standard by 2025 or sooner.

The status of the Basin with regard to the proposed secondary visibility standard cannot be fully assessed until additional implementation guidance is provided by U.S. EPA.



Chapter 9
**Near Roadway Exposure and
Ultrafine Particles**

South Coast Air Quality Management District

Cleaning the air that we breathe...



CHAPTER 9

NEAR ROADWAY EXPOSURE AND ULTRAFINE PARTICLES

Introduction

Ultrafine Particles

Other Near-Roadway Pollutants

Ambient Measurements

Health Effects

Future Research and Assessment Needs

Planning and Regulatory Issues

District Future Actions

INTRODUCTION

There is growing concern about the potential health effects as caused by exposure for people living near major roadways to criteria pollutants and air toxics emitted from both gasoline and diesel vehicles (HEI, 2010). Recent toxicological and epidemiological studies have identified living near major roadways as a risk factor for respiratory and cardiovascular problems and other health related issues including: asthma and allergic diseases, reduced lung function and growth, low birth weight and pre-term newborns, lung cancer and premature death (Brugge et al., 2007; Kan et al., 2008; Balmes et al., 2009; Jerrett et al., 2009; Andersen et al., 2010; Hoek et al., 2010).

Motor-vehicle emissions consist of a complex mixture of particulate and gaseous pollutants such as fine particulate matter (PM_{2.5}; particles with a diameter less than 2.5 µm), ultrafine particles (UFPs; diameter < 0.1 µm), metals, organic material, black carbon (BC), volatile organic compounds (VOC), nitrogen oxides (NO_x; mostly NO and NO₂) and carbon monoxide (CO). While PM_{2.5} and NO₂ are currently regulated as criteria pollutants, UFPs have been shown to be toxic and have health impacts, but are not specifically regulated.

In 1998, the California Air Resources Board (CARB) classified diesel exhaust PM as a toxic air contaminant, citing its potential to cause cancer and other health problems. The U.S. EPA concluded that long-term exposure to diesel engine exhaust is likely to pose a lung cancer hazard to humans and can also contribute to other acute and chronic health effects.¹ The International Agency for Research on Cancer (IARC), part of the World Health Organization, recently classified diesel exhaust as a human carcinogen (Benbrahim-Tallaa et al., 2012). A recent study conducted by the District suggested that exposure to diesel PM is the major contributor to the remaining air toxics cancer risk in the South Coast Air Basin (Basin), accounting on average for about 84% of the carcinogenic risk attributable to air pollutants (MATES III; AQMD, 2008).²

While substantial effort has been made to characterize the health risks associated with exposure to diesel PM, information about the health impacts of UFPs is just now emerging. These very minute particles (consisting primarily of organic material, soot,

¹ <http://www.epa.gov/ttn/atw/dieselfinal.pdf>

² <http://www.aqmd.gov/prdas/matesIII/matesIII.html>

and trace elements) have a different chemical composition than the larger PM fractions (PM_{2.5} and PM₁₀). Due to their small size, UFPs can penetrate deeply into the human respiratory tract, into the blood stream, and be transported to other critical organs such as the heart and brain. Furthermore, their large surface area may provide a mechanism for delivering potentially toxic adsorbed material into the lung and other organs. This penetration capability is suspected to have human health implications because UFPs' toxic components may initiate or facilitate biological processes that may lead to adverse effects to the heart, lung, and other organs (HEI, 2010).

UFPs are emitted from almost every fuel combustion process, including diesel, gasoline, and jet engines, as well as external combustion processes such as wood burning. Consequently, there is growing concern that people living in close proximity to highly trafficked roadways and other sources of combustion-related pollutants (e.g. airports and rail yards) may be exposed to significant levels of UFPs and other air toxics.

Over the last decade, substantial efforts have been made to better characterize the physical and chemical properties of UFPs and their potential impact on people living in close proximity to roadways and other emissions sources. Two areas of research have received particular attention:

- On-roadways, near-roadways, and in-vehicle measurements: UFP emissions from motor vehicles are not static after leaving the tailpipe and undergo physical transformation and chemical reactions in the atmosphere as they are transported away from the source. In order to study the dynamic nature of UFP formation, evolution and transport, as well as their physical and chemical properties, and human exposure, UFP measurements have been taken at the tailpipe, at different distances from the edge of roadways, and inside vehicles.
- Effect of UFP reduction technologies: As modern engines and emissions controls continue to evolve, the mass of combustion-related PM has been dramatically reduced through sophisticated control of combustion conditions, introduction of ultra low sulfur diesel fuel, and the application of after-treatment control technologies such as diesel particulate filters (DPFs). In some cases, emission controls designed for PM mass have facilitated the formation of a greater number of UFPs. However, properly designed emission control technologies can limit the formation and emission of UFP as well as PM mass.

From a regulatory perspective, the U.S. focus has been on reducing the mass of PM emitted in the ambient air. However, UFPs contribute a very small portion of the overall atmospheric particle mass concentration. Thus, there has been growing interest over the last two decades to study, understand, and regulate the size and number of particles found in PM generated from diesel and other combustion engines. Partly because light-duty diesel vehicles are very common in European countries, the European Union has already adopted standards that phase in particle number limits for passenger car and light-duty vehicle emissions. However, there are still concerns related to the health impacts of non-solid organic UFP components that are not addressed by the European solid particle number standard.

Recently, CARB staff prepared a preliminary discussion paper on proposed amendments to California's Low-Emission Vehicle (LEV III) Regulations, to address UFP emissions from light-duty motor vehicles by promoting a solid particle number based PM compliance strategy (CARB, 2010)³. CARB staff ultimately decided that the complexity of the issues warranted further study and understanding before proceeding. Although the District has limited authority to regulate mobile source pollution in the near-roadway environment, District staff has implemented a variety of measures to assess and reduce the health impacts of near-roadway emissions on local communities. The District continues to demonstrate and incentivize the deployment of zero/near-zero emission technology, has implemented numerous installations of high-efficiency air filtration in schools, and conducts outreach and education on near-roadway health impacts. Furthermore, on July 1, 2012 the District began the next Multiple Air Toxics Exposure Study (MATES IV) to characterize the carcinogenic risk from exposure to air toxics in the Basin. A new focus of MATES IV will be the inclusion of measurements of UFP and BC concentrations across the Basin, and near specific combustion sources (e.g. airports, freeways, rail yards, busy intersections, and warehouse operations) to evaluate the long- and short-term exposures to these pollutants.

This chapter of the AQMP first presents background information on UFPs and other important air pollutants emitted from motor vehicles. Next, recent results from ambient measurement studies conducted near traffic sources, on roadways, and inside vehicles are reviewed, followed by an explanation of the current state of knowledge on the health effects caused by UFPs and near-roadway exposure to pollutants.

³ http://www.arb.ca.gov/msprog/levprog/leviii/meetings/051810/pm_disc_paper-v6.pdf

Finally, potential control, mitigation, and policy strategies for limiting such exposures are discussed with recommendations for future actions to address this emerging and important topic.

ULTRAFINE PARTICLES

Formation and Transport

UFPs are emitted from both natural and anthropogenic sources, although in most urban environments vehicular fossil fuel combustion constitutes the major contributing source. The terms UFPs and nanoparticles (NP; diameter $< 0.05 \mu\text{m}$) are often used interchangeably, and the definitions of each generally vary with the study or application. While PM_{2.5} dominates the mass distribution of atmospheric particles, UFPs account for about 90% of the total particle number (Stanier et al., 2004a and Zhang et al., 2004). For this reason, their concentration is usually expressed in terms of total particle count (i.e. # per cubic centimeter of sampled air, or $\#/ \text{cm}^3$), even though a small fraction of the particles being counted may be above 100 nm.

In the late 1990s, pioneering research by the University of Minnesota (Kittelson, 1998) made significant new progress by identifying three size categories for particles found in diesel engine emissions: 1) coarse mode ($1 \mu\text{m} < d < 10 \mu\text{m}$), 2) accumulation mode ($\sim 0.05 \mu\text{m} < d < 1 \mu\text{m}$), and 3) nuclei mode ($d < 0.05 \mu\text{m}$). As shown in Figure 9-1, UFPs ($d < 0.1 \mu\text{m}$) and NPs in particular dominate the total number concentration (blue line).

Today we know that, typically, three UFP size modes appear in the exhaust of motor vehicles:

- Narrow nucleation mode at around 10 nm that corresponds to nucleated particles that have grown by condensation of gaseous precursors. It is mostly comprised of sulfate particles and semi-volatile organic compounds (SVOCs).
- Larger nucleation mode at around 20 to 30 nm which also contains sulfate particles and SVOCs.
- Accumulation mode at around 60 nm that results from the combustion process and that mostly includes soot and non-volatile organic compounds, but also sulfate and SVOCs. This mode is primarily associated with diesel exhaust.

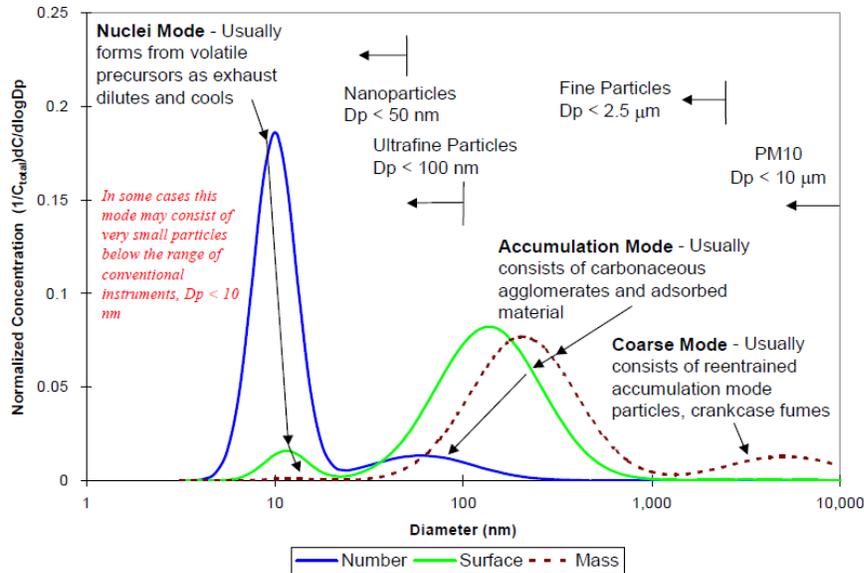


FIGURE 9-1

Typical Particle Size Distribution for Uncontrolled Diesel Emissions (Kittelson, 1998)

Particles from motor vehicle emissions can be divided into two broad categories, depending on the location of their formation:

- **Primary combustion particles:** formed in the engine or tailpipe, they are mostly sub-micrometer agglomerates of solid phase carbonaceous material ranging in size from 30 to 500 nm. These particles may also contain metallic ash (from lubricating oil additives and from engine wear), adsorbed or condensed hydrocarbons, and sulfur compounds (Morawska et al., 2008).
- **Near-tailpipe UFPs:** as the hot exhaust gases are expelled from the tailpipe, they quickly cool and condense on existing particles or nucleate to form large numbers of very small particles in the air. They consist mainly of hydrocarbons and hydrated sulfuric acid, are generally 30 nm or less in diameter and are most commonly observed near busy freeways, especially those where a large fraction of heavy-duty diesel vehicles is present (Westerdahl et al., 2005; Ntziachristos et al., 2007; eskinen and Ronkko, 2010). These particles are formed very quickly and are distinct from UFPs derived from photochemical nucleation processes occurring in the atmosphere further away from the source (Stanier et al., 2004b).

Once released into the atmosphere, UFPs undergo dilution with ambient air and are subject to chemical reactions and physical processes such as evaporation, condensation, and coagulation. Thus, particles measured away from roadways and other emission sources generally have different characteristics than those measured immediately after formation. Wind speed and direction, precipitation, relative humidity, and temperature are the main meteorological factors affecting UFP transport.

Ambient Diurnal and Seasonal Variations

In ambient urban environments, strong diurnal variations in UFP concentration have been reported in many studies and shown to closely follow the temporal variation in traffic density, with the highest levels observed on weekdays during rush hours (Hussein et al., 2004; Morawska et al., 2008; AQMD, 2012)⁴. Typically, weekdays are characterized by two peaks in UFPs, one early in the morning and another in the afternoon coinciding with traffic rush hours. A wider mid-day peak is usually observed on weekends. Photochemical particle formation also contributes to increasing the afternoon number concentration of UFPs, especially in the summer.

Several meteorological factors contribute to the seasonal variability in the concentration of atmospheric PM and UFPs; these include:

- Lower mixing layer height and greater atmospheric stability in winter, which tend to increase particle levels by not allowing for vertical mixing in the atmosphere.
- Lower winter temperature, which leads to increased nucleation of volatile combustion products, particularly during morning rush hours.
- Higher photochemical activity in the summer, which favors photochemical particle formation.

It should be noted that the effects of these meteorological factors on particle concentration are more pronounced in areas where there are significant meteorological differences between seasons. Pirjola et al. (2006) and Virtanen et al. (2006) showed that the average UFP concentrations in winter in Finland were 2–3 times higher than in the summer, with the highest values observed in February. The highest and lowest monthly average UFP concentrations in Pittsburgh (U.S.A.) reported by Zhang et al. (2004) were measured in December and July, respectively.

⁴ http://www.aqmd.gov/tao/AQ-Reports/I710Fwy_Study.pdf

In the wintertime most of the factors leading to an increase in particle concentration tend to occur early in the morning (i.e. rush hour traffic, low mixing height, low wind speed and temperature). Summer minima are usually associated with increased ambient temperature (which does not favor the nucleation process), although increased photochemical activity can lead to new UFP formation.

Concentration Levels in Different Environments

Morawska et al. (2008) compared particle concentration levels reported for different environments including: road tunnel, on-road, road-side, street canyon, urban, urban background, rural, and clean background (Figure 9-2). The mean and median values for each category were calculated using available literature data and are shown below to illustrate the typical atmospheric variability in UFP number concentration measurements.

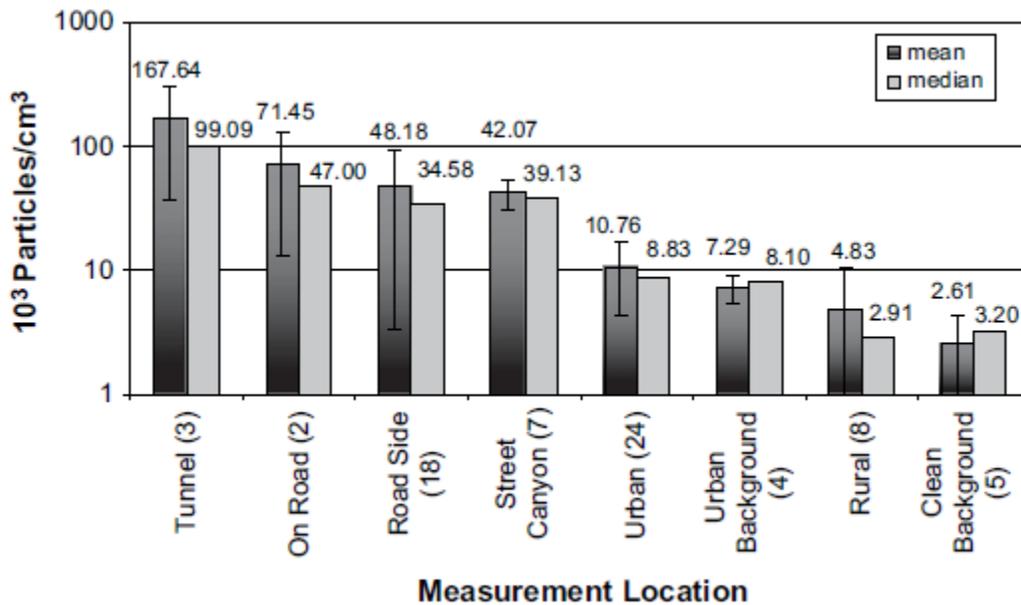


FIGURE 9-2

Mean and Median Particle Number Concentrations for Different Environments

In brackets are the numbers of sites for each environment used to calculate the mean and median UFP values. Vertical lines represent standard deviations (from Morawska et al., 2008)

Substantially higher peak particle number levels are expected in each environment over shorter time periods (e.g. seconds to minutes), and in close proximity to specific sources such as roadways and airports. For example, in a recent study conducted by the District near the Santa Monica Airport (SMO; a general aviation airport), 1-min average UFP levels as high as 2,600,000 #/cm³ were measured 35 m downwind of the runway during jet aircraft take-off (AQMD, 2011)⁵. One-minute maxima between 1,500,000 and 2,000,000 #/cm³ (also associated with jet aircraft departures) were observed 100 m downwind of the runway in the backyard of a local residence.

Chemical Composition

Comprehensive knowledge of the chemical composition of UFPs in ambient air is still not available, mostly because of the small amount of mass available for analysis, and because most studies have been conducted using different measurement protocols, sampled particles in different size ranges, and focused on different aspects of their chemical composition (Morawska et al., 2008). However, it is known that engine emissions include sulfur dioxide (SO₂) or sulfur trioxide (SO₃) and NO_x, and that nucleation of these gaseous species into sulfate and nitrate particles is an important mechanism for increasing particle formation near traffic sites.

A few studies have investigated the composition of UFPs in urban environments. Kuhn et al. (2005) showed that UFP samples collected in downtown Pittsburgh were mostly comprised of organic matter (45 to 55% by weight) and salts of ammonium and sulfate (35 to 40%). In a study conducted at two Los Angeles sites (urban and inland), Sardar et al. (2005) found that organic carbon (OC; the amount of carbon present in the collected organic material) ranged from 32 to 69% (by weight), elemental carbon (EC; an indicator of diesel PM and closely related to BC) from 1 to 34%, sulfate from 0 to 24% and nitrate from 0 to 4%. In these and other cases, organic material was found to comprise the larger fraction of UFP by mass especially in the summer, when photochemical formation of organic aerosol is higher. UFP chemistry, including elemental composition, was investigated by Pakkanen et al. (2001) at two sites (urban and rural) in Helsinki (Finland). The most important trace elements at both sites were Ca, Na, Fe, K and Zn (present in higher concentrations), and Ni, V, Cu, and Pb (“heavy metals”). These measured species accounted for less than 1% of the total UFP mass and their presence was probably related to local combustion sources, possibly traffic exhaust, and combustion of heavy fuel oil. Overall, the

⁵ http://www.aqmd.gov/tao/AQ-Reports/Supplement_GA_Report.pdf

chemical composition of UFPs differs significantly from place to place and depends on the types of local sources and their relative contributions.

Measurement Methods

A basic knowledge of the instruments used for monitoring UFPs is critical as the resulting measurements are dependent on the method and measurement principle used. Since there is no “standard” measurement technique or calibration standard by which different instruments can be evaluated and compared, UFP measurements are somewhat operationally defined. Below is a list of the most common instruments that have been used to monitor the mass and number concentration and size distribution of UFPs in the atmosphere and in exhaust streams. For a more comprehensive discussion on the issues associated with measuring UFPs see Maricq and Maldonado (2010) and Robinson et al. (2010).

- Condensation Particle Counter (CPC): it provides the total number concentration of particles above a lower size limit (~3 -20 nm, depending on make and model) in real-time. UFPs are grown through condensation in a controlled super-saturation environment to larger sizes and then measured (counted) using a photodetector. Alcohol or water are usually used as condensing liquids. Although CPCs are the most widely used instruments in most applications, they do not provide any information on the original size of the particles counted.
- Scanning Mobility Particle Sizer (SMPS): particle counters can also be used in conjunction with electrostatic classifiers (used to separate airborne particles according to their size) to characterize the particle size distribution of UFPs. Typically, SMPSs provide size distribution data in almost real-time for particles as small as 10 nm.
- Electrical Low-Pressure Impactors (ELPI): this instrument provides real-time number weighted size distributions in the particle diameter range of 30 to 10,000 nm. ELPIs are very sensitive instruments and measure ambient aerosol concentrations and size distributions. They can be used to measure particle charge distribution in real-time, and also allow for particle collection and direct mass measurements.
- Engine Exhaust Particle Sizer (EEPS): it measures particle size distributions in real time and covers a range from ~3 to 500 nm. It was designed specifically to measure particles emitted from internal combustion engines and motor vehicles,

but newer versions are designed for ambient applications. Its fast response (e.g. ~10 Hz data collection) allows for the measurement of transient signals, but also tracks well with the CPC concentrations and SMPS size distributions.

- Micro Orifice Uniform Deposition Impactor (MOUDI): it provides integrated mass-based size distribution measurements covering particle sizes from ~56 to 10000 nm. Nano MOUDIs are used for smaller particle size ranges (i.e. ~ 10 to 56 nm). Particle samples collected using a MOUDI can also be analyzed for chemical composition in the lab.

Most of the instruments outlined above have been used in engine/vehicle emission testing. Ambient air monitoring of UFPs is also performed using some of the same instrumentation, especially CPCs and SMPSs. It should be noted that different make/model CPCs are characterized by different particle size ranges, sampling flow rates, optical detection techniques, and other instrumental characteristics and, thus, they may provide significantly different results. Therefore, UFP number measurements from different studies should be compared with caution. The District has worked in collaboration with the University of California, Los Angeles (UCLA), CARB, and with various CPC manufacturers to study intra- and inter-model variations in total number concentration measurements taken with several CPC units (Lee et al., submitted).

OTHER NEAR-ROADWAY POLLUTANTS

The majority of air monitoring studies conducted near- and on-roadways in the past decade has focused not only on the measurements of UFPs, but also on the emissions of more traditional and well-studied pollutants. These include:

- Carbon monoxide (CO): ambient concentrations of this pollutant have declined through the adoption of emission control technologies and regulations. However, motor vehicles (especially light-duty, gasoline-powered vehicles) remain the primary source of CO at most locations.
- Oxides of nitrogen (NO_x): although all motor vehicles emit NO_x, the majority of current on-road NO_x emissions occur from diesel vehicles. In terms of primary emissions, the majority of NO_x exhaust is in the form of NO. NO₂ is the focus of concern in terms of health effects and quickly forms by a photochemical reaction from the oxidation of NO. Primary NO_x emissions from heavy-duty diesel engines

with after-treatment devices may contain a greater percentage of NO₂ relative to NO.

- Particulate matter (PM): suspended particles are generally divided in UFP (already discussed), PM_{2.5} and PM₁₀. Significant near-roadway sources of PM mass include direct emissions from motor vehicle combustion (mostly PM_{2.5}), brake and tire wear, and re-suspension of dust from the road surface (mostly PM₁₀ and larger). The atmospheric concentration of PM_{2.5} is mostly affected by contributions from regional sources, and the impact of direct emissions from motor vehicles is generally small in near-roadway environments.
- Volatile organic compounds (VOCs) and carbonyls: these gaseous air toxics are emitted from both natural and anthropogenic sources (including motor vehicles), are involved in the photochemical formation of atmospheric O₃, and some of them have been associated with both short- and long-term toxic health effects. Typical VOCs of concern for near-road monitoring include benzene, toluene, ethylbenzene, xylenes, styrene, formaldehyde, acetaldehyde, and acrolein, all of which are also toxic air contaminants.
- Black (or elemental) carbon (BC or EC): often referred to as “soot,” BC (or EC) is a common constituent emitted from motor vehicles. Both BC and EC are operationally defined and represent the black, graphitic-containing portion of PM. Although BC and EC are often associated with emissions from heavy-duty diesel engines, a portion of all motor vehicle combustion emissions contains these constituents. A recent study conducted by Liggió et al. (2012) has shown that BC emissions from light-duty-gasoline-vehicles may be at least a factor of 2 to 9 times higher than previously thought. Other sources of BC exist in urban areas, but emissions from motor vehicles, primarily diesel trucks, usually dominate these sources in near-roadway environments.

Most near-road studies showed good correlation among the pollutants listed above (with the exception of PM_{2.5}, whose atmospheric concentration is mostly influenced by regional sources), indicating a common traffic origin (Zhu et al., 2002a,b; Sardar et al., 2005; Hagler et al., 2010). In particular, BC is often very well correlated with UFP concentrations in urban air, given that both are emitted from motor vehicles and the larger relative BC content found in the ultrafine particle size range.

AMBIENT MEASUREMENTS

Near-Roadway Studies

The majority of all near-roadway studies conducted to date have focused on the influence of proximity to roadways on outdoor (residential) and indoor exposure to air pollutants. In virtually all of these works, it was found that the outdoor concentrations of primary pollutants emitted from motor-vehicle emissions (UFP and BC in particular) were more strongly correlated with distance from roadways than the outdoor concentrations of species dominated by atmospheric formation or other regional sources (e.g. PM_{2.5}). Measured concentrations of these primary pollutants were typically highest in close proximity to a roadway and decreased exponentially with increasing distance from (and downwind of) the source. In a study conducted in the Los Angeles area in the daytime, Zhu et al. (2002a) found that the concentrations of CO, BC, and UFPs were highest in the immediate vicinity (17 m) of the I-710 (a freeway highly influenced by heavy-duty diesel trucks), and decreased exponentially to upwind background levels after about 300 m (Figure 9-3a). A companion study was carried out next to the I-405 freeway (dominated by gasoline vehicle traffic) with similar results (Zhu et al. 2002b) (Figure 9-3b).⁶ As discussed earlier, the dynamic pollutant mix evolves during transport from the road: nucleation leads to formation of new particles very soon after emission, followed by their growth by condensation, diffusion to surfaces, evaporation and coagulation. Therefore, at the edge of a roadway, particle concentrations are dominated by the smallest particles (in the 6-10 nm range), with the peak in distribution shifting to the larger sizes at greater distances.

⁶ For each air pollutant, upwind and downwind concentrations were normalized to the highest level measured at the edge of the freeway and expressed as relative values (i.e. 0 to 1)

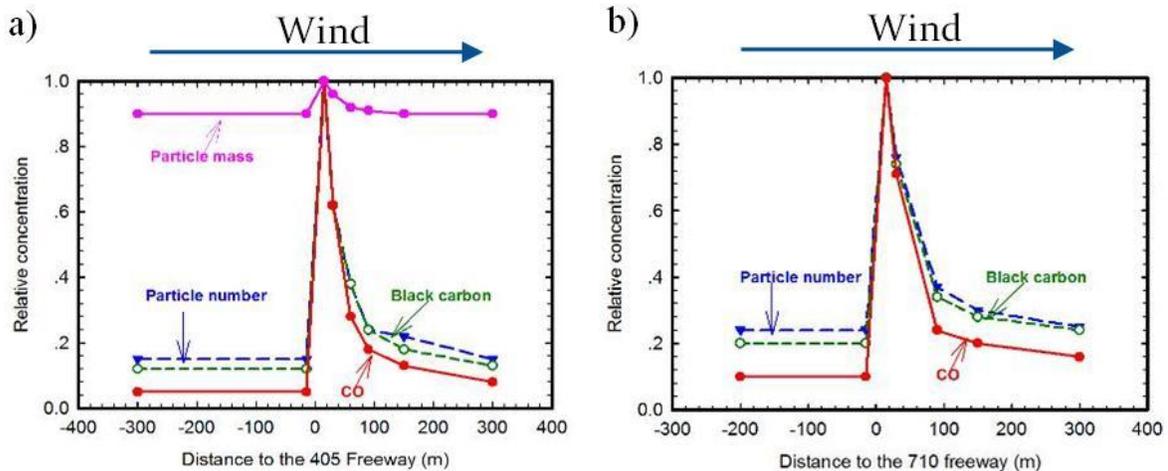


FIGURE 9-3

Relative Black Carbon (BC), Carbon Monoxide (CO), Particle Number (a surrogate for ultrafine particles or UFP), and Particle Mass (PM_{2.5}) Concentrations Upwind and Downwind of the I-405 (a) and I-710 (b) Freeways (from Zhu et al., 2002a; 2002b).

Note that PM_{2.5} was not measured at the I-710.

Measurements conducted in communities adjacent to the Ports of Los Angeles and Long Beach revealed that concentrations of UFP, BC, and NO₂ (mostly from heavy-duty diesel trucks) were frequently elevated two to five times within 150 m downwind of freeways (compared to more than 150 m) and up to two times within 150 m downwind of arterial roads with significant amounts of diesel traffic (Kozawa et al. 2009). In the winter and summer of 2009 the District conducted an intensive study in the vicinity of the I-710 to characterize the spatial and temporal variations of motor vehicle emissions, and their potential impact on the surrounding communities (AQMD, 2012)⁷. Emissions 15 m downwind of the freeway were found to be enriched in BC, UFP, and NO_x, combustion pollutants emitted directly from gasoline and, especially, diesel vehicles. The atmospheric concentration of PM_{2.5} mass and VOCs was not as heavily impacted by proximity to the I-710.

During a recent daytime study conducted in New York City before, during, and after vehicle traffic was excluded from a major street (Park Ave.), Whitlow et al. (2011) showed that the curbside airborne PM_{2.5} level always peaked in the morning regardless of traffic conditions, while UFP number concentration was 58% lower

⁷ http://www.aqmd.gov/tao/AQ-Reports/I710Fwy_Study.pdf

during mornings without traffic. Furthermore, UFP count varied linearly with traffic flow, while PM_{2.5} spiked sharply in response to random traffic events that were weakly correlated with the traffic signal cycle. As expected, UFP concentrations decayed exponentially with distance from the street with unrestricted traffic flow, reaching background levels within 100 m of the source. It is likely that background concentrations of most motor vehicle related pollutants in large urban areas like New York City are more elevated than those found elsewhere.

Karner et al., (2010) summarized data reported in 41 roadside monitoring studies (all conducted during daytime) and found that almost all combustion-related pollutants decay to background by 115-570 m from the edge of road. Changes in pollutant concentrations with increasing distance from the road fell into one of three groups: 1) at least a 50% decrease in peak/edge-of-road concentration by 150 m, followed by consistent but gradual decay toward background (e.g. CO and UFP); 2) consistent decay or change over the entire distance range (e.g. benzene and NO₂); and 3) little or no trend with distance (e.g. PM_{2.5} mass concentrations).

It should be noted that nighttime conditions can lengthen the distance at which near-road pollutant concentrations decay to background. For instance, Hu et al. (2009) observed a wider area of air pollutant impact downwind of the I-10 freeway during pre-sunrise hours. In particular, UFP concentrations peaked immediately downwind of the I-10 and reached background levels only after a distance of about 2600 m (Figure 9-4).⁸ Other combustion related pollutants, such as NO and particle-bound polycyclic aromatic hydrocarbons (p-PAHs), exhibited similar long-distance downwind concentration gradients. The authors associated these elevated pre-sunrise concentrations over a wide area with a nocturnal surface temperature inversion, low wind speeds, and high relative humidity. It should be noted that, occasionally, nighttime near-road UFP number concentrations exceeded daytime conditions, despite reduced traffic volumes.

Further work is needed to integrate daytime and nighttime findings and to assess their relative importance given daytime and nighttime differences in traffic activity, near-road pollutant concentrations, and factors affecting human exposure.

⁸ Upwind and downwind UFP concentrations were normalized to the highest level measured at the edge of the freeway and expressed as relative values (i.e. 0 to 1)

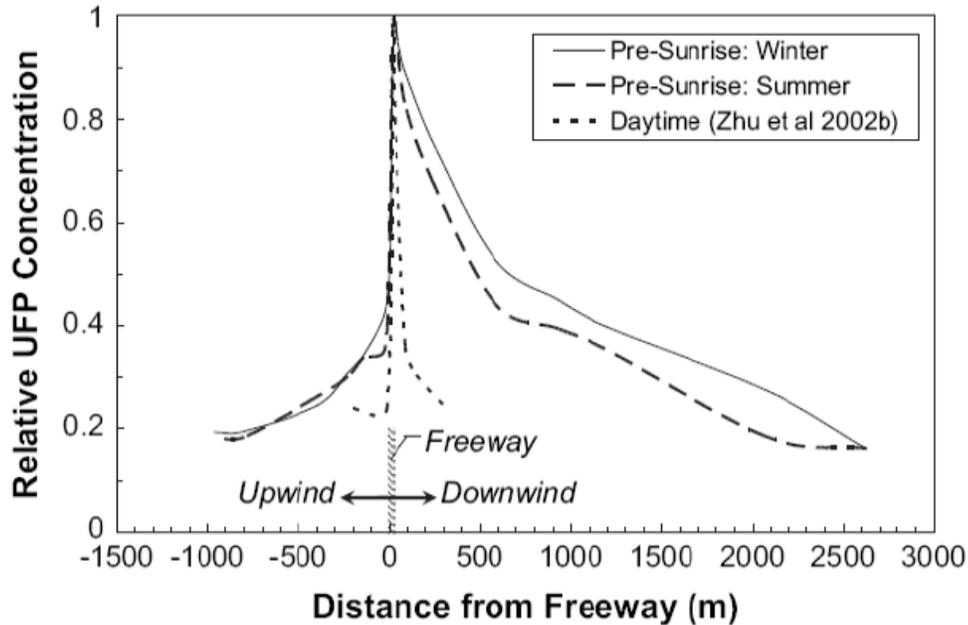


FIGURE 9-4

Relative Averaged UFP Concentrations and Gradients During Pre-sunrise Hours along the I-10 (Hu et al., 2009) and the I-710 Freeways (Zhu et al., 2002b)

In the last few years, new powerful instruments have been developed to characterize the physical and chemical characteristics of freshly emitted aerosols in real time. For example, Sun et al. (2012) used a High-Resolution Time-of-Flight Aerosol Mass Spectrometer to study the mass concentrations and chemical composition of sub-micron aerosol species (PM_{10}) in the vicinity (30 m) of a major highway in New York City. The mass spectrometer data (taken at 1-min time resolution) was complemented by rapid measurements (down to 1 Hz) of particle number concentrations and size distributions. Overall, hydrocarbon-like organic (HOA) species dominated the composition of traffic-related PM_{10} especially during periods of high traffic intensity. Significant enhancements in ultrafine organic aerosol mass and particle number concentrations were frequently observed in traffic plumes, suggesting that UFPs are dominated by HOA species from vehicle emissions near highways.

On-road Studies and In-Vehicle Exposure

Several studies have found that, while commuting, individuals are exposed to air toxic levels that are several times higher than the corresponding ambient concentrations measured at fixed near-roadway monitoring sites. Most of these on-road studies have been conducted using zero-emissions mobile platforms outfitted with real-time

instruments to spatially characterize particle and gaseous pollutant concentrations. Fujita et al. (2003) found that concentrations of BC and NO_x in Harbor communities of Wilmington, West Long Beach, and San Pedro (California) were about ten times higher on roadways than at regional air monitoring sites. Similarly, Westerdahl et al. (2005) showed that concentrations of UFP, NO, BC and CO on Los Angeles freeways were often ten times higher than those on residential streets.

Heavily impacted industrial communities are also characterized by increased on-road air pollutant concentrations. For example, elevated UFP, BC, and NO concentrations were observed across the residential neighborhood of Boyle Heights in Los Angeles (Hu et al. 2012). UFP concentrations were nearly uniform spatially, in contrast to other areas in the greater metropolitan area of Los Angeles where UFP concentrations exhibit strong gradients downwind of roadways. This was attributed to the presence of high heavy-duty traffic volumes on the freeways surrounding Boyle Heights, and substantial numbers of high-emitting vehicles on local surface streets. The high density of stop signs and lights, and short block lengths, requiring frequent acceleration of vehicles, may contribute to elevated UFP levels observed in this area.

Fruin et al. (2008) characterized air pollutant concentrations on Los Angeles freeways and arterial roads. On freeways, concentrations of UFPs, BC, NO_x, and p-PAH were generated primarily by diesel emissions, despite the relatively low fraction (~6%) of diesel-powered vehicles. However, UFP concentrations on arterial roads appeared to be driven mainly by proximity to gasoline-fueled cars undergoing hard accelerations. Concentrations were roughly one-third of those on freeways. They concluded that 33 to 45% of total UFP exposure for Los Angeles residents occurs due to time spent traveling in vehicles. A previous study conducted by the same research group showed that time spent in vehicles contributes between 30 and 55% of Californian's total exposure to diesel PM (Fruin et al., 2004). The applicability of these estimates to other regions of the United States is largely unknown.

Due to the high air exchange rates (AERs) of moving cars/trucks, in-vehicle concentrations are typically close to roadway concentrations. Inside-to-outside UFP concentration ratios are best measured under realistic conditions because AERs and other factors influencing these ratios are determined by vehicle speed and ventilation preference, in addition to vehicle characteristics such as age. Two independent studies conducted in Southern California showed that in-cabin concentration of UFPs can be reduced substantially (i.e. up to ~85%) by turning the recirculation fan on (Zhu et al. 2007; Hudda et al. 2011). Evidence suggests that increased ventilation is also a key

determinant of in-cabin UFP concentrations in buses, ferries, and rail modes (Knibbs et al., 2011). Where a vehicle is fitted with a cabin air filter, its particle removal efficiency is a key determinant of what proportion of on-road UFPs reach the cabin (Burtscher et al., 2008; Pui et al., 2008).

Important Factors Affecting Near-Roadway Measurements

The air quality monitoring studies described above measured elevated concentrations of UFPs and other combustion pollutants near roadways. However, most of these studies were conducted under different environmental conditions. In order to interpret results from these and future near-roadway activities and to better evaluate the risks associated with living in close proximity to highly trafficked freeways, it is important to consider all variables influencing the observed monitoring data. These may include:

- **Traffic activity:** parameters such as the total number of vehicles, the fleet mix (e.g., gasoline vs. diesel), and vehicle speeds affect the concentration of near-road pollutants. This information can usually be obtained from local transportation agencies or on the web.⁹
- **Meteorological parameters:** wind speed and direction, temperature, humidity, and atmospheric stability can be used to better evaluate the generation, transformation and transport of traffic-generated emissions and for interpreting near-road air quality data.
- **Roadway type:** proximity to busy freeways has generally been associated with an increase in atmospheric UFPs. However, most urban areas contain arterial roadways that experience regular increases in UFP levels, especially during morning and afternoon rush hours. Increased number of stop-and-go operations from traffic signals, longer idling times, and cold start conditions all contribute to increased UFP emissions.
- **Roadway design:** road grades create an increased load on vehicles ascending the grade, leading to increased exhaust emissions and potential tire wear, while vehicles descending the grade experience increased brake emissions. The presence of ramps, intersections, and lane merge locations can also lead to increased brake

⁹ For example, see Caltrans' Performance Measurement System (PeMS); <http://pems.dot.ca.gov>

wear emissions and idling vehicle conditions due to increased congestion (Baldouf et al., 2009).

- **Roadside structures:** the presence of roadside features such as noise barriers, trees, and buildings can change the dynamics of air pollutant dispersion downwind of a freeway. Results from two recent studies conducted in Raleigh, NC and in Los Angeles indicate that near-roadway concentrations of combustion particles (e.g. UFP and BC) and related gaseous co-pollutants (e.g. CO and NO₂) were lower where a noise barrier was present than in open terrain (Bowker et al., 2007 and Ning et al., 2010). However, a longer downwind distance was generally needed to reach background levels, indicating a larger impact zone of traffic emission sources. Noise barriers adjacent to a roadway may also inhibit air movements off the road, leading to elevated on-road pollutant concentrations (Bowker et al. 2007; Baldauf et al. 2008). The District has several ongoing research efforts to better evaluate the mitigation potential of various roadside features.

HEALTH EFFECTS

Ultrafine Particles

Short- and long-term exposure to particles produced from combustion processes have been associated with numerous adverse health effects in humans including various cardiovascular and respiratory diseases (Pope and Dockery, 2006). It has been hypothesized that the ultrafine portion of atmospheric PM may be responsible for the majority of the observed health effects (Brugge et al., 2007; Balmes et al., 2009; Jarrett et al., 2009; Hoek et al., 2010; Ljubimova et al., 2012). Thus, recent research studies have specifically focused on UFPs and their ability to be absorbed deeply into the lungs, move across cell membranes, and translocate into the bloodstream and other parts of the body. As noted in the preceding sections, the formation and subsequent evolution of UFPs is complex. They are formed and processed on the order of minutes, but their composition continues to change depending on intricate interactions in the exhaust stream and in ambient air. Thus, exposures will vary depending on location within the exhaust plume and with distance from the emission source.

The mechanisms linking UFP exposure to observed health impacts are still not completely understood, but one of the most plausible hypotheses is that many of the adverse health effects may derive from oxidative stress, initiated by the formation

of reactive oxygen species (ROS) within affected cells. Work conducted at the University of California Los Angeles (UCLA) Southern California Particle Center in the past decade has demonstrated that because of their high OC and polycyclic aromatic hydrocarbon (PAH) content, UFPs have the highest potential to generate ROS and to induce oxidative stress in macrophages and epithelial cells (Li et al., 2003). This, in turn, may promote allergic inflammation in the lungs, the progression of atherosclerosis, and precipitation of acute cardiovascular responses ranging from increased blood pressure to myocardial infarction (Delfino et al., 2005; Araujo et al., 2008). From the analysis of summertime ambient PM samples collected near downtown Los Angeles in the morning and in the afternoon, Verma et al. (2009) showed that both primary (traffic dominated) and photochemically formed quasi-ultrafine particles ($d < 250$ nm) possess high reduction-oxidation activity. However, the latter particle type appeared to be more potent in terms of generating oxidative stress and leading to subsequent damage in cells. The semi-volatile component of quasi-ultrafine urban aerosols (mostly OC and PAHs) seems to be responsible for most of the oxidative potential of PM (Verma et al., 2011).

Recent works have examined the health consequences due to UFP exposure on the most susceptible part of the population such as elderly individuals, children and subjects with asthma and diabetes. For example, between 2005 and 2007 the University of California Irvine (UCI) led a multi-disciplinary project (i.e. Cardiovascular Health and Air Pollution Study or CHAPS) to study the health effects of environmental exposure to different PM fractions (including UFPs) in elderly retirees affected by coronary artery disease (Delfino et al. 2008; 2009). Results suggested that traffic-related emissions of primary OC, PAHs, and UFPs were associated with adverse cardio-respiratory responses including elevated blood pressure (Delfino et al., 2010) and increased risk of myocardial ischemia (Delfino et al., 2011).

Other studies tried to elucidate the link between inhalation of UFPs and cardiovascular responses in children and young adults. In most studies, healthy young subjects were exposed to filtered “particle-free” air or UFPs at rest and during exercise (e.g. Shah, et al. 2008; Zareba, et al. 2009; Samet, et al. 2009). Short-term exposure to UFPs did not cause marked changes to the electrocardiography (ECG) parameters, although acute exposure had mild inflammatory and prothrombotic responses. In a recent experiment conducted by Pope et al. (2011), healthy, non-smoking young adults were exposed a) to known amounts of PM_{2.5} (150-200 $\mu\text{g}/\text{m}^3$) from wood and coal combustion, and b) to uncontrolled ambient air. The researchers

did not find any vascular response following the few hours of PM_{2.5} exposure, but noted declines in vascular response with elevated ambient particle exposures, possibly due to the deleterious contributions from mobile source emissions.

There are no long-term studies of human population exposure to ultrafine particles, as there is a lack of a monitoring network in the U.S. There have been several cross sectional epidemiological studies of ultrafine particles, mainly from Europe. Some of these studies found effects on hospital admissions, emergency department visits, for respiratory and cardiovascular effects. Other studies, however, have not found such effects (U.S. EPA, 2009). Concentrations of ultrafine particles can vary geographically, and it is not clear how well central site monitors may capture actual exposures.

The current U.S. EPA Integrated Science Assessment for Particulate Matter (U.S. EPA, 2009)¹⁰ summarized that evidence is inadequate to determine a causal relationship between short-term exposures of UFPs to mortality or central nervous system effects, but that the evidence is suggestive of short-term exposures causing cardiovascular and respiratory effects. The Assessment also concluded that there is inadequate evidence linking long-term exposure of UFPs to health effects, including respiratory, developmental, cancer, and mortality. Overall, epidemiological studies of atmospheric PM suggest that cardiovascular effects are associated with smaller particles, but there are few reports that make a clear link between UFP exposures and increased mortality.

Recently, Hesterberg et al. (2011) hypothesized that the health effects caused by exposure to controlled diesel exhaust will be much less than those from uncontrolled diesel emissions, mostly because particles generated from nucleation of unfiltered sulfur vapors are believed to be less toxic than UFPs emitted from uncontrolled diesel combustion, which are made primarily of organic compounds (Seigneur, 2008). Additional studies are needed to support this hypothesis. The current ongoing Advanced Collaborative Emissions Study (ACES) will provide more data on the health effects of newer diesel engines meeting the U.S. 2007 standards. Similar testing may be necessary for advanced gasoline and alternative fueled engine exhaust as well as for the newer heavy-duty diesel engines meeting the U.S. 2010 standards.

¹⁰ <http://www.epa.gov/ncea/isa/pm.htm>

Considerably more information and data are needed in order to understand the underlying mechanisms and emission properties that affect human health. In 2011, the Health Effects Institute (HEI) convened an expert panel to conduct a critical evaluation of knowledge regarding the potential for UFP and NP to harm human health. The panel's report will be published as part of the HEI Perspective series. The Advanced Collaborative Emissions Study (ACES), which is jointly managed by HEI and the Coordinating Research Council (CRC) has undertaken a major effort to document improvements in vehicle emissions associated with advanced emissions controls. HEI investigators are analyzing the associated health effects.

Near-Roadway Health Impacts

Recent studies have found a positive association between living near busy roadways and asthma exacerbation, decreased lung function, increased heart disease, and other respiratory and cardiovascular effects (Kan et al., 2008; Andersen et al., 2010; HEI, 2010). Exposure to traffic emissions has also been linked to a faster progression of atherosclerosis in subjects living within 100 m of highways in Los Angeles (Künzli et al., 2010), increased risk of low birth weight and premature delivery (Llop et al., 2010; Wilhelm et al., 2011), and lower immune function and increased risk of Type 2 diabetes in post-menopausal women (Krämer et al., 2010; Williams et al., 2011). These studies do not differentiate exactly which pollutant or pollutants may be responsible.

Children are among the most susceptible segment of the population affected by exposure to traffic related pollutants. Their immune, neurological, and respiratory systems are still under development, they typically spend a substantial amount of time playing outdoors, and they have higher breathing rates per body mass. Neighborhood exposure to traffic-related air pollution has been linked to increased medical visits and hospital admissions for childhood asthma, increased wheezing and bronchitis, and the development of new asthma cases (McConnell et al., 2006; 2010; Chang et al., 2010).

In 2005 the District sent an advisory to all school districts under its jurisdiction to bring attention to findings regarding the potential for adverse health effects resulting from exposures to traffic emissions, and to encourage school districts to consider exposure to vehicle emissions when selecting and evaluating sites for new facilities such as schools, playgrounds, and residences (http://www.aqmd.gov/prdas/aqguide/doc/School_Guidance.pdf). As mentioned early in this document, the concentration of vehicle related pollutants drops off to near-background levels after about 300 m from the edge of the roadway (Zhu et al., 2002a;

2002b). A survey of California schools revealed that approximately 2.3% of public schools were located within 150 meters of high-traffic roads (greater than 50,000 vehicles per day), and an additional 7.2 % were within 150 meters of medium traffic roads (25,000 – 50,000 vehicles per day) (Green et al., 2004).

FUTURE RESEARCH AND ASSESSMENT NEEDS

Chemical Composition

Large differences in UFP chemical composition depend on many factors, including vehicle technology, fuel used and after-treatment devices, but also on atmospheric chemical reactions after being emitted. Since particle composition may be a factor determining particle toxicity, there is a need for developing a better knowledge of UFP chemistry near roadways and in different environments.

Processes Leading to Formation

More work is needed to better characterize the mechanisms that lead to UFP formation right after emission and in the atmosphere. Developing a clearer picture of particle formation dynamics in different environments, including those which are influenced by traffic, would greatly assist control measures to regulate emissions of UFPs.

Standardized Measurement Methods and Procedures

Currently, there is no standard method for conducting size-classified or particle-number measurements. The terms UFP and NP are not clearly defined and often used improperly. In addition, the UFP characteristics measured in ambient and emission testing studies (e.g. volatile vs. solid components; mass vs. number concentration) are highly dependent on the measurement instrument/protocol used and its setting. Therefore, there is a need to develop and utilize standardized measurement methods and procedures to enhance meaningful comparison between results from different studies and to guarantee reproducible results.

Increased Measurements at “Hot Spot” Locations

The range of UFP number concentrations between clean and vehicle-affected environments spans over two orders of magnitude. UFPs and NPs are usually not uniformly dispersed in the atmosphere, but concentrated in areas where large numbers of vehicles are operated. Thus, future ambient UFP measurements should be

conducted in areas where concentrations are likely to be higher (“hot spots”). These may include busy roads and intersections, rail yards, airports, etc.

Emission Inventories

Currently vehicle emission factors for different particle size ranges and for particle numbers are highly uncertain, and there are no emission inventories for UFPs from motor vehicles. Also, long-term UFP concentration data in urban environments is scarce. This knowledge is critical for developing management and control strategies for UFP emissions. New estimations of UFP levels should not be derived solely based on vehicle emission factors (which mostly reflect emissions of primary combustion particles), but have to include predictions for UFP formation near the tailpipe and in the atmosphere.

Air Quality Modeling

Exposure assessment of UFPs will require the development of modeling tools to simulate formation and transport over a wide range of atmospheric conditions and emission scenarios. In particular, there is a need to better understand the atmospheric dispersion and transformation of UFP and UFP precursor emissions within the first few hundred meters of the roadway, a region often characterized by complex flow. This complex flow may also affect how pollutants enter multi-story buildings characteristic of higher density environments. Additional new near-roadway studies and laboratory measurements are also necessary to better validate these models.

Health Effects

New toxicological and epidemiological studies targeting exposure to controlled and uncontrolled emissions from gasoline and diesel vehicles are needed to better characterize the exposure-response relationships to UFPs and to help develop health guidelines and potential regulations. The health effects of inorganic (largely related to oil consumption ash constituents) UFP emissions from vehicles are only now starting to receive significant attention.

Other Types of Sources

UFPs are formed through many types of combustion processes. Motor vehicles powered by internal combustion engines are major sources, but stationary source combustion and other processes also contribute significantly to UFP emissions and formation. More work is needed to better understand the size, composition and health impact of these particles near airports, rail-yards, port areas, natural gas electric generators and other potential “hotspot” locations.

PLANNING AND REGULATORY ISSUES

Jurisdiction over Near-Roadway Exposures

The jurisdictional authority for controlling exposure to mobile source pollutants in the near-roadway environment is generally split between 1) federal and state authority over vehicle tailpipe emissions standards; and 2) local government (e.g. cities, counties) authority over land use planning and zoning decisions. In broad terms, tailpipe emission standards affect the source of mobile source emissions, while land use planning affects the exposure to those pollutants. In particular:

- On-road emission standards: U.S. EPA and CARB set standards for the level of pollutants that are allowed from new on-road engines and the fuels used to power them. Chapter 3 and Appendix III details how the emission standards for on-road vehicles are projected to affect total vehicle emissions in future years. While tighter emission standards in the future are expected to lower overall emissions, the near-roadway environment is still expected to have higher concentrations of mobile source pollutants relative to areas further away, especially for ultrafine particles.
- Local land use planning and zoning: local governments maintain the authority to determine the types of land use that are allowed within their jurisdiction. For example, in city General Plans, each parcel of land within that city is given a land use designation (e.g. residential, industrial, etc.). Land use types that do not fall within the General Plan designation are not allowed, with limited exceptions.¹¹ Because the majority of the area within the District jurisdiction has been built out in the past century, many of the current land use patterns are based on historical land use decisions. These legacy decisions have resulted in a large number of residents living in close proximity to freeways. As an example, approximately 691,000 people in Los Angeles County live within 500 feet of a freeway.¹²

¹¹ For example, school districts generally have the authority to supersede local land use authority when determining where to site new schools.

¹² 2012 Regional Transportation Plan, SCAG. Environmental Justice Appendix, Table 40.

Sustainable Communities Strategies

Pursuant to California Senate Bill 375 (SB 375) passed in 2008, CARB developed regional greenhouse gas reduction targets for passenger vehicle emissions in years 2020 and 2035. As required by SB 375, the Southern California Association of Governments (SCAG) used these regional targets¹³ to develop a Sustainable Communities Strategy (SCS) integrating land use, housing, and transportation planning, all as a part of the adopted 2012 Regional Transportation Plan (RTP).

One of the key features of the RTP/SCS is the encouragement of Transit-Oriented Development (TOD) that promotes higher residential and employment densities in High Quality Transit Areas (HQTA)¹⁴. Among the many benefits of well designed TODs, one of their primary purposes under SB 375 is to reduce the total vehicle miles travelled (VMT) in the region by placing homes and jobs closer to public transportation. However, because much of the original and planned transit network lies in close proximity to existing freeways, many of the HQTA areas overlap with freeway proximate areas. For example, with implementation of the RTP/SCS, approximately 282,000 households in the SCAG region will be located both within a HQTA and within 500 feet of a freeway in the year 2035. Some TODs can therefore present a challenge by potentially reducing regional emissions while increasing the exposure of residents in those project areas to elevated pollutant concentrations found in the near-roadway environment.

Enhanced Environmental Analysis

The California Environmental Quality Act (CEQA) requires that all projects requiring discretionary action by a public agency must evaluate and identify the potential environmental impacts of that project, and implement all feasible methods to reduce, avoid, or eliminate any significant adverse impacts.¹⁵ This analysis is reported in CEQA documents such as Negative Declarations or Environmental Impact Reports. Therefore, CEQA requires that a project proponent analyze how the project itself may impact its surrounding environment. For example, if a project includes a new apartment building located adjacent to a freeway, the project will result in new

¹³ 8% reduction below 2005 levels on a per capita basis by 2020, and 13% reduction by 2035

¹⁴ A HQTA is defined as the ½ mile corridor surrounding a fixed bus route with service intervals no longer than 15 minutes during peak commute hours, or the ½ mile area surrounding a rail transit station, ferry terminal served by bus or rail, or the intersection of two or more major bus routes with service intervals no longer than 15 minutes during peak commute periods. See Public Resources Code 21155(b) and 21064.3 for further details.

¹⁵ Public Resources Code §21000 *et seq.*

emissions from vehicles driven by future residents of the apartment building, and these emissions must be evaluated to determine the impact on air quality and the environment.

In a more rigorous CEQA analysis, the impacts from the surrounding environment on people living in the project itself could also be evaluated (Figure 9-5). Using the same example from above, emissions from all of the vehicles on the adjacent freeway would also be evaluated for their potential impact on the proposed apartment residents.

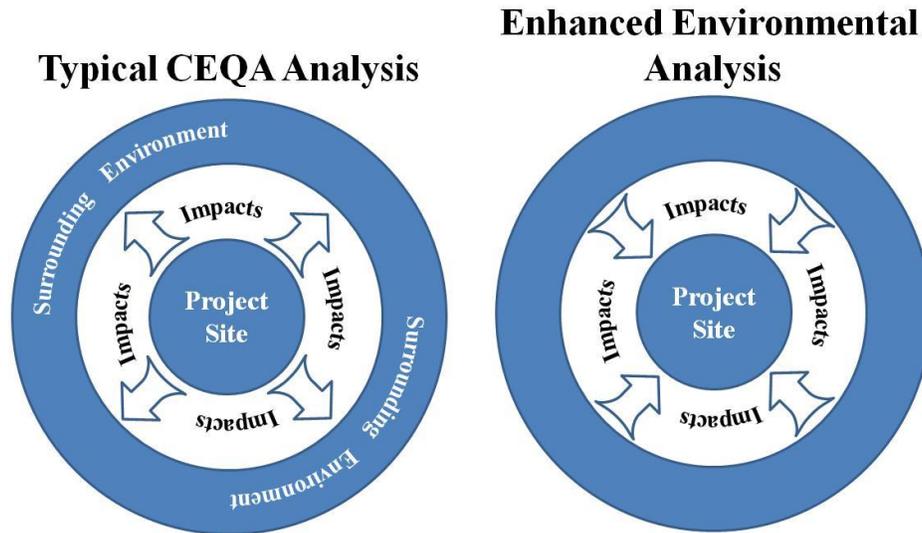


FIGURE 9-5

Example of Typical and Enhanced Environmental Analyses

Although section 15162.2 of the CEQA Guidelines provides that an environmental impact report “shall also analyze any significant environmental effects the project might cause by bringing development and people into the area affected,” recent court rulings have found that CEQA does not require an analysis of the impacts of the environment on a project.¹⁶

¹⁶ *Ballona Wetlands Land Trust v. City of Los Angeles* (2011) 201 Cal.App.4th 455, 473-474 (a revised environmental impact report for a coastal multi-family residential development was not *required* to address impacts on the project from sea-level rise caused by global warming); *see also South Orange County Wastewater Authority v. City of Dana Point* (2011) 196 Cal.App.4th 1604 (analysis of impacts from locating a residential development next to an existing source of noxious odors was not *required*)

However, notwithstanding these court rulings, lead agencies (such as a city or county or air district) that approve CEQA documents retain the authority to include any additional information they deem relevant to assessing and mitigating the environmental impacts of a project. Because of the District's concern about the potential public health impacts of siting sensitive populations within close proximity of freeways, District staff will continue to recommend that, prior to approving the project, lead agencies consider the impacts of air pollutants on people who will live in a new project and provide mitigation where necessary.

Guidance is available for conducting health risk assessments related to mobile sources from the District and from the California Air Pollution Controls Officers Association (CAPCOA).¹⁷

Mitigation Measures

A variety of mitigation measures have been proposed and are under study to reduce exposure to the high concentration of pollutants found in the near-roadway environment. Although some of these exposure controls may have some effectiveness, the solution that would have the greatest effect still lies in source control. Reducing vehicle emissions remains the only way to ensure that all pollutant concentrations in the near-roadway environment can be reduced for everyone, not just for certain pollutants, or for those that can implement mitigation. While emissions from vehicles are expected to continue to decline with existing regulations and fleet turnover, near-roadway environments are still expected to have elevated concentrations of some mobile source pollutants for the foreseeable future. In the interim, there are some measures that may reduce exposure that are briefly described in the table below. All of these conventional methods require further research to determine their effectiveness and feasibility for the variety of land uses found in the near-roadway environment. In addition, District staff will continue to support and monitor the outcome of research on newer technologies such as photocatalytic cement, roadway canopies, and sound barriers with active or passive filtration/ventilation.

Besides buffer zones, none of the measures listed in the table below (Table 9-1) has been found to be effective to reduce all mobile source pollutants to background levels in the near roadway-environment. Because of this limitation, the mitigation

¹⁷ http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html
http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf

considered for new land uses may be different than that considered for existing land uses. For example, new land uses could consider buffer zones or site configurations before considering other measures such as enhanced HVAC filtration.

For existing land uses that do not have the same ability to incorporate buffer zones as new land uses, other measures may be considered first, such as encouraging development of outdoor recreation spaces and playgrounds within walking distance but beyond 300 m from a freeway at the same time as considering enhanced filtration in HVAC systems.

Emission Control Technologies

The application of advanced emissions control technologies to both compression-ignition (diesel) and spark-ignition (gasoline, natural gas) engines has led to new concerns about the formation and health effects of UFPs. Since larger accumulation mode particles have effectively been removed from the exhaust of state-of-the-art vehicles, this has eliminated possible condensation surfaces for volatile gases and UFPs. The net result is that while larger-sized particles (accounting for most of the PM mass) are dramatically reduced by control technologies such as diesel particulate filters (DPFs), an increase in the number of UFPs and NP may potentially occur. Additional evaluation regarding a possible increase in UFP and NP number concentration should be addressed. Below is a brief description of the two main PM control technologies in use today:

- Particulate filters are devices capable of achieving over 90% reduction of the solid portion of the total exhaust particles, with some control of the soluble organic fraction (SOF). With most of the solid particles removed, nucleation, rather than condensation, of the remaining gas phase species can occur, potentially increasing particle number emissions (Morawska et al., 2008). However, particulate filters can also be effective in controlling UFPs if designed properly, for example when used in conjunction with an oxidation catalyst.

TABLE 9-1

MITIGATION MEASURE	POLLUTANT TARGETED	RANGE OF REDUCTION	COMMENTS	KEY REFERENCES
Buffer zones	All pollutants	0-100%	Varies with distance. Up to 100% reduction to background levels at 500 feet.	-CARB Air Quality and Land Use Handbook, (2005) (http://www.arb.ca.gov/ch/handbook.pdf)
Enhanced filtration in building Heating, Ventilation, and Air Conditioning (HVAC) systems	PM	30-90% for indoor environments	Effectiveness varies depending upon rating of filter (>MERV 13 recommended near roadways), HVAC design, maintenance of HVAC system, whether doors and windows stay closed, and amount of time people spend outdoors	-AQMD Pilot Study of High Performance Air Filtration for Classroom Applications (http://www.aqmd.gov/rfp/attachments/2010/AQMDPilotStudyFinalReport.pdf) -SCAG 2012 RTP/SCS PEIR Appendix G Measure AQ-19 (http://rtpscs.scag.ca.gov/Documents/peir/2012/final/2012fPEIR_AppendixG_ExampleMeasures.pdf)
Sound walls	All pollutants	15-50% close to barrier at ground level	Effectiveness varies with distance from freeway, with concentrations sometimes increasing >80m downwind of wall. Other site-specific characteristics may significantly alter effectiveness.	-Impact of noise barriers on near-road air quality, Baldauf et al., (2008) -Impact of noise barriers on particle size distributions and pollutant concentrations near freeways, Ning et al., (2010) -The effect of roadside structures on the transport and dispersion of ultrafine particles from highways, Bowker et al., (2007)
Vegetated barriers	PM	Varies	Effectiveness varies with barrier height, thickness, density, and species. Some configurations may increase concentrations.	-Local measures for PM10 hotspots in London, Air Quality Consultants (2009) -Field investigation of roadside vegetative and structural barrier impact on near-road ultrafine particle concentrations under a variety of wind conditions, Hagler et al., (2012)

Common Mitigation Measures Adopted To Reduce Exposure to Motor Vehicle Emissions In Near-Road Environments

- Oxidation catalysts are effective in removing more than 90% of the SOF fraction of total emissions as well as UFPs formed later in the exhaust. Their effectiveness, however, depends on whether the catalyst is formulated to produce little or no sulfate emissions at high temperature. In fact, special catalyst formulations must be employed to hinder the catalytic generation of sulfate particles from SO₂ present in the exhaust gas. While oxidation catalysts are effective in reducing the SOF fraction and smaller particles, it has little effect on larger accumulation or coarse mode particles. An effective control technology should be based on a system addressing both particle mass and number emission reduction.

Testing Protocols

Under the U.S. gravimetric method for certifying heavy-duty engines, exhaust PM mass is collected on inert filters as each engine is operated over official engine dynamometer testing schedules (e.g. the Federal Test Procedure, or FTP). A constant volume sampler (CVS) system collects the exhaust at prescribed conditions (e.g. temperature, dilution ratio). The preconditioned particulate filters are then weighed to obtain the mass of PM emitted over the test cycle. The mass of emitted PM is then normalized according to the work performed over the test cycle in brake horsepower-hour (bhp-hr). The calculated mass emissions values are compared to the PM emissions standard in g/bhp-hr.

Procedures for characterizing emissions from light-duty (diesel) vehicles are similar from the perspective of collecting the PM on preconditioned filters and determining mass emissions. A key difference is that the light-duty vehicle emissions standards are in grams of pollutant per distance driven (g/mile in the U.S.), instead of work performed. Testing of light-duty vehicles is conducted on chassis dynamometers in contrast to heavy-duty engines, which are tested on engine dynamometers prior to vehicle integration.

In the U.S., the focus on measuring and controlling PM emissions has been almost exclusively on the heavy-duty vehicle sector, because overall emissions are dominated by diesel engines. The mass-focused testing methodology described above has worked well for heavy-duty engine technologies meeting PM standards of 0.1 g/bhp-hr (i.e. up to the 2006 engine model year). Such engines emit relatively large amounts of solid material (soot, metals, and ash) from combustion, engine wear, and lube oils. All of this is collected on the preconditioned filters, along with volatiles in the exhaust that condense on the filters including water vapor, sulfates, and other

organics. The net result is that the mass of PM collected during the test cycle over a known amount of work performed can be compared to the PM emissions standard.

However, as more advanced diesel PM control technology was developed and deployed to meet tighter emissions standards (DPFs to meet the U.S. 2007 heavy-duty engine PM standard) the PM mass collected over the FTP was significantly reduced. In some cases, PM mass levels were too low for detection by existing instrumentation in the test methodology. Also, at these low mass levels, testing anomalies can occur due to absorption of semi-volatile gas molecules on sampling filters or on PM already collected, which possibly leads to bias towards higher weight measurements. Similarly, tunnel wall or sampling line losses can also cause erroneous results. The need for better precision at low mass levels led U.S. EPA to revise the protocol to improve accuracy. At the same time, testing in the United States and in Europe shed new light on the characteristics of diesel PM in the exhaust, raising questions as to the relative importance of measuring particle mass versus particle number and/or size (Swanson et al., 2010).

In the late 1990s, the occupational health and safety authorities of Austria, Switzerland and Germany conducted a comprehensive program called Verminderung der Emissionen von Real-Dieselmotoren im Tunnelbau (VERT), which in English stands for Reduction of Diesel-emissions in tunneling to ensure functional and beneficial systems are utilized for the removal of harmful diesel emissions in underground environments. One of the main objectives of VERT was to look at the composition of diesel exhaust in terms of particle size, surface area, and concentration, and to establish whether mass is a good proxy for subsequent exposures and human health effects. PM, primarily BC and UFPs were found to be of major concern to the extent that in tunneling and other major construction sites, particle-traps for diesel equipment/vehicles became mandatory. This work laid the foundation for two additional important programs, the “Particulates Program” and the “Particle Measurement Programme” (PMP), both of which are further discussed below.

- Particulates Program: this program developed a sampling procedure to characterize both the volatile and non-volatile components of exhaust emissions from light- and heavy-duty vehicles. In particular, it developed sampling methodologies capable of assessing the formation of nucleation- and accumulation-mode particles from a minimum size of 7 nm. Figure 9-6 shows the sampling system used in the Particulates Program. The main results for light-duty

and for heavy-duty-vehicle applications are described in Ntziachristos et al. 2004, and in Thompson et al. 2004, respectively.

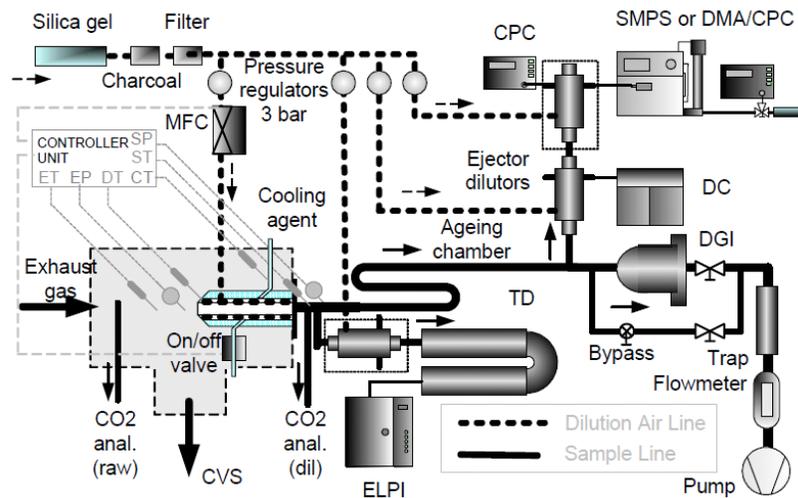


Figure 9-6

Sampling System used in the Particulates Program (from Samaras et al., 2006)

The basic premise behind the testing protocol was that each vehicle technology can and should be tested under consistent conditions. This enables comparison between the various technologies and fuels used. The procedure entails measuring particle mass, active surface (surrogate for surface area), solid particle number, total particle number, and particle size distribution. Both light-duty and heavy-duty programs investigated the effects of vehicle technology, fuel properties, and driving cycle.

- **Particle Measurement Programme (PMP):** this program is aimed at developing a test protocol to measure only the impact of solid particles in motor vehicle exhaust. The PMP is a collaboration of the United Nations Economic Commission for Europe and GRPE (Working Party on Pollution and Energy). The goal of this program is to find a new approach to measure particle emissions from vehicles that can either replace or coexist with the current mass-based particulate measurements. A result of this work has been the development of instrumentation and methodologies for counting solid (i.e. low-volatility particles that survived evaporation after a residence time of 0.2 seconds at 300 °C) particles down to a size of 23 nm. The PMP was implemented in a number of testing labs in Europe, Japan, and the U.S. The results of the lab emission testing for light- and heavy-duty vehicles is provided by Andersson et al. (2007; 2010). Figure 9-7 shows an example of a PMP setup for particle number count testing. New test requirements

are continuously being added to European light-duty vehicle emissions regulations, including those specific to particle number.

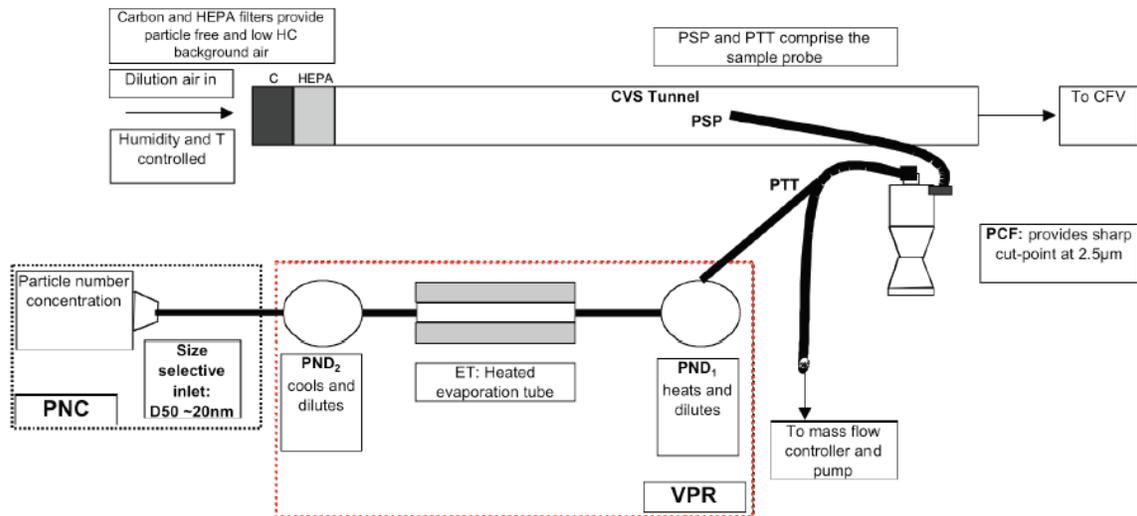


FIGURE 9-7

Schematic of PMP Testing Setup for Particle Number Count (from Kasper et al., 2006)

There have also been a number of related studies or research reports on the evaluation of various components of the PMP methodology. For example, CARB studied this method for light-duty vehicles using the “Golden Vehicle” (GV; a single vehicle that has been shipped to laboratories in Italy, Sweden, United Kingdom, Germany, Greece, Japan, Korea and France for testing) and the Golden Particle Measurement System (GPMS; a set of particle counting instruments that was sent along with the GV) to compare results with the other nine international laboratories that participated in the PMP (CARB, 2008).¹⁸ Additional testing was done on heavy-duty vehicles and results indicated that further study was needed to include a wider range of vehicles and after-treatment systems (Robertson et al., 2007).

The PMP protocol has gained acceptance in Europe and Japan. American regulators, industry and researchers continue to evaluate this methodology. Researchers in the U.S. (e.g., Swanson et al. 2010) favor alternative methods that focus on measuring surface area including solids and volatiles. Kittelson et al. (2011) noted that for engines equipped with particle filters setting the limit to 23 nm effectively regulates all sizes. However, vehicles without filters may emit large concentrations of solid

¹⁸ http://www.arb.ca.gov/research/veh-emissions/pmp-ld/CARB_Golden_Vehicle_PMP_Report_Final-05JAN09.pdf

particles below 23 nm that are not counted by the current method. The next generation of high-efficiency direct injection gasoline engines is also challenged by the current 23 nm limit. They proposed extending solid PM measurements to 10 nm although this may be problematic due to formation of particles as small as 3 nm downstream of the PMP Volatile Particle Remover (VPR) system.¹⁹

As noted, the European PMP protocol has been implemented to include numbers-based particle emission standards. While there is no consensus in the U.S. at present regarding how to standardize particle measurements, research work and regulatory discussions are ongoing among industry and regulatory agencies such as U.S. EPA, CARB, and the District. For now, U.S. EPA and CARB continue to regulate PM mass only.

Emissions Standards

European Standards

Europe's new emission levels for light-duty and medium-duty vehicles are Euro 5 and Euro 6. Euro 5's goal is to reduce the emissions of PM from diesel cars from 25 mg/km to 5 mg/km. Euro 6 will become effective in January 2014, and will reduce the NO_x emissions from diesel cars from 180 mg/km to 80 mg/km. A solid particle number emission limit of $6 \times 10^{11} \text{ km}^{-1}$ became effective in September 2011 for all categories of diesel vehicles. Europe's reason for adopting the number standard is to promote the use of DPF technology. A particle number emissions limit for gasoline vehicles will be determined in 2014.

California Standards

In 2010, CARB considered adopting certain particle number standards as an alternative under the LEV III requirements, and proposed that for all vehicles subject to LEV III, beginning in 2014, manufacturers must select one of two standards to demonstrate compliance (CARB, 2010)²⁰:

1. Federal Test Procedure weighted PM mass emission limit to 0.006 g/mi (2014) and 0.003 g/mi (2017)
2. Federal Test Procedure weighted particle number emission limit to 6.0×10^{12} particles/mi (2014) and 3.0×10^{12} particles/mi (2017)

¹⁹ <http://www.unece.org/fileadmin/DAM/trans/doc/2011/wp29grpe/PMP-26-06e.pdf>

²⁰ http://www.arb.ca.gov/msprog/levprog/leviii/meetings/051810/pm_disc_paper-v6.pdf

CARB's reason for proposing the particle number limit is to take advantage of the latest methodology advances by PMP. The PMP method was considered because it is the only particle emission measurement method that went through extensive international scrutiny and laboratory testing. Excellent sources of information about CARB's LEV III proposals and objectives specific to fine particles can be found on CARB's 2011 publication "LEV III PM Technical Support Document: Development of Particulate Mass Standards for Future Light-Duty Vehicles".²¹

National Standards

The National Ambient Air Quality Standards (NAAQS) set by the U.S. EPA are designed to protect public health and the environment. The standards are developed based on a variety of scientific studies, including the results of epidemiologic studies that evaluate how human health has been affected by pollutant concentrations in the past. These standards are periodically reviewed and updated based on recent scientific developments. Most recently, the NO₂ and CO NAAQS were reviewed and updated, with a new provision that new permanent monitors must be established near roadways. The most recent AQMD monitoring plan provides details about how and where these new monitors may be located.²² The recent PM NAAQS revision proposed on June 14, 2012, by U.S. EPA for the first time includes near-roadway monitoring requirements for PM_{2.5}. Currently, U.S. EPA notes that, in their assessment, there is not sufficient health evidence to support a separate standard for UFPs.

DISTRICT FUTURE ACTIONS

Although the District has limited authority to regulate mobile source pollution in the near-roadway environment, there are a variety of measures that District staff will continue to take to reduce this public health impact.

- The District will continue to fund health effects, exposure, atmospheric chemistry, modeling, and other research activities aimed at investigating the impact of UFPs exposure in communities impacted by traffic emissions. An AQMD-funded study is currently underway to assess potential air quality impacts and the effectiveness of mitigation measures (e.g. sound walls and vegetated barriers) in the near roadway environment. The multi-pronged approach of this study includes a

²¹ <http://www.arb.ca.gov/regact/2012/leviiiighg2012/levappp.pdf>

²² <http://www.aqmd.gov/tao/AQ-Reports/AQMonitoringNetworkPlan/AQnetworkplan.htm>

review of different mitigation techniques implemented throughout the world, pollutant monitoring combined with dispersion modeling of local freeway emissions, development of alternative models, and laboratory-based simulations in flow tanks. The results of this study are expected by early 2013.

- Since the problem of near-roadway exposure can effectively be addressed by controlling tailpipe emissions, the District will continue to encourage U.S.EPA and CARB to set vehicle emission standards for UFP.
- District staff will continue to work with local and state agencies to address near-roadway exposures. This includes outreach and education to local governments and elected officials on the health risks associated with mobile source pollution and recommending measures that can be taken to reduce those risks. As an example, General Plans prepared for a city can include requirements to provide buffer zones, as feasible, between freeways and any new development with sensitive receptors.
- Through the CEQA Intergovernmental Review program, CEQA documents submitted to the District are reviewed during the public comment period. For those projects that may expose sensitive populations to elevated concentrations of mobile source pollution, District staff will recommend that the potential impacts be quantified and that all feasible mitigation measures be considered to reduce this impact below a significant level.
- As part of the Clean Communities Program (CCP), District staff will continue to work in the pilot study areas of Boyle Heights and San Bernardino to address exposure to mobile source pollution and will apply those lessons learned to other areas in the District. Further, as part of CCP Measures Outreach-1 and Agency-01, District staff will prepare a document titled “Proximity Matters” that will provide an additional resource for local agency planners to use when addressing near-roadway exposures.
- On July 1, 2012 the District began MATES IV, a year-long study designed to characterize the carcinogenic risk caused by exposure to air toxics in the Basin. MATES IV will enhance the spatial resolution of previous measurement efforts by characterizing the localized exposure to UFPs and Diesel Particulate Matter in residential, industrial, and commercial communities. Mobile monitoring platforms will be deployed for short-term monitoring at six to eight sites in areas close to mobile sources such as airports, rail yards, freeways and warehouse operations.

- District staff will continue to work with instrument manufacturers, CARB, and U.S. EPA on the evaluation of new technologies for monitoring UFPs, BC and other traffic-related pollutants, and on the development of methods for the standardization of UFP measurements.

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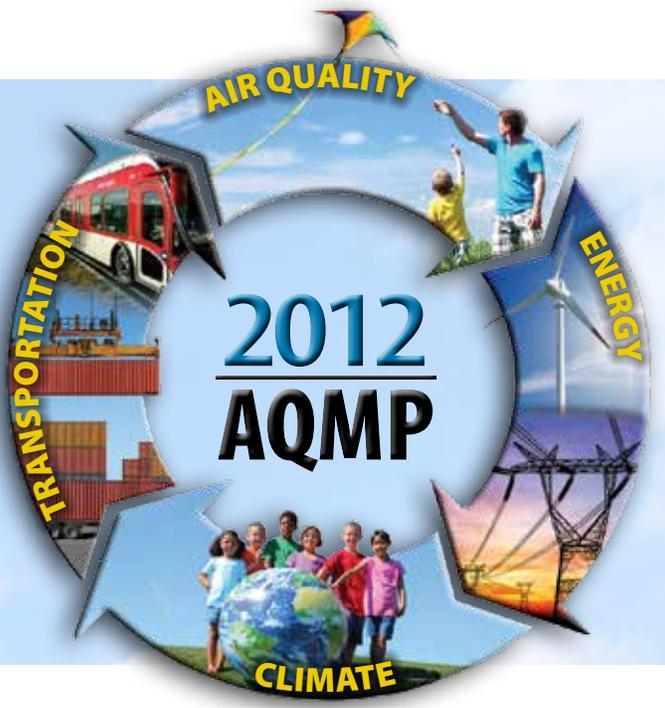
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Chapter 10

Energy and Climate

South Coast Air Quality Management District
Cleaning the air that we breathe...



CHAPTER 10

ENERGY AND CLIMATE

Introduction

Energy Consumption Inventory and Projections

Recently Implemented State Regulations and Electricity Generation

Natural Gas

Transportation Fuels

Efficiency Impacts on Energy Use

Southern California's Energy Future

INTRODUCTION

In September of 2011, the AQMD Governing Board adopted the AQMD Air Quality-Related Energy Policy. This policy was developed to integrate air quality, energy issues, and climate change in a coordinated holistic manner and provides a review of energy usage within the Basin followed by ten policies and ten actions (Tables 10-1a and 10-1b). One of the action items is to provide an update of energy usage within the District in each AQMP (SCAQMD, 2011). Energy projections made in this chapter reflect past energy usage in the South Coast Basin and energy projections made from utility and other agencies' planning documents. These projections reflect existing policies and regulations. This review does not include an analysis of energy implications from the control measures within this AQMP; this analysis is conducted within the EIR review.

Energy use in Southern California plays a major role in everyone's lives for purposes such as transportation, comfort, goods movement, manufacturing, and entertainment. In the South Coast Basin this reliance on energy was at a cost of over \$50 billion in 2008 and is projected to increase to over \$70 billion on our current path of consumption. Unfortunately our reliance on energy usage is also the main source of criteria pollutants and greenhouse gases in Southern California. In particular, on-road transportation sources are the largest sources of GHG and criteria pollutants, emitting over 80% of the NO_x and 70% of the CO₂ emissions in the Basin.

Technology changes are needed in the transportation sector over the next 10 to 20 years to meet the criteria pollutant standards and 2050 GHG goals. In the jointly developed *Vision for Clean Air: A Framework for Air Quality and Climate Planning*, technology scenarios are outlined for the transportation sector that provide insight relative to pathways forward to achieving criteria pollutant standards and climate change goals. The likely pathways also would result in greater energy independence and less money spent on energy. For example, newer transportation technologies such as hybrid and electric vehicles provide much greater efficiencies than typical internal combustion engines alone.

Despite the large quantities of energy consumed in California, the per capita energy consumption is the fourth lowest in the nation (EIA, 2011). This low per-capita energy consumption is due to California's energy efficiency programs as well as the relatively mild California climate. However, there are large improvements that need

to be made through increased efficiency, renewable fuels, conservation, and renewable energy generation from all sources.

TABLE 10-1a
AQMD Air Quality-Related Energy Policy

POLICIES	
1.	Promote zero and near-zero emission technologies through ultra clean energy strategies, to meet air quality, energy security, and climate change objectives
2.	Promote zero and near-zero emission technologies in both stationary and mobile applications to the extent feasible
3.	Promote diversification of electricity generation technologies to provide reliable, feasible, affordable, sustainable, and zero or near-zero emission electricity supply for the Basin in partnership with local power producers
4.	Promote demand side management programs to manage energy demand growth. Such programs include, but are not limited to, energy conservation, energy efficiency and load-shifting measures
5.	Promote in-Basin distributed electricity generation, with emphasis on distributed renewable electricity generation, to reduce reliance on energy imports or central power plants, and to minimize the air quality, climate and cross-media environmental impacts of traditional power generation
6.	Promote electricity storage technology to improve the supply reliability, availability, and increased generation technology choices
7.	Require any new/repowered in-Basin fossil-fueled generation power plant to incorporate Best Available Control Technology (BACT) as required by District rules, considering energy efficiency for the application. These power plants shall also comply with any requirements adopted by the California Air Resources Board (CARB), California Energy Commission (CEC), Public Utilities Commission (PUC), California Independent System Operator (ISO), or the governing board of a publicly-owned electric utility, as well as state law under the California Environmental Quality Act (CEQA)
8.	Advocate, within the existing CEQA review process, maximum cost effective mitigation in the communities affected by emission increases resulting from the siting of new or repowered power plants
9.	Educate and incentivize the public and businesses to shift toward the lowest emission technologies, considering emissions of criteria pollutants, toxic air contaminants, greenhouse gases, energy efficiency, and the potential to create local jobs
10.	Incorporate energy efficiency and conservation as an emissions reductions strategy for stationary and mobile sources through AQMD's planning, rule making, advocacy, and CEQA commenting activities

TABLE 10-1b

AQMD Air Quality-Related Energy Policy

ACTIONS	
1.	Advocate for, conduct, and/or support detailed technical studies to identify viable zero and near-zero emission technologies and associated energy delivery and capacity needs to support these technologies as part of the clean air strategy for the Basin
2.	Conduct appropriate socioeconomic studies to identify the societal costs and benefits for the implementation of zero and near-zero emissions strategies, including but not limited to, further electrification and impacts on businesses and jobs
3.	Where feasible, develop an AQMD action plan to develop and deploy electrification and other zero and near-zero emissions measures for various sectors, including identification of implementation barriers and strategies to overcome such barriers
4.	Conduct studies to identify measures to reduce emissions from the transportation sector, including incentivizing early introduction of zero and near-zero emission measures and identify potential new transportation funding mechanisms to support substantial penetration of such technologies within the transportation sector
5.	Further develop and demonstrate low emitting biogas technologies and other clean energy sources from biomass
6.	Coordinate this Energy Policy with California state energy policy as promulgated by the California Energy Commission (CEC), California Public Utilities Commission (PUC), and the California Air Resources Board (CARB), and assure that rules and regulations adopted by the Board are not in conflict with state and federal laws. Actively participate in CEC, PUC, and CARB proceedings to promote policies and regulatory actions that further clean air objectives, consistent with state and federal law
7.	Convene a stakeholder working group (including, but not limited to, representatives from the building industry, local fire departments and building departments, and utilities) to develop and recommend standardized installations of electricity recharging, natural gas refueling, and other zero/near-zero emission refueling equipment for residential and commercial building applications to facilitate greater plug-in electric vehicle (PEV), natural gas vehicle (NGV), fuel cell vehicle, and other zero or near-zero emission vehicle market penetration
8.	Advocate for electricity rate structures that incentivize off-peak charging for PEVs through the Statewide PEV Collaborative (comprised of CEC, PUC, CARB, local air districts and utilities) while remaining sensitive to potential impacts on rates for existing customers
9.	Partner with local utilities and local government stakeholders to promote energy conservation and efficiency through local actions
10.	Compile and track Basin-wide energy usage and supply profiles in conjunction with each Air Quality Management Plan (AQMP) update

Many of the recently adopted and existing State regulations developed for energy efficiency, greenhouse gas reductions, and fuel economy will have impacts on the future amounts and types of energy use in Southern California and influence future-year energy consumption projections. This review helps us understand the amounts of energy being used, the associated costs, the historical and projected trends, and the energy-related emissions.

In this chapter, an overview of energy consumption within the District is presented for year 2008 and projected years 2014, 2019 and 2023. This review incorporates recent planning documents from other federal and state agencies, and utility providers. The review also utilizes information presented in other chapters and appendices of the 2012 AQMP. Finally, this chapter includes a discussion of the large benefits efficiency improvements provide and a discussion of the Basin's energy future to meet both criteria and pollutant GHG goals.

ENERGY CONSUMPTION INVENTORY AND PROJECTIONS

In 2008, the end use energy needs of the South Coast Basin were 2.1 quads (1 quadrillion [10^{15}] British Thermal Units) as shown in Figure 10-1. This is equivalent to 2% of the energy consumption within the U.S. The large majority of energy use in the South Coast Basin is devoted to transportation purposes as shown in Figure 10-2. This is the result of several factors related to the region's dense urban population, development structure, and economy. Southern California has two of the largest maritime ports in the United States that account for up to 40% of all U.S. container traffic. This goods movement system includes local distribution networks that require numerous diesel-powered trucks and trains. The Basin also has three large airports that involve both air and ground transportation. Most importantly Southern California is home to approximately 16 million residents that primarily rely on freeway and road infrastructure for mobility. As a result the largest energy use is gasoline consumption. As shown in Figure 10- 1, in 2008, 0.9 quads of gasoline were consumed in the South Coast Basin, approaching 50% of the total energy consumed. End use electricity consumption accounts for the second largest source of energy in Southern California, principally the result of commercial and residential usage.

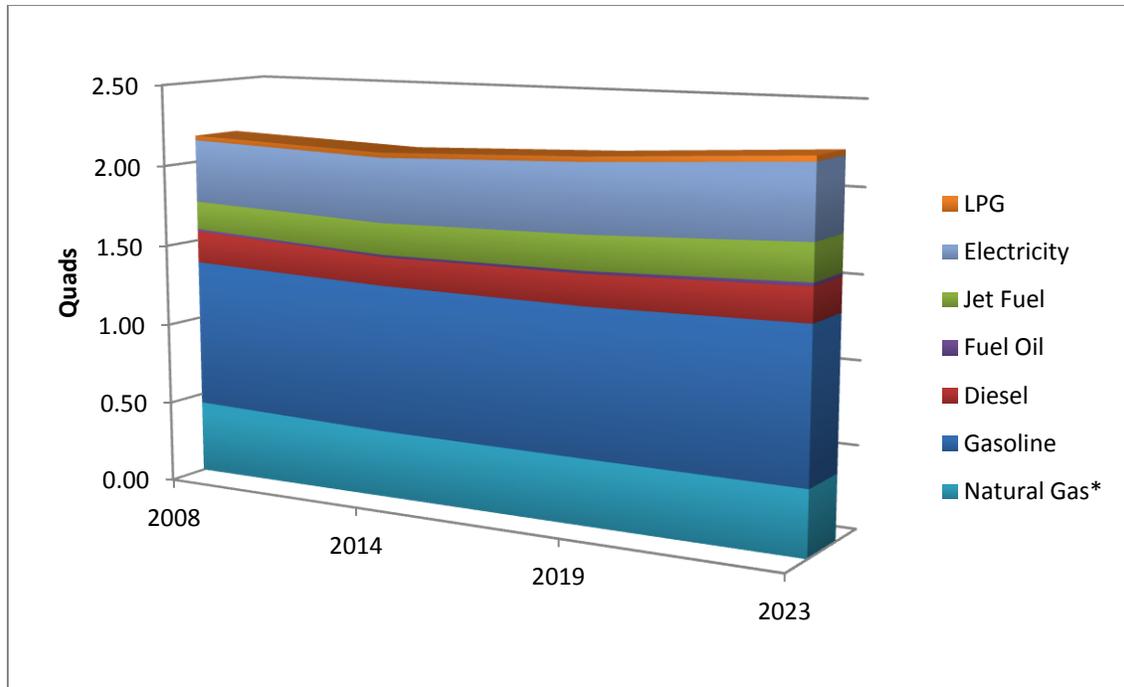


FIGURE 10-1

Total End Use Energy Consumption in the South Coast Basin by Fuel Type in 2008 and Forecasted Energy Growth

*Natural Gas consumption does not include consumption for electricity generation. Future projections are discussed in each energy type category.

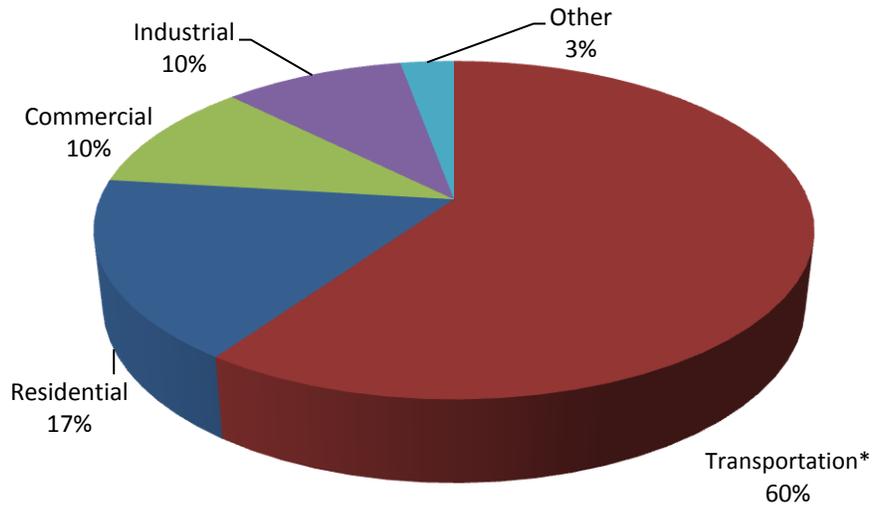


FIGURE 10-2

Share of Energy Use in South Coast Basin in 2008

*Transportation includes off-road sources

The energy usage in Southern California comes with a significant price tag. In 2008, over \$54 billion was spent on energy usage within the Basin. As shown in Figure 10-3, the energy usage is projected to grow relatively slowly and will reach slightly over 2.2 quads in 2023 (i.e., a 0.1 quad increase between 2008 and 2023). Unfortunately, Figure 10-4 shows that the cost of energy consumption within the Basin is projected to increase by 27% in 2023 to \$74 billion (EIA AEO, 2011).

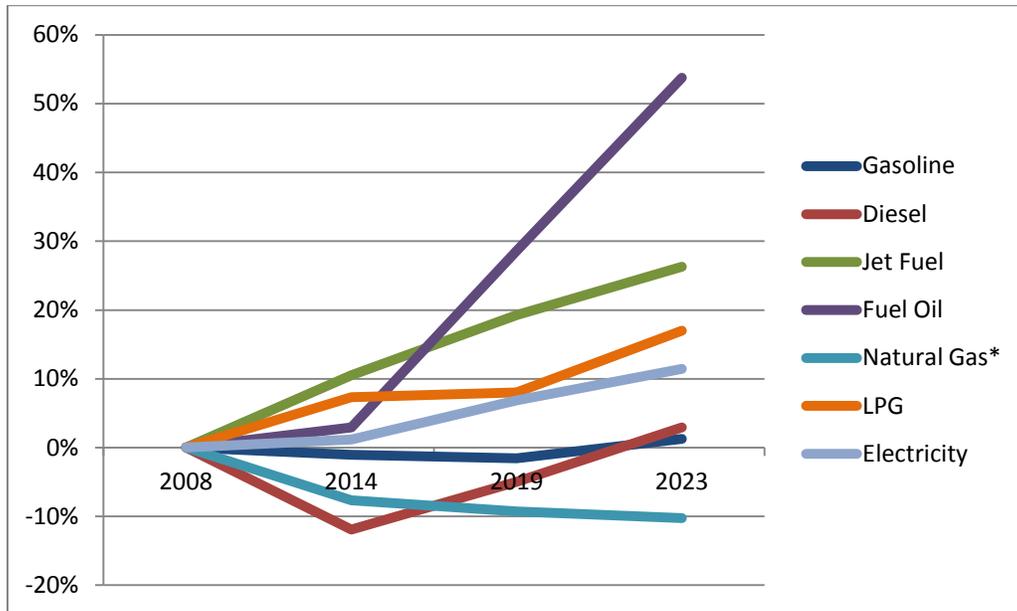


FIGURE 10-3

Projected Basin Energy Usage Growth by Fuel Type Relative to 2008

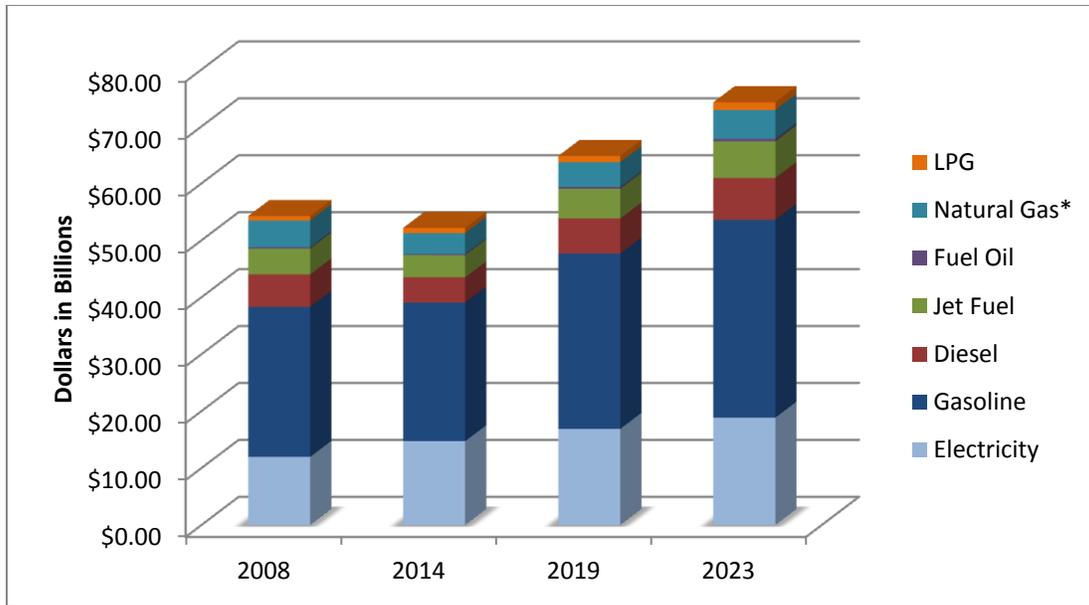


FIGURE 10-4

Dollars Spent on Energy End Use in 2008 and Projected Years in the South Coast Basin

Note: Prices based on EIA Energy Outlook 2011 reference case for the Pacific except electricity (EIA AEO, 2011); electricity prices based on LADWP and SCE rates for 2008 and projected (CEC Energy Demand, 2009).

While transportation sources accounts for over 50% of the energy use, the majority of NO_x emissions are attributable to transportation sources (Figures 10-5 and 10-6). Within the transportation sector, the majority of the NO_x is emitted from diesel-powered vehicles. This is largely the result of years of effective stationary source and light-duty vehicle controls, the large numbers of vehicles in use, and the slow rate of fleet turnover for diesel-powered vehicles. Increased fleet turnover, fuel economy standards, diesel repowering and other state regulations are projected to lower NO_x emissions. However, these reductions are far from what is needed to achieve ozone standards. Figure 10-7 provides the corresponding data for PM_{2.5} emissions by fuel type. Similarly, the majority of PM_{2.5} emissions are attributable to transportation sources.

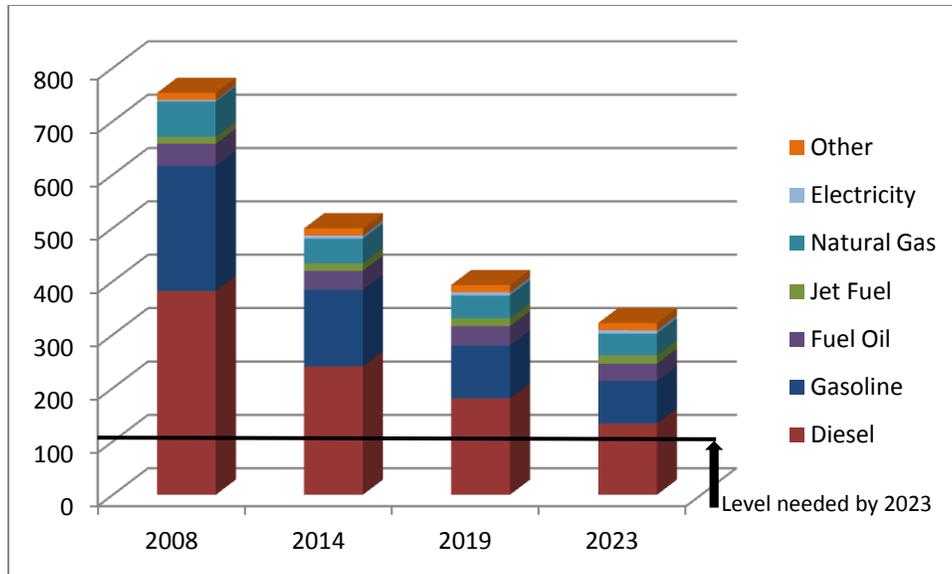


FIGURE 10-5

NOx Emissions in Tons per Day by Fuel Type

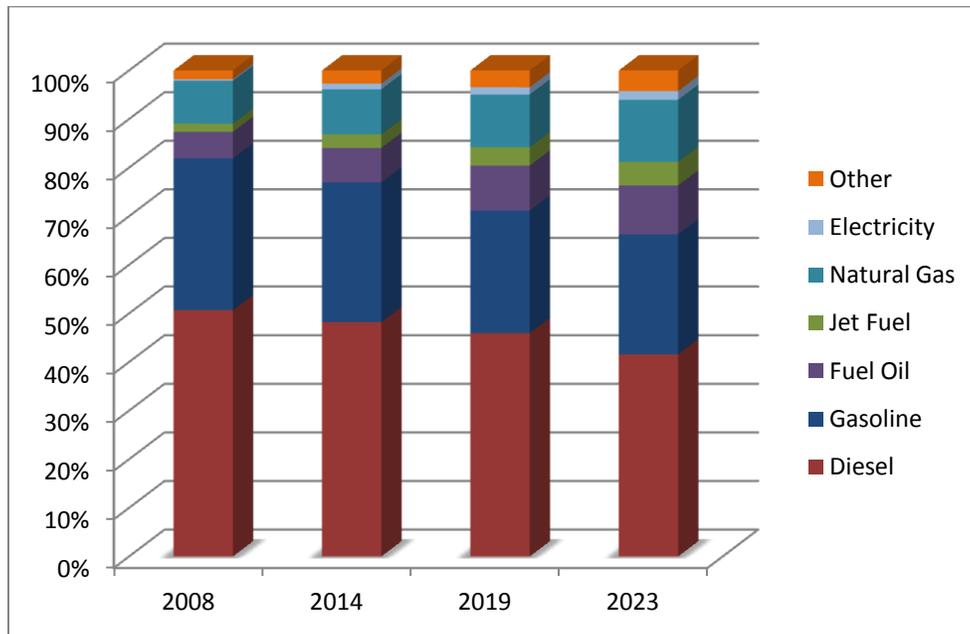


FIGURE 10-6

Percentage of NOx Emissions by Fuel Type

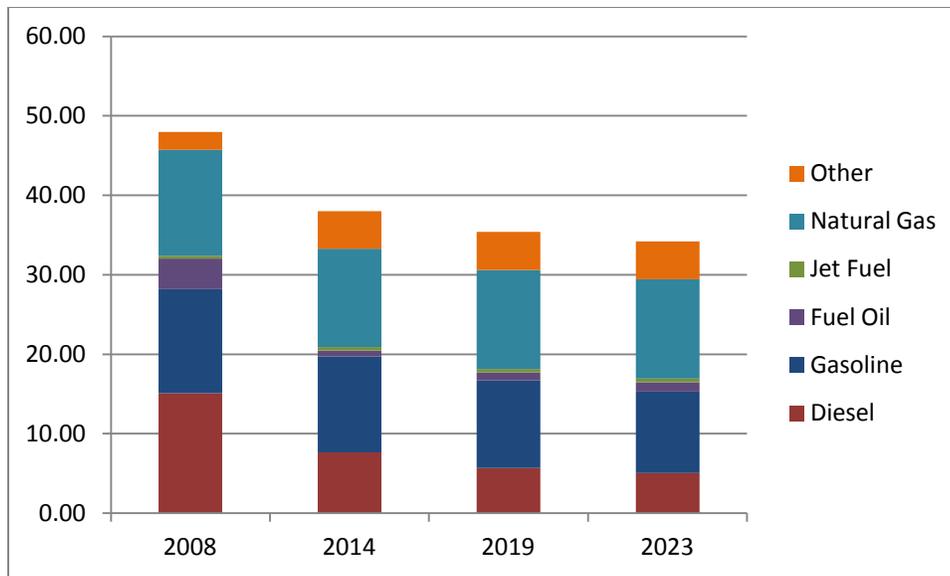
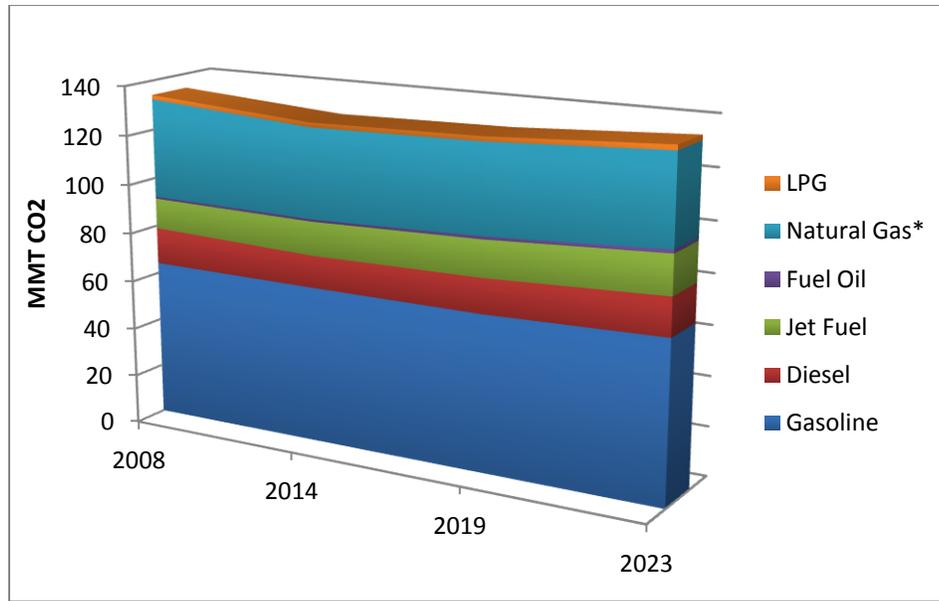


FIGURE 10-7
PM2.5 Emissions by Fuel Type

In 2008, the carbon dioxide emissions from fuel use were 134 MMT (million metric tons) in the Basin (Figure 10-8). This accounts for 32% of the total 421 MMT of carbon dioxide released in California in 2008 (CARB). The CO₂ emissions from fuel usage in Southern California are dominated by the use of transportation fuels. By 2023, emissions of carbon dioxide are projected to remain relatively flat. This is largely the result of programs and regulations being implemented in California and discussed in further sections.

The carbon dioxide emissions in Figure 10-8 were determined from fuel consumption data and future fuel consumption projections. Sector-specific carbon dioxide emissions can be found in Appendix III – Table F.

**FIGURE 10-8**

Carbon Dioxide Emissions by Fuel Type

*Natural Gas emissions include all combustion sources including electricity generation

Electricity Sources

Within the Basin in 2008, electricity end use accounted for 114,400 GWh of energy usage and 23% of the energy costs. While electricity generated within the Basin accounted for 26,000 GWh or 24% of the total electricity consumed in the Basin (CEC QFER). The generation mix for electricity produced within the Basin as of 2008 was mostly from natural gas fueled power plants (Figure 10-9) as it is for most of California; the majority of electricity in the U.S. derives from coal-fired power plants. As shown in Figure 10-9, the remaining supply of electricity into the Basin from Southern California Edison (SCE) and Los Angeles Department of Water and Power (LADWP) are likewise broken out to show percentages of their electricity from coal-powered plants in 2008. The percentages of power from coal between these two utilities have come down from 12% and 44% for SCE and LADWP to 7% and 39% in 2010 respectively (SB1305). SB 1368 (Perata, Chapter 598, 2006), and its implementing regulations by the CEC and CPUC, has explicit constraints on utilities regarding the development of new coal-powered facilities or contracts for coal-powered generation. Due to this legislation, and as the State's renewable portfolio standard and cap-and-trade program are implemented, the power procurement from coal will continue to decline through time.

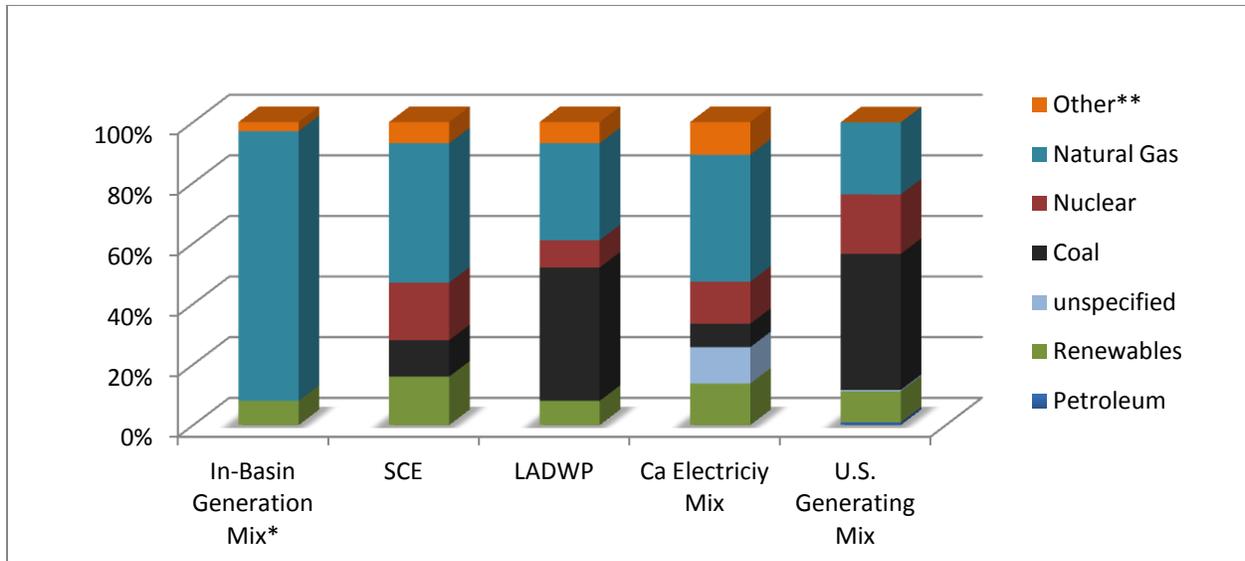


FIGURE 10-9

Electricity Generating Mix by Type in 2008

*Wind and Solar not included in Basin generation renewable mix, location data not available;
 ** Includes large hydro not accounted in renewable and fossil derived co-generation

Basin Electricity Consumption

As stated above, total electricity consumption within the Basin was 114,400 GWh in 2008 and is predicted to grow to an estimated 123,600 GWh by 2020 as shown in Figure 10-10. This is determined from the net energy loads for L.A. Basin and LADWP service territories within the CEC California Energy Demand Forecast 2010-2020 (CEC Energy Demand Outlook, 2009). Electricity consumption is recovering from a recent decline due to the economic recession that began in 2008.

The projected electricity use within the Basin is estimated to grow an average of 0.5% per year until 2020. In 2008, \$12 billion was spent on end use electricity deliveries within the Basin. Using the projected electricity rates in the CA Demand Forecasts and anticipated electricity deliveries between SCE and LADWP, it is estimated that \$18 billion will be spent on electricity in the Basin in 2020.

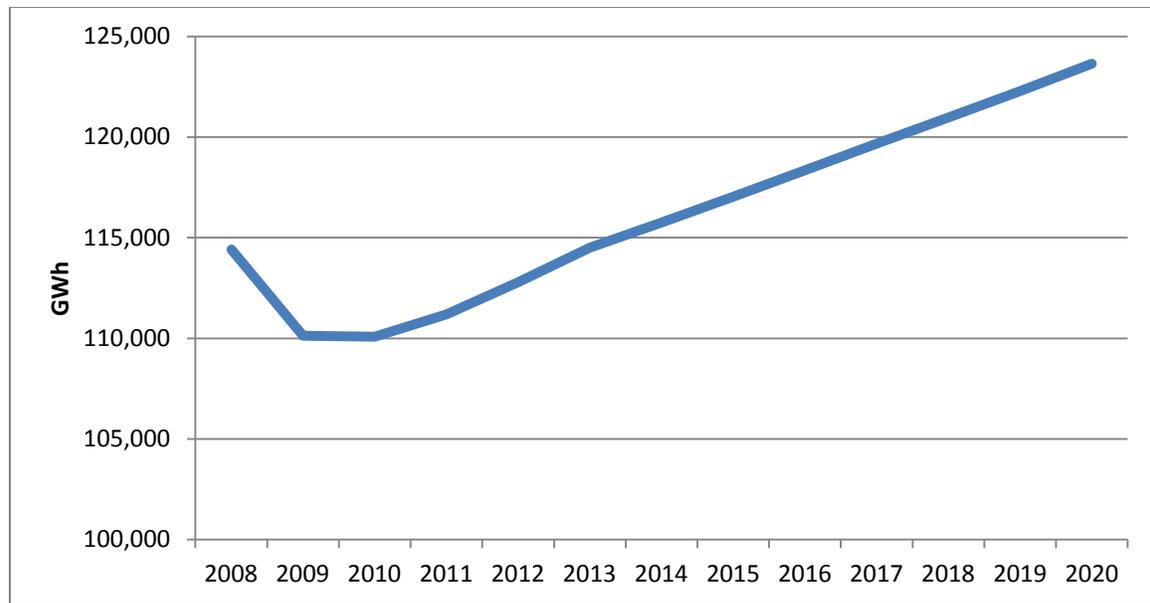


FIGURE 10-10

Total Basin End Use Electricity Consumption and Projections
within the South Coast Basin

Electricity Consumption by Sector

The 2008 electricity consumption and future projections within the residential, industrial, and commercial source categories are shown in Figure 10-11 based on the SCE and LADWP service areas in the adopted CEC California energy demand forecasts and prices (CEC Energy Demand Outlook, 2009). These projections include electricity energy efficiency savings of 14,000 GWh in 2008, growing to an estimated 24,000 GWh in 2020. These savings are anticipated from new and existing appliance standards, building standards, and utility programs.

Electricity projections from these two utility service areas correspond closely, but not exactly, to the expected energy use in the Basin. For instance, total electricity consumption in the Basin in 2008 was 114,400 GWh as compared to 129,700 GWh in these service areas. These two utility service area demand forecasts include the local municipal utilities located within the Basin, except for electricity services provided by the Cities of Burbank, Glendale and Pasadena; individual source categories for these power providers were not available.

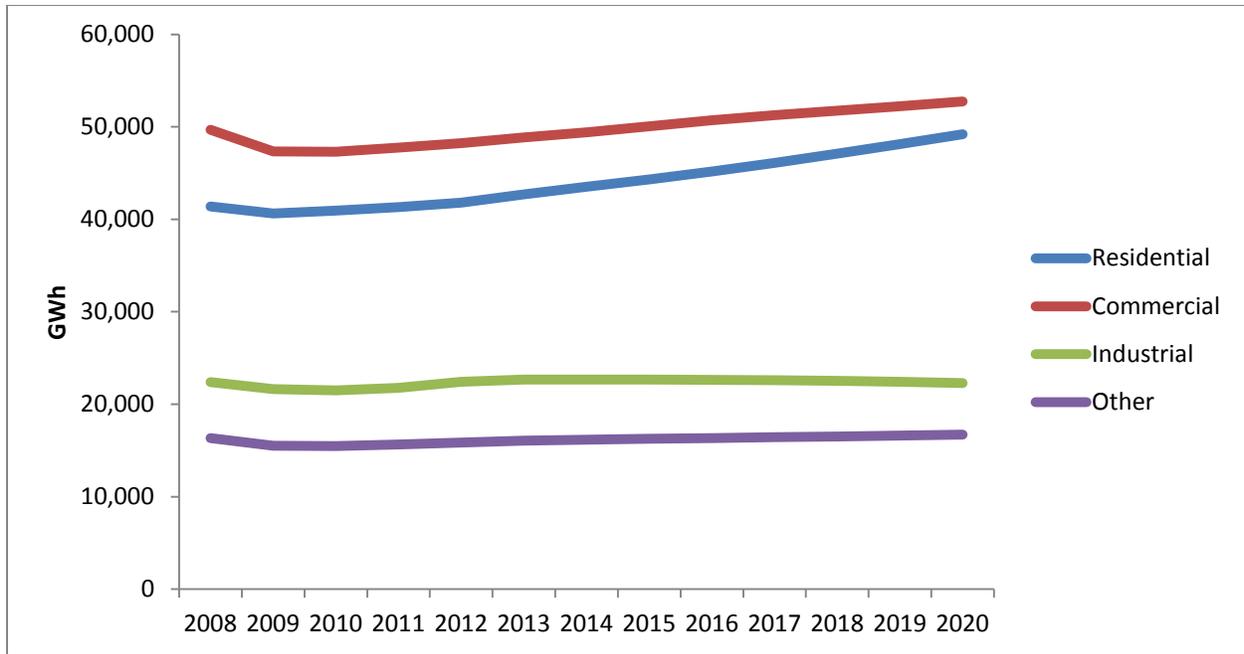


FIGURE 10-11

Electricity Consumption and Projections for LADWP and SCE Service Areas by Sector

RECENTLY IMPLEMENTED STATE REGULATIONS AND ELECTRICITY GENERATION

There are several state regulations that will impact the sources of electricity, the emissions of GHGs from electricity production, and the demand for repowered or new fossil-fueled plants in the future. These regulations were very recently implemented and represent a groundbreaking shift in how electricity is generated in California. The number of recently adopted regulations that affect the power sources in California, along with future conservation and efficiency programs, will significantly impact energy planning efforts in the future.

SBX 1-2 Renewable Portfolio Standard (RPS) – The expanded RPS was adopted in April 2011 and requires both publicly owned utilities and investor owned utilities to serve 33% of retail electricity sales with renewable generation sources by 2020. Compliance periods monitor the progress of procuring renewable power by California electricity-servicing utilities; the first period ending in 2013 requires utilities to have an average of 20% of sales from eligible renewables; by 2016, 25% must be from renewables; and then 33% by 2020 and beyond. Eligible renewable power sources

that meet the compliance requirements include photovoltaics, wind, geothermal, solar thermal, power from renewable fuels, and small hydroelectric less than 30 MW.

Adding large percentages of renewable power requires changes to the existing grid and generation requirements for fossil-fueled plants. Large solar power generation facilities in the desert areas have required new transmission lines, such as the San Diego Sunrise 500 kV line linking the Imperial Valley solar resources with the San Diego urban area demand. Other implications include providing ancillary services on the grid to account for the intermittency of some renewable power generation sources. New and existing fossil-fueled generation will need to provide some of these services since these generating sources can provide voltage support through inertia and fast ramp rates when needed. Storage technologies and pumped hydro may also help provide the needed ancillary services for supply stability.

Once-Through Cooling (OTC) – In May 2010, the State Water Resources Control Board adopted the Statewide Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling. This regulation places restrictions on the use of seawater for power plant cooling in order to protect marine life. Using billions of gallons of seawater to cool California’s power plants significantly harms the environment by killing marine life primarily on the lower end of the food chain as they are trapped against the intake screens or drawn into the power plant cooling system where they are exposed to high heat and pressure. In California, nineteen power plants are affected by this regulation. The plants may undertake several options to comply, including incorporating a 93% reduction in their seawater intake, screening, or switching to evaporative cooling, with certain exceptions given to the two nuclear generating facilities. The coastal plants affected by this regulation in Southern California include seven fossil fuel powered plants and the San Onofre Nuclear plant. These Southern California plants provide over 7,000 MW of generating capacity and have varying compliance dates under this regulation (Table 10-2). To comply with this regulation, some of the Southern California fossil-powered generation plants will need repowering and some units are planned for shutdown.

TABLE 10-2

Southern California Fossil-Fueled Power Plants affected by OTC

FACILITY	UNITS	TOTAL MW	OTC REPLACEMENT DATE
Alamitos, Long Beach	Boilers 1-6	1,950	2020
Huntington Beach	Boilers 1-4	880	2020
Redondo Beach	Boilers 5-8	1,310	2020
El Segundo	Boilers 3-4	670	2015
Haynes, Los Angeles	Boilers 1,2,5,6 Turbines 9,10	1,654	2029
Harbor, Los Angeles	Turbines 1,2	364	2029
Scattergood, Playa del Rey	Boilers 1-3	818	2024

SCAB Electricity Needs Assessment (AB-1318) – The passage of AB-1318 required the state power regulatory agencies, in conjunction with CARB, to conduct a needs assessment of electricity generation for the South Coast Basin. This analysis is also needed for implementing the OTC regulation, to determine how many plants will need to be repowered. This analysis is currently being conducted and initial estimates under several base case scenarios indicate the OTC regulation results in new generation needs of 2,400 MW. A draft report is expected in the summer of 2012.

Cap-and-Trade – The Global Warming Solutions Act of 2006 (AB-32) seeks to reduce GHG emissions in California to 1990 levels by 2020. Under the Governor’s Executive Order, an additional goal was established to reduce GHG emissions 80% below 1990 levels by 2050. To achieve the initial 2020 goal CARB has set forth a scoping plan that contains voluntary and regulatory measures to help reduce GHG emissions. One of these measures is to establish a cap on GHG emissions for the largest emitters in the state. The CARB cap-and-trade regulation was adopted in October 2011 and goes into effect in January 2013 for facilities with emissions greater than 25,000 MT CO₂e. This inclusion threshold encompasses most large fossil fueled generating plants. Additionally, the cap-and-trade program also applies to fuel providers and importers of electricity. Participants falling under this regulation must surrender allowances to meet their emissions over three-year compliance periods with some annual monitoring. Allowances under this program will be obtained through direct issuance, available through auctions; or may be partially obtained from allowable GHG offsets. Under this regulation, the electrical distribution utilities will

be given allowances that they must auction, the proceeds from these allowance auctions are then used to help isolate the electricity ratepayers from fee increases (§95892 Cap-and-Trade Regulation). How the utilities will use these proceeds may provide opportunities to further reduce consumption and incentivize clean power through incentives such as efficiency programs and appropriate distributed generation sources while also providing other co-benefits.

NATURAL GAS

Figure 10-12 shows the natural gas consumption by major customer end use categories, including the electricity generating sector, in the Southern California Gas Company’s service area within the District (consumption data and forecast provided by SoCal Gas Co.).

The decline of natural gas prices relative to liquid fuels will likely result in natural gas continuing to be a large component of California’s electricity production and increased usage as a transportation fuel. In addition, natural gas plants will help integrate renewables into the grid by providing peaking assistance, fast ramp rates and other ancillary services. The declining consumption forecast for natural gas in the commercial and industrial sectors is due to improved energy efficiency/conservation programs in place through the CEC and CPUC. This declining consumption is partially offset by a projected increased usage for transportation purposes.

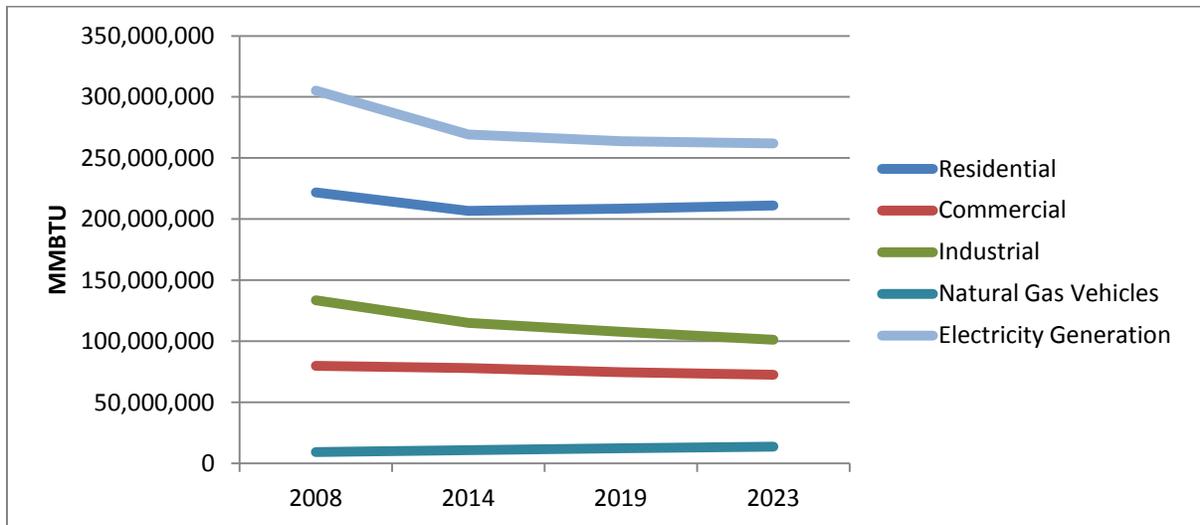


FIGURE 10-12

Natural Gas Consumption in the Basin by Sector

TRANSPORTATION FUELS

The use of transportation fuels in Southern California as shown previously in Figures 10-6 and 10-7 accounts for the majority of NO_x emissions and fuel-related emissions of fine particulate. Diesel fuel use in Southern California is dominated by on-road heavy-duty diesel vehicles. Overall usage of transportation fuels in the Basin is slightly over a staggering 10 billion gallons annually (Figures 10-13 and 10-14).

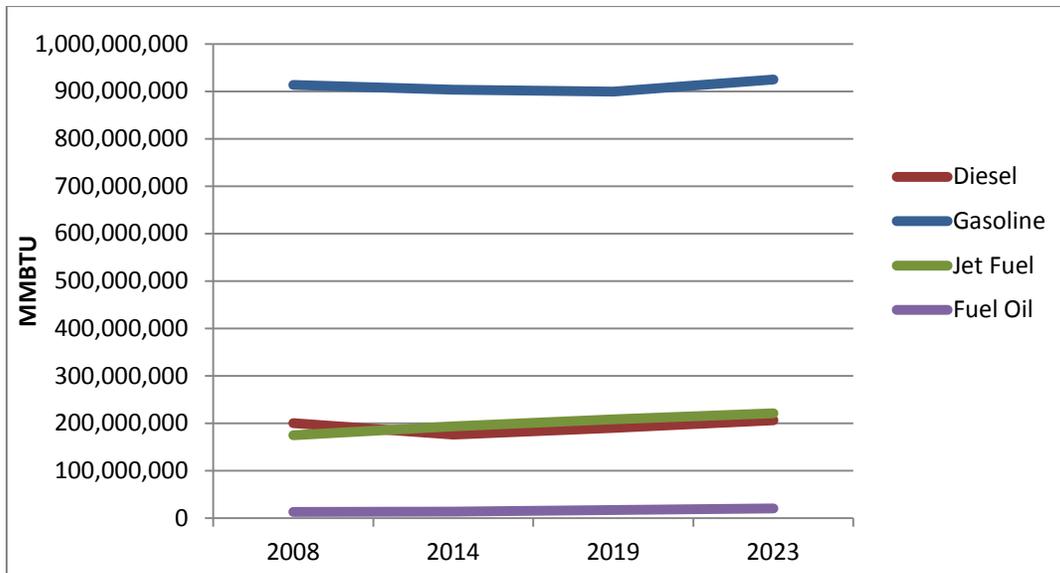


FIGURE 10-13

Consumption of Transportation Fuels in the Basin in 2008 and Projected Years

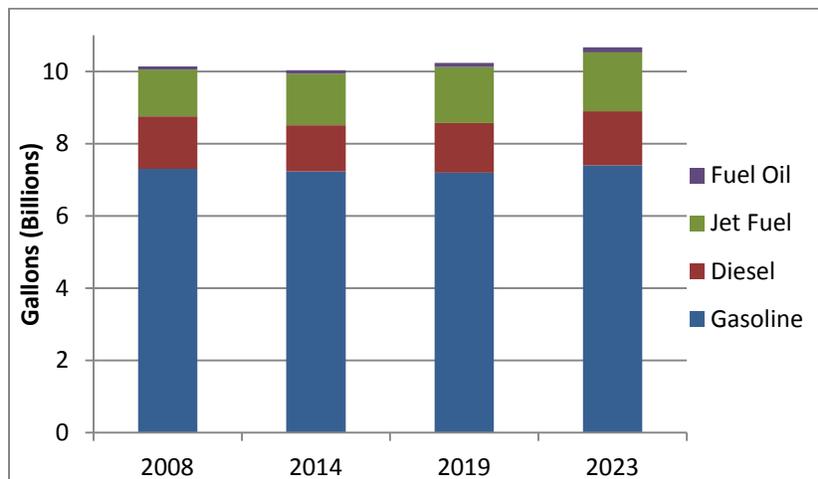


FIGURE 10-14

Fuel Consumption by Type

Fuel consumption figures for transportation fuels were obtained from several sources. The on-road portions of diesel and gasoline vehicles were obtained from the annual average emissions in Appendix III within attachment D. An estimation of the jet fuel consumption within the Basin was determined using the EIA sales to California for 2008 and adjusting for the Basin consumption using the NO_x inventory for the Basin relative to the State, then projected to future years using the inventory in Appendix III (CARB Almanac). The diesel consumption estimates for ocean-going vessels were limited to the 100 nm regulatory zone for the Basin ports (CARB OGV). The consumption figures estimated for trains were determined using consumption numbers developed in 2004 for South Coast and grown using inventory numbers for future years (CARB). Other off-road users of diesel were determined from CARB's OFFROAD model.

EFFICIENCY IMPACTS ON ENERGY USE

Energy efficiency is an increasingly important strategy in reducing impacts from volatile and rising energy prices. For example, in 2008 the South Coast Basin consumed over 10 billion gallons of gasoline at a cost of over \$26 billion dollars. Unfortunately, the typical gasoline fueled vehicle utilizes, at best, 20% of the energy contained in a gallon of gasoline for propulsion (fueleconomy.gov). The remaining 80% of the energy content of gasoline is mostly wasted as heat. Small changes in the fuel efficiency of gasoline vehicles can have major impacts on the amount of gasoline consumed and money spent while also providing major emission reductions.

Other benefits of implementing efficiency projects include helping to minimize strains on existing infrastructure, providing positive environmental impacts, helping to promote economic growth, and providing job opportunities. Although the term energy efficiency is often used interchangeably with energy conservation, there are key differences. Energy conservation techniques typically involve reducing the “level of service” consumers derive from energy usage, such as raising thermostat levels in the summer or driving less by foregoing leisure travel. Conservation measures are typically behavior based and more difficult to rely on for meeting a specific air quality or climate objective. Energy efficiency, on the other hand, means obtaining the same level of service while using less energy. An example of an energy efficiency project might be installing a high efficiency air conditioning unit as a replacement for an older less efficient one. The consumer is still obtaining the benefit of a cool house, but

uses less electricity, requiring less power generated, and thus less pollution from such power plants.

In California, incentive funding administered by the CPUC and distributed to ratepayers through utilities for efficiency projects has helped alleviate the need for new power plants while also reducing the infrastructure needs for energy distribution. Since 2010 these efficiency incentives in the South Coast Basin have reduced 3.8 million GWh of electricity and 71,000 MMBTU of natural gas (<http://eega.cpuc.ca.gov/Default.aspx>) consumption, resulting in a reduction of 1.4 million MT of CO₂ from being released into the atmosphere (equivalent to the combustion of 154 million gallons of gasoline) and energy cost savings of well over half a billion dollars (based on \$0.10/kWh and \$2/therm). In addition to energy cost savings, these efficiency projects have reduced criteria pollutant emissions such as PM and NO_x. Other efficiency requirements, such as the Title 24 building standards for residential and non-residential buildings, have saved an estimated \$66 billion in energy costs since 1978. These efforts have helped California's per-capita energy consumption to remain relatively flat since 1973 while the U.S. per-capita consumption has increased over 60% during this time (CEC per capita).

Globally there is an increase in energy use and demand as emerging markets further develop and thus, global energy markets are becoming increasingly volatile. Addressing energy issues through policy and technology improvements is a lengthy process, combining scientific, engineering, economic, social, and political elements that take long periods of time to develop and implement. However, implementing efficiency measures provides for actions that can be taken quickly and provide several immediate benefits. These benefits include emission reductions from electricity generation or process equipment and typically have quick payback periods given the energy cost savings.

Example: Manufacturing, Industrial and Commercial Boilers

The manufacturing and industrial sectors have significant opportunities for additional efficiency gains that can be captured as a compliance strategy for NO_x and GHG reductions. These two sectors account for 20% of energy end use in the United States and 23% within California (IEA). It is estimated that 4.7-7.7 quads of energy can be saved in the United States by 2020 in these sectors through efficiency measures that have rates of return from energy savings of at least 10% (NAS). Of the equipment

within these sectors, boilers account for the largest sources of energy consumption. Efficiency improvements on boilers often have higher initial capital costs but result in quick payback from energy savings. Table 10-3 shows a partial list of efficiency improvements, which when properly applied, have payback periods of less than two years (DOE; Itron).

TABLE 10-3
High Impact Efficiency Measures for Boilers

NATURAL GAS BOILER EFFICIENCY MEASURE	DESCRIPTION	POTENTIAL EFFICIENCY GAIN
Reduce Steam Demand	Optimize process steam requirements	High
Maintenance	Maintain burners and condensate return systems, clean heat transfer surfaces, use proper water treatment, steam trap maintenance	>30%
Economizer	Flue gas heat used to preheat feed water	4-8%
Burner Efficiency	Oxygen trim systems to optimize air-fuel mixture, new burners	2-5%
Load Control	Optimize use of several boilers	3-5%
Improved Insulation	Improving insulation (type, thickness, quality)	6-26%
Scheduling	Optimizing boiler usage	2-8%

Boilers have widespread use to produce steam and provide hot water for industrial processes and commercial buildings. Because boilers are large consumers of fuel, primarily natural gas in Southern California, there are numerous opportunities to implement efficiency measures with quick payback periods from reduced energy use. Nearly 49% of fuel consumed by U.S. manufacturers is used for steam processes (http://www1.eere.energy.gov/manufacturing/tech_deployment/steam.html). In the South Coast Basin there are over 2,000 boilers ranging in size from 5 to greater than 50 MMBtu/hr with an average age greater than 14 years old which consumed 143,000 mmscf of natural gas (2008). This accounts for 20% of natural gas consumed within the South Coast Basin. Figure 10-15 below shows energy usage in 2008 from boilers was 143,000 mmscf of natural gas at a cost of \$1.23 billion dollars. This resulted in emissions of 870 tons of NO_x and 8 million MT of CO₂. (<http://info.ornl.gov/sites/publications/files/Pub25191.pdf>).

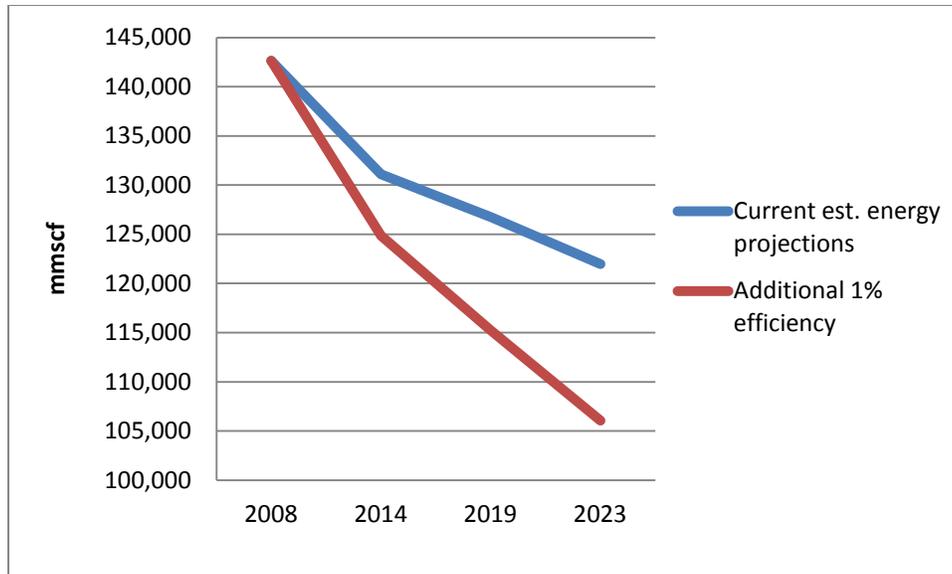


FIGURE 10-15

Boiler Energy Usage within the Basin

Note: Current estimated energy use projections accounting for existing efficiency programs and an accelerated one percent per year efficiency increase above projection.

Efficiency programs already in place are projected to decrease the natural gas consumption used in boilers as shown in Figure 10-15. If these efficiency measures can be enhanced to achieve an additional one percent efficiency gain per year, the resulting savings in 2023 will be 16,000 mmscf. This would result in a yearly savings of \$140 million, prevent 87,000 MT of CO₂ emissions, and produce reductions in criteria pollutant emissions.

Waste Heat Recovery

Additional efficiencies can be gained in the commercial, manufacturing and industrial sectors through utilizing waste heat recovery. There are widespread applications of waste heat recovery in the commercial, industrial and manufacturing sectors. Applying waste heat recovery systems can provide a holistic approach to energy use. Some technical approaches to waste heat recovery include the following:

Combined Heat and Power (CHP) - Utilizing CHP takes advantage of both electricity production and thermal energy from one energy source. Efficiency benefits of CHP systems can be achieved through utilizing waste heat of electricity production from small generating sources like a fuel cell or micro turbine to increase the efficiency of another thermal process such as preheating boiler feed water. Combined systems can

achieve overall thermal efficiencies greater than 90%. Certain steam industrial applications may benefit from generating power directly from their steam production using a high pressure steam boiler coupled with a turbine. In California, currently 8,444 MW are online from approximately 1,000 CHP systems (ICF database). In Southern California some of the largest generators of electricity are utilizing waste heat to generate electricity (CEC QFER, large kWh from refinery CHPs).

Waste Heat to Cooling or Refrigeration - Waste heat may also be used to help with cooling or refrigeration needs utilizing absorption chillers.

Heat to Heat – Some applications can use waste heat to supplement another heating process such as supplementing space heating requirements or utilizing an economizer to preheat feed water.

Available Tools to Develop Projects

The DOE has developed a suite of software tools to evaluate existing boiler systems and provide benefit estimates from a suite of efficiency and performance tools. Other resources such as energy assessments on specific industries, best practices, and literature resources are available at the DOE Advanced Manufacturing website (http://www1.eere.energy.gov/manufacturing/tech_deployment/steam.html). The providing local utilities also offer technical assistance in developing efficiency projects.

EFFICIENCY INCENTIVES AND FINANCING

There are many business reasons for undertaking efficiency projects, including rising energy prices, high demand use charges, environmental concerns and regulations, increased productivity, and business sustainability. Despite these strong business cases and potentially short payback periods for capital investments, financing and incentives are necessary to help implement efficiency projects (AP NORC). Implementing efficiency projects on industrial applications often requires a large initial capital outlay, time to implement the project, and personnel to administer the project. Often the largest hurdle is securing the initial capital to undertake the project. Providing efficiency incentives and loan programs can help overcome the limited capital improvement budgets that businesses have for such projects. Additionally, incentive programs also can provide funding and technical assistance in developing a project which also helps limit staff hours allocated to these projects. Incentives

available for efficiency projects include direct rebate incentives often administered through the local utility, tax incentives, and favorable loan terms. Some resources to find available incentives include:

- Flex Your Power: www.fypower.org
- CEC low-interest loans for energy efficiency projects:
www.energy.ca.gov/efficiency/financing/index.html
- Energy Star: http://www.energystar.gov/index.cfm?c=tax_credits.tx_index
- WRCOG HERO program: <http://herofinancing.com/HEROFinancing/>

SOUTHERN CALIFORNIA'S ENERGY FUTURE

The energy use projections presented above represent a base case scenario of energy use in the South Coast Basin in the near future. The control measures proposed as SIP commitments for the PM_{2.5} attainment and progress toward the ozone standard do not in themselves cause substantial change in current energy consumption. However, in order to meet the ozone standards and GHG goals, energy consumption related NO_x and carbon emissions would need to be reduced. In the transportation sector, fleet turnover along with newer emission control designs will help reduce criteria pollutants from this sector but as shown in Figure 10-5 these reductions alone will not be enough to meet federal ozone standards by the 2023 deadline.

To greatly impact energy usage, attain healthful air quality levels, and meet the 2050 climate change goals, significant technology shifts are needed in the transportation sector, including efficiency shifts and increased renewable sources of energy, especially for electricity production.

Transportation and goods movement are our largest energy consumption sectors, responsible for 80% of NO_x emissions and 70% of the CO₂. The majority of our transportation and goods movement activities rely on the internal combustion engine, which has dominated these sectors for well over the past hundred years and is inherently energy inefficient. Reliance on internal combustion engines results in a vehicle fleet that utilizes only 20% of the gasoline energy consumed for mobility while the rest is lost primarily to wasted heat. From the over \$26 billion spent on gasoline in 2008 within the South Coast Basin, this significant inefficiency means over \$20 billion in gasoline costs was wasted as unused heat. On a national level in 2008, \$455 billion was spent on gasoline, thus wasting \$364 billion dollars as unused heat. Other transportation fuels for the most part have a slightly higher efficiency than gasoline; however, a similar situation applies, resulting in the vast majority of the

fuel being wasted as heat. This wastefulness in transportation fuels represents a dramatic opportunity for efficiency increases in the transportation and goods movement sector that would reduce criteria and toxic pollutant emissions, GHG emissions and provide many other co-benefits.

Currently, emerging global markets are developing infrastructures reliant on existing transportation technologies. As these are implemented, more people globally are being exposed to the same transportation-related emissions and will encounter the negative effects of volatile energy prices. It will not take long for the cost benefits of a cleaner more efficient transportation system to be realized, especially when looking at the energy cost savings. The business-as-usual scenario without these changes may cause significant increases and will certainly delay decreases in air pollution related health problems as the population increases, both in California and the rest of the world.

New fuel economy standards will eventually help improve the effectiveness of transportation fuels in providing mobility. More transportation choices are coming into the marketplace providing higher efficiencies that utilize electricity either solely or in hybrid applications. In the jointly developed Vision for Clean Air: A Framework for Air Quality and Climate Planning, information is presented that shows the benefits of implementing these new technologies and renewable energy sources.

As outlined earlier, more renewable power sources will be put online as utilities work toward meeting their obligations under the Renewable Portfolio Standard. Coupling renewable electricity sources with transportation can mean large reductions in the total amount of energy spent for transportation, provide emission reductions in all areas, and support energy independence along with buffering from increasingly volatile transportation fuel prices. Under AB32, there is also a need to implement renewable sources of transportation fuels which would help with GHG reductions.

Transformation of the Energy Sector

The recent shutdown of the San Onofre Nuclear Generating Station has required temporary return to service of two units at the Huntington Beach natural gas plant which had been voluntarily shut down. This event demonstrates the vulnerabilities in the current energy planning process. The planning and investments in the energy infrastructure must consider reliability; reductions in criteria pollutants, air toxics, and greenhouse gases; provide energy security, energy diversity, and energy cost

certainty. The transformation of the energy sector to maximize these co-benefits can start with:

- Coordinated planning efforts – Agencies such as the CEC, CPUC, CARB, AQMD, EPA, and CaISO need to be working closely together in planning and regulatory efforts. A holistic, integrated approach, considering the objectives, constraints, and legal responsibilities of all agencies, needs to be addressed. Regulations and actions by one agency can negatively impact the other agencies. A coordinated planning strategy would not only help to avoid such conflicts, but also identify synergies whereby the goals of multiple agencies could be furthered simultaneously.
- Scheduling for infrastructure and technology needs – New and existing mobile source technologies can provide a more efficient means of mobility and goods movement. Implementing these technologies requires the supporting energy infrastructure to allow acceptance and greater use, similar to the Actions to Deploy Advanced Control Technologies (ADV) measures in Chapter 4 and Appendix IV-B. These efforts should also be implemented in a coordinated manner with multi-agency participation and support.

To achieve these planning objectives, the District will enhance its outreach and coordination efforts with the appropriate state and federal agencies. Through scheduled public hearing testimony, as well as meetings, conferences, workshops, and the formation of interagency working groups, the District desires to help catalyze the coordinated planning efforts that are needed to achieve air quality, climate and energy goals.

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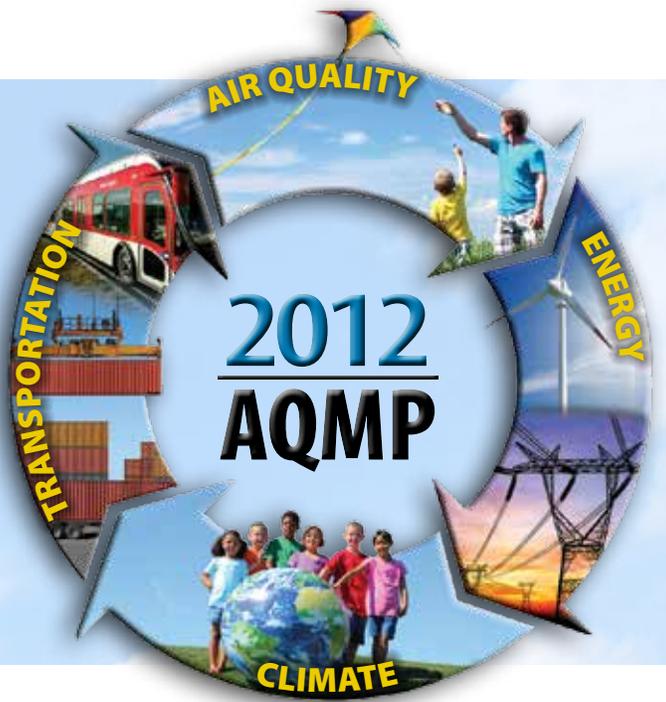
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Chapter 11

Public Process and Participation

South Coast Air Quality Management District
Cleaning the air that we breathe...



CHAPTER 11

PUBLIC PROCESS AND PARTICIPATION

Introduction

Outreach Program

Outreach Results

Summary of Outreach Activities

INTRODUCTION

The development of the 2012 AQMP has been a regional and multi-agency effort including the District Governing Board, CARB, SCAG, and U.S. EPA. The AQMP includes control strategies and contingency measures that demonstrate attainment with NAAQS by specified deadlines. The 2012 AQMP incorporates the latest scientific and technological information and planning assumptions, including SCAG's 2012 Regional Transportation Plan/Sustainable Communities Strategy, an updated emission inventory and modeling methodologies for various source categories.

A 2012 AQMP Advisory Group was formed to provide feedback and recommendations on the development of the plan, including policy and control measure strategies. The Advisory Group represents a diverse cross section of stakeholders such as large and small businesses, government agencies, environmental and community groups, and academia. In addition, a Scientific, Technical, and Modeling Peer Review (STMPR) Advisory Group convened to make recommendations on air quality modeling, emissions inventory and socioeconomic modeling and analysis. Both Advisory Groups meet monthly throughout the AQMP development process and those meetings have been open to the public. There has been ongoing close coordination between U.S. EPA, CARB, SCAG and AQMD staff on all elements of AQMP development.

The 2012 AQMP Outreach Program is designed to go above and beyond the usual Advisory Group, public workshop and public hearing mandates in order to more broadly disseminate information and engage a wider range of stakeholders. The approach aims to achieve multiple goals, such as:

- Reach a broader and more diverse audience
- Ensure greater transparency in the process
- Facilitate greater participation and engagement
- Develop partnerships with stakeholder groups

The outreach approach has been designed to help formulate the policy debate by ensuring all stakeholders share a common set of essential facts, understand the federal requirements, and thus have adequate information to make informed comments on the AQMP.

The clean air goals in the 2012 AQMP will not be achieved solely by the actions of the District. The proposed control strategy will require participation from affected businesses, local communities, and government agencies. Achieving the mutual goals of

protecting public health, providing environmental equity and promoting robust and sustainable economic development can only be accomplished through strong partnerships. Thus, it was critical to inform and engage a wide range of stakeholders on the requirements, approach, goals, and impacts of the 2012 AQMP.

OUTREACH PROGRAM

Audience

Stakeholders for the 2012 AQMP include community members, businesses, trade associations, environmental organizations, health advocates and local, regional, state and federal governmental entities. Table 11-1 lists specific stakeholder groups targeted for outreach efforts. The stakeholders were notified of all Advisory Group meetings, workshops and hearings, as well as invited to participate in various activities designed to assist in the communication and development of the 2012 AQMP.

TABLE 11-1

Stakeholders Targeted for Outreach Efforts

Public Agencies	<ul style="list-style-type: none"> • CARB • California Energy Commission • California Public Utility Commission • California ISO • CalWaste • U.S. EPA • U.S. Department of Transportation • U.S. Department of Energy
Local/Regional Government	<ul style="list-style-type: none"> • Councils of Governments • SCAG • Transportation Commissions • Local Planning Departments • Building and Fire Departments • Tribal Governments

TABLE 11-1 (concluded)
Stakeholders Targeted for Outreach Efforts

Special Districts	<ul style="list-style-type: none"> • School Districts • Sanitation Districts • Water Districts
Health Advocates	<ul style="list-style-type: none"> • Medical Practitioners • Health Researchers • Health Providers
Community/Health/Environmental Groups	<ul style="list-style-type: none"> • Public Health Departments • Environmental Justice Organizations • Environmental Advocacy Groups • Faith-based Organizations • Labor Organizations
Academia	<ul style="list-style-type: none"> • Universities • National Laboratories
Business	<ul style="list-style-type: none"> • Energy Industry (Electricity, Petroleum Refining, Natural Gas, Biofuels, Renewables, etc.) • Green Technologies • Goods Movement and Logistics (Warehousing, Trucking, Railroads, Ports) • Dairy Operations • Printing/Coating Industry • Airport/Airline Operations • Engine Technologies • After-treatment Technologies • Building and Construction Industry • Chambers of Commerce/ Business Councils • Small Businesses

Format

A variety of formats and communication outreach methods were utilized as part of the Outreach Program. The format used for specific activities were tailored to the particular audience or venue where information was being presented and discussed.

Formats and methods include:

- AQMD Advisory Groups and Committee meetings
- Workshops
- Air Quality Institutes
- Open houses and community meetings
- Panel discussions
- Conference calls
- Invited presentations at conferences, seminars, board/council meetings, etc.
- Printed materials such as the Advisor newsletter and collaterals
- Dissemination of information through stakeholder newsletters, websites and other communication tools
- Clean Air Connection email blasts
- Distribution at the AQMD Public Information Center
- AQMD website including postings and links from partner organizations
- Social media
- Telephone “hold” message
- Radio telephone operators

Outreach Activities

As in previous AQMPs, multiple public workshops will be held throughout the District. Mandatory public hearings will also be held as required. In addition, the following specific activities are planned to fulfill the goals of the Outreach Program:

- Key agency coordination meetings (CARB, US EPA, SCAG)
- Local stakeholder meetings
- Topical workshops
- Public agency engagement (CEC, CPUC, solid waste agencies, sanitation districts, transportation agencies, etc.)
- Focus groups
- Peer review
- General public outreach

Key Agency Coordination Meetings

Throughout the 2012 AQMP development process, staff has and continues to hold frequent coordination meetings with the key AQMP partner agencies (CARB, US EPA and SCAG). Meetings occurred several times per month to raise and discuss technical and control strategy issues.

Local Stakeholder Meetings

Meetings with specific stakeholder groups have been held to communicate the purpose and scope of the 2012 AQMP, discuss the concerns of the representatives, solicit recommendations for inclusion, and gather further outreach suggestions. Stakeholders include all those listed in Table 13-1, such as regional council of governments (COGs), county transportation commissions, labor organizations, Chambers of Commerce, business councils, trade groups and associations, environmental and health advocates, community groups, and faith-based organizations. Outreach methods included agendized AQMD presentations at COGs, participation at conferences and seminars, and face-to-face meetings as requested.

Topical Workshops

In addition to the regional workshops/hearings, topical workshops have been held to focus on specific AQMP related topics such as economics, incentives, employment impacts, health benefits, modeling issues, climate/energy, transportation, environmental justice, and goods movement. Attendance at the public workshops has been comprised of experts and interested parties from various stakeholder groups, but focused on a particular aspect of the AQMP. These topical workshops provided a forum where different opinions on specific topics could be shared and discussed.

Focus Groups

Focus groups have been formed to address specific issues including the evaluation and development of the emission inventory and certain control measures. The control measure topics included, but were not limited to, coatings and solvents, petroleum operations, combustion sources, energy, transportation, mobile sources and incentive programs. The focus groups were comprised of experts for the particular inventory or control technology under evaluation, including equipment manufacturers and suppliers. The focus groups met as often as necessary to provide any recommendations.

Peer Review

In addition to the feedback provided by the 2012 AQMP Advisory Group and the STMPR Advisory Group, additional expert peer review of specific 2012 AQMP components has been sought. One specific example is the focused peer review of the socioeconomic/health impacts and a cost-benefit analysis of the 2012 AQMP and associated control strategy. Another review was focused on modeling methods and assumptions, including growth and emissions projections. Expert reviewers were from a diverse range of institutions and perspectives. All results of the peer reviews have and will be made public to ensure full transparency and open discussion of any issues raised.

General Public Outreach

The 2012 AQMP has been included in the District's extensive community outreach activities – including, but not limited to events, community forums and other meetings – to promote better public awareness of its purpose and significance. Non-technical brochures have been created and distributed at events at which AQMD participates. Furthermore, web-based and social media communication tools have been utilized to distribute AQMP information and provide an opportunity for interactive feedback.

OUTREACH RESULTS

As of the release of the Draft Final 2012 AQMP, twenty-two (22) Focus Groups convened, including: Ports of LA and Long Beach, CCEEB, The Gas Company, SoCal Edison, Regulatory Flexibility Group, Sanitation Districts (4 counties), Manufacturer's of Emission Control Association (MECA), Construction Industry Air Quality Coalition (CIAQC), American Coatings Association, Environmental and Health Community, the Environmental Justice Advisory Group (EJAG), Western States Petroleum Association (WSPA), Home Rule Advisory Group (HRAG), Compost/Greenwaste Processing/Composting, Mobile Source Committee, and Mira Loma Focus Group.

Seven (7) topical workshops took place with: Technology Symposium, Transportation Research Board, Independent Lubricant Manufacturing Association (ILMA), Valley Green Building Education Conference and Expo, and AQMD Student Interns.

Eight (8) meetings with key agencies were coordinated with: SCAG, CARB, U.S. EPA, and San Joaquin Valley APCD (SJVAPCD).

Thirty-eight (38) meetings with local stakeholders occurred with: WRCOG (Executive Council), Santa Monica City Council Task Force on the Environment, LA Chamber of Commerce (Energy, Water and Environmental), WRCOG (Technical Advisory Committee), Valley Industrial Commerce Association (VICA), ALA/Inland Empire Air Quality Committee, Inland Action Committee, Loma Linda Chamber of Commerce, San Gabriel Valley Economic Partnership (Legislative Action), SCAG (Energy and Environment), San Fernando Valley COG, STEM Learning Institute, San Bernardino Association of Governments (Major Projects), Orange County COG, San Gabriel Valley COG (Energy, Environment and Natural Resources), South Bay Cities COG, Gateway COG, SCAG (Regional Council), City of Los Angeles, Orange County (OC) COG Technical Advisory Committee, OC Business Council, U.S. Forest Service, Jurupa Valley Parks/ Chamber of Commerce/ Rotary Club, DWP, SoCal Edison, SoCal Gas, Department of Housing and Community Development, City of Redondo Beach, AEP, Environmental Groups, BizFed, SCAG GLUE Council, Association of CA Cities of Orange County (ACCOG), Assembly Budget Committee/ Assemblymember Blumenfield's office, and Inland Action Committee.

Approximately 65 presentations were given regarding the development of 2012 AQMP.

SUMMARY OF OUTREACH ACTIVITIES

Table 11-2 provides the specific efforts conducted to implement the outreach program for the 2012 AQMP. The table provides the outreach format (e.g., an air quality institute, key agency coordination meeting, etc.), the date the activity took place, with what organization(s), what was discussed or accomplished, and the type of activity (e.g., conference, meeting, presentation, etc.). In addition to meeting and giving presentations, AQMD staff also attended a number of meetings conducted by other organizations (e.g., cities, councils of government, chambers, etc.) where a brief announcement regarding the 2012 AQMP was made. These types of announcement include any information in regards to the date, time and location of the next AQMP Advisory meeting or the latest status in the development of the 2012 AQMP. That list is provided in Table 11-3.

TABLE 11-2

Outreach Activities for the 2012 AQMP*

DATE	ORGANIZATION	STAKEHOLDER	TYPE OF OUTREACH
7/19/2011	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
8/18/2011	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
10/20/2011	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
12/15/2011	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
9/28/2011	Technology Symposium	Business, Government	Topical Workshop
1/10/2012	Ports of LA, Long Beach	Business	Focus Group
1/12/2012	SCAG	Public Agency	Key Agency Coordination
1/19/2012	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
1/19/2012	CARB	Public Agency	Key Agency Coordination
1/20/2012	Mobile Source & Stationary Source Committees	Open to Public	Focus Group
1/23/2012	Transportation Research Board	Business, Government	Topical Workshop
1/26/2012	Transportation Research Board	Business, Government	Air Quality Institute
1/31/2012	SCAG	Public Agency	Key Agency Coordination
2/1/2012	SCAG	Public Agency	Key Agency Coordination
2/7/2012	Mobile Source & Stationary Source Committees	Open to Public	Focus Group
2/14/2012	Ports of LA, Long Beach	Business	Focus Group
2/16/2012	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
2/16/2012	CCEEB	Business Representative	Focus Group
3/5/2012	WRCOG (Executive Council)	Council of Governments	Local Stakeholder
3/6/2012	Mobile Source & Stationary Source Committees	Open to Public	Focus Group

TABLE 11-2 (continued)
Outreach Activities for the 2012 AQMP*

DATE	ORGANIZATION	STAKEHOLDER	TYPE OF OUTREACH
3/7/2012	The Gas Company	Business	Focus Group
3/8/2012	Independent Lubricant Manufacturing Association (ILMA)	Business Representative	Topical Workshop
3/15/2012	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
3/15/2012	CARB	Public Agency	Key Agency Coordination
3/28/2012	SoCal Edison, Gas Company	Business	Focus Group
4/10/2012	Regulatory Flexibility Group	Business Representative	Focus Group
4/19/2012	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
4/20/2012	Mobile Source & Stationary Source Committees	Open to Public	Focus Group
4/25/2012	Sanitation Districts (4 counties)	Business	Focus Group
5/3/2012	Santa Monica City Council Task Force on the Environment	Local Government	Local Stakeholder
5/9/2012	LA Chamber of Commerce (Energy, Water & Environmental Sustainability; Transportation & Goods Movement Councils)	Business Representative	Local Stakeholder
5/9/2012	WRCOG (Technical Advisory Committee)	Council of Governments	Local Stakeholder
5/17/2012	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
5/18/12	Mobile Source & Stationary Source Committees	Open to Public	Focus Group
5/22/2012	Manufacturer's of Emission Control Association (MECA)	Business Representative	Focus Group
5/24/12	Environmental Groups	Environmental Advocacy	Local Stakeholder
6/6/2012	Construction Industry Air Quality Coalition (CIAQC)	Business Representative	Focus Group
6/7/2012	Valley Green Building Education Conference and Expo	Business, Environmental	Topical Workshop

TABLE 11-2 (continued)
 Outreach Activities for the 2012 AQMP*

DATE	ORGANIZATION	STAKEHOLDER	TYPE OF OUTREACH
6/7/2012	Valley Industrial Commerce Association (VICA)	Business Representative	Local Stakeholder
6/13/2012	EPA, CARB, SJVAPCD	Public Agency	Key Agency Coordination
6/13/2012	ALA/Inland Empire Air Quality Committee	Health Advocates	Local Stakeholder
6/14/2012	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
6/14/2012	American Coatings Association	Business Representative	Focus Group
6/14/2012	SCAQMD Student Interns	Students	Topical Workshop
6/15/12	Mobile Source & Stationary Source Committees	Open to Public	Focus Group
6/19/2012	Inland Action Committee	Business, Government	Local Stakeholder
6/20/2012	Loma Linda Chamber of Commerce	Business Representative	Local Stakeholder
6/27/2012	San Gabriel Valley Economic Partnership (Legislative Action	Business, Government,	Local Stakeholder
6/28/2012	SCAQMD Student Interns	Students	Topical Workshop
7/5/2012	SCAG (Energy & Environment)	Council of Governments	Local Stakeholder
7/10/2012	Orange County	Open to Public	Public Workshop
7/11/2012	San Bernardino County	Open to Public	Public Workshop
7/11/2012	Riverside County	Open to Public	Public Workshop
7/11/2012	AQMD Advisory Council	Open to Public	Local Stakeholder
7/12/2012	Los Angeles County	Open to Public	Public Workshop
7/12/2012	San Fernando Valley COG	Council of Governments	Local Stakeholder
7/12/2012	Orange County AWMA	Environmental Advocacy	Local Stakeholder

TABLE 11-2 (continued)
Outreach Activities for the 2012 AQMP*

DATE	ORGANIZATION	STAKEHOLDER	TYPE OF OUTREACH
7/13/2012	Environmental/Health Community (NRDC, CBE, etc.)	Environmental Advocacy	Focus Group
7/17/2012	STEM Learning Institute	Academic	Local Stakeholder
7/19/2012	San Bernardino Association of Governments (Major Projects)	Council of Governments	Local Stakeholder
7/19/2012	WRCOG (Technical Advisory Committee)	Council of Governments	Local Stakeholder
7/19/2012	Western States Petroleum Association (WSPA)	Business Representative	Focus Group
7/24/2012	Home Rule Advisory Group	Open to Public	Focus Group
7/24/2012	Los Angeles County	Open to Public	Public Workshop
7/25/2012	Orange County COG	Council of Governments	Local Stakeholder
7/25/2012	San Gabriel Valley COG (Energy, Environment & Natural Resources)	Council of Governments	Local Stakeholder
7/25/2012	Compost/Greenwaste Processing/Composting	Business Representative	Focus Group
7/25/2012	City of Los Angeles	City Government	Local Stakeholder
7/26/2012	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
7/26/2012	American Coatings Association	Business Representative	Focus Group
7/26/2012	South Bay Cities COG	Council of Governments	Local Stakeholder
7/27/2012	Mobile Source & Stationary Source Committees	Open to Public	Focus Group
7/27/2012	EJAG	SCAQMD Advisory Council	Focus Group
8/1/2012	Gateway COG	Council of Governments	Local Stakeholder
8/2/2012	Concerned Residents Against Airport Pollution	Business Representative	Local Stakeholder
8/7/2012	Orange County COG (Technical Advisory Committee)	Council of Governments	Local Stakeholder

TABLE 11-2 (continued)
Outreach Activities for the 2012 AQMP*

DATE	ORGANIZATION	STAKEHOLDER	TYPE OF OUTREACH
8/8/2012	US EPA Staff Meeting	Public Agency	Key Agency Coordination
8/9/2012	Coachella Valley	Open to Public	Public Workshop
8/14/2012	OC Business Council	Business Representative	Local Stakeholder
8/17/2012	US Forest Service	Public Agency	Local Stakeholder
8/21/2012	Mira Loma Focus Group	Environmental Advocacy	Focus Group
8/22/2012	Environmental Groups	Environmental Advocacy	Local Stakeholder
8/23/2012	CEQA Scoping Session	Open to Public	Public Workshop
8/23/2012	Vision for Clean Air Workshop	Open to Public	Public Workshop
8/23/2012	Jurupa Valley Parks Board / Chamber of Commerce / Rotary Club	Business Representative	Local Stakeholder
8/28/2012	DWP, So Cal Edison, So Cal Gas, US EPA	Business Representative	Local Stakeholder
8/29/2012	Department of Housing & Community Development / AQ Task Force	Business Representative	Local Stakeholder
8/29/2012	Inland Empire US Green Building Council	Contractors, Government,	Topical Workshop
9/6/2012	SCAG (Regional Council)	Council of Governments	Local Stakeholder
9/11/2012	Los Angeles County	Open to Public	Public Hearing
9/12/2012	Orange County	Open to Public	Public Hearing
9/13/2012	Riverside County	Open to Public	Public Hearing
9/13/2012	San Bernardino	Open to Public	Public Hearing
9/18/2012	City of Redondo Beach	Open to Public	Local Stakeholder
9/20/2012	AEP	Professionals	Local Stakeholder

TABLE 11-2 (continued)
 Outreach Activities for the 2012 AQMP*

DATE	ORGANIZATION	STAKEHOLDER	TYPE OF OUTREACH
9/20/2012	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
9/21/2012	Mobile Source & Stationary Source Committees	Open to Public	Focus Group
9/26/2012	Environmental Groups	Environmental Advocacy	Local Stakeholder
9/27/2012	Orange County COG	Council of Government	Local Stakeholder
9/27/2012	Department of Housing and Community Development	Task Force	Focus Group
10/18/2012	SCAQMD AQMP Advisory Group Meeting	Open to Public	Topical Workshop
10/19/2012	Mobile Source & Stationary Source Committees	Open to Public	Focus Group
10/24/12	Environmental Groups	Environmental Advocacy	Local Stakeholder
10/26/2012	BizFed	Business Representative	Local Stakeholder
10/30/2012	U.S. EPA	Government	Key Agency Coordination
10/31/2012	SCAG GLUE Council	Council of Government	Local Stakeholder
10/?/2012	Association of CA Cities, Orange County (ACCOC)	Council of Government	Local Stakeholder
11/1/2012	SCAG Regional Council	Council of Government	Local Stakeholder
11/1/2012	BizFed Advocacy Committee	Business Representative	Local Stakeholder
11/2//12	Assembly Budget Committee / Assemblymember Blumenfield's office	Government	Local Stakeholder
11/13/2012	AQMP Regional Public Hearing - LA County	Open to Public	Public Hearing
11/14/2012	AQMP Regional Public Hearing - Orange County	Open to Public	Public Hearing
11/15/2012	AQMP Regional Public Hearing - Riverside County	Open to Public	Public Hearing
11/15/2012	AQMP Regional Public Hearing - San Bernardino County	Open to Public	Public Hearing

TABLE 11-2 (concluded)
Outreach Activities for the 2012 AQMP*

DATE	ORGANIZATION	STAKEHOLDER	TYPE OF OUTREACH
11/16/2012	Mobile Source & Stationary Source Committees	Open to Public	Focus Group
11/24/2012	Joint Socioeconomic Workshop & STMPR Meeting	Open to Public	Topical Workshop
11/27/2012	Inland Action Committee	Business, Government	Local Stakeholder
12/7/2012	SCAQMD Governing Board	Open to Public	Public Hearing

*Events will be added as more meetings are held prior to the December Board Meeting

TABLE 11-3

Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
11/2/2011	Irwindale Business of Commerce	Business
11/16/2011	San Gabriel Valley Economic Partnership	Business
11/17/2011	San Gabriel Valley Council of Governments	Council of Governments
12/14/2011	Assembly member Anthony Portantino	Other Government
12/14/2011	Wilmington Business of Commerce	Business
12/15/2011	Assembly member Roger Hernandez	Other Government
12/15/2011	Government of Diamond Bar	Government
12/15/2011	Government of Walnut	Government
12/16/2011	Legislative Alliance of South Orange County	Business
1/3/2012	Government of Azusa	Government
1/5/2012	League of California Cities - LA Division	Political Organizations
1/5/2012	San Bernardino Association of Governments	Council of Governments
1/5/2012	San Bernardino Business of Commerce	Business
1/10/2012	Government of Torrance	Government
1/10/2012	Loma Linda Business of Commerce	Business
1/11/2012	Government of San Marino	Government
1/11/2012	Irwindale Business of Commerce	Business
1/11/2012	South Pasadena Business of Commerce	Business
1/12/2012	South Bay Cities Council of Governments	Council of Governments
1/12/2012	Upland Business of Commerce	Business
1/13/2012	Crenshaw Business of Commerce	Business
1/14/2012	Irwindale Business of Commerce	Business
1/17/2012	Government of Monrovia	Government
1/18/2012	Government of South Pasadena	Government
1/18/2012	San Gabriel Valley Council of Governments	Council of Governments
1/19/2012	Fontana Business of Commerce	Business
1/19/2012	San Gabriel Valley Council of Governments	Council of Governments
1/19/2012	South Bay Cities Council of Governments	Council of Governments
1/24/2012	Alhambra Business of Commerce	Business

TABLE 11-3 (continued)

Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
1/24/2012	Government of Compton	Government
1/24/2012	Government of Rosemead	Government
1/25/2012	California Black Women's Health Project	Health
1/25/2012	Government of Sierra Madre	Government
1/25/2012	Metropolitan Churches Los Angeles	Faith
1/25/2012	San Gabriel Valley Council of Governments	Council of Governments
1/25/2012	San Gabriel Valley Economic Partnership	Business
1/26/2012	Compton Business of Commerce	Business
1/26/2012	Gardena Business of Commerce	Business
1/26/2012	Greater Los Angeles African American Business of Commerce	Faith
1/26/2012	South Bay Cities Council of Governments	Council of Governments
2/1/2012	Carson Business of Commerce	Business
2/1/2012	Government of Baldwin Park	Government
2/1/2012	Inglewood Airport Business of Commerce	Business
2/1/2012	Redlands Business of Commerce	Business
2/2/2012	Environmental Priorities Network	Faith
2/2/2012	League of California Cities - LA Division	Political Organizations
2/7/2012	Government of Arcadia	Government
2/7/2012	Government of Commerce	Government
2/8/2012	5 Mountain Communities Business of Commerce	Business
2/8/2012	Azusa Business of Commerce	Business
2/8/2012	Redondo Beach Business of Commerce	Business
2/8/2012	San Pedro Peninsula Business	Business
2/8/2012	South Pasadena Business of Commerce	Business
2/8/2012	Wilmington Business of Commerce	Business
2/9/2012	Government of Industry	Government
2/9/2012	Palos Verde Peninsula Business of Commerce	Business
2/9/2012	Torrance Business of Commerce	Business
2/9/2012	Upland Business of Commerce	Business
2/10/2012	Crenshaw - Watts Rotary Club	Business

TABLE 11-3 (continued)

Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
2/10/2012	LAX Business of Commerce	Business
2/10/2012	West Los Angeles Business of Commerce	Business
2/14/2012	Government of Duarte	Government
2/14/2012	Pomona Business of Commerce	Business
2/14/2012	San Pedro Peninsula Business of Commerce	Business
2/15/2012	Black Business Association	Business
2/15/2012	Environmental Charter High School	Education
2/16/2012	Fontana Business of Commerce	Business
2/17/2012	Greater Los Angeles African American Business of Commerce	Business
2/17/2012	Torrance Business of Commerce	Business
2/21/2012	Government of San Gabriel	Government
2/21/2012	Santa Monica Business of Commerce	Business
2/22/2012	Carson Business of Commerce	Business
2/22/2012	South Bay Association of Business of Commerce	Business
2/23/2012	South Bay Workforce Investment Board	Industry Trade Groups
2/24/2012	South Bay Cities Council of Governments	Council of Governments
2/24/2012	South Orange County Economic Coalition	Business
3/1/2012	Government of Beverly Hills	Government
3/1/2012	Government of Torrance	Government
3/1/2012	League of California Cities - LA Division	Political Organizations
3/1/2012	Metro	Public Agencies
3/4/2012	Government of Inglewood	Government
3/6/2012	5 Mountain Communities Business of Commerce	Business
3/6/2012	Government of Norwalk	Government
3/6/2012	Concerned Citizens of Compton	Environmental & Community Organizations
3/7/2012	Gateway Council of Governments	Council of Governments
3/7/2012	Inland Empire Air Quality Committee	Health

TABLE 11-3 (continued)

Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
3/7/2012	International Brotherhood of Electrical Worker/National Electrical Contractors Association	Labor
3/7/2012	Irwindale Business of Commerce	Business
3/7/2012	North Orange County Legislative Alliance	Business
3/7/2012	San Gabriel Valley Mountains Regional Conservancy	Environmental & Community Organizations
3/7/2012	Santa Monica Business of Commerce	Business
3/8/2012	100 Black Men	Faith
3/8/2012	Government of Los Angeles	Government
3/8/2012	Government of Santa Fe Springs	Government
3/8/2012	Upland Business of Commerce	Business
3/8/2012	Watts Health Foundation	Health
3/8/2012	Wilmington Neighborhood Council	Environmental & Community Organizations
3/13/2012	Assembly member Isadore Hall	Government Organizations
3/13/2012	Celebrate Life Cancer Church	Faith
3/13/2012	Government of Redondo Beach	Government
3/14/2012	Good Samaritan Hospital/USC	Health
3/14/2012	Inland Empire Resource Conservation District	Environmental & Community Organizations
3/14/2012	Metro	Public Agencies
3/14/2012	South Pasadena Business of Commerce	Business
3/14/2012	Southern California Ecumenical Council	Faith
3/15/2012	Beverly Hills Business of Commerce	Business
3/15/2012	Carson Business of Commerce	Business
3/15/2012	Inland Empire League of California Cities	Political Organizations
3/15/2012	West Hollywood Business of Commerce	Business
3/16/2012	Assemblymember Chris Norby	Government Organizations
3/20/2012	Pasadena Business of Commerce	Business

TABLE 11-3 (continued)

Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
3/20/2012	Temple Government	Government
3/21/2012	Government of Laguna Woods	Government
3/21/2012	San Gabriel Valley Council of Governments	Council of Governments
3/22/2012	Assembly member Tony Mendoza	Government Organizations
3/22/2012	Congress member Grace Napolitano	Government Organizations
3/22/2012	Orange County Council of Governments	Council of Governments
3/22/2012	Port of Los Angeles	Public Agencies
3/22/2012	South Bay Cities Council of Governments	Council of Governments
3/23/2012	South Orange County Economic Coalition	Business
3/27/2012	Alhambra/Rosemead Business of Commerce	Business
3/27/2012	Assembly member Isadore Hall	Government Organizations
3/27/2012	Government of Santa Monica	Government
3/27/2012	San Bernardino County Unified School District (SBCUSD) - Pacific High School AP Science Class	Education
3/28/2012	Dollarhide Senior Center	Environmental & Community Organizations
3/28/2012	San Gabriel Valley Regional Business of Commerce	Business
3/29/2012	San Gabriel Valley Council of Governments	Council of Governments
4/3/2012	Government of Irwindale	Government
4/3/2012	South Bay Association of Business of Commerce	Business
4/4/2012	Inglewood Senior Citizens Center	Environmental & Community Organizations
4/4/2012	Irwindale Business of Commerce	Business
4/4/2012	North Orange County Legislative Alliance	Business
4/4/2012	Santa Monica Business of Commerce	Business
4/5/2012	Westchester Senior Center	Environmental & Community Organizations
4/6/2012	Orange Business of Commerce	Business
4/11/2012	Redlands Business of Commerce	Business

TABLE 11-3 (continued)

Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
4/12/2012	Upland Business of Commerce	Business
4/13/2012	Moreno Valley Business of Commerce	Business
4/13/2012	San Gabriel Valley Economic Partnership	Business
4/16/2012	Government of West Hollywood	Government
4/17/2012	Carson Business of Commerce	Business
4/17/2012	Government of Bradbury	Government
4/17/2012	Government of Norwalk	Government
4/17/2012	Pasadena Business of Commerce	Business
4/19/2012	San Gabriel Valley Council of Governments	Council of Governments
4/25/2012	San Gabriel Valley Economic Partnership	Business
4/25/2012	Wilmington Neighborhood Council	Environmental & Community Organizations
5/1/2012	South Bay Association of Business of Commerce	Business
5/3/2012	League of California Cities - LA Division	Political Organizations
5/8/2012	Government of Redondo Beach	Government
5/8/2012	Loma Linda Business of Commerce	Business
5/9/2012	Athens/Willowbrook Task Force	Environmental & Community Organizations
5/9/2012	Orange County Green Business of Commerce	Business
5/9/2012	Positive Aging Committee	Faith
5/10/2012	Upland Business of Commerce	Business
5/15/2012	Inglewood Business of Commerce	Business
5/16/2012	Inland Empire Asthma Coalition	Health
5/16/2012	San Pedro Business of Commerce	Business
5/18/12 - 5/20/12	California Contract Cities Association	Political Organizations
5/22/2012	Alhambra Business of Commerce	Business
5/23/2012	San Pedro Business of Commerce	Business
5/24/2012	Citizens Climate Lobby - Pasadena Foothills Chapter	Environmental & Community Organizations

TABLE 11-3 (continued)

Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
5/24/2012	South Bay Council of Governments	Council of Governments
5/30/2012	San Gabriel Valley Mountains Regional Conservancy	Environmental & Community Organizations
5/31/2012	San Gabriel Valley Council of Governments	Council of Governments
6/4/2012	Volunteers and Organizations Improving Community's Environment (VOICE)	Environmental & Community Organizations
6/5/2012	5 Mountain Communities	Business
6/5/2012	South Bay Area Business of Commerce	Business
6/6/2012	Santa Monica Business of Commerce	Business
6/7/2012	Irwindale Business of Commerce	Business
6/7/2012	League of CA Cities - Los Angeles Division	Political Organizations
6/8/2012	Government of Torrance	Government
6/8/2012	South Coast Interfaith Council	Faith
6/13/2012	Los Angeles Clean Cities Coalition	Government Organizations
6/13/2012	South Pasadena Business of Commerce	Business
6/14/2012	Wilmington Business of Commerce	Business
6/19/2012	Carson Business of Commerce	Business
6/19/2012	Culver Government Business of Commerce	Business
6/20/2012	Loma Linda Business of Commerce	Business
6/21/2012	San Gabriel Valley Council of Governments	Council of Governments
6/21/2012	San Gabriel Valley Council of Governments	Council of Governments
6/21/2012	San Gabriel Valley Mountains Regional Conservancy	Environmental & Community Organizations
6/22/2012	Assembly member Diane Harkey	Other Government
6/22/2012	Hawthorne Senior Center	Environmental & Community Organizations
6/22/2012	Congressman John Campbell	Other Government
6/22/2012	Senator Mimi Walters	Other Government

TABLE 11-3 (continued)

Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
6/22/2012	South Orange County Regional Business of Commerce	Business
6/22/2012	Stevenson Village Homeowners Association	Environmental & Community Organizations
6/26/2012	Alhambra Business of Commerce	Business
6/26/2012	Inglewood Senior Citizens Center	Environmental & Community Organizations
6/27/2012	Crenshaw Business of Commerce	Business
6/28/2012	Carson Black Business of Commerce	Business
6/28/2012	South Bay Council of Governments	Business
6/29/2012	100 Black Men	Environmental & Community Organizations
6/29/2012	Black Business Association	Industry Trade Groups
6/29/2012	San Gabriel Valley Economic Partnership	Business
7/3/2012	Irwindale Business of Commerce	Business
7/3/2012	South Bay Area Business of Commerce	Business
7/3/2012	Yvonne Burke Senior Center	Environmental & Community Organizations
7/5/2012	Government of Monterey Park	Government
7/10/2012	Pasadena Chamber of Commerce	Business
7/10/2012	Santa Clarita Valley Chamber of Commerce	Business
7/11/2012	Los Angeles Regional Collaborative for Climate Action and Sustainability	Environmental & Community Organizations
7/11/2012	South Pasadena Chamber of Commerce	Business
7/13/2012	Orange County Business Council	Business
7/17/2012	California Institute of Technology	Education
7/17/2012	United Nations Association - Foothill Chapter	Environmental & Community Organizations
7/18/2012	League of Women Voters - West San Gabriel Valley	Environmental & Community Organizations
7/18/2012	Orange County City Managers Association	Political Organizations

TABLE 11-3 (continued)
Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
7/18/2012	Western Riverside Council of Governments	Council of Governments
7/19/2012	Industrial Environmental Coalition of Orange County	Industry Trade Groups
7/19/2012	Pasadena Forward	Environmental & Community Organizations
7/19/2012	San Gabriel Valley Council of Governments	Council of Governments
7/20/2012	Anaheim Chamber of Commerce	Business
7/20/2012	West Orange County Chamber of Commerce	Business
7/25/2012	San Gabriel Valley Council of Governments Energy, Environment & Natural Resources Committee	Council of Governments
7/25/2012	San Gabriel Valley Economic Partnership	Business
7/26/2012	South Bay Cities Council of Governments	Council of Governments
8/1/2012	Gateway Cities Council of Governments	Council of Governments
8/1/2012	Pasadena Sierra Club	Environmental & Community Organizations
8/2/2012	League of California Cities - Los Angeles Division	Political Organizations
8/3/2012	Assemblymember Jose Solorio	Government
8/9/2012	Southern California Chinese-American Environmental Protection Association	Environmental & Community Organizations
8/15/2012	Brea Chamber of Commerce	Business
8/15/2012	California Contract Cities Association	Political Organizations
8/15/2012	Inland Empire Asthma Coalition	Environmental & Community Organizations
8/16/2012	San Gabriel Valley Council of Governments	Council of Governments
8/17/2012	Anaheim Chamber of Commerce	Business
8/17/2012	West Orange County Chamber of Commerce	Business
8/22/2012	Orange County Public Affairs Association	Industry Trade Groups
8/24/2012	San Gabriel Valley Economic Partnership	Business
8/24/2012	South Orange County Economic Coalition	Business
8/29/2012	League of Cities, San Bernardino Legislative Committee	Government

TABLE 11-3 (continued)
Announcements at Other Meetings Regarding the 2012 AQMP

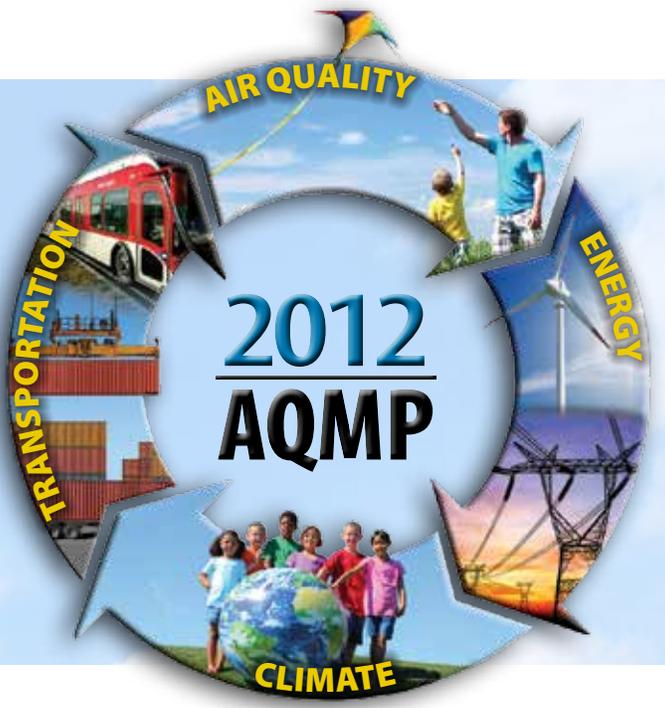
DATE	ORGANIZATION	STAKEHOLDER
9/4/2012	5 Mountain Communities Chambers of Commerce	Business
9/5/2012	Government of Baldwin Park	Government
9/5/2012	Irwindale Chamber of Commerce	Business
9/5/2012	Orange County City Managers Association	Political Organizations
9/6/2012	Riverside Transit Agency Transportation NOW	Public Agencies
9/6/2012	Southern California Association of Governments	Council of Governments
9/7/2012	Greater Corona Valley Chamber of Commerce	Business
9/7/2012	Youth Science Center	Environmental & Community Organizations
9/11/2012	Government of Buena Park	Government
9/11/2012	Government of Duarte	Government
9/11/2012	Government of La Puente	Government
9/12/2012	Indio Chamber of Commerce	Business
9/12/2012	Inland Empire Air Quality Committee	Environmental & Community Organizations
9/12/2012	Los Angeles Area Chamber of Commerce	Business
9/12/2012	South Pasadena Chamber of Commerce	Business
9/13/2012	Independent Cities Association	Political Organizations
9/13/2012	Irwindale Chamber of Commerce	Business
9/14/2012	Orange County Business Council	Business
9/18/2012	Government of Arcadia	Government
9/18/2012	Government of Redondo Beach	Government
9/18/2012	Pasadena Chamber of Commerce	Business
9/19/2012	Monterey Park Environmental Commission	Environmental & Community Organizations
9/20/2012	San Gabriel Valley Council of Governments	Council of Governments
9/21/2012	San Gabriel Valley Mountains Regional Conservancy	Environmental & Community Organizations
9/25/2012	Alhambra Chamber of Commerce	Business
9/25/2012	Government of Sierra Madre	Government

TABLE 11-3 (continued)
Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
9/26/2012	Irwindale Chamber of Commerce	Business
9/26/2012	San Gabriel Valley Economic Partnership	Business
9/27/2012	Orange County Council of Governments	Council of Governments
9/27/2012	United Nations Association - Foothill Chapter	Environmental & Community Organizations
9/28/2012	South Orange County Economic Coalition	Business
10/1/2012	Government of La Verne	Government
10/1/2012	Santa Monica Chamber of Commerce	Business
10/2/2012	5 Mountain Communities Chambers of Commerce	Business
10/2/2012	Government of San Gabriel	Government
10/2/2012	South Bay Cities Council of Governments	Council of Governments
10/3/2012	Athens/Willowbrook Community Task Force	Environmental & Community Organizations
10/3/2012	Gateway Cities Council of Governments	Council of Governments
10/3/2012	Government of Los Angeles	Government
10/3/2012	Irwindale Chamber of Commerce	Business
10/3/2012	North Orange County Legislative Alliance	Business
10/3/2012	Orange County City Managers Association	Political Organizations
10/3/2012	San Gabriel Valley Councils of Governments	Council of Governments
10/3/2012	Santa Monica Chamber of Commerce	Business
10/4/2012	Crenshaw Watts Rotary Club	Business
10/4/2012	League of California Cities - Los Angeles Division	Political Organizations
10/4/2012	Monterey Park Environmental Commission	Environmental & Community Organizations
10/9/2012	Cal State Long Beach	Education
10/9/2012	Government of Compton	Government
10/9/2012	Government of Glendora	Government
10/9/2012	Government of Rosemead	Government
10/9/2012	South Bay M.A.P.S	Environmental & Community Organizations
10/10/2012	Compton Chamber of Commerce	Business
10/10/2012	Indio Chamber of Commerce	Business

TABLE 11-3 (concluded)
Announcements at Other Meetings Regarding the 2012 AQMP

DATE	ORGANIZATION	STAKEHOLDER
10/10/2012	LAX Coastal Area Chamber of Commerce	Business
10/10/2012	South Pasadena Chamber of Commerce	Business
10/12/2012	Moreno Valley Chamber of Commerce	Business
10/16/2012	American Jewish Committee	Environmental & Community Organizations
10/16/2012	Carson Chamber of Commerce	Business
10/16/2012	Culver City Chamber of Commerce	Business
10/16/2012	Government of Diamond Bar	Government
10/17/2012	San Gabriel Valley City Managers Association	Political Organizations
10/17/2012	Western Riverside Council of Governments	Council of Governments
10/18/2012	Association of California Cities - Orange County Division	Political Organizations
10/18/2012	Bear Valley Chamber of Commerce	Business
10/18/2012	Gardena Brownfields Community Relations Committee	Industry Trade Groups
10/18/2012	San Gabriel Valley Council of Governments	Council of Governments
10/19/2012	Anaheim Chamber of Commerce	Business
10/19/2012	Claremont Chamber of Commerce	Business
10/19/2012	Government of Long Beach	Government
10/19/2012	Long Beach Alliance for Children with Asthma	Environmental & Community Organizations
10/19/2012	Robert F. Kennedy Institute of Community & Family Medicine	Environmental & Community Organizations
10/19/2012	West Orange County Chambers Legislative Alliance	Business
10/24/2012	Huntington Beach Chamber of Commerce	Business
10/24/2012	San Gabriel Valley Economic Partnership	Business
10/24/2012	US Green Building Council, Inland Empire	Business



Glossary

South Coast Air Quality Management District
Cleaning the air that we breathe...



GLOSSARY

GLOSSARY

AAQS (Ambient Air Quality Standards): Health and welfare based standards for clean outdoor air that identify the maximum acceptable average concentrations of air pollutants during a specified period of time. (See NAAQS)

Acute Health Effect: An adverse health effect that occurs over a relatively short period of time (e.g., minutes or hours).

Aerosol: Particles of solid or liquid matter that can remain suspended in air for long periods of time because of their small size and light weight.

Air Pollutants: Amounts of foreign and/or natural substances occurring in the atmosphere that may result in adverse effects on humans, animals, vegetation, and/or materials.

Air Quality Simulation Model: A computer program that simulates the transport, dispersion, and transformation of compounds emitted into the air and can project the relationship between emissions and air quality.

Air Toxics: A generic term referring to a harmful chemical or group of chemicals in the air. Typically, substances that are especially harmful to health, such as those considered under EPA's hazardous air pollutant program or California's AB 1807 toxic air contaminant program, are considered to be air toxics. Technically, any compound that is in the air and has the potential to produce adverse health effects is an air toxic.

Airborne Toxic Control Measure (ATCM): A type of control measure, adopted by the CARB (Health and Safety Code Section 39666 et seq.), which reduces emissions of toxic air contaminants from nonvehicular sources.

Alternative Fuels: Fuels such as methanol, ethanol, hydrogen, natural gas, and liquid propane gas that are cleaner burning and help to meet mobile and stationary emission standards.

Ambient Air: The air occurring at a particular time and place outside of structures. Often used interchangeably with "outdoor" air.

APCD (Air Pollution Control District): A county agency with authority to regulate stationary, indirect, and area sources of air pollution (e.g., power plants, highway construction, and housing developments) within a given county, and governed by a district air pollution control board composed of the elected county supervisors and in most cases, representatives of cities within the district.

AQMD (Air Quality Management District): A group or portions of counties, or an individual county specified in law with authority to regulate stationary, indirect, and area sources of air pollution within the region and governed by a regional air pollution control board comprised mostly of elected officials from within the region.

AQMP (Air Quality Management Plan): A Plan prepared by an APCD/AQMD, for a county or region designated as a nonattainment area, for the purpose of bringing the area into compliance with the requirements of the national and/or California Ambient Air Quality Standards. AQMPs designed to attain national ambient air quality standards are incorporated into the State Implementation Plan (SIP).

Area-wide Sources (also known as "area" sources): Smaller sources of pollution, including permitted sources smaller than the districts' emission reporting threshold and those that do not receive permits (e.g. water heaters, gas furnace, fireplaces, woodstoves, architectural coatings) that often are typically associated with homes and non-industrial sources. The CCAA requires districts to include area sources in the development and implementation of the AQMPs.

Atmosphere: The gaseous mass or envelope surrounding the earth.

Attainment Area: A geographic area which is in compliance with the National and/or California Ambient Air Quality Standards (NAAQS OR CAAQS).

Attainment Plan: In general, a plan that details the emission reducing control measures and their implementation schedule necessary to attain air quality standards. In particular, the federal Clean Air Act requires attainment plans for nonattainment areas; these plans must meet several requirements, including requirements related to enforceability and adoption deadlines.

BACT (Best Available Control Technology): The most up-to-date methods, systems, techniques, and production processes available to achieve the greatest feasible emission reductions for given regulated air pollutants and processes. BACT is a requirement of NSR (New Source Review) and PSD (Prevention of Significant Deterioration). BACT as used in federal law under PSD applies to permits for sources of attainment pollutants and other regulated pollutants is defined as an emission limitation based on the maximum degree of emissions reductions allowable taking into account energy, environmental & economic impacts and other costs. [(CAA Section 169(3)]. The term BACT as used in state law means an emission limitation that will achieve the lowest achievable emission rates, which means the most stringent of either the most stringent emission limits contained in the SIP for the class or category of source, (unless it is demonstrated that the limitation is not achievable) or the most stringent emission limit

achieved in practice by that class in category of source. "BACT" under state law is more stringent than federal BACT and is equivalent to federal LAER (lowest achievable emission rate) which applies to nonattainmentNSR permit actions.

BAR (Bureau of Automotive Repair): An agency of the California Department of Consumer Affairs that manages the implementation of the motor vehicle Inspection and Maintenance Program.

CAA (Federal Clean Air Act): A federal law passed in 1970 and amended in 1977 and 1990 which forms the basis for the national air pollution control effort. Basic elements of the act include national ambient air quality standards for major air pollutants, air toxics standards, acid rain control measures, and enforcement provisions.

CAAQS (California Ambient Air Quality Standards): Standards set by the State of California for the maximum levels of air pollutants which can exist in the outdoor air without unacceptable effects on human health or the public welfare. These are more stringent than NAAQS.

CARB (California Air Resources Board): The State's lead air quality agency, consisting of a nine-member Governor-appointed board. It is responsible for attainment and maintenance of the State and federal air quality standards, and is primarily responsible for motor vehicle pollution control. It oversees county and regional air pollution management programs.

CCAA (California Clean Air Act): A California law passed in 1988 which provides the basis for air quality planning and regulation independent of federal regulations. A major element of the Act is the requirement that local APCDs/AQMDs in violation of state ambient air quality standards must prepare attainment plans which identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

CEQA (California Environmental Quality Act): A California law which sets forth a process for public agencies to make informed decisions on discretionary project approvals. The process aids decision makers to determine whether any environmental impacts are associated with a proposed project. It requires significant environmental impacts associated with a proposed project to be identified, disclosed, and mitigated to the maximum extent feasible.

CFCs (Chlorofluorocarbons): Any of a number of substances consisting of chlorine, fluorine, and carbon. CFCs are used for refrigeration, foam packaging, solvents, and propellants. They have been found to cause depletion of the atmosphere's ozone layer.

Chronic Health Effect: An adverse health effect which occurs over a relatively long period of time (e.g., months or years).

CO (Carbon Monoxide): A colorless, odorless gas resulting from the incomplete combustion of fossil fuels. Over 80% of the CO emitted in urban areas is contributed by mobile sources. CO interferes with the blood's ability to carry oxygen to the body's tissues and results in numerous adverse health effects. CO is a criteria air pollutant.

Community Multiscale Air Quality Model (CMAQ): A computer modeling system designed to address air quality as a whole by including state-of-the-science capabilities for modeling multiple air quality issues, including tropospheric ozone, fine particles, toxics, acid deposition, and visibility degradation.

Comprehensive Air Quality Model with Extensions (CAMx): An open-source modeling system for multi-scale integrated assessment of gaseous and particulate air pollution.

Conformity: Conformity is a process mandated in the federal Clean Air Act to insure that federal actions do not impede attainment of the federal health standards. General conformity sets out a process that requires federal agencies to demonstrate that their actions are air quality neutral or beneficial. Transportation conformity sets out a process that requires transportation projects that receive federal funding, approvals or permits to demonstrate that their actions are air quality neutral or beneficial and meet specified emissions budgets in the SIP.

Congestion Management Program: A state mandated program (Government Code Section 65089a) that requires each county to prepare a plan to relieve congestion and reduce air pollution.

Consumer Products: Products for consumer or industrial uses such as detergents, cleaning compounds, polishes, lawn and garden products, personal care products, and automotive specialty products which are part of our everyday lives and, through consumer use, may produce air emissions which contribute to air pollution.

Contingency Measure: Contingency measures are statute-required back-up control measures to be implemented in the event of specific conditions. These conditions can include failure to meet interim milestone emission reduction targets or failure to attain the standard by the statutory attainment date. Both state and federal Clean Air Acts require that District plans include contingency measures.

Electric Motor Vehicle: A motor vehicle which uses a battery-powered electric motor as the basis of its operation. Such vehicles emit virtually no air pollutants. Hybrid electric

motor vehicles may operate using both electric and gasoline powered motors. Emissions from hybrid electric motor vehicles are also substantially lower than conventionally powered motor vehicles.

EMFAC: The EMISSION FACTOR model used by CARB to calculate on-road mobile vehicle emissions. The 2012 AQMP is based on the latest version, EMFAC2011.

Emission Inventory: An estimate of the amount of pollutants emitted from mobile and stationary sources into the atmosphere over a specific period such as a day or a year.

Emission Offset (also known as an emission trade-off): A regulatory requirement whereby approval of a new or modified stationary source of air pollution is conditional on the reduction of emissions from other existing stationary sources of air pollution or banked reductions. These reductions are required in addition to reductions required by BACT.

Emission Standard: The maximum amount of a pollutant that is allowed to be discharged from a polluting source such as an automobile or smoke stack.

FIP (Federal Implementation Plan): In the absence of an approved State Implementation Plan (SIP), a plan prepared by the EPA which provides measures that nonattainment areas must take to meet the requirements of the Federal Clean Air Act.

Fugitive Dust: Dust particles which are introduced into the air through certain activities such as soil cultivation, off-road vehicles, or any vehicles operating on open fields or dirt roadways.

Goods Movement: An event that causes movement of commercial materials or stock typically at ports, airports, railways, highways, including dedicated truck lanes and logistics centers.

Greenhouse Gases (GHGs): A gas in an atmosphere that absorbs long-wave radiant energy reflected by the earth, which warms the atmosphere. GHGs also radiate long-wave radiation both upward to space and back down toward the surface of the earth. The downward part of this long-wave radiation absorbed by the atmosphere is known as the “greenhouse effect.”

Growth Management Plan: A plan for a given geographical region containing demographic projections (i.e., housing units, employment, and population) through some specified point in time, and which provides recommendations for local governments to better manage growth and reduce projected environmental impacts.

Hybrid Electric Vehicles (HEV): Hybrids commercially available today combine an internal combustion engine with a battery and electric motor.

Hydrocarbon: Any of a large number of compounds containing various combinations of hydrogen and carbon atoms. They may be emitted into the air as a result of fossil fuel combustion, fuel volatilization, and solvent use, and are a major contributor to smog. (Also see VOC)

Hydrogen Fuel Cell Vehicles (HFCV): Vehicles that produce zero tailpipe emissions and run on compressed hydrogen fed into a fuel cell "stack" that produces electricity to power the vehicle.

Incentives – tax credits, financial rebates/discounts, or non-monetary conveniences offered to encourage further use of advanced technology and alternative fuels for stationary and mobile sources.

Indirect Source: Any facility, building, structure, or installation, or combination thereof, which generates or attracts mobile source activity that results in emissions of any pollutant (or precursor). Examples of indirect sources include employment sites, shopping centers, sports facilities, housing developments, airports, commercial and industrial development, and parking lots and garages.

Indirect Source Control Program: Rules, regulations, local ordinances and land use controls, and other regulatory strategies of air pollution control districts or local governments used to control or reduce emissions associated with new and existing indirect sources.

Inspection and Maintenance Program: A motor vehicle inspection program implemented by the BAR. It is designed to identify vehicles in need of maintenance and to assure the effectiveness of their emission control systems on a biennial basis. Enacted in 1979 and strengthened in 1990. (Also known as the "Smog Check" program.)

Low Emission Vehicle (LEV): A vehicle which is certified to meet the CARB 1994 emission standards for low emission vehicles.

Maintenance Plan: In general, a plan that details the actions necessary to maintain air quality standards. In particular, the federal Clean Air Act requires maintenance plans for areas that have been redesignated as attainment areas.

Mobile Sources: Moving sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats and airplanes.

Model Year: Model year refers to the actual annual production period (year) as determined by the manufacturer.

NAAQS (National Ambient Air Quality Standards): Standards set by the federal U.S. EPA for the maximum levels of air pollutants which can exist in the outdoor air without unacceptable effects on human health or the public welfare.

Near-Zero Emission Technologies: Refers to emissions approaching zero and will be delineated for individual source categories through the process of developing the Air Quality Management Plan/State Implementation Plan and subsequent control measures.

Nitrogen Oxides (Oxides of Nitrogen, NO_x): A general term pertaining to compounds of nitric acid (NO), nitrogen dioxide (NO₂), and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO₂ is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility.

Nonattainment Area: A geographic area identified by the U.S. EPA and/or CARB as not meeting either NAAQS or CAAQS standards for a given pollutant.

NSR (New Source Review): A program used in development of permits for new or modified industrial facilities which are in a nonattainment area, and which emit nonattainment criteria air pollutants. The two major requirements of NSR are Best Available Control Technology and Emission Offsets.

Ozone: A strong smelling reactive toxic chemical gas consisting of three oxygen atoms. It is a product of the photochemical process involving the sun's energy. Ozone exists in the upper atmosphere ozone layer as well as at the earth's surface. Ozone at the earth's surface causes numerous adverse health effects and is a criteria air pollutant. It is a major component of smog.

Ozone Precursors: Chemicals such as hydrocarbons and oxides of nitrogen, occurring either naturally or as a result of human activities, which contribute to the formation of ozone, a major component of smog.

Partial Zero Emission Vehicle (PZEV): A vehicle emissions rating within California's exhaust emission standards. Cars that are certified as PZEVs meets the Super Ultra Low Emission Vehicle exhaust emission standard and has zero evaporative emissions from its fuel system.

Permit: Written authorization from a government agency (e.g., an air quality management district) that allows for the construction and/or operation of an emissions generating facility or its equipment within certain specified limits.

PIC (Particle-in-Cell) Model: An air quality simulation model that is used to apportion sulfate and nitrate PM10 concentrations to their precursor emissions sources. The PIC model uses spatially and temporally resolved sources of NOx and SOx emissions, with meteorological, physical, and simplified chemical processes, to calculate the contributions from various emission source categories.

Plug-in Electric Vehicle (PEV): Vehicles that can be recharged from any external source of electricity and the electricity is stored in a rechargeable battery pack to drive or contribute to drive the wheels.

Plug-in Hybrid Electric Vehicle (PHEV): Vehicles similar to traditional hybrids but are also equipped with a larger, more advanced battery that allows the vehicle to be plugged in and recharged in addition to refueling with gasoline. This larger battery allows the car to drive on battery alone, gasoline alone, or a combination of electric and gasoline fuels.

PM (Particulate Matter): Solid or liquid particles of soot, dust, smoke, fumes, and aerosols.

PM10 (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the air sacs in the lungs where they may be deposited, resulting in adverse health effects. PM10 also causes visibility reduction and is a criteria air pollutant.

PM2.5 (Particulate Matter less than 2.5 microns): A major air pollutant consisting of tiny solid or liquid particles, generally soot and aerosols. The size of the particles (2.5 microns or smaller, about 0.0001 inches or less) allows them to easily enter the air sacs deep in the lungs where they may cause adverse health effects, as noted in several recent studies. PM2.5 also causes visibility reduction,

PSD (Prevention of Significant Deterioration): A program used in development of permits for new or modified industrial facilities in an area that is already in attainment. The intent is to prevent an attainment area from becoming a non-attainment area. This program, like require BACT as defined in the Clean Air Act and, if an AAQS is projected to be exceeded, Emission Offsets.

Public Workshop: A workshop held by a public agency for the purpose of informing the public and obtaining its input on the development of a regulatory action or control measure by that agency.

Regional Transportation Plan (RTP): The long-range transportation plan developed by the Southern California Association of Governments that provides a vision for transportation investments throughout the South Coast region. The RTP considers the role of transportation in the broader context of economic, mobility, environmental, and quality-of-life goals for the future, identifying regional transportation strategies to address regional mobility needs.

ROG (Reactive Organic Gas): A reactive chemical gas, composed of hydrocarbons, that may contribute to the formation of smog. Also sometimes referred to as Non-Methane Organic Compounds (NMOCs). (Also see VOC)

Salton Sea Air Basin (SSAB): Area comprised of a central portion of Riverside County (the Coachella Valley) and Imperial County. The Riverside county portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

SIP (State Implementation Plan): A document prepared by each state describing existing air quality conditions and measures which will be taken to attain and maintain national ambient air quality standards (see AQMP).

Smog: A combination of smoke, ozone, hydrocarbons, nitrogen oxides, and other chemically reactive compounds which, under certain conditions of weather and sunlight, may result in a murky brown haze that causes adverse health effects. The primary source of smog in California is motor vehicles. **Smog Check Program:** (See Inspection and Maintenance Program.)

Smoke: A form of air pollution consisting primarily of particulate matter (i.e., particles). Other components of smoke include gaseous air pollutants such as hydrocarbons, oxides of nitrogen, and carbon monoxide. Sources of smoke may include fossil fuel combustion, agricultural burning, and other combustion processes.

SO₂ (Sulfur Dioxide): A strong smelling, colorless gas that is formed by the combustion of fossil fuels. Ocean-going vessels, which may use oil high in sulfur content, can be major sources of SO₂. SO₂ and other sulfur oxides contribute to ambient PM_{2.5}. SO₂ is also a criteria pollutant.

South Coast Air Basin (SCAB or Basin): Area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties.

Stationary Sources: Non-mobile sources such as power plants, refineries, and manufacturing facilities which emit air pollutants; can include area sources depending on context.

Super Ultra Low Emission Vehicle (SULEV): A vehicle emissions rating within California's LEV 1 and LEV 2 exhaust emission standards.

Sustainable Communities Strategy (SCS): Planning element in the RTP that integrates land use and transportation strategies that will achieve CARB's greenhouse gas emissions reduction targets.

Toxic Air Contaminant: An air pollutant, identified in regulation by the CARB, which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. TACs are considered under a different regulatory process (California Health and Safety Code Section 39650 et seq.) than pollutants subject to CAAQS. Health effects due to TACs may occur at extremely low levels, and it is typically difficult to identify levels of exposure which do not produce adverse health effects.

Transportation Control Measure (TCM): Under Health & Safety Code Section 40717, any control measure to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions. TCMs can include encouraging the use of carpools and mass transit. Under federal law, includes, but is not limited to those measures listed in CAA Section 108(f).

Ultrafine Particles (UFP): Particles with a diameter less than 0.1 μm (or 100nm).

Ultra Low Emission Vehicle (ULEV): Vehicles with low emission ratings within California's LEV 1 or LEV 2 exhaust emission standards. The LEV 1 emission standards typically apply to cars from 1994-2003. The LEV 2 emission standards were adopted in 1998 and typically apply to cars from 2004-2010.

U.S. EPA (United States Environmental Protection Agency): The federal agency charged with setting policy and guidelines, and carrying out legal mandates for the protection of national interests in environmental resources.

VMT: Total vehicle miles traveled by all or a subset of mobile sources.

Visibility: The distance that atmospheric conditions allow a person to see at a given time and location. Visibility reduction from air pollution is often due to the presence of sulfur and nitrogen oxides, as well as particulate matter.

VOCs (Volatile Organic Compounds): Hydrocarbon compounds that exist in the ambient air. VOCs contribute to the formation of smog and/or may themselves be toxic. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints.

Zero-Emission Technologies: Advanced technology or control equipment that generates zero end-use emissions from stationary or mobile source applications.

Zero Emission Vehicle (ZEV): A vehicle that produces no emissions from the on-board source of power.

**DRAFT FINAL 2012 AQMP
APPENDIX I
VERSION 3**

HEALTH EFFECTS

NOVEMBER 2012

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INTRODUCTION

This document presents a summary of scientific findings on the health effects of ambient air pollutants. The California Health and Safety Code Section 40471(b) requires that the South Coast Air Quality Management District prepare a report on the health impacts of particulate matter in the South Coast Air Basin (SCAB) in conjunction with the preparation of the Air Quality Management Plan revisions. This document, which was prepared to satisfy that requirement, also includes the effects of the other major pollutants.

HEALTH EFFECTS OF AIR POLLUTION

Ambient air pollution is a major public health concern. Excess deaths and increases in illnesses associated with high air pollution levels have been documented in several episodes as early as 1930 in Meuse Valley, Belgium; 1948 in Donora, Pennsylvania; and 1952 in London. Although levels of pollutants that occurred during these acute episodes are now unlikely in the United States, ambient air pollution continues to be linked to increases in illness and other health effects (morbidity) and increases in death rates (mortality).

The adverse health effects associated with air pollution are diverse and include:

- Premature mortality
- Cardiovascular effects
- Increased health care utilization (hospitalization, physician and emergency room visits)
- Increased respiratory illness and other morbidity (symptoms, infections, and asthma exacerbation)
- Decreased lung function (breathing capacity)
- Lung inflammation
- Potential immunological changes

- Increased airway reactivity to a known pharmacological agent exposure - a method used in laboratories to evaluate the tendency of airways to have an increased possibility of developing an asthmatic response
- A decreased tolerance for exercise.
- Adverse birth outcomes such as low birth weights

The evidence linking these effects to air pollutants is derived from population-based observational and field studies (epidemiological) as well as controlled laboratory studies involving human subjects and animals. There have been an increasing number of studies focusing on the mechanisms (that is, on learning how specific organs, cell types, and biomarkers are involved in the human body's response to air pollution) and specific pollutants responsible for individual effects. Yet the underlying biological pathways for these effects are not always clearly understood.

Although individuals inhale pollutants as a mixture under ambient conditions, the regulatory framework and the control measures developed are pollutant-specific for six major outdoor pollutants covered under Sections 108 and 109 of the clean Air Act. This is appropriate, in that different pollutants usually differ in their sources, their times and places of occurrence, the kinds of health effects they may cause, and their overall levels of health risk. Different pollutants, from the same or different sources, oftentimes occur together. Evidence for more than additive effects have not been strong and, as a practical matter, health scientists, as well as regulatory officials, usually must deal with one pollutant at a time in adopting air quality standards. To meet the air quality standards, comprehensive plans are developed such as the Air Quality Management Plan (AQMP), and to minimize toxic exposure a local air toxics control plan is also prepared. These plans examine multiple pollutants, cumulative impacts, and transport issues related to attaining healthful air quality. A brief overview of the effects observed and attributed to various air pollutants is presented in this document.

This summary is drawn substantially from reviews presented previously (SCAQMD, 1996, 2003, 2007), and from reviews on the effects of air pollution by the American Thoracic Society (ATS, 1996), the U.S. EPA reviews for ozone (U.S. EPA, 2006), Carbon Monoxide (U.S. EPA, 2010), and Particulate Matter (U.S. EPA, 2004, 2009), from a published review of the health effects of air pollution (Brunekreef and Holgate, 2002), and from reviews prepared by the California Air Resources Board and the California EPA Office of the Environmental Health Hazard Assessment for

Particulate Matter (CARB, 2002), for Ozone (CARB, 2005) and for NO2 (CARB 2007). Additional materials are from EPA’s current and ongoing review of the ozone standard and health effects (EPA, 2012c, d). More detailed citations and discussions on air pollution health effects can be found in these references.¹

Also included are are tables showing summaries of the EPA conclusions regarding the causality of air pollution health effects. The TABLE 1-1 below shows the five descriptors used by EPATABLE 1-1

Weight of evidence descriptions for causal determination

DETERMINATION	WEIGHT OF EVEDENCE
Causal Relationship	Evidence is sufficient to conclude that there is a causal relationship with relevant pollutant exposures. That is, the pollutant has been shown to result in health effects in studies in which chance, bias, and confounding could be ruled out with reasonable confidence. For example: a) controlled human exposure studies that demonstrate consistent effects; or b) observational studies that cannot be explained by plausible alternatives or are supported by other lines of evidence (e.g., animal studies or mode of action information). Evidence includes replicated and consistent high-quality studies by multiple investigators. Evidence is sufficient to conclude that there is a causal relationship with relevant pollutant exposures. That is, the pollutant has been shown to result in effects in studies in which chance, bias, and confounding could be ruled out with reasonable confidence. Controlled exposure studies (laboratory or small-to medium-scale field studies) provide the strongest evidence for causality, but the scope of inference may be limited. Generally, determination is based on multiple studies conducted by multiple research groups, and evidence that is considered sufficient to infer a causal relationship is usually obtained from the joint consideration of many lines of evidence that reinforce each other.
Likely To Be A Causal Relationship	Evidence is sufficient to conclude that a causal relationship is likely to exist with relevant pollutant exposures, but important uncertainties remain. That is, the pollutant has been shown to result in health effects in studies in which chance and bias can be ruled out with reasonable confidence but potential issues remain. For example: a) observational studies show an association, but copollutant exposures are difficult to address and/or other lines of evidence (controlled human exposure, animal, or mode of action information) are limited or inconsistent; or b) animal toxicological evidence from multiple studies from different

¹ Most of the studies referred to in this appendix are cited in the above sources. Only more recent specific references selected references to provide examples of the types of health effects will be cited in this summary.

DETERMINATION	WEIGHT OF EVIDENCE
	laboratories that demonstrate effects, but limited or no human data are available. Evidence generally includes replicated and high-quality studies by multiple investigators.
Suggestive Of A Causal Relationship	Evidence is suggestive of a causal relationship with relevant pollutant exposures, but is limited because chance, bias and confounding cannot be ruled out. For example, at least one high-quality epidemiologic study shows an association with a given health outcome but the results of other studies are inconsistent.
Inadequate To Infer A Causal Relationship	Evidence is inadequate to determine that a causal relationship exists with relevant pollutant exposures. The available studies are of insufficient quantity, quality, consistency or statistical power to permit a conclusion regarding the presence or absence of an effect.
Not Likely To Be A Causal Relationship	Evidence is suggestive of no causal relationship with relevant pollutant exposures. Several adequate studies, covering the full range of levels of exposure that human beings are known to encounter and considering susceptible populations, are mutually consistent in not showing an effect at any level of exposure.

Adapted from EPA 2009

OZONE

Ozone is a highly reactive compound, and is a strong oxidizing agent. When ozone comes into contact with the respiratory tract, it can react with tissues and cause damage in the airways. Since it is a gas, it can penetrate into the gas exchange region of the deep lung.

The EPA primary standard for ozone, adopted in 2008, is 0.075 ppm averaged over eight hours. The California Air Resources Board (CARB) has established standards of 0.09 ppm averaged over one hour and at 0.070 ppm averaged over eight hours.

A number of population groups are potentially at increased risk for ozone exposure effects. In the ongoing review of ozone, the EPA has identified populations as having adequate evidence for increased risk from ozone exposures include individuals with asthma, younger and older age groups, individuals with reduced intake of certain nutrients such as Vitamins C and E, and outdoor workers. There is suggestive evidence for other potential factors, such as variations in genes related to oxidative metabolism or inflammation, gender, socioeconomic status, and obesity. However further evidence is needed.

The adverse effects reported with short-term ozone exposure are greater with increased activity because activity increases the breathing rate and the volume of air reaching the lungs, resulting in an increased amount of ozone reaching the lungs. Children may be a particularly vulnerable population to air pollution effects because they spend more time outdoors, are generally more active, and have a higher specific ventilation rate than adults (i.e. after normalization for body mass).

A number of adverse health effects associated with ambient ozone levels have been identified from laboratory and epidemiological studies (EPA, 1996; 2006, 2011; ATS, 1996). These include increased respiratory symptoms, damage to cells of the respiratory tract, decrease in lung function, increased susceptibility to respiratory infection, an increased risk of hospitalization, and increased risk of mortality.

Increases in ozone levels are associated with increased numbers of absences from school. The Children's Health Study, conducted by researchers at the University of Southern California, followed a cohort of children that live in 12 communities in Southern California with differing levels of air pollution for several years. A publication from this study reported that school absences in fourth graders for respiratory illnesses were positively associated with ambient ozone levels. An increase of 20 ppb ozone was associated with an 83% increase in illness-related absence rates (Gilliland, 2001).

The number of hospital admissions and emergency room visits for all respiratory causes (infections, respiratory failure, chronic bronchitis, etc.) including asthma shows a consistent increase as ambient ozone levels increase in a community. These excess hospital admissions and emergency room visits are observed when hourly ozone concentrations are as low as 0.06 to 0.10 ppm.

Numerous recent studies have found positive associations between increases in ozone levels and excess risk of mortality. These associations are strongest during warmer months but overall persist even when other variables including season and levels of particulate matter are accounted for. This indicates that ozone mortality effects may be independent of other pollutants (Bell, 2004).

Multicity studies of short-term ozone exposures (days) and mortality have also examined regional differences. Evidence was provided that there were generally higher ozone-mortality risk estimates in northeastern U.S. cities, with the southwest and urban mid-west cities showing lower or no associations (Smith, 2009; Bell, 2008). Another long-term study of a national cohort found that long-term exposures

to ozone were associated with respiratory-related causes of mortality, but not cardiovascular-related causes, when PM_{2.5} exposure were also included in the analysis.

In the ongoing EPA review, it was concluded that there is adequate evidence for asthmatics to be a potentially at risk population (EPA, 2012c). Several population-based studies suggest that asthmatics are at risk from ambient ozone levels, as evidenced by changes in lung function, increased hospitalizations and emergency room visits.

Laboratory studies have also compared the degree of lung function change seen in age and gender-matched healthy individuals versus asthmatics and those with chronic obstructive pulmonary disease. In studies of individuals with chronic obstructive pulmonary disease, the degree of change evidenced did not differ significantly. That finding, however, may not accurately reflect the true impact of exposure on these respiration-compromised individuals. Since the respiration-compromised group may have lower lung function to begin with, the same total change may represent a substantially greater relative adverse effect overall. Other studies have found that subjects with asthma are more sensitive to the short term effects of ozone in terms of lung function and inflammatory response.

Another publication from the Children's Health Study focused on children and outdoor exercise. In southern California communities with high ozone concentrations, the relative risk of developing asthma in children playing three or more sports was found to be over three times higher than in children playing no sports (McConnell, 2002). These findings indicate that new cases of asthma in children may be associated with performance of heavy exercise in communities with high levels of ozone. While it has long been known that air pollution can exacerbate symptoms in individuals with preexisting respiratory disease, this is among the first studies that indicate ozone exposure may be causally linked to asthma onset.

In addition, human and animal studies involving both short-term (few hours) and long-term (months to years) exposures indicate a wide range of effects induced or associated with ambient ozone exposure. These are summarized in Table I-1.

TABLE I-2

Adverse Health Effects of Ozone (O₃) - Summary of Key Findings

O₃ CONCENTRATION AND EXPOSURE HR., PPM	HEALTH EFFECT
<p>Ambient air containing 0.10 - 0.15 daily 1-h max over days to weeks;</p> <p>< 0.06 (Max 8 hour average)</p> <p>< 0.069 (Mean 8 hour average)</p>	<p>Decreased breathing capacity, in children, adolescents, and adults exposed to O₃ outdoors</p> <p>Positive associations of ambient O₃ with respiratory hospital admissions and ED visits in the U.S., Europe, and Canada with supporting evidence from single city studies. Generally, these studies had mean 8-h max O₃ concentrations less than 60 ppb.</p> <p>Positive associations between short-term exposure to ambient O₃ and respiratory symptoms (e.g., cough, wheeze, and shortness of breath) in children with asthma. Generally, these studies had mean 8-h max O₃ concentrations less than 69 ppb.</p>
<p>≥0.12 (1-3h)</p> <p>≥0.06 (6.6h)</p> <p>(chamber exposures)</p>	<p>Decrements in lung function (reduced ability to take a deep breath), increased respiratory symptoms (cough, shortness of breath, pain upon deep inspiration), increased airway responsiveness and increased airway inflammation in exercising adults</p> <p>Effects are similar in individuals with preexisting disease except for a greater increase in airway responsiveness for asthmatic and allergic subjects</p> <p>Older subjects (>50 yrs old) have smaller and less reproducible changes in lung function</p> <p>Attenuation of response with repeated exposure</p>
<p>≥0.12 with prolonged, repeated exposure (chamber exposures)</p>	<p>Changes in lung structure, function, elasticity, and biochemistry in laboratory animals that are indicative of airway irritation and inflammation with possible development of chronic lung disease</p> <p>Increased susceptibility to bacterial respiratory infections in laboratory animals</p>

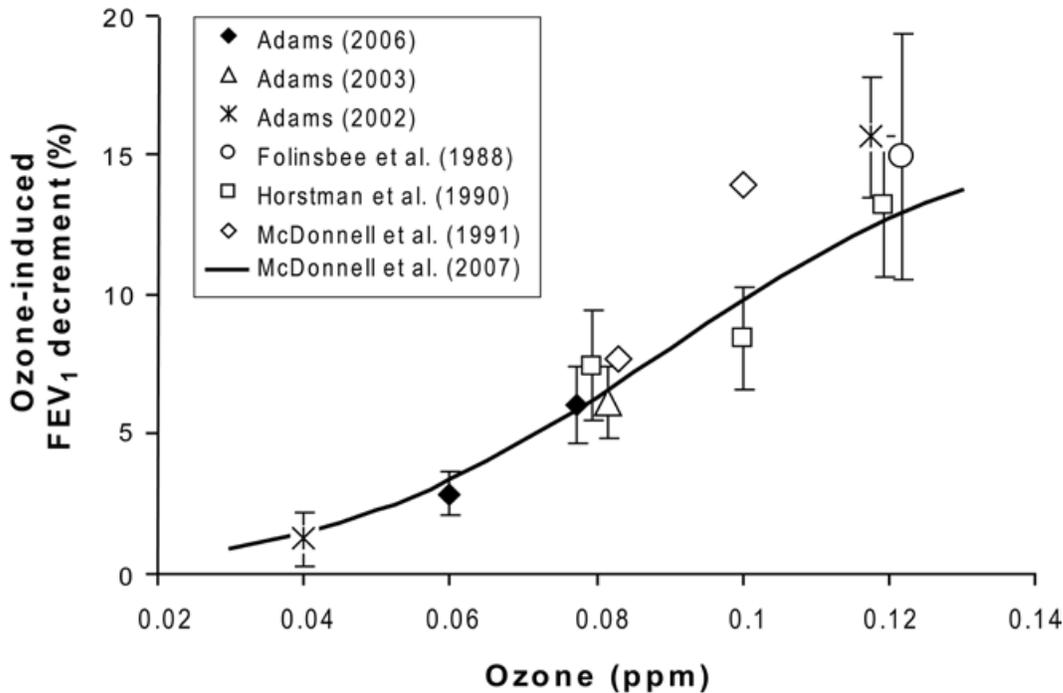
From: SCAQMD, 1996; EPA, 2007, EPA, 2012c, Kim 2011

Some lung function responses (volume and airway resistance changes) observed after a single exposure to ozone exhibit attenuation or a reduction in magnitude with repeated exposures. Although it has been argued that the observed shift in response

is evidence of a probable adaptation phenomenon, it appears that while functional changes may exhibit attenuation, biochemical and cellular changes which may be associated with episodic and chronic exposure effects may not exhibit similar adaptation. That is, internal damage to the respiratory system may continue with repeated ozone exposures, even if externally observable effects (chest symptoms and reduced lung function) disappear. Additional argument against adaptation is that after several days or weeks without ozone exposures, the responsiveness in terms of lung function as well as symptoms returns.

In a laboratory, exposure of human subjects to low levels of ozone causes reversible decrease in lung function as assessed by various measures such as respiratory volumes, airway resistance and reactivity, irritative cough and chest discomfort. Lung function changes have been observed with ozone exposure as low as 0.06 to 0.12 ppm for 6-8 hours under moderate exercising conditions. Similar lung volume changes have also been observed in adults and children under ambient exposure conditions (0.10 - 0.15 ppm 1-hour average). The responses reported are indicative of decreased breathing capacity and are reversible.

The results of several studies where human volunteers were exposed to ozone for 6.6 hours at levels between 0.04 and 0.12 ppm were recently summarized (Brown, 2008). As shown in the figure below, there is an increasing response on lung function with increasing exposure levels in moderately exercising subjects. A more recent study (Kim, 2010) exposed young healthy adults to 0.06 ppm ozone for 6.6 hours while engaging in intermittent moderate exercise. The subjects exhibited a reduction in lung function (FEV1) after exposure.

**FIGURE I-1**

Comparison of mean ozone-induced decrements in lung function following 6.6 hours of ozone exposure (from Brown, 2008)

In addition to controlled laboratory conditions, studies of individuals exercising outdoors, including children attending summer camp, have shown associations of reduced lung function with ozone exposure. There were wide ranges in responses among individuals. EPA's recent review indicates reductions of <1 to 4% in lung function when standardized to an increase of 0.03 ppm for an 8-hour maximum (EPA 2012).

Results of epidemiology studies support the relationship between ozone exposure and respiratory effects. Several, but not all, studies have found associations of short-term ozone levels and hospital admissions and emergency department admissions for respiratory-related conditions (EPA, 2011).

In laboratory studies, cellular and biochemical changes associated with respiratory tract inflammation have also been consistently found in the airway lining after low level exposure to ozone. These changes include an increase in specific cell types and in the concentration of biochemical mediators of inflammation and injury such as Interleukin-1, Tumor Necrosis Factor α , and fibronectin. Indications of lung injury

and inflammatory changes have been observed in healthy adults exposed to ozone in the range of 0.06 to 0.10 ppm for up to 6.6 hours with intermittent moderate exercise.

There may be interactions between ozone and other ambient pollutants. The susceptibility to ozone observed under ambient conditions could be modified due to the combination of pollutants that coexist in the atmosphere or ozone might sensitize these subgroups to the effects of other pollutants.

Some animal studies show results that indicate possible chronic effects including functional and structural changes of the lung. These changes indicate that repeated inflammation associated with ozone exposure over a lifetime may result in cumulative damage to respiratory tissue such that individuals later in life may experience a reduced quality of life in terms of respiratory function and activity level achievable. An autopsy study involving Los Angeles County residents, although conducted many years ago when pollutant levels were higher than currently measured, provided supportive evidence of lung tissue damage (structural changes) attributable to air pollution.

A study of birth outcomes in southern California found an increased risk for birth defects in the aortic and pulmonary arteries associated with ozone exposure in the second month of pregnancy (Ritz et al., 2002). This was the first study linking ambient air pollutants to birth defects in humans. Studies conducted since mostly focusing on cardiac and oral cleft defects have found mixed results, with some showing associations, but others did not.

In summary, adverse effects associated with ozone exposures have been well documented. Although the specific mechanisms of actions are not fully identified, there is a strong likelihood that oxidation of key enzymes and proteins and inflammatory responses play important roles.

It may be instructive to provide the overall EPA staff preliminary conclusions on the causality on ozone health effects for the health outcomes evaluated (EPA, 2011). These are provided in the two tables below. On the basis of the most recent evaluations of ozone health effects, EPA's Clean Air Scientific Advisory Committee has recommended that the NAAQS for ozone be reduced and recommended a range in which 0.070 ppm would be the upper limit. This would be consistent with the California air quality standard.

TABLE I-3

Summary of Causal Determinations for Short-Term Exposures to Ozone

HEALTH CATEGORY	CAUSAL DETERMINATION
Respiratory Effects	Causal relationship
Cardiovascular Effects	Suggestive of a causal relationship
Central Nervous System Effects	Suggestive of a causal relationship
Effects on Liver and Xenobiotic Metabolism	Inadequate to infer a causal relationship
Effects on Cutaneous and Ocular Tissues	Inadequate to infer a causal relationship
Mortality	Likely to be a causal relationship

From EPA, 2011

TABLE I-4

Summary of Causal Determinations for Long-Term Exposures to Ozone

HEALTH CATEGORY	CAUSAL DETERMINATION
Respiratory Effects	Likely to be a causal relationship
Cardiovascular Effects	Suggestive of a causal relationship
Reproductive and Developmental Effects	Suggestive of a causal relationship
Central Nervous System Effects	Suggestive of a causal relationship
Carcinogenicity and Genotoxicity	Inadequate to infer a causal relationship
Mortality	Suggestive of a causal relationship

From EPA, 2012c

PARTICULATE MATTER

Airborne particulates are a complex group of pollutants that vary in source, size and composition, depending on location and time. The components include nitrates, sulfates, elemental carbon, organic carbon compounds, acid aerosols, trace metals, and material from the earth's crust. Substances of biological origin, such as pollen and spores, may also be present.

The National Ambient Air Quality Standard for particulate matter was established in 1971, and set limits on the ambient level of Total Suspended Particulates (TSP). In 1987, the national particulate matter standards were revised to cover particles sized 10 μm (micrometers) aerodynamic diameter and smaller. These can be inhaled through the upper airways and deposited in the lower airways and gas exchange tissues in the lung. These particles are referred to as PM₁₀. EPA initially promulgated ambient air quality standards for PM₁₀ of 150 $\mu\text{g}/\text{m}^3$ averaged over a 24-hour period, and 50 $\mu\text{g}/\text{m}^3$ for an annual average. EPA has since rescinded the annual PM₁₀ standard, but kept the 24-hour standard.

In more recent years additional focus has been placed on particles having an aerodynamic diameter of 2.5 μm or less (PM_{2.5}). A greater fraction of particles in this size range can penetrate and deposit deep in the lungs. The EPA established standards for PM_{2.5} in 1997 and in 2006 lowered the air quality standards for PM_{2.5} to 35 $\mu\text{g}/\text{m}^3$ for a 24-hour average and reaffirmed 15 $\mu\text{g}/\text{m}^3$ for an annual average standard. There was considerable controversy and debate surrounding the review of particulate matter health effects and the consideration of ambient air quality standards (Kaiser, 1997; Vedal, 1997) when the EPA promulgated the initial PM_{2.5} standards in 1997. The California Air Resources Board adopted an air quality standard for PM_{2.5} in 2002 at 12 $\mu\text{g}/\text{m}^3$ annual average.

Since that time, numerous studies have been published, and some of the key studies were closely scrutinized and the data reanalyzed by additional investigators. The reanalyses confirmed the findings of significant result, and there are now substantial new data confirming and extending the range of the adverse health effects of PM_{2.5} exposures.

There are also differences in the composition and sources of particles in the different size ranges that may have implications for health effects. The particles larger than 2.5 μm (often referred to as the coarse fraction) are mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and resuspension of particles from the ground or road surfaces by wind and human activities.

In contrast, particles smaller than 2.5 μm are mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary combustion sources. The particles are either directly emitted or are formed in the atmosphere from gases that are emitted. Components from material in the

earth's crust, such as dust, are also present, with the amount varying in different locations.

Attention to another range of very small particles has been increasing over the last few years. These are generally referred to as "ultrafine" particles, with diameters of 0.1 μm or less. These particles are mainly from fresh emissions of combustion sources, but are also formed in the atmosphere by condensation of vapors that are emitted or by chemical or photochemical reactions with other contaminants in the air.

Ultrafine particles have relatively short half lives (minutes to hours) and rapidly grow through condensation and coagulation process into larger particles within the PM_{2.5} size range. These particles are garnering interest since a limited number of epidemiological and some laboratory studies, though not all, indicate that their toxicity may be higher on a mass basis than larger particles. There is also evidence that these small particles, or toxic components carried on their surface, can translocate from the lung to the blood and to other organs of the body.

There have been several reviews of the health effects of ambient particulate matter (ATS, 1996; Brunekreef, 2002; U.S. EPA, 2004; U.S. EPA, 2009; Brook, 2012). In addition, the California Air Resources Board (CARB) and the Office of Environmental Health and Hazard Assessment (OEHHA) have reviewed the adequacy of the California Air Quality Standards for Particulate Matter (Cal EPA, 2002).

The major types of effects associated with particulate matter include:

- Increased mortality
- Exacerbation of respiratory disease and of cardiovascular disease as evidenced by increases in:
 - Respiratory symptoms
 - Cardiovascular symptoms, non-fatal myocardial infarction
 - Hospital admissions and emergency room visits
 - Physician office visits
 - School absences
 - Adverse birth outcomes

- Effects on lung function
- Changes in lung morphology

The California Air Resources Board has also set air quality standards for particulate matter. The current federal and California standards are listed below:

TABLE I-5

Ambient Air Quality Standards for Particulate Matter

STANDARD	FEDERAL	CALIFORNIA
PM10 24-Hour average	150 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$
PM10 Annual Average	--	20 $\mu\text{g}/\text{m}^3$
PM 2.5 24-Hour Average	35 $\mu\text{g}/\text{m}^3$	--
PM 2.5 Annual Average	15 $\mu\text{g}/\text{m}^3$	12 $\mu\text{g}/\text{m}^3$

Short-Term Exposure Effects

Epidemiological studies have provided evidence for most of the effects listed above. An association between increased daily or several-day-average concentrations of PM10 and excess mortality and morbidity is consistently reported from studies involving communities across the U.S. as well as in Europe, Asia, and South America. A review and analysis of epidemiological literature for acute adverse effects of particulate matter was published by the American Thoracic Society in 1996. Several adverse effects were listed as associated with daily PM10 exposures, as listed in Table I-5. It also appears that individuals who are elderly or have preexistent lung or heart disease are more susceptible than others to the adverse effects of PM10 (ATS, 1996).

Since then many more recent studies have confirmed that excess mortality and morbidity are associated with short term particulate matter levels (Pope, 2006).

Estimates of mortality effects from studies of PM10 exposures range from 0.3 to 1.7% increase for a 10 $\mu\text{g}/\text{m}^3$ increase in PM10 levels. The National Morbidity, Mortality, and Air Pollution Study (NMMAPS), a study of 20 of the largest U.S. cities, determined a combined risk estimate of about a 0.5% increase in total mortality for a 10 $\mu\text{g}/\text{m}^3$ increase in PM10 (Samet, 2000a). This study also analyzed

the effects of gaseous co-pollutants. The results indicated that the association of PM10 and mortality were not confounded by the presence of the gaseous pollutants. When the gaseous pollutants were included in the analyses, the significance of the PM10 estimates remained. The PM10 effects were reduced somewhat when O₃ was also considered and tended to be variably decreased when NO₂, CO, and SO₂ were added to the analysis. These results argue that the effects are likely due to the particulate exposures; they cannot readily be explained by coexisting weather stresses or other pollutants.

TABLE I-6

Combined Effect Estimates of Daily Mean Particulate Pollution (PM10)

	% CHANGE IN HEALTH INDICATOR PER EACH 10 µg/m³ INCREASE IN PM10
Increase in Daily Mortality	
Total deaths	1.0
Respiratory deaths	3.4
Cardiovascular deaths	1.4
Increase in Hospital Usage (all respiratory diagnoses)	
Admissions	1.4
Emergency department visits	0.9
Exacerbation of Asthma	
Asthmatic attacks	3.0
Bronchodilator use	12.2
Emergency department visits*	3.4
Hospital admissions	1.9
Increase in Respiratory Symptom Reports	
Lower respiratory	3.0
Upper respiratory	0.7
Cough	2.5
Decrease in Lung Function	
Forced expiratory volume	0.15
Peak expiratory flow	0.08

* One study only

(Source: American Journal of Respiratory and Critical Care Medicine, Vol. 153, 113-50, 1996)

An expansion of the NMMAPS study to 90 U.S. Cities also reported association with PM10 levels and mortality (Samet 2000b; HEI, 2003). It was discovered that this study was one that used a software package with inappropriate default settings. The investigators have reanalyzed the data using corrected settings for the software (Dominici, 2002a, Dominici 2002b). When the estimates for the 90 cities in the study were recalculated, the estimate changed from 0.41% increase in mortality for a 10 $\mu\text{g}/\text{m}^3$ increase in PM10 to a 0.27% increase. There remained a strong positive association between acute exposure to PM10 and mortality. When an alternate model was used, the average estimate was 0.21% increase in mortality per 10 $\mu\text{g}/\text{m}^3$ increase in PM10 (HEI, 2003). Thus while the quantitative estimate was reduced, the major findings of the study did not change.

Studies of short term exposures to PM2.5 have also found associations with increases in mortality. The NMMAPS study conducted a national analysis of PM2.5 mortality association for 1999-2000. The risk estimates were 0.29% for all-cause mortality and 0.38% for cardio-respiratory mortality (Dominici, 2007). In its recent review EPA determined that estimates for PM2.5 generally are in the range of 0.29 to 1.21% increase in total deaths per 10 $\mu\text{g}/\text{m}^3$ increase in 24-hour PM2.5 levels. The estimates for cardiovascular related mortality range from 0.03 to 1.03% per 10 $\mu\text{g}/\text{m}^3$, and for respiratory mortality estimates range from 1.01 to 2.2% per 10 $\mu\text{g}/\text{m}^3$ 24-hour PM2.5 (EPA,2009). FIGURE I-2 shows a summary of recent studies of mortality and short term PM2.5 exposures.

Several studies have attempted to assess the relative importance of particles smaller than 2.5 μm and those between 2.5 μm and 10 μm (PM10-2.5). While some studies report that PM2.5 levels are better predictors of mortality effects, others suggest that PM10-2.5 is also important. Most of the studies found higher mortality associated with PM2.5 levels than with PM10-2.5. For example, a study of six cities in the U.S. found that particulate matter less than 2.5 μm was associated with increased mortality, but that the larger particles were not. In the EPA review, (EPA, 2009) several studies were presented that found associations of PM10-2.5 and mortality. Some of the studies showed differences by region of the U.S. In one study of 47 U.S. cities that had both PM2.5 and PM10 data available to calculate PM10-2.5 as a difference. Overall, the study found a significant association between

the computed PM10—2.5 and all cause, cardiovascular, and respiratory mortality. The study also reported difference by season and climate area.

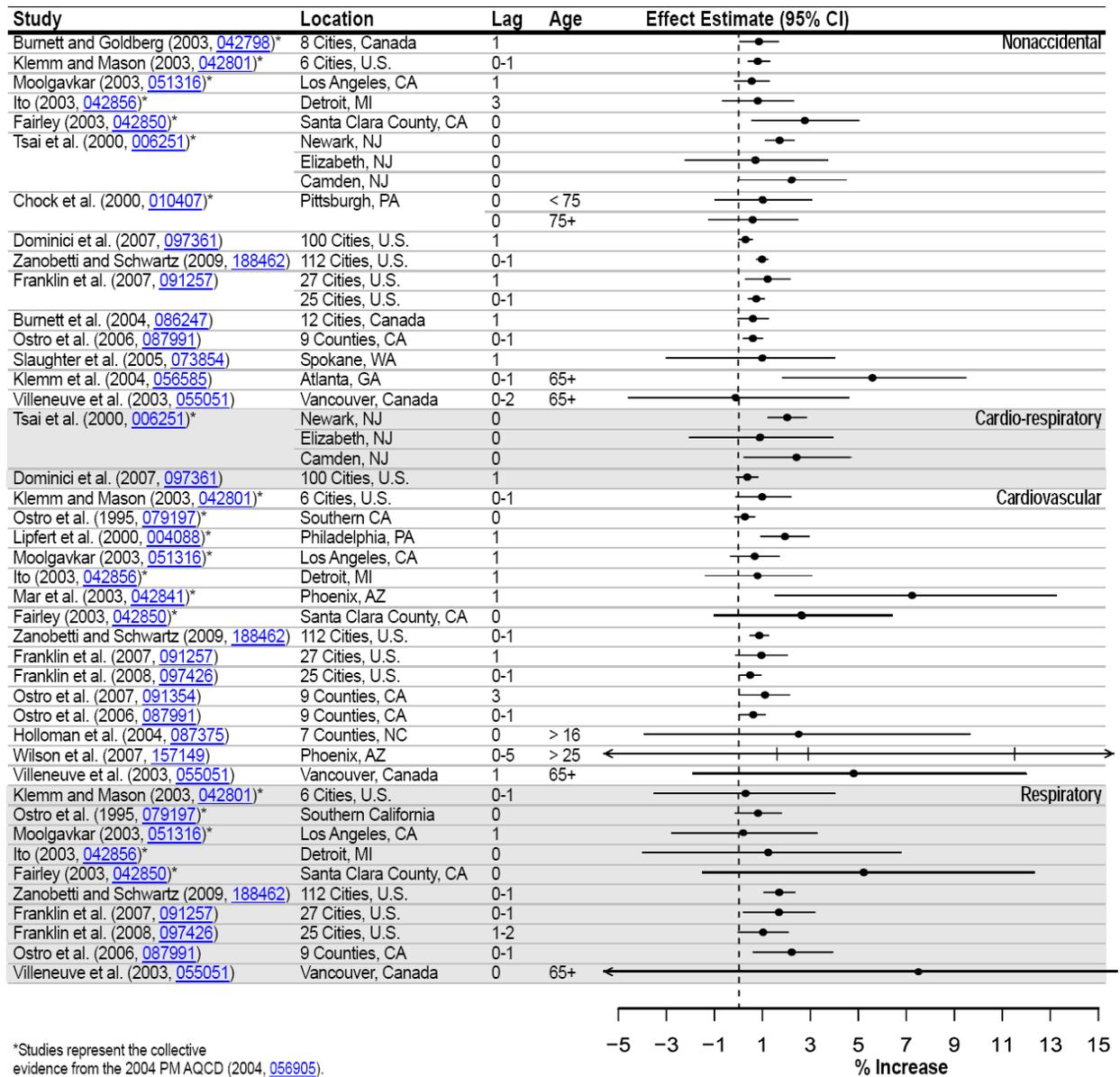


FIGURE I-2

Summary of nonaccidental mortality per 10 µg/m³ increase in PM_{2.5} short- term exposures (from EPA 2009)

The relative importance of both PM_{2.5} and PM_{10-2.5} may vary in different regions depending on the relative concentrations and components, which can also vary by season. A major knowledge gap is the relative paucity of direct measurements of

PM2.5-10. Most estimates are made by subtracting PM2.5 from PM10 measured at co-located samplers, a process that is subject to errors that are inherent in the subtracting of one relatively large number from another. More research is needed to better assess the relative effects of fine (PM2.5) and coarse (PM10-2.5) fractions of particulate matter on mortality. A graph from the EPA review is included below to demonstrate ranges of mortality findings.

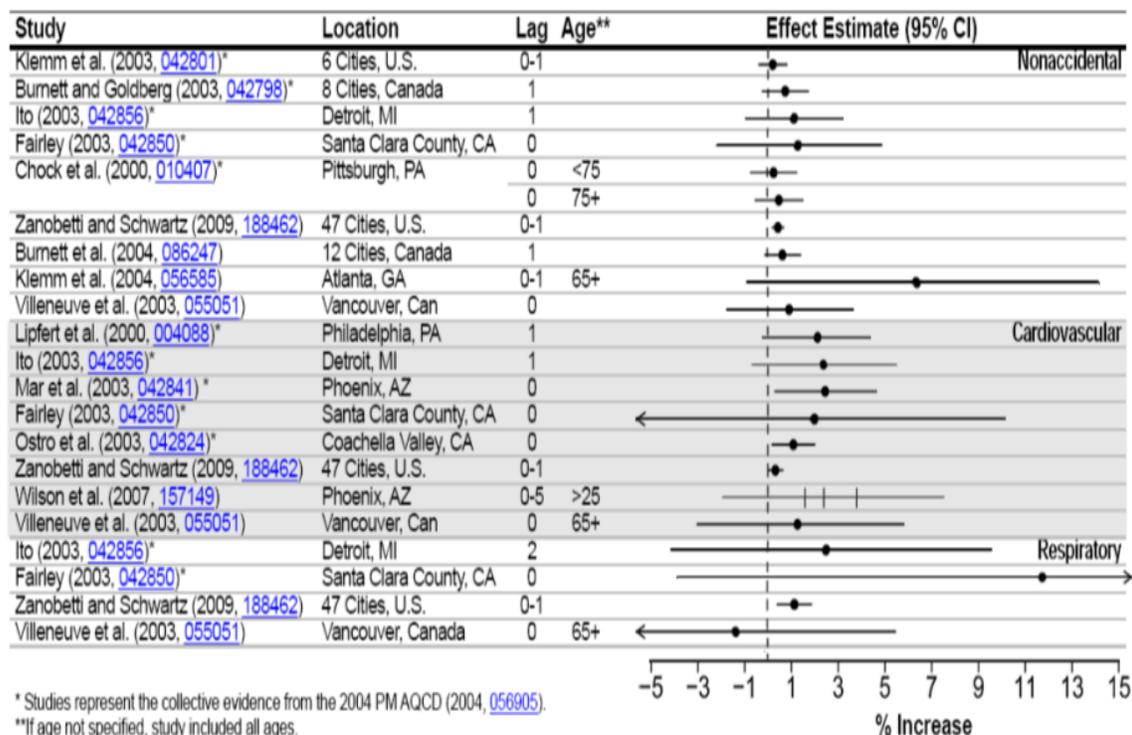


FIGURE I-3

Summary of percent increase in total (nonaccidental) and cause-specific mortality per 10 µg/m³ increase in PM10-2.5 (from EPA, 2009)

A number of studies have evaluated the association between particulate matter exposure and indices of morbidity such as hospital admissions, emergency room visits or physician office visits for respiratory and cardiovascular diseases. The effects estimates are generally higher than the effects for mortality. The effects are associated with measures of PM10 and PM2.5. Effects are also associated with PM10-2.5.

In the NMMAPS study, hospital admissions for those 65 years or older were assessed in 14 cities. Several models were compared to estimate associations of hospital

admissions for specific disease categories and short term PM10 levels. Hospital admissions showed an increase ranging from 0.68 – 1.47% for cardiovascular diseases, a range of 1.46 – 2.88% increase for chronic obstructive pulmonary disease, and a range of 1.31 – 2.86% increase for pneumonia per 10 $\mu\text{g}/\text{m}^3$ increase in PM10. (Samet, 2000) In the reanalysis of the study, (HEI 2003), it was found that using different models the pollution coefficients were on average lower. However the authors note that most of the conclusions of associations with PM10 exposures and hospital admissions held.

Similarly, school absences, lost workdays and restricted activity days have also been used in some studies as indirect indicators of acute respiratory conditions. The results are suggestive of both immediate and delayed impact on these parameters following elevated particulate matter exposures. These observations are consistent with the hypothesis that increased susceptibility to infection follows particulate matter exposures, which is consistent with mechanistic studies that show PM exposures may suppress the immune system.

Some studies have reported that short-term particulate matter exposure is associated with changes in lung function (lung capacity and breathing volume); upper respiratory symptoms (hoarseness and sore throat); and lower respiratory symptoms (increased sputum, chest pain and wheeze). The severity of these effects is widely varied and is dependent on the population studied, such as adults or children with and without asthma. Sensitive individuals, such as those with asthma or pre-existing respiratory disease, may have increased or aggravated symptoms associated with short-term particulate matter exposures. Several studies have followed the number of medical visits associated with pollutant exposures. A range of increases from 1 to 4% for medical visits for respiratory illnesses was found corresponding to a 10 $\mu\text{g}/\text{m}^3$ change in PM10. A number of studies also looked at levels of PM2.5 or PM10-2.5. The findings suggest that both the fine and coarse fractions may have associations with some respiratory symptoms (EPA, 2009).

The biological mechanisms by which particulate matter can produce health effects are being investigated in laboratory studies. Inflammatory responses in the respiratory system in humans and animals exposed to concentrated ambient particles have been measured. These include effects such as increases in neutrophils in the lungs. Other changes reported include increased release of cytokines and interleukins, chemicals released as part of the inflammatory process. The effects of particulate matter may be mediated in part through the production of reactive oxygen species

during the inflammatory process. Several reviews discuss mechanistic studies in more detail (Brunekreef, 2002; Brook, 2004, Brook, 2010).

Long-Term Exposure Effects

While most studies have evaluated the acute effects, some studies specifically focused on evaluating the effects of chronic exposure to PM10 and PM2.5. Studies have analyzed the mortality of adults living in different U.S. cities. After adjusting for important risk factors, taken as a whole these studies found a positive association of deaths and exposure to particulate matter. A similar association was observable in both total number of deaths and deaths due to specific causes. The largest effects were observed from cardiovascular causes and ischemic heart disease. A shortening of lifespan was also reported in these studies.

Since the initial promulgation by EPA of the National Ambient Air Quality Standards for PM2.5, controversy has remained over the association of mortality and exposures to PM2.5. Thus an expanded discussion of this issue is presented below.

Significant associations for PM2.5 for both total mortality and cardiorespiratory mortality were reported in a study following a national cohort recruited by the American Cancer Society for its Cancer Preventions Study II over several years. A re-analysis of the data from this study confirmed the initial finding (Krewski, 2000). In this study, mortality rates and PM2.5 levels were analyzed for 51 metropolitan areas of the U.S. Average levels from monitors in each area were used to estimate exposures. At these levels of aggregation, regional differences in the association of PM2.5 and mortality were noted, with higher associations in the Northeast, and lower or non-significant associations in the West.

The Harvard Six Cities Study evaluated several size ranges of particulate matter and reported significant associations with PM15, PM2.5, sulfates, and non-sulfate particles, but not with coarse particles (PM15 – PM2.5). An extension of the Harvard Six Cities Cohort confirmed the association of mortality with PM2.5 levels (Laden, 2006). These studies provide evidence that the fine particles, as measured by PM2.5, may be more strongly associated with mortality effects from long-term particulate matter exposures than are coarse compounds. An update to this study covering a follow-up over the years 1974 to 2009 (Lepeule, 2012) was recently published. Findings indicated a linear relationship of PM2.5 levels and mortality from all causes, cardiovascular causes, and from lung cancer. According to the

authors, the PM_{2.5} levels decreased over time, but no evidence of a threshold for these effects was found.

A recent study conducted in Canada on long term particulate exposures and mortality found a 15% increase in all-cause mortality and a 31 % increase in ischemic heart disease mortality for a 10 µg.m³ increase in PM_{2.5}. The mean concentration among all study subjects was 8.7 µg/m³ (Crouse, 2012)

A follow-up study of the American Cancer Society cohort confirmed and extended the findings in the initial study. The researchers estimated that, on average, a 10 µg/m³ increase in fine particulates was associated with approximately a 4% increase in total mortality, a 6% increase in cardiopulmonary mortality, and an 8% increase risk of lung cancer mortality (Pope, 2002). The magnitude of effects is larger in the long-term studies than in the short-term investigations. In an additional re analysis and extension of the American Cancer Society cohort from 1982 to 2000 (Krewski, 2009), and including additional metropolitan areas for the most recent years, effects estimates on mortality were similar, though somewhat higher, than those reported previously. The extended analyses included an additional 11 years of cohort follow-up. The authors reported positive and significant association between a 10 µg/m³ change in PM_{2.5} level and all cause, cardiopulmonary disease, and ischemic heart disease deaths. Mortality from ischemic heart disease was associated with the largest risk estimates.

Other national studies include an analysis of mortality and PM_{2.5} exposures in a Medicare population. Zeger and Associates (2008) assembled a Medicare cohort by including all Medicare enrollees residing in zip codes with centroids within 6 miles of a PM_{2.5} monitor. PM_{2.5} data was obtained from the monitoring stations, and mean annual levels were called for the zip codes within six miles of each monitor. The estimated associations between exposures to PM_{2.5} and mortality for the eastern and central portions of the U.S were similar to those previously published in the Six Cities Study and the American Cancer Society cohorts. The authors reported that there were no significant associations between zip code levels of PM_{2.5} and mortality rates in the western region of the U.S. This lack of association was attributed largely to the higher PM_{2.5} levels in Los Angeles area counties compared to other western urban areas, but there were not higher mortality rates in these counties. The authors further reported that they found no associations of PM_{2.5} with mortality in persons aged 85 years or higher.

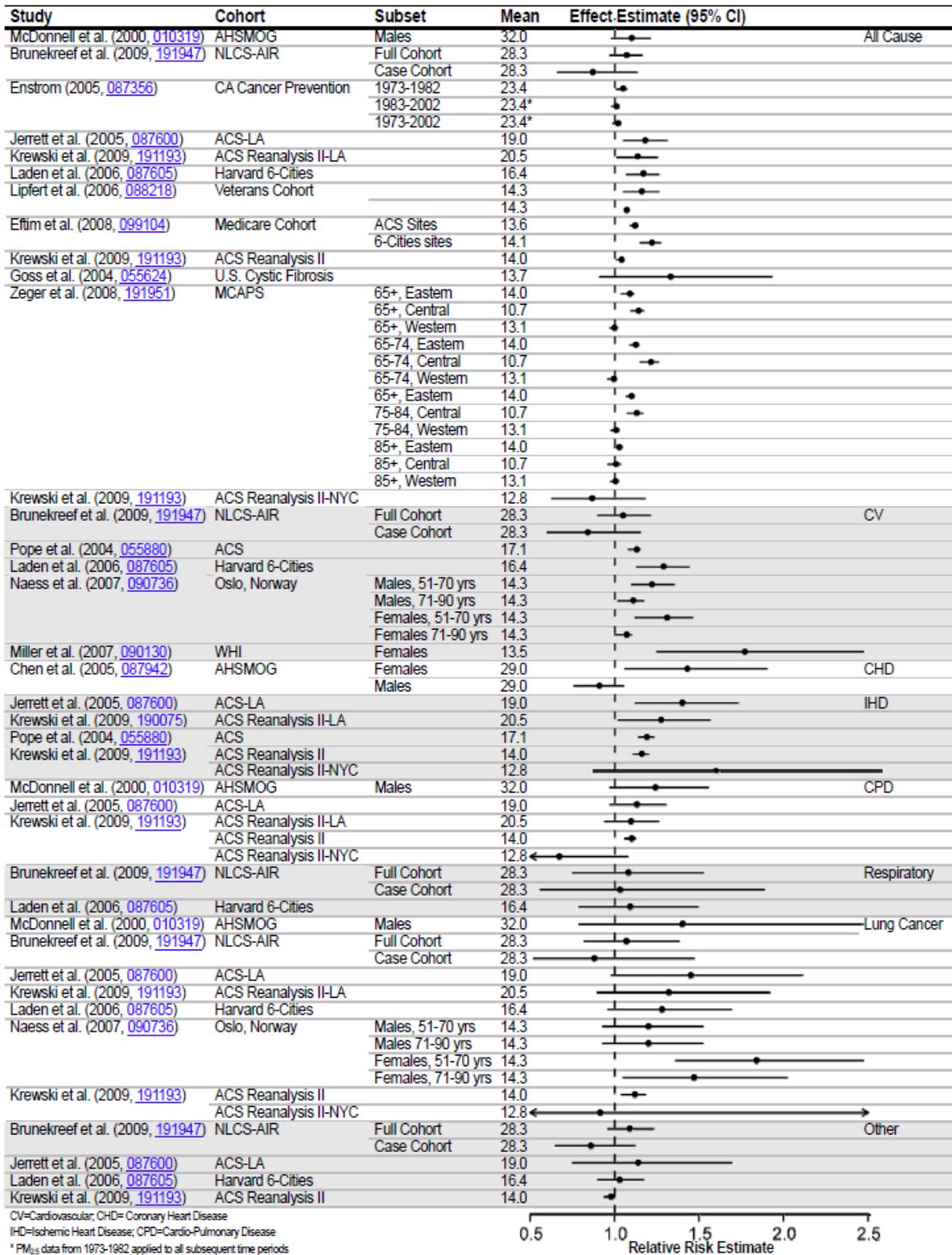


FIGURE I-4
 Mortality risk estimates, long-term exposure to PM_{2.5} in recent cohort studies
 From EPA, 2009

Analyses of mortality and PM_{2.5} levels specific to California have also been reported. A cohort of elderly individuals (average age of 65 yr in 1973) recruited from 11 California counties was followed over several years (Enstrom, 2005). An association for exposure with all cause deaths was reported from 1973–1982. However, no significant association was found in the later time period of 1983–2002. Pollutant levels were taken from ambient monitors and averaged over each county to estimate exposures.

Two recent reports have been released looking at air pollution and health effects in California cohorts. One study (Lipsett, 2011) followed school teachers recruited in 1995, and followed through 2005. Pollutant exposures at the subject residence were estimated using data from ambient monitors, and extrapolated using a distance weighted method. The authors reported significant association of PM_{2.5} levels and mortality from ischemic heart disease, but no associations were found with all cause, cardiovascular, or respiratory disease.

The second study (Jerrett, 2011) followed individuals in California from the American Cancer Society II cohort recruited starting in 1982, with follow up to 2000. Pollutant levels at subject residences were estimated using several methods and models. All but one of the methods found no association of all-cause mortality with PM_{2.5} levels. All exposure estimation methods were reported to have found significant associations with ischemic heart disease mortality, however. The authors noted that mortality rates differ in urban areas compared to non-urban areas, and so included a variable for this in a land use regression model to estimate effects on mortality. When the authors applied the land use regression model including an urban indicator to estimate exposures, all-cause mortality, mortality from cardiovascular disease, and mortality from ischemic heart disease were all significantly associated with PM_{2.5} levels.

Some other studies have focused on particulate matter exposure and health effects in residents of Southern California. Two analyses of the American Cancer Society cohort, for example, focused specifically on the Los Angeles Metropolitan area using methods to estimate exposures on a finer geographical scale than previous studies that used geographic scales at the county or metropolitan area. Using data from monitoring stations in the Los Angeles area, one study applied interpolation methods (Jerrett, 2005) and another applied land use regression techniques (Krewski, 2009) to estimate exposures to the study individuals. Significant associations of PM_{2.5} with mortality from all causes and cardiopulmonary disease were reported, with the

magnitude of risks being higher than those from the national studies of the American Cancer Society cohort. This provides evidence that using methods to provide more detailed exposure estimates can result in stronger associations of PM_{2.5} and mortality. It should be noted that various analyses were presented in these, as well as other, studies to estimate the influence on various individual level and ecologic variables that might also be related to health effects risks. Including such variable generally reduces the association of PM_{2.5} and mortality. It may be illustrative to describe some of the estimates from the various calculations as presented by the authors of the Los Angeles area cohort (Krewski, 2009). In the descriptions below, HR refers to Hazard Ratio expressed for a 10 ug/m³ change in PM_{2.5} exposure, followed by the 95% Confidence Interval. For example, if the Hazard Ratio is 2, the risk would be twice as high, and conversely if the Hazard Ratio is 0.5, the risk would be one half of that of the reference group. Several of the analyses results follow as excerpted from Krewski, 2009. The analyses listed all include PM_{2.5}, plus various additional individual and ecological variables.

TABLE I- 7

Influence of Adding Confounding Variables (From Krewski, 2009)	
Variable Included	Hazard Ratio
PM _{2.5} alone (stratified for age, sex, and race)	1.197 (95% CI, 1.082–1.325);
PM _{2.5} with 44 individual-level covariates	1.143 (95% CI, 1.033–1.266)
With 44 individual-level covariates and the ecologic covariate of unemployment	1.127 (95% CI, 1.015–1.252)
With 44 individual-level covariates and social factors extracted from the principal component analysis (which account for 81% of the total variance in the social variables)	1.142 (95% CI, 1.026–1.272).
With 44 individual-level covariates and all ecologic covariates that were individually associated with mortality in bivariate models with PM _{2.5} exposure	1.115 (95% CI, 1.003–1.239)
Parsimonious model that included 44 individual-level covariates and ecologic confounder variables that both reduced the pollution coefficient and had associations with mortality	1.126 (95% CI, 1.014–1.251)

Another study looked at measuring of atherosclerosis in Southern California residents (Kunzli, 2005). An assessment of the carotid intima-media thickness (CIMT) was used as a measure of subclinical atherosclerosis. The subjects' residential areas were geocoded and a geospatial extrapolation of ambient monitoring data was used to assign annual mean concentrations of ambient PM_{2.5}. The authors report results of an association between atherosclerosis and ambient air pollution as measured by PM_{2.5}. The associations of PM_{2.5} and CIMT were strongest in women ≥ 60 years of age.

The U.S. EPA has recently proposed to lower the annual National Ambient Air Quality Standard for PM_{2.5} (U.S. EPA, 2012a). EPA also released a Regulatory Impact Analysis (U.S. EPA 2012b) which looked at the costs and benefits of alternate PM_{2.5} stand levels. As part of the analysis, EPA also looked at California specific studies regarding PM_{2.5} and mortality published in the scientific literature. The EPA analysis concluded "most of the cohort studies conducted in California report central effect estimates similar to the (nation-wide) all-cause mortality risk estimate we applied from Krewski et al. (2009) and Laden et al. (2006) albeit with wider confidence intervals. A couple cohort studies conducted in California indicate higher risks than the risk estimates we applied." Thus in EPA's judgment the California related studies provided estimates of mortality consistent with or higher than those from the national studies.

Other studies report evidence indicating that particulate matter exposure early in pregnancy may be associated with lowered birth weights (Bobak, 1999). Studies from the U.S., the Czech Republic and Mexico City have reported that neonatal and early postnatal exposure to particulate matter may lead to increased infant mortality. A more recent study in Southern California found increased risks for infant deaths associated with exposures to particulates and other pollutants (Ritz, 2006). These results suggest that fetuses and infants may be subgroups affected by particulate matter exposures.

In addition, some long-term effect studies have reported an increased risk of mortality from lung cancer associated with particulate matter exposures. A study involving California Seventh Day Adventists (very few of whom smoke) has reported an association of lung cancer mortality with PM₁₀ levels. It is not clear from these studies whether the association relates to causation of disease, or whether individuals with cancer are more susceptible to other effects of particles leading to the observed mortality association. A study that followed a large number of

individuals living in the largest U.S. cities found elevated lung cancer risk associated with long-term average PM_{2.5} levels (Pope, 2002).

Several studies have assessed the effects of long-term particulate matter exposure on respiratory symptoms and lung function changes. Associations have been found with symptoms of chronic bronchitis and decreased lung function. A study of school children in 12 communities in Southern California showed significant association of particulate matter with bronchitis or phlegm in children with asthma. These effects were also associated with NO₂ and acid vapor levels (McConnell, 1999).

A cohort of fourth graders from the Southern California communities was followed over a period of four years by the Children's Health Study. A lower rate of growth in lung function was found in children living in areas with higher levels of particulate pollution (Gauderman, 2000). Decreases in lung function growth were associated with PM₁₀, PM_{2.5}, PM_{10-2.5}, acid vapor, and NO₂. There was no association with ozone levels. The investigators were not able to identify independent effects of the pollutants, but noted that motor vehicle emissions are a major source of the pollutants.

A follow-up study on a second cohort of children confirmed the findings that decreased lung function growth was associated with particulates, nitric oxides, and elemental carbon levels (Gauderman, 2002). Elemental carbon is often used as a measure for diesel particulate. Additionally, children who moved to areas with less air pollution were found to regain some of the lung function growth rate (Avol, 2001). By the time the fourth graders graduated from high school, a significant number showed lower lung function. The risk of lower lung function was about five times higher in children with the highest PM_{2.5} exposure when compared to the lowest exposure communities (Gauderman, 2004). These deficits are likely to persist since the children were at the end of their growth period.

Despite data gaps, the extensive body of epidemiological studies has both qualitative and quantitative consistency suggestive of causality. A considerable body of evidence from these studies suggests that ambient particulate matter, alone or in combination with other coexisting pollutants, is associated with significant increases in mortality and morbidity in a community.

In summary, the scientific literature indicates that an increased risk of mortality and morbidity is associated with particulate matter at ambient levels. The evidence for particulate matter effects is mostly derived from population studies with supportive

evidence from clinical and animal studies. Although most of the effects are attributable to particulate matter, co-pollutant effects cannot be ruled out on the basis of existing studies. The difficulty of separating the effects may be due to the fact that particulate levels co-vary with other combustion source pollutants. That is, the particle measurements serve as an index of overall exposure to combustion-related pollution, and some component(s) of combustion pollution other than particles might be at least partly responsible for the observed health effects.

EPA staff has presented conclusions on the particulate matter causal determination of several health effects based on a recent review of the available scientific studies (EPA, 2009). These are depicted in the Tables below.

TABLE I-8

Summary of Causal Determination of PM10-2.5 by Exposure Duration and Health Outcome

SHORT-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Suggestive
Respiratory effects	Suggestive
Mortality	Suggestive
LONG-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Inadequate
Respiratory effects	Inadequate
Mortality	Inadequate
Reproductive and developmental	Inadequate

From EPA, 2009

TABLE I- 9Summary of Causal Determination of PM_{2.5} by Exposure Duration and Health Outcome

SHORT-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Causal
Respiratory effects	Likely to be causal
Central nervous system	Inadequate information to assess
Mortality	Causal
LONG-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Causal
Respiratory effects	Likely to be causal
Mortality	Causal
Reproductive and developmental	Suggestive of a causal relationship
Cancer, Mutagenicity, Genotoxicity	Suggestive of a causal relationship

From EPA, 2009

In terms of estimating health burdens of air pollution exposure, CARB has conducted analyses in the past estimating exposures and quantitative health effects from exposures to particulate matter, as well as other pollutants. The most recent assessment focused on premature mortality and PM_{2.5} (CARB 2010). The analysis used the EPA's risk assessment methodology for calculating premature mortality, and used ambient air quality measurements averaged over a three year period of 2006-2008. The analysis indicated that PM_{2.5} related premature deaths in California as 9,200 with an uncertainty range of 7,300 – 11,000. Estimates were also made at for the California Air Basins. For the South Coast Air Basin, the estimate was 4,900 with an uncertainty range of 3,900 – 6,000. These estimates were calculated using the associations of cardiopulmonary mortality and PM_{2.5} from the second exposure period from Krewski (2009). The associations from the first exposure period from Krewski, 2009 as well as other cause of death estimates were also presented.

Another analysis of health impacts in the South Coast was conducted as part of the Draft Socioeconomic Report for the 2012 AQMP. The analysis estimates the

anticipated costs and benefits of adopting the measures in the Draft 2012 AQMP. Adopting these measures is projected to result in attainment of the national PM2.5 standards by 2014. The total average annual quantifiable benefits associated with implementing the Draft 2012 AQMP were calculated and represent the currently quantifiable benefit of moving beyond today’s regulations to the level needed to meet the federal PM2.5 standards. The table below shows the number of avoided cases (or person-days) by health effect when the Basin attains the PM2.5 standard in 2014 and also in 2023 that result (SCAQMD 2012). The estimates pertain to the projected PM2.5 reductions only.

TABLE I-10

Changes in Number of Health Effects for Future Years*
for Measures contained in the Draft 2012 AQMP

Health Outcome	Number of Avoided Cases	
	2014	2023
Mortality	668	275
Acute Bronchitis	597	186
Non-Fatal Heart Attacks	29 - 261	12 – 105
Lower & Upper Respiratory Symptoms	18,384	5,750
Emergency Room Visits	153	53
Hospital Admissions	151	62
Minor Restricted Activity Days	287,447	95,093
Work Loss Days	48,805	16,055
Asthma Attacks	26,910	3,628

*Changes reflect differences in base and control cases for a given year. Positive numbers are reductions in symptoms due to the Draft 2012 AQMP.

**Person-days.

ULTRAFINE PARTICLES

As noted above, numerous studies have found association of particulate matter levels with adverse effects, including mortality, hospital admissions, and respiratory disease symptoms. The vast majority of these studies used particle mass of PM10 or PM2.5

as the measure of exposure. Some researchers have postulated, however, that ultrafine particles may be responsible for some of the observed associations of particulate matter and health outcomes (Oberdorster, et al, 1995; Seaton, et al, 1995). Ultrafine particles that have aerodynamic diameter of less than 0.1 μm .

Several potential mechanisms have been brought forward to suggest that the ultrafine portion may be important in determining the toxicity of ambient particulates, some of which are discussed below.

For a given mass concentration, ultrafine particles have much higher numbers and surface area compared to larger particles. Particles can act as carriers for other adsorbed agents, such as trace metals and organic compounds; and the larger surface area may transport more of such toxic agents than larger particles.

Smaller particles can also be inhaled deep into the lungs. As much as 50% of 0.02 μm diameter particles are estimated to be deposited in the alveolar region of the lung. There is complex nature of the relation between deposition and particle size. The ultrafine particles generally have higher fractional deposition in the alveolar region. However, for the smaller nucleation mode (particles less than 0.01 μm size) the deposition in the alveolar region declines, but increases in the extrathoracic region.

Exposures of laboratory animals to ultrafine particles have found cardiovascular and respiratory effects. Using an animal model of atherosclerotic disease, mice exposed to concentrated ultrafine particles near a roadway in Southern California showed larger early atherosclerotic lesions than mice exposed to concentrated PM_{2.5} or to filtered air (Araujo, 2008). In a mouse allergy model, exposures to concentrated ultrafine particles resulted in a greater response to antigen challenge to ovalbumin (Li, 2010), indicating that vehicular traffic exposure could exacerbate allergic inflammation in already-sensitized animals.

Controlled exposures of human volunteers to ultrafine particles either laboratory generated or as products of combustion, such as diesel exhaust containing particles, have found physiological changes related to vascular effects. Mills, 2011, for example found exposure to diesel exhaust particulate attenuated both acetylcholine and sodium-nitroprusside -induced vasorelaxation.

There are no long-term studies of human population exposure to ultrafine particle, as there is a lack of a monitoring network in the U.S. There have been several cross sectional epidemiological studies of ultrafine particles, mainly from Europe. Some of these studies found effects on hospital admissions, emergency department visits, for respiratory and cardiovascular effects. Other studies, however, have not found

such effects (EPA, 2009). Concentrations of ultrafine particles can vary geographically, and it is not clear how well central site monitors may capture actual exposures.

EPA staff has presented conclusions on causal determination of several health effects of ultrafine PM based on a recent review of the available scientific studies (EPA, 2009). These are depicted in the table below.

Additional discussion on the sources and health effects of ultrafine particles can be found in Chapter 9 of the 2012 AQMP.

TABLE I-11

Summary of Causal Determination of Ultrafine PM by Exposure Duration and Health Outcome

SHORT-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Suggestive
Respiratory effects	Suggestive
Central nervous system	Inadequate information to assess
Mortality	Inadequate
LONG-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Inadequate
Respiratory effects	Inadequate
Mortality	Inadequate
Reproductive and developmental	Inadequate
Cancer, Mutagenicity, Genotoxicity	Inadequate

From EPA, 2009

CARBON MONOXIDE

The high affinity of carbon monoxide (CO) to bond with oxygen-carrying proteins (hemoglobin and myoglobin) results in reduced oxygen supply in the bloodstream of exposed individuals. The reduced oxygen supply is responsible for the toxic effects

of CO which are typically manifested in the oxygen-sensitive organ systems. The effects have been studied in controlled laboratory environments involving exposure of humans and animals to CO, as well as in population-based studies of ambient CO exposure effects. People with deficient blood supply to the heart (ischemic heart disease) are known to be susceptible to the effects of CO. Protection of this group is the basis of the existing National Ambient Air Quality Standards for CO at 35 ppm for one hour and 9 ppm averaged over eight hours. The health effects of ambient CO have been recently reviewed (U.S. EPA, 2000, 2010).

Inhaled CO has no known direct toxic effect on lungs but rather exerts its effects by interfering with oxygen transport through the formation of carboxyhemoglobin (COHb, a chemical complex of CO and hemoglobin). Exposure to CO is often evaluated in terms of COHb levels in blood measured as percentage of total hemoglobin bound to CO. COHb levels in non-smokers range between 0.3 and 0.7% and 5 to 10% in smokers. COHb levels in excess of 1.5% in a significant proportion of urban non-smoking populations can be considered as evidence of widespread exposure to environmental CO.

Under controlled laboratory conditions, healthy subjects exposed to CO sufficient to result in 5% COHb levels exhibited reduced duration of maximal exercise performance and consumption of oxygen. Studies involving subjects with coronary artery disease who engaged in exercise during CO exposures have shown that COHb levels as low as 2.4% can lead to earlier onset of electrocardiograph changes indicative of deficiency of oxygen supply to the heart. Other effects include an earlier onset of chest pain, an increase in the duration of chest pain, and a decrease in oxygen consumption.

Findings of epidemiologic studies have observed associations between ambient CO concentration and emergency department visits and hospital admissions for ischemic heart disease and other cardiovascular diseases.

Animal studies associated with long-term exposure to CO resulting in COHb levels that are equivalent to those observed in smokers have shown indication of reduction in birth weight and impaired neurobehavior in the offspring of exposed animals.

Epidemiological studies conducted in Southern California have indicated an association with CO exposure during pregnancy to increases in pre-term births (Ritz, 2000). However, the results were not consistent in different areas studied. The increase in the pre-term births was also associated with PM10 levels. Another study found increased risks for cardiac related birth defects with carbon monoxide exposure in the second month of pregnancy (Ritz, 2002). Toxicological studies in

laboratory animals with higher than ambient levels of CO have also reported decrements in birth weight and prenatal growth.

EPA staff has presented conclusions on causal determination of the health effects of carbon monoxide based on a recent review of the available scientific studies (EPA, 2010). These are depicted in the table below.

TABLE I-12

Causal Determination for Health Effects of Carbon Monoxide

SHORT-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular morbidity	Likely to be a causal relationship
Central nervous system	Suggestive
Respiratory morbidity	Suggestive
Mortality	Suggestive
LONG-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular morbidity	Inadequate
Central nervous system	Suggestive
Birth outcomes and developmental effects	Suggestive
Respiratory morbidity	Inadequate
Mortality	Not likely to be a causal relationship

From EPA, 2010

NITROGEN DIOXIDE

The U.S. EPA has recently reviewed the health effects of nitrogen dioxide (U.S. EPA, 2008a). Evidence for low-level nitrogen dioxide (NO₂) exposure effects is derived from laboratory studies of asthmatics and from epidemiological studies. Additional supportive evidence is derived from animal studies.

Some epidemiological studies using the presence of an unvented gas stove as a surrogate for indoor NO₂ exposures suggest an increased incidence of respiratory infections or symptoms in children. However the evidence is mixed.

Recent studies related to outdoor exposure have found health effects associated with ambient NO₂ levels, including respiratory symptoms, respiratory illness, decreased lung function, increased emergency room visits for asthma, and cardiopulmonary mortality. However, since NO₂ exposure generally occurs in the presence of other pollutants, such as particulate matter, these studies are often unable to determine the specific role of NO₂ in causing effects.

The Children's Health Study in Southern California found associations of air pollution, including NO₂, PM₁₀, and PM_{2.5}, with respiratory symptoms in asthmatics (McConnell, 1999). Particles and NO₂ were correlated, and effects of individual pollutants could not be discerned. A subsequent analysis indicated a stronger role for NO₂ (McConnell, 2002).

Ambient levels of NO₂ were also associated with a decrease in lung function growth in a group of children followed for eight years. In addition to NO₂, the decreased growth was also associated with particulate matter and airborne acids. The study authors postulated this may be a result of a package of pollutants from traffic sources (Gauderman, 2004).

Results from controlled exposure studies of asthmatics demonstrate an increase in the tendency of airways to contract in response to a chemical stimulus (bronchial reactivity) or after inhaled allergens. Effects were observed with exposures from 0.1 to 0.3 ppm NO₂ for periods ranging from 30 minutes to 3 hours. A similar response is reported in some studies with healthy subjects at higher levels of exposure (1.5 - 2.0 ppm). Mixed results have been reported when people with chronic obstructive lung disease are exposed to low levels of NO₂.

Short-term controlled studies of animals exposed to NO₂ over a period of several hours indicate cellular changes associated with allergic and inflammatory response and interference with detoxification processes in the liver. In some animal studies

the severity of the lung structural damage observed after relatively high levels of short-term ozone exposure is observed to increase when animals are exposed to a combination of ozone and NO₂.

In animals, longer-term (3-6 months) repeated exposures at 0.25 ppm appear to decrease one of the essential cell-types (T-cells) of the immune system. Non-specific changes in cells involved in maintaining immune functions (cytotoxic T-cells and natural killer cells) have been observed in humans after repeated exposure (4-6 days) to >0.6 ppm of NO₂ (20 min. - 2 hours). All these changes collectively support the observation reported both in population and animal studies of increased susceptibility to infections, as a result of NO₂ exposure.

The U.S. EPA recently adopted a new short-term standard of 100 ppb (0.1 ppm) averaged over 1 hour. The standard was designed to protect against increases in airway reactivity in individuals with asthma observed in controlled exposure studies, as well as respiratory symptoms observed in epidemiological studies. The new standard also requires additional monitoring for NO₂ near roadways.

SULFUR DIOXIDE

Controlled laboratory studies involving human volunteers have clearly identified asthmatics as a very sensitive group to the effects of ambient sulfur dioxide (SO₂) exposures. Healthy subjects have failed to demonstrate any short-term respiratory functional changes at exposure levels up to 1.0 ppm over 1-3 hours.

In exercising asthmatics, brief exposure (5-10 minutes) to SO₂ at levels between 0.2-0.6 ppm can result in significant alteration of lung function, such as increases in airway resistance and decreases in breathing capacity. In some, the exposure can result in severe symptoms necessitating the use of medication for relief. The response to SO₂ inhalation is observable within 2 minutes of exposure, increases further with continuing exposure up to 5 minutes then remains relatively steady as exposure continues. SO₂ exposure is generally not associated with any delayed reactions or repetitive asthmatic attacks.

In epidemiologic studies, associations of SO₂ levels with increases in respiratory symptoms, increases in emergency department visits and hospital admissions for respiratory-related causes have been reported. Coupled with the human clinical studies, these data suggest that SO₂ can trigger asthmatic episodes in individuals with pre-existing asthma.

The U.S. EPA has recently revised the SO₂ air quality standard. The previous 24-hour standard was rescinded and replaced with a new 1-hour standard at 75 ppb (0.075 ppm) to protect against acute asthma attacks in sensitive individuals.

Animal studies have shown that despite SO₂ being a respiratory irritant, it does not cause substantial acute or chronic toxicity in animals exposed at ambient concentrations. However, relatively high exposures (10 ppm of SO₂ for 72 hours) in mice can lead to tissue damage, fluid accumulation and sloughing of respiratory lining. Sensitization to allergies is observable in guinea pigs repeatedly exposed to high levels (72 ppm) of SO₂. This effect needs further evaluation in clinical and population studies to identify any chronic exposure impact on both asthmatic incidence and attacks in a population.

Some epidemiological studies indicate that the mortality and morbidity effects associated with the fine fraction of particles show a similar association with ambient SO₂ levels. In these studies, efforts to separate the effects of SO₂ from fine particles have not been successful. Thus, it is not clear whether the two pollutants act synergistically, or whether being generated from similar combustion sources, they represent the same pollution index for the observed effects.

SULFATES

Based on a level determined necessary to protect the most sensitive individuals, the California Air Resources Board (CARB) in 1976 adopted a standard of 25 µg/m³ (24-hour average) for sulfates. There is no federal air quality standard for sulfates.

In recent years, a vast majority of effects (mortality and morbidity) associated with fine particles (PM_{2.5}) and sulfur dioxide have shown a similar association with ambient sulfate levels in some population studies. The efforts to fully separate the effects of sulfates from other coexisting pollutants have not been successful. This may be due to the fact that these pollutants covary under ambient conditions, having been emitted from common sources; and the effects observed may be due to the combination of pollutants, rather than a single pollutant.

A clinical study involving exposure of human subjects to sulfuric acid aerosol indicated that adolescent asthmatics may be a susceptible population subgroup with some changes in lung function observed with exposures below 100 µg/m³. In

general, however, laboratory exposures of human volunteers to sulfates at or near ambient levels have not found significant changes in lung function.

Results from animal studies involving exposures to sulfuric acid aerosol, ammonium bisulfate and ammonium sulfate indicate that acidic particles (former two) are more toxic than non-acidic particles (latter). In addition, the severity or magnitude of both mortality and morbidity effects is relatively higher in population studies of the eastern United States and Canada where sulfate concentrations are higher than for those observed in the western United States. Mixed results have been reported from studies which attempted to ascertain the role of acidity in determining the observed toxicity.

LEAD

The U.S. EPA has recently reviewed the health effects of ambient lead exposures in conjunction with a review of the NAAQS for lead. (U.S. EPA 2006b; U.S. EPA 2007b). The following summary is taken from these reviews.

There are a number of potential public health effects at low level exposures. The health implications are generally indexed by blood lead levels, which are related to lead exposures both from inhalation as well as from ingestion. As identified by EPA, effects include impacts on population IQ, as well as heart disease and kidney disease. The array of health effects includes the following.

- Heme biosynthesis and related functions;
- Neurological development and function;
- Reproduction and physical development;
- Kidney function;
- Cardiovascular function
- Immune function

Children appear to be sensitive to the neurological toxicity of lead, with effects observed at blood lead concentration ranges of 5 – 10 µg/dL, or possibly lower. No clear threshold has yet been established for such effects.

According to the EPA review, the most important effects observed are neurotoxic effects in children and cardiovascular effects in adults. The effects in children include impacts on intellectual attainment and school performance.

EPA has recently revised the NAAQS for lead to a level of 0.15 $\mu\text{g}/\text{m}^3$ averaged over a rolling 3 month period to protect against lead toxicity. The following two charts, taken from the U.S. EPA review, depict the health effects of lead in relation to blood levels. In the figure, the question marks indicate that there are no demonstrated threshold blood lead levels for health effects. The Centers for Disease Control (CDC) has recently revised their lead hazard information and replaced their level of concern for adverse effects of 10 $\mu\text{g}/\text{dL}$ blood lead level with a childhood blood lead level reference value of 5 $\mu\text{g}/\text{dL}$ to identify children and environments associated with lead-exposure hazards (CDC, 2012).

Lowest Observed Effect Blood Lead Level	Neurological Effects	Hematological Effects	Immune Effects
30 $\mu\text{g}/\text{dL}$		Increased urinary δ -aminolevulinic acid	
15 $\mu\text{g}/\text{dL}$	Behavioral disturbances (e.g., inattention, delinquency) Altered electrophysiological responses	Erythrocyte protoporphyrin (EP) elevation	
10 $\mu\text{g}/\text{dL}$	Effects on neuromotor function CNS cognitive effects (e.g., IQ deficits)	Inhibition of δ -aminolevulinic acid dehydratase (ALAD) ↓ Pyrimidine-5'-nucleotidase (Py5N) activity inhibition	Effects on humoral (\uparrow serum IgE) and cell-mediated (\downarrow T-cell abundance) immunity
5 $\mu\text{g}/\text{dL}$	↓ (???)	↓ (???)	
0 $\mu\text{g}/\text{dL}$			

FIGURE I-5

Summary of Lowest Observed Effect Levels for Key Lead- Induced Health Effects in Children (From U.S. EPA 2007b)

Lowest Observed Effect Blood Lead Level	Neurological Effects	Hematological Effects	Cardiovascular Effects	Renal Effects
30 µg/dL	Peripheral sensory nerve impairment	Erythrocyte protoporphyrin (EP) elevation in males		Impaired Renal Tubular Function
20 µg/dL	Cognitive impairment			
15 µg/dL	Postural sway	Erythrocyte protoporphyrin (EP) elevation in females		
10 µg/dL		Increased urinary δ-aminolevulinic acid		
5 µg/dL		Inhibition of δ-aminolevulinic acid dehydratase (ALAD)	Elevated blood pressure ↓ (???)	Elevated serum creatine (↓ creatine clearance)
0 µg/dL				

FIGURE I-6

Summary of Lowest Observed Effect Levels for Key Lead- Induced Health Effects in Adults
(From U.S. EPA 2007b)

TOXIC AIR CONTAMINANTS

Toxic air contaminants are pollutants for which there generally are no ambient air quality standards. The Toxic Air Contaminant Identification and Control Act (AB1807, Tanner 1983) created California’s program to reduce exposures to air toxics. The air Toxics “Hot Spots” Information and Assessment Act (AB2588, Connelly 1987) supplements the program by requiring statewide air toxics inventories, notification of people exposure to significant health risks, and facility plans to reduce these risks. Under California’s Air Toxics Program, CARB staff and Office of Environmental Health Hazard Assessment (OEHHA) assess the health effects of substances that may pose a risk of adverse health effects. These effects are usually an increased risk for cancer, adverse birth outcomes and respiratory effects. After review by the state Scientific Review Panel, CARB holds a public hearing on whether to formally list substances that may pose a significant risk to public health as a Toxic Air Contaminant.

OEHHA also establishes potency factors for air toxics that are carcinogenic. The potency factors can be used to estimate the additional cancer risk from ambient levels of toxics. This estimate represents the chance of contracting cancer in an individual

over a lifetime exposure to a given level of an air toxic and is usually expressed in terms of additional cancer cases per million people exposed.

For non-cancer health effects, OEHHA has developed acute and chronic Reference Exposure Levels (RELs). RELs are concentrations in the air below which adverse health effects are not likely to occur. Acute RELs refer to short-term exposures, generally of one-hour duration. Chronic RELs refer to long-term exposures of several years. OEHHA has also established 8-hour RELs for several substances. The ratio of ambient concentration to the appropriate REL can be used to calculate a Hazard Index. A Hazard Index of less than one would not be expected to result in adverse effects. The measured levels from the most recent study were below the applicable Reference Exposure Levels.

The District conducted studies on the ambient concentrations and estimated the potential health risks from air toxics (SCAQMD, 2008). In the latest study, a two year monitoring program was undertaken at 10 sites throughout the SCAB over the time period 2004-2006. Over 30 substances were measured, and annual average levels were calculated. The results showed that the overall risk for excess cancer from a 70-year lifetime exposure to the levels of air toxics calculated as the average level at the 10 sites was about 1,200 in a million. The largest contributor to this risk was diesel particulate matter, accounting for about 84% of the air toxics risk. A breakdown of the major contributors to the air toxics risk is shown in the figure below. The average levels measured were also compared to the non-cancer Reference Exposure Levels. The measurements were below the established RELs.

The California Air Resources Board listed Diesel Particulate Matter as a Toxic Air Contaminant in 1989. The International Agency for Research on Cancer, an arm of the World Health Organization, classified diesel exhaust as probably carcinogenic to humans in 1989. Recently IARC convened an international panel of scientists to review the published literature since the initial classification regarding the carcinogenicity of diesel combustion emissions. The panel concluded that Diesel Exhaust is a substance that causes lung cancer in humans (Benbrahim-Tallaa, 2012).

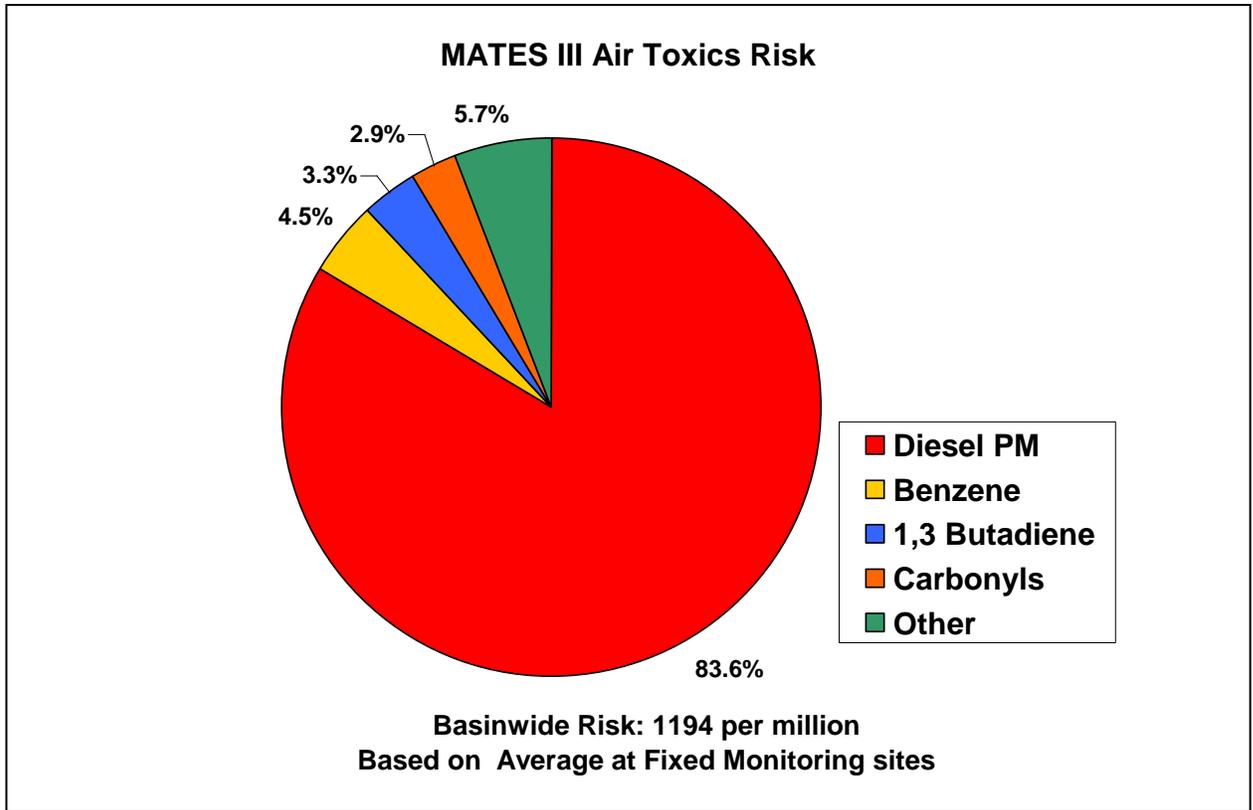


FIGURE I-7

Major Pollutants Contributing to Air Toxics Cancer Risk in the South Coast Air Basin

The key air toxics contributing to risk from mobile and stationary sources are listed in the table below.

TABLE I-13

Key Toxic Air Contaminants in the SCAB

MOBILE SOURCES	STATIONARY SOURCES
Acetaldehyde	Hexavalent Chromium
Benzene	Methylene Chloride
1,3 Butadiene	Nickel
Diesel Particulate Matter	Perchloroethylene
Formaldehyde	Trichloroethylene

CONCLUSION

A large body of scientific evidence shows that the adverse impacts of air pollution in human and animal health are clear. A considerable number of population-based and laboratory studies have established a link between air pollution and increased morbidity and, in some instances, earlier mortality.

As the scientific methods for the study of air pollution health effects has progressed over the past decades, adverse effects have been shown to occur at lower levels of exposure. For some pollutants, no clear thresholds for effects have been demonstrated. The new findings have, in turn, led to the revision and lowering of National Ambient Air Quality Standards which, in the judgment of the Administrator of the U.S. EPA, are necessary to protect public health. The figures below are meant to convey some of the historical context to recent revisions to the NAAQS for ozone and for particulate matter.

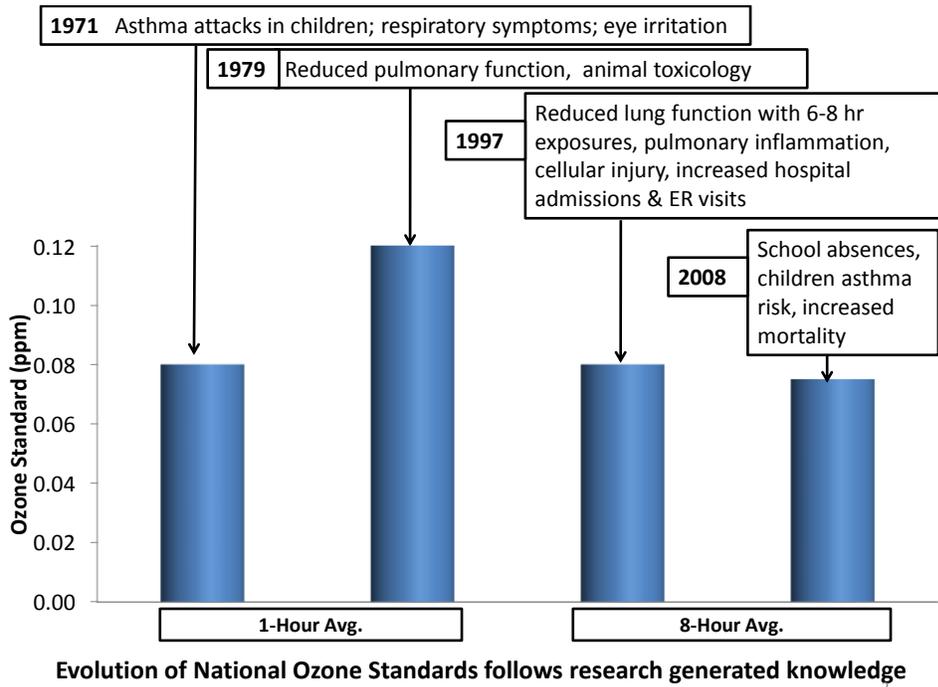


FIGURE I-8

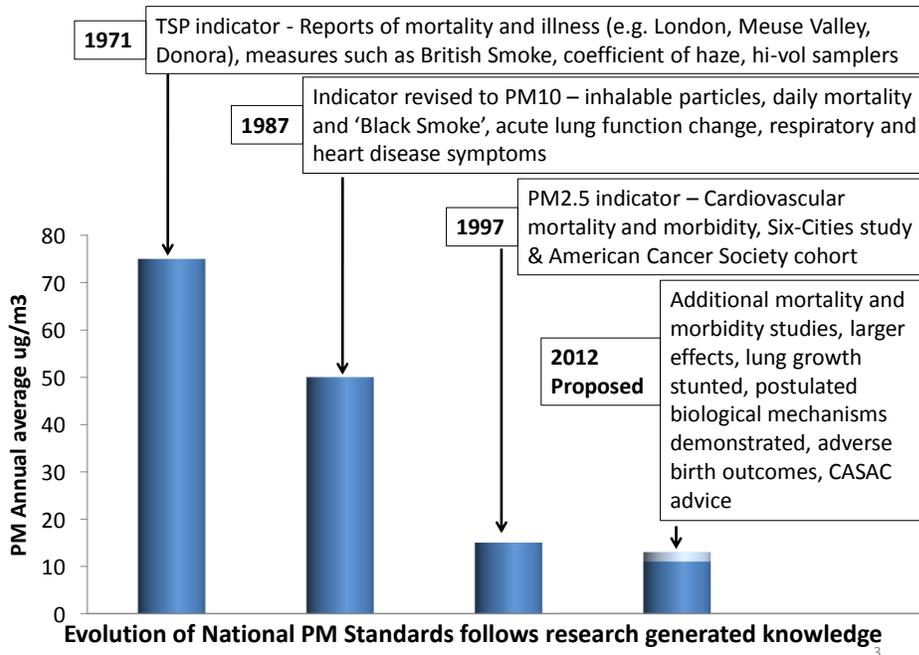


FIGURE I- 9

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ATTACHMENT 1

ROSTER OF THE 2012 AQMP ADVISORY COUNCIL

South Coast AQMD Advisory Council
2012

NAME	AFFILIATION
Greg Adams	Los Angeles County Sanitation Districts
Todd Campbell	Clean Energy Fuels
David Czamanske	Sierra Club of Pasadena
Afif El-Hasan	American Lung Association
John Froines	UCLA School of Public Health
Ed Laird	Laird Coatings Corp
William LaMarr	Small Business Alliance
Julia Lester	ENVIRON
Rita Loof	RadTech
Robert McConnell	USC
J. Wayne Miller	CE-CERT Bourns College of Engineering
Emily Nelson	Consultant
Gary Polakovic	Make Over Earth
Walter Siembab	South Bay COG; Siembab Planning Associates
Sam Soret	Loma Linda University, School of Public Health
Mike Wang	WSPA

ATTACHMENT 2

CARB AND OEHHA COMMENTS

Appendix I-Health Effects was submitted to the following individuals for review and comment:

Linda Smith, Ph.D.
Chief, Health Exposure Assessment Branch
California Environmental Protection Agency
California Air Resources Board (CARB)

Melanie Marty, Ph.D.
Assistant Deputy Director
Scientific Affairs Division
Office of Environmental Health Hazard Assessment (OEHHA)

Copies of their comments follow.

CARB Comments on 2012 Appendix I-Health Effects

From: Smith, Linda@ARB [mailto:lsmith@arb.ca.gov]
Sent: Wednesday, September 26, 2012 1:40 PM
To: Jean Ospital
Cc: Herner, Jorn@ARB
Subject: RE: AQMD Advisory Council Update and Meeting on October 11, 2012

Jean,

Thank you for the opportunity to review and comment on Appendix I of the SC AQMP. Overall, it is a well-written document on the health effects of exposure to the major air pollutants, summarizing the most important literature in the field. Our comments, which are embedded in the document (attached), are brief. There are a few suggestions for improving clarity, and we noted a few minor errors in fact that should be corrected.

Please contact me if you have any questions, and thanks, again. I hope this email finds you well.

Regards,
Linda

***** Linda Tombras Smith, Ph.D.
Chief, Health and Exposure Assessment Branch California Environmental Protection Agency Air Resources Board lsmith@arb.ca.gov

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy cost, see our web site at <http://www.arb.ca.gov>

-----Original Message-----

From: Jean Ospital [mailto:JOspital@aqmd.gov]
Sent: Friday, September 21, 2012 8:34 AM
To: Afif El-Hasan (Afif.h.el-hasan@kp.org); David Czamanske (dczamanske@hotmail.com); Ed Laird (elaird@coatingsresource.com); Emily Nelson (dremilynelson@gmail.com); makeoverearth.com, gary; Greg Adams (gadams@lacs.org); J. Wayne Miller (wayne.miller@ucr.edu); John Froines (jfroines@ucla.edu); Lester, Julia; Mike Wang (mwang@wspa.org); radtech.org, rita; Robert McConnell (rmcconne@usc.edu); Sam Soret (ssoret@llu.edu); Todd Campbell (tcampbell@cleanenergyfuels.com); Walter Siembab (ws@siembab.com); William LaMarr (BillLaMarr@msn.com)
Cc: Marty, Melanie@OEHHA; Smith, Linda@ARB; Elaine Chang; Philip Fine; Barbara Baird; William Wong; Marilyn Traynor; Christina Batteate
Subject: AQMD Advisory Council Update and Meeting on October 11, 2012

To: 2012 AQMD Advisory Council
RE: Update on Draft Appendix I Review

Greetings to all.

At the July 11, 2012 meeting of the Advisory Council the group requested that another meeting be held to review Appendix I and any revisions that might be made. We have scheduled a meeting of the Advisory Council for October 11, 2012. Details are below.

2012 AQMP Advisory Council meeting
October 11, 2012
10 am - noon
Room CC8
AQMD Offices
21865 Copley Drive,
Diamond Bar, CA

An interim updated draft has been posted to the AQMD website at <http://www.aqmd.gov/aqmp/2012aqmp/RevisedDraft/AppI.pdf>. Additions to the initial draft were made based on suggestions from the advisory group, and include a brief summary of lead health effects, an expansion of the conclusion section to reflect how health studies support revisions to the National Ambient Air Quality Standards, information on EPA's proposed revisions to the PM2.5 NAAQS, and the recent finding from the International Agency for Research on Cancer regarding the carcinogenicity of diesel exhaust.

We have also received one public comment to the AQMP that is relevant to the draft Appendix I, which I attach for your information. A member of the public also distributed a handout at a meeting of the AQMP Advisory Group relevant to the draft Appendix I, and the handout is also attached for your information. Prior to the October 11 meeting, we will be providing you another interim draft version of Appendix I, which will be prepared in conjunction with CARB. Additionally, we expect to have additional outside reviews of the draft Appendix by the end of this month. We will attach any additional comments relative to the draft Appendix as we receive them so that they will also be available to you prior to the October 11 meeting.

If any of you have additional comment on the draft Appendix I, please forward to me by the end of this month (Sept 30, 2012) if possible, but at the latest prior to the next meeting of the Advisory Council on October 11, 2012.

Revisions to the current draft made as a result of comments received by the end of September will be sent to you prior to the October 11 Advisory Council meeting for your review. Additionally, the revised draft will have all comments received as attachments.

Additional information regarding the Draft 2012 AQMP is available at <http://www.aqmd.gov/aqmp/2012aqmp/index.htm>.

Lastly, a reminder that the Advisory Council is subject to the California open meetings regulations. Please do not copy other Advisory Council members regarding any comments or correspondence. There will be opportunity for discussion at the meeting on October 11.

Thanks.

Jean Ospital
Health Effects Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Phone: 909-396-2582
Fax: 909-396-3324
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REVIEW DRAFT
APPENDIX I

HEALTH EFFECTS

SEPTEMBER 2012

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD**

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City of Los Angeles

MIGUEL A. PULIDO
Mayor, Santa Ana
Cities of Orange County

EXECUTIVE OFFICER:

BARRY R. WALLERSTEIN, D.Env.

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Health Effects Officer

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This page contains no comments

INTRODUCTION

This document presents a summary of scientific findings on the health effects of ambient air pollutants. The California Health and Safety Code Section 40471(b) requires that the South Coast Air Quality Management District prepare a report on the health impacts of particulate matter in the South Coast Air Basin (SCAB) in conjunction with the preparation of the Air Quality Management Plan revisions. This document, which was prepared to satisfy that requirement, also includes the effects of the other major pollutants.

HEALTH EFFECTS OF AIR POLLUTION

Ambient air pollution is a major public health concern. Excess deaths and increases in illnesses associated with high air pollution levels have been documented in several episodes as early as 1930 in Meuse Valley, Belgium; 1948 in Donora, Pennsylvania; and 1952 in London. Although levels of pollutants that occurred during these acute episodes are now unlikely in the United States, ambient air pollution continues to be linked to increases in illness (morbidity) and increases in death rates (mortality).

The adverse health effects associated with air pollution are diverse and include:

- Increased mortality
- Increased health care utilization (hospitalization, physician and emergency room visits)
- Increased respiratory illness (symptoms, infections, and asthma exacerbation)
- Decreased lung function (breathing capacity)
- Lung inflammation
- Potential immunological changes
- Increased airway reactivity to a known chemical exposure - a method used in laboratories to evaluate the tendency of airways to have an increased possibility of developing an asthmatic response
- A decreased tolerance for exercise.

The evidence linking these effects to air pollutants is derived from population-based observational and field studies (epidemiological) as well as controlled laboratory studies involving human subjects and animals. There have been an increasing number of studies focusing on the mechanisms (that is, on learning how specific organs, cell types, and biochemicals are involved in the human body's response to air pollution) and specific pollutants responsible for individual effects. Yet the underlying biological pathways for these effects are not always clearly understood.

Although individuals inhale pollutants as a mixture under ambient conditions, the regulatory framework and the control measures developed are mostly pollutant-specific. This is appropriate, in that different pollutants usually differ in their sources, their times and places of occurrence, the kinds of health effects they may cause, and their overall levels of health risk. Different pollutants, from the same or different sources, may sometimes act together to harm health more than they would acting separately. Nevertheless, as a practical matter, health scientists, as well as regulatory officials, usually must deal with one pollutant at a time in determining health effects and in adopting air quality standards. To meet the air quality standards, comprehensive plans are developed such as the Air Quality Management Plan (AQMP), and to minimize toxic exposure a local air toxics control plan is also prepared. These plans examine multiple pollutants, cumulative impacts, and transport issues related to attaining healthful air quality. A brief overview of the effects observed and attributed to various air pollutants is presented in this document.

This summary is drawn substantially from reviews presented previously (SCAQMD, 1996, 2003, 2007), and from reviews on the effects of air pollution by the American Thoracic Society (ATS, 1996), the U.S. EPA reviews for ozone (U.S. EPA, 2006), Carbon Monoxide (U.S. EPA, 2010), and Particulate Matter (U.S. EPA, 2004, 2009), from a published review of the health effects of air pollution (Brunekreef and Holgate, 2002), and from reviews prepared by the California EPA Office of Environmental Health Hazard Assessment for Particulate Matter (Cal EPA, 2002) and for Ozone (Cal EPA, 2005). Additional materials are from EPA's current review of the ozone standard and health effects (EPA, 2011). More detailed citations and discussions on air pollution health effects can be found in these references.¹

¹ Most of the studies referred to in this appendix are cited in the above sources. Only more recent specific references will be cited in this summary.

Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:17:07 AM
Please give citations to substantiate the statement.

Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:19:03 AM
The author is referring to ARB's reviews of the state ambient air quality standards. The correct citation is ARB, 2002 and ARB, 2005.

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OZONE

Ozone is a highly reactive compound, and is a strong oxidizing agent. When ozone comes into contact with the respiratory tract, it can react with tissues and cause damage in the airways. Since it is a gas, it can penetrate into the gas exchange region of the deep lung.

The EPA primary standard for ozone, adopted in 2008, is 0.075 ppm averaged over eight hours. The California Air Resources Board (CARB) has established standards of 0.09 ppm averaged over one hour and at 0.070 ppm averaged over eight hours.

The major subgroups of the population considered to be at increased risk from ozone exposure are outdoor exercising individuals, including children, and people with preexisting respiratory disease(s) such as asthma. The data base identifying the former group as being at increased risk to ozone exposure is much stronger and more quantitative than that for the latter group, probably because of a larger number of studies conducted with healthy individuals. The adverse effects reported with short-term ozone exposure are greater with increased activity because activity increases the breathing rate and the volume of air reaching the lungs, resulting in an increased amount of ozone reaching the lungs. Children may be a particularly vulnerable population to air pollution effects because they spend more time outdoors, are generally more active, and have a higher ventilation rate than adults.

A number of adverse health effects associated with ambient ozone levels have been identified from laboratory and epidemiological studies (EPA, 1996; 2006, 2011; ATS, 1996). These include increased respiratory symptoms, damage to cells of the respiratory tract, decrease in lung function, increased susceptibility to respiratory infection, and increased risk of hospitalization.

Increases in ozone levels are associated with elevated absences from school. The Children's Health Study, conducted by researchers at the University of Southern California, followed a cohort of children that live in 12 communities in Southern California with differing levels of air pollution for several years. A publication from this study reported that school absences in fourth graders for respiratory illnesses were associated with ambient ozone levels. An increase of 20 ppb ozone was associated with an 83% increase in illness-related absence rates (Gilliland, 2001).

The number of hospital admissions and emergency room visits for all respiratory causes (infections, respiratory failure, chronic bronchitis, etc.) including asthma

shows a consistent increase as ambient ozone levels increase in a community. These excess hospital admissions and emergency room visits are observed when hourly ozone concentrations are as low as 0.06 to 0.10 ppm.

Numerous recent studies have found positive associations between increases in ozone levels and excess risk of mortality. These associations persist even when other variables including season and levels of particulate matter are accounted for. This indicates that ozone mortality effects may be independent of other pollutants (Bell, 2004).

Multicity studies of short-term ozone exposures (days) and mortality have also examined regional differences. Evidence was provided that there were generally higher ozone-mortality risk estimates in northeastern U.S. cities, with the southwest and urban mid-west cities showing lower or no associations (Smith, 2009; Bell, 2008). Another long-term study of a national cohort found that long-term exposures to ozone were associated with respiratory-related causes of mortality, but not cardiovascular-related causes, when PM2.5 exposure were also included in the analysis.

Several population-based studies suggest that asthmatics are more adversely affected by ambient ozone levels, as evidenced by increased hospitalizations and emergency room visits. Laboratory studies have attempted to compare the degree of lung function change seen in age and gender-matched healthy individuals versus asthmatics and those with chronic obstructive pulmonary disease. While the degree of change evidenced did not differ significantly, that finding may not accurately reflect the true impact of exposure on these respiration-compromised individuals. Since the respiration-compromised group may have lower lung function to begin with, the same degree of change may represent a substantially greater adverse effect overall.

Another publication from the Children's Health Study focused on children and outdoor exercise. In communities with high ozone concentrations, the relative risk of developing asthma in children playing three or more sports was found to be over three times higher than in children playing no sports (McConnell, 2002). These findings indicate that new cases of asthma in children are associated with heavy exercise in communities with high levels of ozone. While it has long been known that air pollution can exacerbate symptoms in individuals with respiratory disease, this is among the first studies that indicate ozone exposure may be causally linked to asthma onset.

Author: Administrator Subject: Sticky Note Date: 9/14/2012 1:58:20 PM
This is a rather strong conclusion given that there is only one study that supports the statement.

In addition, human and animal studies involving both short-term (few hours) and long-term (months to years) exposures indicate a wide range of effects induced or associated with ambient ozone exposure. These are summarized in Table I-1.

TABLE I-1

Adverse Health Effects of Ozone (O₃) - Summary of Key Studies

O ₃ CONCENTRATION AND EXPOSURE HR., PPM	HEALTH EFFECT
Ambient air containing 0.10 - 0.15 daily 1-h max over days to weeks; ≥ 0.05 (8 hour average)	Decreased breathing capacity, in children, adolescents, and adults exposed to O ₃ outdoors Exacerbation of respiratory symptoms (e.g., cough, chest pain) in individuals with preexisting disease (e.g., asthma) with low ambient exposure, decreased temperature, and other environmental factors resulting in increased summertime hospital admissions and emergency department visits for respiratory causes
≥ 0.12 (1-3h) ≥ 0.06 (6.6h) (chamber exposures)	Decrements in lung function (reduced ability to take a deep breath), increased respiratory symptoms (cough, shortness of breath, pain upon deep inspiration), increased airway responsiveness and increased airway inflammation in exercising adults Effects are similar in individuals with preexisting disease except for a greater increase in airway responsiveness for asthmatic and allergic subjects Older subjects (>50 yrs old) have smaller and less reproducible changes in lung function Attenuation of response with repeated exposure
≥ 0.12 with prolonged, repeated exposure (chamber exposures)	Changes in lung structure, function, elasticity, and biochemistry in laboratory animals that are indicative of airway irritation and inflammation with possible development of chronic lung disease Increased susceptibility to bacterial respiratory infections in laboratory animals

From: SCAQMD, 1996; EPA, 2007

Some lung function responses (volume and airway resistance changes) observed after a single exposure to ozone exhibit attenuation or a reduction in magnitude with repeated exposures. Although it has been argued that the observed shift in response is evidence of a probable adaptation phenomenon, it appears that while functional changes may exhibit adaptation, biochemical and cellular changes which may be

- Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:19:55 AM
 We are not aware of any studies that report reduced pulmonary function and symptoms in people exposed to 0.05 ppm ozone. Only a small percentage of studied subjects show these effects with exposure to 0.06 ppm (5% of fewer of the total number studied to date).
- Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:20:39 AM
 Respiratory symptoms have also been noted in healthy children and younger adults with this sort of exposure, although not in healthy older adults.
- Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:20:23 AM
 This is an incorrect usage of the work "adaptation". Adaptation implies a permanently altered biological process, which is not the case with ozone. The correct term here is "attenuation" because the altered biological response only persists so long as regular ozone exposures continue.

associated with episodic and chronic exposure effects may not exhibit similar adaptation. That is, internal damage to the respiratory system may continue with repeated ozone exposures, even if externally observable effects (chest symptoms and reduced lung function) disappear.

In a laboratory, exposure of human subjects to low levels of ozone causes reversible decrease in lung function as assessed by various measures such as respiratory volumes, airway resistance and reactivity, irritative cough and chest discomfort. Lung function changes have been observed with ozone exposure as low as 0.06 to 0.12 ppm for 6-8 hours under moderate exercising conditions. Similar lung volume changes have also been observed in adults and children under ambient exposure conditions (0.10 - 0.15 ppm). The responses reported are indicative of decreased breathing capacity and are reversible.

The results of several studies where human volunteers were exposed to ozone for 6.6 hours at levels between 0.04 and 0.12 ppm were recently summarized (Brown, 2008). As shown in the figure below, there is an increasing response on lung function with increasing exposure levels in moderately exercising subjects.

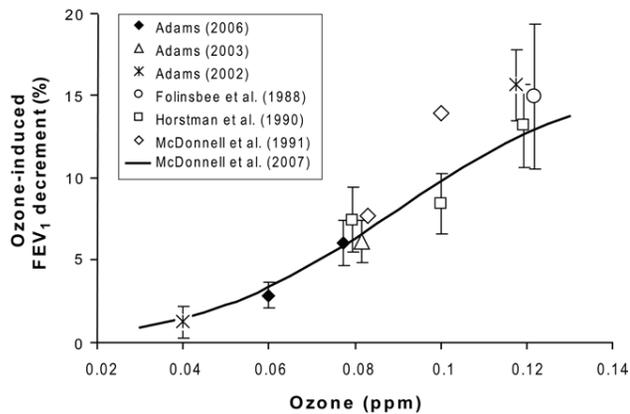


FIGURE I-1

Comparison of mean ozone-induced decrements in lung function following 6.6 hours of ozone exposure (from Brown, 2008)

Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:21:08 AM
Please specify the averaging time and whether or not the subjects were exercising, and if so, the ventilation rate. The total inhaled dose is the important factor, not just the ambient concentration.

In addition to controlled laboratory conditions, studies of individuals exercising outdoors, including children attending summer camp, have shown associations of reduced lung function with ozone exposure. There were wide ranges in responses among individuals.

Results of epidemiology studies support the relationship between ozone exposure and respiratory effects. Several, but not all, studies have found associations of short-term ozone levels and hospital admissions and emergency department admissions for respiratory-related conditions (EPA, 2011).

In laboratory studies, cellular and biochemical changes associated with respiratory tract inflammation have also been consistently reported in the airway lining after low level exposure to ozone. These changes include an increase in specific cell types and in the concentration of biochemical mediators of inflammation and injury such as cytokines and fibronectin. Indications of lung injury and inflammatory changes have been observed in healthy adults exposed to ozone in the range of 0.06 to 0.10 ppm.

The susceptibility to ozone observed under ambient conditions could be due to the combination of pollutants that coexist in the atmosphere or ozone may actually sensitize these subgroups to the effects of other pollutants.

Some animal studies show results that indicate possible chronic effects including functional and structural changes of the lung. These changes indicate that repeated inflammation associated with ozone exposure over a lifetime may result in sufficient damage to respiratory tissue such that individuals later in life may experience a reduced quality of life in terms of respiratory function and activity level achievable. An autopsy study involving Los Angeles County residents provided supportive evidence of lung tissue damage (structural changes) attributable to air pollution.

A study of birth outcomes in southern California found an increased risk for birth defects in the aortic and pulmonary arteries associated with ozone exposure in the second month of pregnancy (Ritz et al., 2002). This is the first study linking ambient air pollutants to birth defects in humans. Studies conducted since mostly focusing on cardiac and oral cleft defects have found mixed results, with some showing associations, but others did not. Confirmation by further studies is needed.

In summary, adverse effects associated with ozone exposures have been well documented, although the specific causal mechanism is still somewhat unclear.

This page contains no comments

It may be instructive to provide the overall EPA staff preliminary conclusions on the causality on ozone health effects for the health outcomes evaluated (EPA, 2011). These are provided in the two tables below.

TABLE I-2

Summary of Causal Determinations for Short-Term Exposures to Ozone

HEALTH CATEGORY	CAUSAL DETERMINATION
Respiratory Effects	Causal relationship
Cardiovascular Effects	Suggestive of a causal relationship
Central Nervous System Effects	Suggestive of a causal relationship
Effects on Liver and Xenobiotic Metabolism	Inadequate to infer a causal relationship
Effects on Cutaneous and Ocular Tissues	Inadequate to infer a causal relationship
Mortality	Likely to be a causal relationship

From EPA, 2011

TABLE I-3

Summary of Causal Determinations for Long-Term Exposures to Ozone

HEALTH CATEGORY	CAUSAL DETERMINATION
Respiratory Effects	Likely to be a causal relationship
Cardiovascular Effects	Suggestive of a causal relationship
Reproductive and Developmental Effects	Suggestive of a causal relationship
Central Nervous System Effects	Suggestive of a causal relationship
Carcinogenicity and Genotoxicity	Inadequate to infer a causal relationship
Mortality	Suggestive of a causal relationship

From EPA, 2011

PARTICULATE MATTER

Airborne particulates are a complex group of pollutants that vary in source, size and composition, depending on location and time. The components include nitrates, sulfates, elemental carbon, organic carbon compounds, acid aerosols, trace metals, and material from the earth's crust. Substances of biological origin, such as pollen and spores, may also be present.

Until several years ago, the health effects of particulates were focused on those sized 10 µm (micrometers) aerodynamic diameter and smaller. These can be inhaled through the upper airways and deposited in the lower airways and gas exchange tissues in the lung. These particles are referred to as PM10. EPA initially promulgated ambient air quality standards for PM10 of 150 µg/m³ averaged over a 24-hour period, and 50 µg/m³ for an annual average. EPA has since rescinded the annual PM10 standard, but kept the 24-hour standard.

In recent years additional focus has been placed on particles having an aerodynamic diameter of 2.5 µm or less (PM2.5). A greater fraction of particles in this size range can penetrate and deposit deep in the lungs. The EPA recently lowered the air quality standards for PM2.5 to 35 µg/m³ for a 24-hour average and reaffirmed 15 µg/m³ for an annual average standard. There was considerable controversy and debate surrounding the review of particulate matter health effects and the consideration of ambient air quality standards (Kaiser, 1997; Vedal, 1997) when the EPA promulgated the initial PM2.5 standards in 1997.

Since that time, numerous studies have been published, and some of the key studies were closely scrutinized and analyses repeated. The result is that there are now substantial data confirming the adverse health effects of PM2.5 exposures.

There are also differences in the composition and sources of particles in the different size ranges that may have implications for health effects. The particles larger than 2.5 µm (often referred to as the coarse fraction) are mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and resuspension of particles from the ground or road surfaces by wind and human activities.

In contrast, particles smaller than 2.5 µm are mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary combustion sources. The particles are either directly emitted or are formed

Author: pwong Subject: Sticky Note Date: 9/26/2012 10:21:25 AM
While the California PM standards values are mentioned in table I-4, there is no discussion or mention in the text unlike ozone.

Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:18:05 AM
You might mention that a new annual average PM2.5 standard is expected by the end of the year. US EPA is considering a range of 12-13 ug/m3.

in the atmosphere from gases that are emitted. Components from material in the earth's crust, such as dust, are also present, with the amount varying in different locations.

Attention to another range of very small particles has been increasing over the last few years. These are generally referred to as "ultrafine" particles, with diameters of 0.1 µm or less. These particles are mainly from fresh emissions of combustion sources, but are also formed in the atmosphere from photochemical reactions. Ultrafine particles have relatively short half lives (minutes to hours) and rapidly grow through condensation and coagulation process into larger particles within the PM2.5 size range. These particles are garnering interest since laboratory studies indicate that their toxicity may be higher on a mass basis than larger particles, and there is evidence that these small particles can translocate from the lung to the blood and to other organs of the body.

There have been several reviews of the health effects of ambient particulate matter (ATS, 1996; Brunekreef, 2002; U.S. EPA, 2004; U.S. EPA, 2009). In addition, the California Air Resources Board (CARB) and the Office of Environmental Health and Hazard Assessment (OEHHA) have reviewed the adequacy of the California Air Quality Standards for Particulate Matter (Cal EPA, 2002).

The major types of effects associated with particulate matter include:

- Increased mortality
- Exacerbation of respiratory disease and of cardiovascular disease as evidenced by increases in:
 - Respiratory symptoms
 - Hospital admissions and emergency room visits
 - Physician office visits
 - School absences
 - Work loss days 
- Effects on lung function
- Changes in lung morphology

The current federal and California standards are listed below:

Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:21:48 AM
We don't think that the work loss days paper specifies the reason for work loss in terms of exacerbated chronic disease. This should be verified with the Ostro paper.

TABLE I-4

Ambient Air Quality Standards for Particulate Matter

STANDARD	FEDERAL	CALIFORNIA
PM10 24-Hour average	150 µg/m ³	50 µg/m ³
PM10 Annual Average	--	20 µg/m ³
PM 2.5 24-Hour Average	35 µg/m ³	--
PM 2.5 Annual Average	15 µg/m ³	12 µg/m ³

Short-Term Exposure Effects

Epidemiological studies have provided evidence for most of the effects listed above. An association between increased daily or several-day-average concentrations of PM10 and excess mortality and morbidity is consistently reported from studies involving communities across the U.S. as well as in Europe, Asia, and South America. A review and analysis of epidemiological literature for acute adverse effects of particulate matter was published by the American Thoracic Society in 1996. Several adverse effects were listed as associated with daily PM10 exposures, as listed in Table I-5, undertaken by Doekery and Pope to estimate these effects as percent increase in mortality associated with each incremental increase of PM10 by 10 µg/m³. The estimates are presented in Table I-5. It also appears that individuals who are elderly or have preexistent lung or heart disease are more susceptible than others to the adverse effects of PM10 (ATS, 1996). Since then many more recent studies have confirmed that excess mortality and morbidity are associated with short term particulate matter levels (Pope, 2006).

Estimates of mortality effects from these studies of PM10 exposures range from 0.3 to 1.7% increase for a 10 µg/m³ increase in PM10 levels. The National Morbidity, Mortality, and Air Pollution Study (NMMAPS), a study of 20 of the largest U.S. cities, determined a combined risk estimate of about a 0.5% increase in total mortality for a 10 µg/m³ increase in PM10 (Scahill, 2000a). This study also analyzed the effects of gaseous co-pollutants. The results indicated that the association of PM10 and mortality were not confounded by the presence of the gaseous pollutants. When the gaseous pollutants were included in the analyses, the significance of the PM10 estimates remained. The PM10 effects were reduced somewhat when O₃ was also considered and tended to be variably decreased when NO₂, CO, and SO₂ were

Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:22:38 AM
 The author should cite the reanalysis of the original NMMAPS studies that were sponsored by HEI. The statistical package used for the original analyses was found to not converge correctly. This led to incorrect RR and standard errors. The corrected papers are from 2003, and all reanalyzed papers that were affected by this statistical problem are in a volume published by HEI, and available on their website. In the case of NMMAPS, the RR dropped to about 0.25% with a 10 ug/m3 change in PM10.

added to the analysis. These results argue that the effects are likely due to the particulate exposures; they cannot readily be explained by coexisting weather stresses or other pollutants.

An expansion of the NMMAPS study to 90 U.S. Cities also reported association with PM10 levels and mortality (Samet, 2006). It was discovered that this study was one that used a flawed statistical software package. The investigators have reanalyzed the data using corrected settings for the software (Dominici, 2002a, Dominici 2002b). When the estimates for the 90 cities in the study were recalculated, the estimate changed from 0.41% increase in mortality for a 10 µg/m³ increase in PM10 to a 0.27% increase. There remained a strong positive association between acute exposure to PM10 and mortality. Thus while the quantitative estimate was reduced, the major findings of the study did not change.

TABLE I-5

Combined Effect Estimates of Daily Mean Particulate Pollution (PM10)

% CHANGE IN HEALTH INDICATOR PER EACH 10 µg/m ³ INCREASE IN PM10	
Increase in Daily Mortality	
Total deaths	1.0
Respiratory deaths	3.4
Cardiovascular deaths	1.4
Increase in Hospital Usage (all respiratory diagnoses)	
Admissions	1.4
Emergency department visits	0.9
Exacerbation of Asthma	
Asthmatic attacks	3.0
Bronchodilator use	12.2
Emergency department visits*	3.4
Hospital admissions	1.9
Increase in Respiratory Symptom Reports	
Lower respiratory	3.0
Upper respiratory	0.7

Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:22:44 AM
As stated in the a previous comment, please use the reanalysis from 2003.

Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:22:51 AM
The reference for this table is from 1996. A summary of more recent data would be helpful. EPA thoroughly evaluated the PM literature as part of the NAAQS review. On page 2-18 of the Integrated Science Assessment there is a summary of recent PM coarse literature. The ISA can be found at: <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=216546#Download>

TABLE I-5 (concluded)
 Combined Effect Estimates of Daily Mean Particulate Pollution

	% CHANGE IN HEALTH INDICATOR PER EACH 10 µg/m³ INCREASE IN PM10
Cough	2.5
Decrease in Lung Function	
Forced expiratory volume	0.15
Peak expiratory flow	0.08

* One study only

(Source: American Journal of Respiratory and Critical Care Medicine, Vol. 153, 113-50, 1996)

Studies of PM2.5 also find associations with elevated mortality. The estimates for PM2.5 generally are in the range of 2.0 to 8.5% increase in total deaths per 25 µg/m³ increase in 24-hour PM2.5 levels. The estimates for cardiovascular related mortality range from 3.0 to 7.0% per 25 µg/m³ 24-hour PM2.5, and for respiratory mortality estimates range from 2.0 to 7.0% per 25 µg/m³ 24-hour PM2.5.

Several studies have attempted to assess the relative importance of particles smaller than 2.5 µm and those between 2.5 µm and 10 µm (PM10-2.5). While some studies report that PM2.5 levels are better predictors of mortality effects, others suggest that PM10-2.5 is also important. Most of the studies found higher mortality associated with PM2.5 levels than with PM10-2.5. For example, a study of six cities in the U.S. found that particulate matter less than 2.5 µm was associated with increased mortality, but that the larger particles were not. Other studies in Mexico City and Santiago, Chile reported that PM10-2.5 was as important as PM2.5. Overall effects estimates for PM10-2.5 fall in the range of 0.5 to 6.0 % excess mortality per 25 µg/m³ 24-hour average.

The relative importance of both PM2.5 and PM10-2.5 may vary in different regions depending on the relative concentrations and components, which can also vary by season. More research is needed to better assess the relative effects of fine (PM2.5) and coarse (PM10-2.5) fractions of particulate matter on mortality.

A number of studies have evaluated the association between particulate matter exposure and indices of morbidity such as hospital admissions, emergency room

visits or physician office visits for respiratory and cardiovascular diseases. The effects estimates are generally higher than the effects for mortality. The effects are associated with measures of PM10 and PM2.5. Effects are also associated with PM10-2.5. Thus, it appears that when a relatively small number of people experience severe effects, larger numbers experience milder effects, which may relate either to the coarse or to the fine fraction of airborne particulate matter.

In the NMMAPS study, hospital admissions for those 65 years or older were assessed in 14 cities. Hospital admissions for these individuals showed an increase of 6% for cardiovascular diseases and a 10% increase for respiratory disease admissions, per $\mu\text{g}/\text{m}^3$ increase in PM10. The excess risk for cardiovascular disease ranges from 3-10% per 50 $\mu\text{g}/\text{m}^3$ PM10 and from 4-10% per 25 $\mu\text{g}/\text{m}^3$ PM2.5 or PM10-2.5.

Similarly, school absences, lost workdays and restricted activity days have also been used in some studies as indirect indicators of acute respiratory conditions. The results are suggestive of both immediate and delayed impact on these parameters following elevated particulate matter exposures. These observations are consistent with the hypothesis that increased susceptibility to infection follows particulate matter exposures.

Some studies have reported that short-term particulate matter exposure is associated with changes in lung function (lung capacity and breathing volume); upper respiratory symptoms (hoarseness and sore throat); and lower respiratory symptoms (increased sputum, chest pain and wheeze). The severity of these effects is widely varied and is dependent on the population studied, such as adults or children with and without asthma. Sensitive individuals, such as those with asthma or pre-existing respiratory disease, may have increased or aggravated symptoms associated with short-term particulate matter exposures. Several studies have followed the number of medical visits associated with pollutant exposures. A range of increases from 3% to 42% for medical visits for respiratory illnesses was found corresponding to a 50 $\mu\text{g}/\text{m}^3$ change in PM10. A limited number of studies also looked at levels of PM2.5 or PM10-2.5. The findings suggest that both the fine and coarse fractions may have associations with some respiratory symptoms.

The biological mechanisms by which particulate matter can produce health effects are being investigated in laboratory studies. Inflammatory responses in the respiratory system in humans and animals exposed to concentrated ambient particles have been measured. These include effects such as increases in neutrophils in the lungs. Other changes reported include increased release of cytokines and interleukins,

chemicals released as part of the inflammatory process. The effects of particulate matter may be mediated in part through the production of reactive oxygen species during the inflammatory process. Recent reviews discuss mechanistic studies in more detail (Brunekreef, 2002; Brook, 2004).

Long-Term Exposure Effects

While most studies have evaluated the acute effects, some studies specifically focused on evaluating the effects of chronic exposure to PM10 and PM2.5. Studies have analyzed the mortality of adults living in different U.S. cities. After adjusting for important risk factors, taken as a whole these studies found a positive association of deaths and exposure to particulate matter. A similar association was observable in both total number of deaths and deaths due to specific causes. The largest effects were observed from cardiovascular causes and ischemic heart disease. A shortening of lifespan was also reported in these studies.

Since the initial promulgation by EPA of the National Ambient Air Quality Standards for PM2.5, controversy has remained over the association of mortality and exposures to PM2.5. Thus an expanded discussion of these studies is presented below.

Significant associations for PM2.5 for both total mortality and cardiorespiratory mortality were reported in a study following a national cohort recruited by the American Cancer Society for a Cancer Preventions Study over several years. A re-analysis of the data from this study confirmed the initial finding (Krewski, 2000). In this study, mortality rates and PM2.5 levels were analyzed for 51 metropolitan areas of the U.S. Average levels from monitors in each area were used to estimate exposures. At these levels of aggregation, regional differences in the association of PM2.5 and mortality were noted, with higher associations in the Northeast, and lower or non-significant associations in the West.

The Harvard Six Cities Study evaluated several size ranges of particulate matter and reported significant associations with PM15, PM2.5, sulfates, and non-sulfate particles, but not with coarse particles (PM15 – PM2.5). An extension of the Harvard Six Cities Cohort confirmed the association of mortality with PM2.5 levels (Laden, 2006). These studies provide evidence that the fine particles, as measured by PM2.5, may be more strongly associated with mortality effects from long-term particulate matter exposures than are coarse compounds. An update to this study covering a follow-up over the years 1974 to 2009 (Lepeule, 2012) was recently published. Findings indicated a linear relationship of PM2.5 levels and mortality

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from all causes, cardiovascular causes, and from lung cancer. According to the authors, the PM_{2.5} levels decreased over time, but no evidence of a threshold for these effects was found.

A follow-up study of the American Cancer Society cohort confirmed and extended the findings in the initial study. The researchers estimated that, on average, a 10 ug/m³ increase in fine particulates was associated with approximately a 4% increase in total mortality, a 6% increase in cardiopulmonary mortality, and an 8% increase risk of lung cancer mortality (Pope, 2002). The magnitude of effects is larger in the long-term studies than in the short-term investigations. In an additional re analysis and extension of the American Cancer Society cohort from 1982 to 2000 (Krewski, 2009), and including additional metropolitan areas for the most recent years, effects estimates on mortality were similar, though somewhat higher, than those reported previously.

Other national studies include an analysis of mortality and PM_{2.5} exposures in a Medicare population. Zeger and Associates (2008) assembled a Medicare cohort by including all Medicare enrollees residing in zip codes with centroids within 6 miles of a PM_{2.5} monitor. PM_{2.5} data was obtained from the monitoring stations, and mean annual levels were called for the zip codes within six miles of each monitor. The estimated associations between exposures to PM_{2.5} and mortality for the eastern and central portions of the U.S were similar to those previously published in the Six Cities Study and the American Cancer Society cohorts. The authors reported that there were no significant associations between zip code levels of PM_{2.5} and mortality rates in the western region of the U.S. This lack of association was attributed largely to the higher PM_{2.5} levels in Los Angeles area counties compared to other western urban areas, but there were not higher mortality rates in these counties. The authors further reported that they found no associations of PM_{2.5} with mortality in persons aged 85 years or higher.

Analyses of mortality and PM_{2.5} levels specific to California have also been reported. A cohort of elderly individuals (average age of 65 yr in 1973) recruited from 11 California counties was followed over several years (Enstrom, 2005). An association for exposure with all cause deaths was reported from 1973–1982. However, no significant association was found in the later time period of 1983–2002. Pollutant levels were taken from ambient monitors and averaged over each county to estimate exposures.

Two analyses of the American Cancer Society cohort focused [specifically](#) on the Los Angeles [Metropolitan](#) area using methods to estimate exposures on a finer geographical scale than previous studies that used geographic scales at the county or metropolitan area. Using data from monitoring stations in the Los Angeles area, one study applied interpolation methods (Jerrett, 2005) and another applied land use regression techniques (Krewski, 2009) to estimate exposures to the study individuals. Significant associations of PM2.5 with mortality from all causes and cardiopulmonary disease were reported, with the magnitude of risks being up to [one](#) times higher than those from the national studies of the American Cancer Society cohort. This provides evidence that using methods to provide more detailed exposure estimates can result in stronger associations of PM2.5 and mortality.

Two recent reports have been released looking at air pollution and health effects in California. One study (Lipsett, 2011) followed school teachers recruited in 1995, and followed through 2005. Pollutant exposures at the subject residence were estimated using data from ambient monitors, and extrapolated using a distance weighted method. The authors reported significant association of PM2.5 levels and mortality from ischemic heart disease, but no associations were found with all cause, cardiovascular, or respiratory disease.

The second study (Jerrett, 2011) followed individuals in ~~the Los Angeles area~~ [California](#) from the American Cancer Society cohort recruited starting in 1982, with follow up to 2000. Pollutant levels at subject residences were estimated using several methods. All but one of the methods found no association of all-cause mortality with PM2.5 levels. All exposure estimation methods were reported to have found significant associations with ischemic heart disease mortality, however. The authors noted that mortality rates differ in urban areas compared to non-urban areas, and so included a variable for this in a land use regression model to estimate effects on mortality. When the authors applied the land use regression model including an urban indicator to estimate exposures, all-cause mortality, mortality from cardiovascular disease, and mortality from ischemic heart disease were all significantly associated with PM2.5 levels.

[The U.S. EPA has recently proposed to lower the annual National Ambient Air Quality Standard for PM2.5 \(U.S. EPA, 2012a\).](#) [EPA also released a Regulatory Impact Analysis \(U.S. EPA 2012b\) which looked at the costs and benefits of alternate PM2.5 stand levels.](#) [As part of the analysis, EPA also looked at California specific studies regarding PM2.5 and mortality published in the scientific literature.](#) [The EPA](#)

Author: Administrator Subject: Sticky Note Date: 9/26/2012 10:23:52 AM
When comparing the relative risks from the LA and national studies, we recommend that both the national and the LA studies be adjusted to account for ozone exposure. Adjustment for ozone reduced the RR from three to about 1.5 times the national studies, which still suggest that the RR is greater in LA.

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[analysis concluded "most of the cohort studies conducted in California report central effect estimates similar to the \(nation-wide\) all-cause mortality risk estimate we applied from Krewski et al. \(2009\) and Laden et al. \(2006\) albeit with wider confidence intervals. A couple cohort studies conducted in California indicate higher risks than the risk estimates we applied." Thus in EPA's judgment the California related studies provided estimates of mortality consistent with or higher than those from the national studies.](#)

Other studies report evidence indicating that particulate matter exposure early in pregnancy may be associated with lowered birth weights (Bobak, 1999). Studies from the U.S., the Czech Republic and Mexico City have reported that neonatal and early postnatal exposure to particulate matter may lead to increased infant mortality. A more recent study in Southern California found increased risks for infant deaths associated with exposures to particulates and other pollutants (Ritz, 2006). These results suggest that infants may be a subgroup affected by particulate matter exposures.

In addition, some long-term effect studies have reported an increased risk of mortality from lung cancer associated with particulate matter exposures. A study involving California Seventh Day Adventists (very few of whom smoke) has reported an association of lung cancer mortality with PM₁₀ levels. It is not clear from these studies whether the association relates to causation of disease, or whether individuals with cancer are more susceptible to other effects of particles leading to the observed mortality association. A study that followed a large number of individuals living in the largest U.S. cities found elevated lung cancer risk associated with long-term average PM_{2.5} levels (Pope, 2002).

Several studies have assessed the effects of long-term particulate matter exposure on respiratory symptoms and lung function changes. Associations have been found with symptoms of chronic bronchitis and decreased lung function. A study of school children in 12 communities in Southern California showed significant association of particulate matter with bronchitis or phlegm in children with asthma. These effects were also associated with NO₂ and acid vapor levels.

A cohort of fourth graders from the Southern California communities was followed over a period of four years by the Children's Health Study. A lower rate of growth in lung function was found in children living in areas with higher levels of particulate pollution (Gauderman, 2000). Decreases in lung function growth were associated with PM₁₀, PM_{2.5}, PM_{10-2.5}, acid vapor, and NO₂. There was no association with

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ozone levels. The investigators were not able to identify independent effects of the pollutants, but noted that motor vehicle emissions are a major source of the pollutants.

A follow-up study on a second cohort of children confirmed the findings that decreased lung function growth was associated with particulates, nitric oxides, and elemental carbon levels (Gauderman, 2002). Elemental carbon is often used as a measure for diesel particulate. Additionally, children who moved to areas with less air pollution were found to regain some of the lung function growth rate (Avol, 2001). By the time the fourth graders graduated from high school, a significant number showed lower lung function. The risk of lower lung function was about five times higher in children with the highest PM_{2.5} exposure when compared to the lowest exposure communities (Gauderman, 2004). These deficits are likely to persist since the children were at the end of their growth period.

Despite data gaps, the extensive body of epidemiological studies has both qualitative and quantitative consistency suggestive of causality. A considerable body of evidence from these studies suggests that ambient particulate matter, alone or in combination with other coexisting pollutants, is associated with significant increases in mortality and morbidity in a community.

In summary, the scientific literature indicates that an increased risk of mortality and morbidity is associated with particulate matter at ambient levels. The evidence for particulate matter effects is mostly derived from population studies with supportive evidence from clinical and animal studies. Although most of the effects are attributable to particulate matter, co-pollutant effects cannot be ruled out on the basis of existing studies. The difficulty of separating the effects may be due to the fact that particulate levels co-vary with other combustion source pollutants. That is, the particle measurements serve as an index of overall exposure to combustion-related pollution, and some component(s) of combustion pollution other than particles might be at least partly responsible for the observed health effects.

EPA staff has presented conclusions on causal determination of several health effects based on a recent review of the available scientific studies (EPA, 2009). These are depicted in the Table below.

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TABLE I-6Summary of Causal Determination of PM_{2.5} by Exposure Duration and Health Outcome

SHORT-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Causal
Respiratory effects	Likely to be causal
Central nervous system	Inadequate information to assess
Mortality	Causal
LONG-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Causal
Respiratory effects	Likely to be causal
Mortality	Causal
Reproductive and developmental	Suggestive of a causal relationship
Cancer, Mutagenicity, Genotoxicity	Suggestive of a causal relationship

From EPA, 2009

ULTRAFINE PARTICLES

As noted above, numerous studies have found association of particulate matter levels with adverse effects, including mortality, hospital admissions, and respiratory disease symptoms. The vast majority of these studies used particle mass of PM₁₀ or PM_{2.5} as the measure of exposure. Some researchers have postulated, however, that ultrafine particles may be responsible for some of the observed associations of particulate matter and health outcomes (Oberdorster, et al, 1995; Seaton, et al, 1995). Ultrafine particles are generally classified of 0.1 μm and small diameter.

Several potential mechanisms have been brought forward to suggest that the ultrafine portion may be important in determining the toxicity of ambient particulates, some of which are discussed below.

For a given mass concentration, ultrafine particles have much higher numbers and surface area compared to larger particles. Particles can act as carriers for other adsorbed agents, such as trace metals and organic compounds; and the larger surface area may transport more of such toxic agents than larger particles.

Smaller particles can also be inhaled deep into the lungs. As much as 50% of 0.02 μm diameter particles are estimated to be deposited in the alveolar region of the lung. There is complex nature of the relation between deposition and particle size. The ultrafine particles generally have higher fractional deposition in the alveolar region. However, for the smaller nucleation mode (particles less than 0.01 μm size) the deposition in the alveolar region declines, but increases in the extrathoracic region.

Exposures of laboratory animals to ultrafine particles have found cardiovascular and respiratory effects. Mice exposed to concentrated near roadway ultrafine particles showed larger early atherosclerotic lesions than mice exposed to PM2.5 or filtered air (Arujo, 2008). In a mouse allergy model, exposures to concentrated ultrafine particles resulted in a greater response to antigen challenge to ovalbumin (Li, 2010), indicating that vehicular traffic exposure could exacerbate allergic inflammation in already-sensitized animals.

Controlled exposures of human volunteers to ultrafine particles either laboratory generated or as products of combustion, such as diesel exhaust containing particles, have found physiological changes related to vascular effects. Mills, 2011, for example found exposure to diesel exhaust particulate attenuated both acetylcholine and sodium-nitroprusside -induced vasorelaxation.

There are no long-term studies of human population exposure to ultrafine particle, as there is a lack of a monitoring network in the U.S. There have been several cross sectional epidemiological studies of ultrafine particles, mainly from Europe. Some of these studies found effects on hospital admissions, emergency department visits, for respiratory and cardiovascular effects. Other studies, however, have not found such effects (EPA, 2009). Concentrations of ultrafine particles can vary geographically, and it is not clear how well central site monitors may capture actual exposures.

EPA staff has presented conclusions on causal determination of several health effects of ultrafine PM based on a recent review of the available scientific studies (EPA, 2009). These are depicted in the table below.

[Additional discussion on the sources and health effects of ultrafine particles can be found in Chapter 9 of the 2012 AQMP.](#)

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TABLE I-7

Summary of Causal Determination of Ultrafine PM by Exposure Duration and Health Outcome

SHORT-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Suggestive
Respiratory effects	Suggestive
Central nervous system	Inadequate information to assess
Mortality	Inadequate
LONG-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Inadequate
Respiratory effects	Inadequate
Mortality	Inadequate
Reproductive and developmental	Inadequate
Cancer, Mutagenicity, Genotoxicity	Inadequate

From EPA, 2009

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CARBON MONOXIDE

The high affinity of carbon monoxide (CO) to bond with oxygen-carrying proteins (hemoglobin and myoglobin) results in reduced oxygen supply in the bloodstream of exposed individuals. The reduced oxygen supply is responsible for the toxic effects of CO which are typically manifested in the oxygen-sensitive organ systems. The effects have been studied in controlled laboratory environments involving exposure of humans and animals to CO, as well as in population-based studies of ambient CO exposure effects. People with deficient blood supply to the heart (ischemic heart disease) are known to be susceptible to the effects of CO. Protection of this group is the basis of the existing National Ambient Air Quality Standards for CO at 35 ppm for one hour and 9 ppm averaged over eight hours. The health effects of ambient CO have been recently reviewed (U.S. EPA, 2000, 2010).

Inhaled CO has no known direct toxic effect on lungs but rather exerts its effects by interfering with oxygen transport through the formation of carboxyhemoglobin (COHb, a chemical complex of CO and hemoglobin). Exposure to CO is often evaluated in terms of COHb levels in blood measured as percentage of total hemoglobin bound to CO. COHb levels in non-smokers range between 0.3 and 0.7% and 5 to 10% in smokers. COHb levels in excess of 1.5% in a significant proportion of urban non-smoking populations can be considered as evidence of widespread exposure to environmental CO.

Under controlled laboratory conditions, healthy subjects exposed to CO sufficient to result in 5% COHb levels exhibited reduced duration of maximal exercise performance and consumption of oxygen. Studies involving subjects with coronary artery disease who engaged in exercise during CO exposures have shown that COHb levels as low as 2.4% can lead to earlier onset of electrocardiograph changes indicative of deficiency of oxygen supply to the heart. Other effects include an earlier onset of chest pain, an increase in the duration of chest pain, and a decrease in oxygen consumption.

Findings of epidemiologic studies have observed associations between ambient CO concentration and emergency department visits and hospital admissions for ischemic heart disease and other cardiovascular diseases.

Animal studies associated with long-term exposure to CO resulting in COHb levels that are equivalent to those observed in smokers have shown indication of reduction in birth weight and impaired neurobehavior in the offspring of exposed animals.

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Epidemiological studies conducted in Southern California have indicated an association with CO exposure during pregnancy to increases in pre-term births. (Ritz, 2000). However, the results were not consistent in different areas studied. The increase in the pre-term births was also associated with PM10 levels. Another study found increased risks for cardiac related birth defects with carbon monoxide exposure in the second month of pregnancy (Ritz, 2002). Toxicological studies in laboratory animals with higher than ambient levels of CO have also reported decrements in birth weight and prenatal growth.

EPA staff has presented conclusions on causal determination of the health effects of carbon monoxide based on a recent review of the available scientific studies (EPA, 2010). These are depicted in the table below.

TABLE I-8

Causal Determination for Health Effects of Carbon Monoxide

SHORT-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular morbidity	Likely to be a causal relationship
Central nervous system	Suggestive
Respiratory morbidity	Suggestive
Mortality	Suggestive
LONG-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular morbidity	Inadequate
Central nervous system	Suggestive
Birth outcomes and developmental effects	Suggestive
Respiratory morbidity	Inadequate
Mortality	Not likely to be a causal relationship

From EPA, 2010

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NITROGEN DIOXIDE

The U.S. EPA has recently reviewed the health effects of nitrogen dioxide (U.S. EPA, 2008a). Evidence for low-level nitrogen dioxide (NO₂) exposure effects is derived from laboratory studies of asthmatics and from epidemiological studies. Additional supportive evidence is derived from animal studies.

Epidemiological studies using the presence of an unvented gas stove as a surrogate for indoor NO₂ exposures suggest an increased incidence of respiratory infections or symptoms in children.

Recent studies related to outdoor exposure have found health effects associated with ambient NO₂ levels, including respiratory symptoms, respiratory illness, decreased lung function, increased emergency room visits for asthma, and cardiopulmonary mortality. However, since NO₂ exposure generally occurs in the presence of other pollutants, such as particulate matter, these studies are often unable to determine the specific role of NO₂ in causing effects.

The Children's Health Study in Southern California found associations of air pollution, including NO₂, PM₁₀, and PM_{2.5}, with respiratory symptoms in asthmatics (McConnell, 1999). Particles and NO₂ were correlated, and effects of individual pollutants could not be discerned. A subsequent analysis indicated a stronger role for NO₂ (McConnell, 2002).

Ambient levels of NO₂ were also associated with a decrease in lung function growth in a group of children followed for eight years. In addition to NO₂, the decreased growth was also associated with particulate matter and airborne acids. The study authors postulated that these may be a measure of a package of pollutants from traffic sources. (Gauderman, 2004).

Results from controlled exposure studies of asthmatics demonstrate an increase in the tendency of airways to contract in response to a chemical stimulus (bronchial reactivity). Effects were observed with exposures from 0.1 to 0.3 ppm NO₂ for periods ranging from 30 minutes to 3 hours. A similar response is reported in some studies with healthy subjects at higher levels of exposure (1.5 - 2.0 ppm). Mixed results have been reported when people with chronic obstructive lung disease are exposed to low levels of NO₂.

Short-term controlled studies of animals exposed to NO₂ over a period of several hours indicate cellular changes associated with allergic and inflammatory response and interference with detoxification processes in the liver. In some animal studies

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the severity of the lung structural damage observed after relatively high levels of short-term ozone exposure is observed to increase when animals are exposed to a combination of ozone and NO₂.

In animals, longer-term (3-6 months) repeated exposures at 0.25 ppm appear to decrease one of the essential cell-types (T-cells) of the immune system. Non-specific changes in cells involved in maintaining immune functions (cytotoxic T-cells and natural killer cells) have been observed in humans after repeated exposure (4-6 days) to >0.6 ppm of NO₂ (20 min. - 2 hours). All these changes collectively support the observation reported both in population and animal studies of increased susceptibility to infections, as a result of NO₂ exposure.

The U.S. EPA recently adopted a new short-term standard of 100 ppb (0.1 ppm) averaged over 1 hour. The standard was designed to protect against increases in airway reactivity in individuals with asthma observed in controlled exposure studies, as well as respiratory symptoms observed in epidemiological studies.

SULFUR DIOXIDE

Controlled laboratory studies involving human volunteers have clearly identified asthmatics as the most sensitive group to the effects of ambient sulfur dioxide (SO₂) exposures. Healthy subjects have failed to demonstrate any short-term respiratory functional changes at exposure levels up to 1.0 ppm over 1-3 hours.

In exercising asthmatics, brief exposure (5-10 minutes) to SO₂ at levels between 0.2-0.6 ppm can result in significant alteration of lung function, such as increases in airway resistance and decreases in breathing capacity. In some, the exposure can result in severe symptoms necessitating the use of medication for relief. The response to SO₂ inhalation is observable within 2 minutes of exposure, increases further with continuing exposure up to 5 minutes then remains relatively steady as exposure continues. SO₂ exposure is generally not associated with any delayed reactions or repetitive asthmatic attacks.

In epidemiologic studies, associations of SO₂ levels with increases in respiratory symptoms, increases in emergency department visits and hospital admissions for respiratory-related causes have been reported.

The U.S. EPA has recently revised the SO₂ air quality standard. The previous 24-hour standard was rescinded and replaced with a new 1-hour standard at 75 ppb (0.075 ppm) to protect against high short-term exposures.

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Animal studies have shown that despite SO₂ being a respiratory irritant, it does not cause substantial acute or chronic toxicity in animals exposed at ambient concentrations. However, relatively high exposures (10 ppm of SO₂ for 72 hours) in mice can lead to tissue damage, fluid accumulation and sloughing of respiratory lining. Sensitization to allergies is observable in guinea pigs repeatedly exposed to high levels (72 ppm) of SO₂. This effect needs further evaluation in clinical and population studies to identify any chronic exposure impact on both asthmatic incidence and attacks in a population.

Some epidemiological studies indicate that the mortality and morbidity effects associated with the fine fraction of particles show a similar association with ambient SO₂ levels. In these studies, efforts to separate the effects of SO₂ from fine particles have not been successful. Thus, it is not clear whether the two pollutants act synergistically, or whether being generated from similar combustion sources, they represent the same pollution index for the observed effects.

SULFATES

Based on a level determined necessary to protect the most sensitive individuals, the California Air Resources Board (CARB) in 1976 adopted a standard of 25 µg/m³ (24-hour average) for sulfates. There is no federal air quality standard for sulfates.

In recent years, a vast majority of effects (mortality and morbidity) associated with fine particles (PM_{2.5}) and sulfur dioxide have shown a similar association with ambient sulfate levels in some population studies. The efforts to fully separate the effects of sulfates from other coexisting pollutants have not been successful. This may be due to the fact that these pollutants covary under ambient conditions, having been emitted from common sources; and the effects observed may be due to the combination of pollutants, rather than a single pollutant.

A clinical study involving exposure of human subjects to sulfuric acid aerosol indicated that adolescent asthmatics may be a susceptible population subgroup with some changes in lung function observed with exposures below 100 µg/m³. In general, however, laboratory exposures of human volunteers to sulfates at or near ambient levels have not found significant changes in lung function.

Results from animal studies involving exposures to sulfuric acid aerosol, ammonium bisulfate and ammonium sulfate indicate that acidic particles (former two) are more toxic than non-acidic particles (latter). In addition, the severity or magnitude of both

mortality and morbidity effects is relatively higher in population studies of the eastern United States and Canada where sulfate concentrations are higher than for those observed in the western United States. Mixed results have been reported from studies which attempted to ascertain the role of acidity in determining the observed toxicity.

LEAD



The U.S. EPA has recently reviewed the health effects of ambient lead exposures in conjunction with a review of the NAAQS for lead. (U.S. EPA 2006b; U.S. EPA 2007b). The following summary is taken from these reviews.

There are a number of potential public health effects at low level exposures. The health implications are generally indexed by blood lead levels, which are related to lead exposures both from inhalation as well as from ingestion. As identified by EPA, effects include impacts on population IQ, as well as heart disease and kidney disease. The array of health effects includes the following.

- Heme biosynthesis and related functions;
- Neurological development and function;
- Reproduction and physical development;
- Kidney function;
- Cardiovascular function
- Immune function

Children appear to be sensitive to the neurological toxicity of lead, with effects observed at blood lead concentration ranges of 5 – 10 µg/dL, or possibly lower. No clear threshold has yet been established for such effects.

According to the EPA review, the most important effects observed are neurotoxic effects in children and cardiovascular effects in adults. The effects in children include impacts on intellectual attainment and school performance.

EPA has recently revised the NAAQS for lead to a level of 0.15 µg/m³ averaged over a 3 month period to protect against lead toxicity. The following two charts, taken from the U.S. EPA review, depict the health effects of lead in relation to blood levels.

Author: pwong Subject: Sticky Note Date: 9/26/2012 10:25:49 AM

The report (maybe intentionally) does not discuss any recent studies, similar to PM/ozone, regarding inhaled lead which may have been used for the updated NAAQS designation. There is no mention or discussion on the California lead standard which is a 30 day average (1.5 ug/m3). It may helpful to mention that this is the concentration of lead in total suspended particles.

Author: pwong Subject: Sticky Note Date: 9/26/2012 10:25:10 AM

It may also be good to mention that the NAAQS is a "rolling" 3-month average

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Lowest Observed Effect Blood Lead Level	Neurological Effects	Hematological Effects	Immune Effects
30 µg/dL		Increased urinary δ-aminolevulinic acid	
15 µg/dL	Behavioral disturbances (e.g., inattention, delinquency) Altered electrophysiological responses	Erythrocyte protoporphyrin (EP) elevation	
10 µg/dL	Effects on neuromotor function CNS cognitive effects (e.g., IQ deficits)	Inhibition of δ-aminolevulinic acid dehydratase (ALAD) ↓ Pyrimidine-5'-nucleotidase (Py5N) activity inhibition	Effects on humoral (↑ serum IgE) and cell-mediated (↓ T-cell abundance) immunity
5 µg/dL	↓ (???)	↓ (???)	
0 µg/dL			

FIGURE I-2

Summary of Lowest Observed Effect Levels for Key Lead- Induced Health Effects in Children
(From U.S. EPA 2007b)

Lowest Observed Effect Blood Lead Level	Neurological Effects	Hematological Effects	Cardiovascular Effects	Renal Effects
30 µg/dL	Peripheral sensory nerve impairment	Erythrocyte protoporphyrin (EP) elevation in males		Impaired Renal Tubular Function
20 µg/dL	Cognitive impairment			
15 µg/dL	Postural sway	Erythrocyte protoporphyrin (EP) elevation in females Increased urinary δ-aminolevulinic acid		
10 µg/dL		Inhibition of δ-aminolevulinic acid dehydratase (ALAD)	Elevated blood pressure	
5 µg/dL			↓ (???)	Elevated serum creatine (↓ creatine clearance)
0 µg/dL				

FIGURE I-3

Summary of Lowest Observed Effect Levels for Key Lead- Induced Health Effects in Adults
(From U.S. EPA 2007b)

TOXIC AIR CONTAMINANTS

Toxic air contaminants are pollutants for which there generally are no ambient air quality standards. Under California’s Air Toxics Program, CARB staff and Office of Environmental Health Hazard Assessment (OEHHA) assess the health effects of substances that may pose a risk of adverse health effects. These effects are usually an increased risk for cancer or adverse birth outcome. After review by the state Scientific Review Panel, CARB holds a public hearing whether to formally list substances that may pose a significant risk to public health as a Toxic Air Contaminant.

ARB and OEHHA also establish potency factors for air toxics that are carcinogenic. The potency factors can be used to estimate the additional cancer risk from ambient levels of toxics. This estimate represents the chance of contracting cancer in an individual over a lifetime exposure to a given level of an air toxic and is usually expressed in terms of additional cancer cases per million people exposed.

The District conducted studies on the ambient concentrations and estimated the potential health risks from air toxics (SCAQMD, 2008). In the latest study, a two year monitoring program was undertaken at 10 sites throughout the SCAB over the time period 2004-2006. Over 30 substances were measured, and annual average levels were calculated. The results showed that the overall risk for excess cancer from a 70-year lifetime exposure to the levels of air toxics calculated as the average level at the 10 sites was about 1,200 in a million. The largest contributor to this risk was diesel exhaust particulate matter, accounting for about 84% of the air toxics risk. A breakdown of the major contributors to the air toxics risk is shown in **FIGURE I-2** **FIGURE I-4**.

[While the California Air Resources Board listed Diesel Particulate Matter as a Toxic Air Contaminant in 1989, the International Agency for Research on Cancer, an arm of the World Health Organization, recently convened an international panel of scientists to review the published literature regarding the carcinogenicity of diesel combustion emissions. The panel concluded that Diesel Exhaust is a substance that causes cancer in humans \(Benbrahim-Tallaa, 2012\).](#)

- Author: pwing Subject: Sticky Note Date: 9/26/2012 10:26:17 AM
 The respiratory system appears to be a more frequent target than the reproductive system (<http://www.oehha.ca.gov/air/allrels.html>) and thus should be listed as well.
- Author: pwing Subject: Sticky Note Date: 9/26/2012 10:26:24 AM
 OEHHA calculates the potency factors.
- Author: Administrator Subject: Sticky Note Date: 9/14/2012 5:28:36 PM
 It was 1999, not 1989.
- Author: pwing Subject: Sticky Note Date: 9/26/2012 10:26:44 AM
 This gives the impression that IARC only recently began to review diesel. It might be better to discuss the original 1988 IARC designation and the recent update.

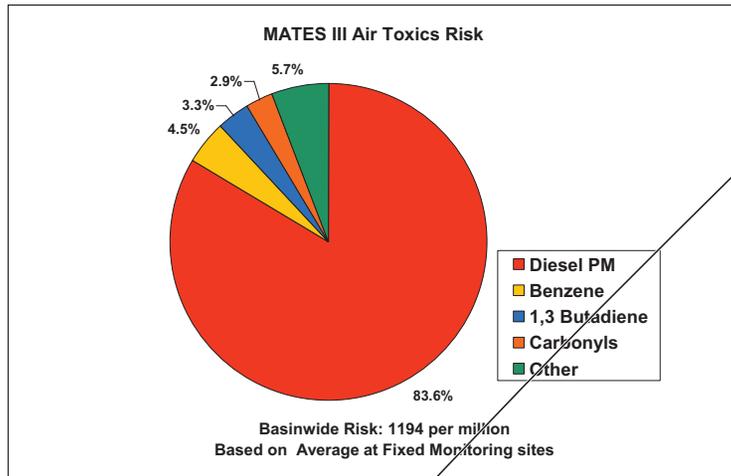


FIGURE I-42

Major Pollutants Contributing to Air Toxics Cancer Risk in the South Coast Air Basin

For non-cancer health effects, OEHHA has developed acute and chronic Reference Exposure Levels (RELs). RELs are concentrations in the air below which adverse health effects are not likely to occur. Acute RELs refer to short-term exposures, generally of one-hour duration. Chronic RELs refer to long-term exposures of several years. The ratio of ambient concentration to the appropriate REL can be used to calculate a Hazard Index. A Hazard Index of less than one would not be expected to result in adverse effects. The measured levels from the most recent study were below the applicable Reference Exposure Levels.

The key air toxics contributing to risk from mobile and stationary sources are listed in TABLE I-9.

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TABLE I-9

Key Toxic Air Contaminants in the SCAB

MOBILE SOURCES	STATIONARY SOURCES
Acetaldehyde	Hexavalent Chromium
Benzene	Methylene Chloride
1,3 Butadiene	Nickel
Diesel Exhaust Particulate Matter	Perchloroethylene
Formaldehyde	Trichloroethylene

CONCLUSION

A large body of scientific evidence shows that the adverse impacts of air pollution in human and animal health are clear. A considerable number of population-based and laboratory studies have established a link between [air pollution and](#) increased morbidity and, in some instances, earlier mortality ~~and air pollution~~.

[As the scientific methods for the study of air pollution health effects has progressed over the past decades, adverse effects have been shown to occur at lower levels of exposure. For some pollutants, no clear thresholds for effects have been demonstrated. The new findings have, in turn, led to the revision and lowering of National Ambient Air Quality Standards which, in the judgment of the Administrator of the U.S. EPA, are necessary to protect public health. The figures below are meant to convey some of the historical context to recent revisions to the NAAQS for ozone and for particulate matter.](#)

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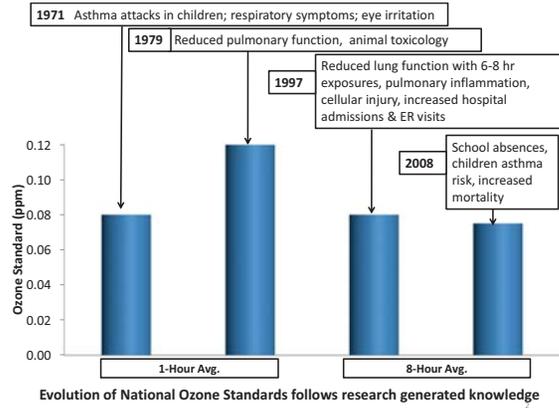


FIGURE I-4

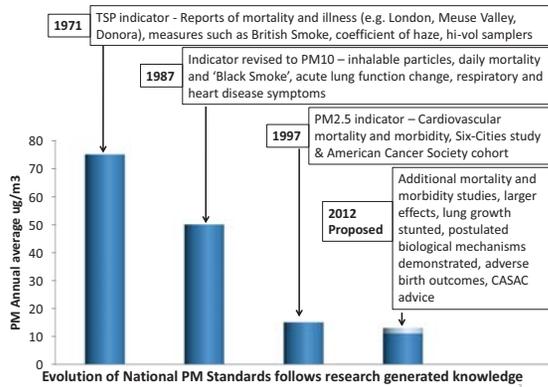


FIGURE I-5

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OEHHA Comments on 2012 Appendix I-Health Effects

From: Marty, Melanie@OEHHA [mailto:Melanie.Marty@oehha.ca.gov]
Sent: Monday, October 01, 2012 4:25 PM
To: Jean Ospital
Subject: FW: Review of Draft 2012 AQMP Appendix I

Hi Jean – Bart and staff reviewed the report and have comments embedded in the pdf. They note that there are many more recent studies that are not cited. May be worth adding more, particularly where they note in the comments.

Hope this is helpful,

Melanie

Melanie Marty, Ph.D.
Assistant Deputy Director
Scientific Affairs Division
Office of Environmental Health Hazard Assessment
(916) 323-8808

From: Ostro, Bart@OEHHA
Sent: Monday, October 01, 2012 3:49 PM
To: Marty, Melanie@OEHHA
Subject: RE: Review of Draft 2012 AQMP Appendix I

Here it is. My general assessment is that for Pm and ozone many of the refs are old and a lot of new studies (2005 on) are not included...I'm not sure how much time Jean wants to put into this. We made some suggested refs along the way but there are dozens more that could be included in an a more current review. b

From: Marty, Melanie@OEHHA
Sent: Monday, October 01, 2012 12:29 PM
To: Ostro, Bart@OEHHA
Subject: FW: Review of Draft 2012 AQMP Appendix I

Hi Bart – Did you guys ever generate comments on the SCAQMD draft?

M.

Melanie Marty, Ph.D.
Assistant Deputy Director
Scientific Affairs Division
Office of Environmental Health Hazard Assessment
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From: Jean Ospital [mailto:JOspital@aqmd.gov]
Sent: Tuesday, September 18, 2012 9:57 AM
To: Marty, Melanie@OEHHA
Cc: Elaine Chang; Philip Fine; Barbara Baird; William Wong
Subject: Review of Draft 2012 AQMP Appendix I

Melanie,

Thank you for your willingness to provide a review of the Draft Appendix I of the District's 2012 Air Quality Management Plan.

As background, the California Health and Safety Code Section 40471 calls for the District to prepare a report on the health impacts of particulate matter pollution in the South Coast Air Basin as part of the preparation of air quality management plans. Appendix I of the AQMP is a review of air pollution health effects, with the section dealing with particulate matter intended to fulfill this requirement. The current draft is available at the following link. <http://www.aqmd.gov/aqmp/2012aqmp/draft/Appendices/Appxl.pdf>. Additional materials related to the AQMP are available at <http://www.aqmd.gov/aqmp/2012aqmp/index.htm>.

As we discussed today, receiving the review before the end of this month would be most helpful for us.

Please give me a call if I can provide any additional information.

Best regards,

Jean

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REVIEW DRAFT
APPENDIX I

HEALTH EFFECTS

SEPTEMBER 2012

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD**

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VICE CHAIR: DENNIS YATES
Mayor, Chino
Cities of San Bernardino

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Cities of Los Angeles County/Eastern Region

JOSIE GONZALES
Supervisor, Fifth District
San Bernardino County Representative

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SHAWN NELSON
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CLARK E. PARKER, Ph.D.
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JAN PERRY
Councilmember, Ninth District
City of Los Angeles

MIGUEL A. PULIDO
Mayor, Santa Ana
Cities of Orange County

EXECUTIVE OFFICER:

BARRY R. WALLERSTEIN, D.Env.

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ATTACHMENT 1
Roster of the 2012 AQMP Advisory Council

ATTACHMENT 2
Comments received from Advisory Council review

Author: sgreen Subject: Sticky Note Date: 9/26/2012 11:42:17 AM
Add:
Adverse birth outcomes such as low birth weight

INTRODUCTION

This document presents a summary of scientific findings on the health effects of ambient air pollutants. The California Health and Safety Code Section 40471(b) requires that the South Coast Air Quality Management District prepare a report on the health impacts of particulate matter in the South Coast Air Basin (SCAB) in conjunction with the preparation of the Air Quality Management Plan revisions. This document, which was prepared to satisfy that requirement, also includes the effects of the other major pollutants.

HEALTH EFFECTS OF AIR POLLUTION

Ambient air pollution is a major public health concern. Excess deaths and increases in illnesses associated with high air pollution levels have been documented in several episodes as early as 1930 in Meuse Valley, Belgium; 1948 in Donora, Pennsylvania; and 1952 in London. Although levels of pollutants that occurred during these acute episodes are now unlikely in the United States, ambient air pollution continues to be linked to increases in illness (morbidity) and increases in death rates (mortality).

The adverse health effects associated with air pollution are diverse and include:

- Increased mortality
- Increased health care utilization (hospitalization, physician and emergency room visits)
- Increased respiratory illness (symptoms, infections, and asthma exacerbation)
- Decreased lung function (breathing capacity)
- Lung inflammation
- Potential immunological changes
- Increased airway reactivity to a known chemical exposure - a method used in laboratories to evaluate the tendency of airways to have an increased possibility of developing an asthmatic response
- A decreased tolerance for exercise

The evidence linking these effects to air pollutants is derived from population-based observational and field studies (epidemiological) as well as controlled laboratory studies involving human subjects and animals. There have been an increasing number of studies focusing on the mechanisms (that is, on learning how specific organs, cell types, and biochemicals are involved in the human body's response to air pollution) and specific pollutants responsible for individual effects. Yet the underlying biological pathways for these effects are not always clearly understood.

Although individuals inhale pollutants as a mixture under ambient conditions, the regulatory framework and the control measures developed are mostly pollutant-specific. This is appropriate, in that different pollutants usually differ in their sources, their times and places of occurrence, the kinds of health effects they may cause, and their overall levels of health risk. Different pollutants, from the same or different sources, may sometimes act together to harm health more than they would acting separately. Nevertheless, as a practical matter, health scientists, as well as regulatory officials, usually must deal with one pollutant at a time in determining health effects and in adopting air quality standards. To meet the air quality standards, comprehensive plans are developed such as the Air Quality Management Plan (AQMP), and to minimize toxic exposure a local air toxics control plan is also prepared. These plans examine multiple pollutants, cumulative impacts, and transport issues related to attaining healthful air quality. A brief overview of the effects observed and attributed to various air pollutants is presented in this document.

This summary is drawn substantially from reviews presented previously (SCAQMD, 1996, 2003, 2007), and from reviews on the effects of air pollution by the American Thoracic Society (ATS, 1996), the U.S. EPA reviews for ozone (U.S. EPA, 2006), Carbon Monoxide (U.S. EPA, 2010), and Particulate Matter (U.S. EPA, 2004, 2009), from a published review of the health effects of air pollution (Brunekreef and Holgate, 2002), and from reviews prepared by the California EPA Office of the Environmental Health Hazard Assessment for Particulate Matter (Cal EPA, 2002) and for Ozone (Cal EPA, 2005). Additional materials are from EPA's current review of the ozone standard and health effects (EPA, 2011). More detailed citations and discussions on air pollution health effects can be found in these references.¹

Author: sgreen Subject: Sticky Note Date: 9/26/2012 11:43:36 AM
Add something about the increased susceptibility of children and the elderly.

Author: sgreen Subject: Sticky Note Date: 9/26/2012 11:46:15 AM
and Nitrogen Dioxide (Cal EPA, 2007)

¹ Most of the studies referred to in this appendix are cited in the above sources. Only more recent specific references will be cited in this summary.

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OZONE

Ozone is a highly reactive compound, and is a strong oxidizing agent. When ozone comes into contact with the respiratory tract, it can react with tissues and cause damage in the airways. Since it is a gas, it can penetrate into the gas exchange region of the deep lung.

The EPA primary standard for ozone, adopted in 2008, is 0.075 ppm averaged over eight hours. The California Air Resources Board (CARB) has established standards of 0.09 ppm averaged over one hour and at 0.070 ppm averaged over eight hours.

The major subgroups of the population considered to be at increased risk from ozone exposure are outdoor exercising individuals, including children, and people with preexisting respiratory disease(s) such as asthma. The data base identifying the former group as being at increased risk to ozone exposure is much stronger and more quantitative than that for the latter group, probably because of a larger number of studies conducted with healthy individuals. The adverse effects reported with short-term ozone exposure are greater with increased activity because activity increases the breathing rate and the volume of air reaching the lungs, resulting in an increased amount of ozone reaching the lungs. Children may be a particularly vulnerable population to air pollution effects because they spend more time outdoors, are generally more active, and have a higher ventilation rate than adults.

A number of adverse health effects associated with ambient ozone levels have been identified from laboratory and epidemiological studies (EPA, 1996; 2006, 2011; ATS, 1996). These include increased respiratory symptoms, damage to cells of the respiratory tract, decrease in lung function, increased susceptibility to respiratory infection, and increased risk of hospitalization.

Increases in ozone levels are associated with elevated absences from school. The Children's Health Study, conducted by researchers at the University of Southern California, followed a cohort of children that live in 12 communities in Southern California with differing levels of air pollution for several years. A publication from this study reported that school absences in fourth graders for respiratory illnesses were associated with ambient ozone levels. An increase of 20 ppb ozone was associated with an 83% increase in illness-related absence rates (Gilliland, 2001).

The number of hospital admissions and emergency room visits for all respiratory causes (infections, respiratory failure, chronic bronchitis, etc.) including asthma

shows a consistent increase as ambient ozone levels increase in a community. These excess hospital admissions and emergency room visits are observed when hourly ozone concentrations are as low as 0.06 to 0.10 ppm.

Numerous recent studies have found positive associations between increases in ozone levels and excess risk of mortality. These associations persist even when other variables including season and levels of particulate matter are accounted for. This indicates that ozone mortality effects may be independent of other pollutants (Bell, 2004).

Multicity studies of short-term ozone exposures (days) and mortality have also examined regional differences. Evidence was provided that there were generally higher ozone-mortality risk estimates in northeastern U.S. cities, with the southwest and urban mid-west cities showing lower or no associations (Smith, 2009; Bell, 2008). Another long-term study of a national cohort found that long-term exposures to ozone were associated with respiratory-related causes of mortality, but not cardiovascular-related causes, when PM2.5 exposure were also included in the analysis.

Several population-based studies suggest that asthmatics are more adversely affected by ambient ozone levels, as evidenced by increased hospitalizations and emergency room visits. Laboratory studies have attempted to compare the degree of lung function change seen in age and gender-matched healthy individuals versus asthmatics and those with chronic obstructive pulmonary disease. While the degree of change evidenced did not differ significantly, that finding may not accurately reflect the true impact of exposure on these respiration-compromised individuals. Since the respiration-compromised group may have lower lung function to begin with, the same degree of change may represent a substantially greater adverse effect overall.

Another publication from the Children's Health Study focused on children and outdoor exercise. In communities with high ozone concentrations, the relative risk of developing asthma in children playing three or more sports was found to be over three times higher than in children playing no sports (McConnell, 2002). These findings indicate that new cases of asthma in children are associated with heavy exercise in communities with high levels of ozone. While it has long been known that air pollution can exacerbate symptoms in individuals with respiratory disease, this is among the first studies that indicate ozone exposure may be causally linked to asthma onset.

Author: BOstro Subject: Sticky Note Date: 10/1/2012 3:34:34 PM
You could include long-term exposures and resp mortality (Jerrett) and Mortality among those with pre-existing chronic disease (Zanobetti & Schwartz, 2011)

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In addition, human and animal studies involving both short-term (few hours) and long-term (months to years) exposures indicate a wide range of effects induced or associated with ambient ozone exposure. These are summarized in Table I-1.

TABLE I-1

Adverse Health Effects of Ozone (O₃) - Summary of Key Studies

O ₃ CONCENTRATION AND EXPOSURE HR., PPM	HEALTH EFFECT
Ambient air containing 0.10 - 0.15 daily 1-h max over days to weeks; ≥ 0.05 (8 hour average)	Decreased breathing capacity, in children, adolescents, and adults exposed to O ₃ outdoors Exacerbation of respiratory symptoms (e.g., cough, chest pain) in individuals with preexisting disease (e.g., asthma) with low ambient exposure, decreased temperature, and other environmental factors resulting in increased summertime hospital admissions and emergency department visits for respiratory causes
≥0.12 (1-3h) ≥0.06 (6.6h) (chamber exposures)	Decrements in lung function (reduced ability to take a deep breath), increased respiratory symptoms (cough, shortness of breath, pain upon deep inspiration), increased airway responsiveness and increased airway inflammation in exercising adults Effects are similar in individuals with preexisting disease except for a greater increase in airway responsiveness for asthmatic and allergic subjects Older subjects (>50 yrs old) have smaller and less reproducible changes in lung function Attenuation of response with repeated exposure
≥0.12 with prolonged, repeated exposure (chamber exposures)	Changes in lung structure, function, elasticity, and biochemistry in laboratory animals that are indicative of airway irritation and inflammation with possible development of chronic lung disease Increased susceptibility to bacterial respiratory infections in laboratory animals

From: SCAQMD, 1996; EPA, 2007

Some lung function responses (volume and airway resistance changes) observed after a single exposure to ozone exhibit attenuation or a reduction in magnitude with repeated exposures. Although it has been argued that the observed shift in response is evidence of a probable adaptation phenomenon, it appears that while functional changes may exhibit adaptation, biochemical and cellular changes which may be

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associated with episodic and chronic exposure effects may not exhibit similar adaptation. That is, internal damage to the respiratory system may continue with repeated ozone exposures, even if externally observable effects (chest symptoms and reduced lung function) disappear.

In a laboratory, exposure of human subjects to low levels of ozone causes reversible decrease in lung function as assessed by various measures such as respiratory volumes, airway resistance and reactivity, irritative cough and chest discomfort. Lung function changes have been observed with ozone exposure as low as 0.06 to 0.12 ppm for 6-8 hours under moderate exercising conditions. Similar lung volume changes have also been observed in adults and children under ambient exposure conditions (0.10 - 0.15 ppm). The responses reported are indicative of decreased breathing capacity and are reversible.

The results of several studies where human volunteers were exposed to ozone for 6.6 hours at levels between 0.04 and 0.12 ppm were recently summarized (Brown, 2008). As shown in the figure below, there is an increasing response on lung function with increasing exposure levels in moderately exercising subjects.

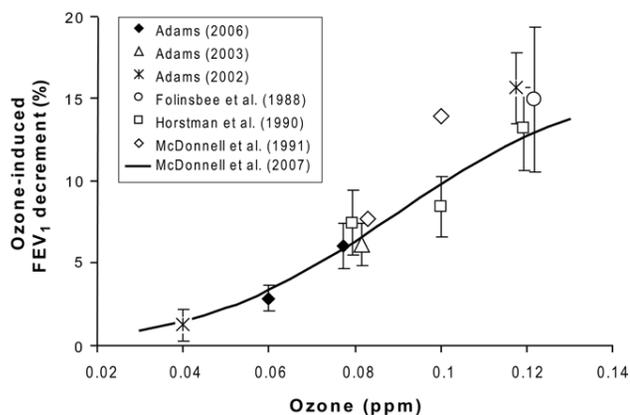


FIGURE I-1

Comparison of mean ozone-induced decrements in lung function following 6.6 hours of ozone exposure (from Brown, 2008)

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In addition to controlled laboratory conditions, studies of individuals exercising outdoors, including children attending summer camp, have shown associations of reduced lung function with ozone exposure. There were wide ranges in responses among individuals.

Results of epidemiology studies support the relationship between ozone exposure and respiratory effects. Several, but not all, studies have found associations of short-term ozone levels and hospital admissions and emergency department admissions for respiratory-related conditions (EPA, 2011).

In laboratory studies, cellular and biochemical changes associated with respiratory tract inflammation have also been consistently reported in the airway lining after low level exposure to ozone. These changes include an increase in specific cell types and in the concentration of biochemical mediators of inflammation and injury such as cytokines and fibronectin. Indications of lung injury and inflammatory changes have been observed in healthy adults exposed to ozone in the range of 0.06 to 0.10 ppm.

The susceptibility to ozone observed under ambient conditions could be due to the combination of pollutants that coexist in the atmosphere or ozone may actually sensitize these subgroups to the effects of other pollutants.

Some animal studies show results that indicate possible chronic effects including functional and structural changes of the lung. These changes indicate that repeated inflammation associated with ozone exposure over a lifetime may result in sufficient damage to respiratory tissue such that individuals later in life may experience a reduced quality of life in terms of respiratory function and activity level achievable. An autopsy study involving Los Angeles County residents provided supportive evidence of lung tissue damage (structural changes) attributable to air pollution.

A study of birth outcomes in southern California found an increased risk for birth defects in the aortic and pulmonary arteries associated with ozone exposure in the second month of pregnancy (Ritz et al., 2002). This is the first study linking ambient air pollutants to birth defects in humans. Studies conducted since mostly focusing on cardiac and oral cleft defects have found mixed results, with some showing associations, but others did not. Confirmation by further studies is needed.

In summary, adverse effects associated with ozone exposures have been well documented, although the specific causal mechanism is still somewhat unclear.

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It may be instructive to provide the overall EPA staff preliminary conclusions on the causality on ozone health effects for the health outcomes evaluated (EPA, 2011). These are provided in the two tables below.

TABLE I-2

Summary of Causal Determinations for Short-Term Exposures to Ozone

HEALTH CATEGORY	CAUSAL DETERMINATION
Respiratory Effects	Causal relationship
Cardiovascular Effects	Suggestive of a causal relationship
Central Nervous System Effects	Suggestive of a causal relationship
Effects on Liver and Xenobiotic Metabolism	Inadequate to infer a causal relationship
Effects on Cutaneous and Ocular Tissues	Inadequate to infer a causal relationship
Mortality	Likely to be a causal relationship

From EPA, 2011

TABLE I-3

Summary of Causal Determinations for Long-Term Exposures to Ozone

HEALTH CATEGORY	CAUSAL DETERMINATION
Respiratory Effects	Likely to be a causal relationship
Cardiovascular Effects	Suggestive of a causal relationship
Reproductive and Developmental Effects	Suggestive of a causal relationship
Central Nervous System Effects	Suggestive of a causal relationship
Carcinogenicity and Genotoxicity	Inadequate to infer a causal relationship
Mortality	Suggestive of a causal relationship

From EPA, 2011

PARTICULATE MATTER

Airborne particulates are a complex group of pollutants that vary in source, size and composition, depending on location and time. The components include nitrates, sulfates, elemental carbon, organic carbon compounds, acid aerosols, trace metals, and material from the earth's crust. Substances of biological origin, such as pollen and spores, may also be present.

Until several years ago, the health effects of particulates were focused on those sized 10 μm (micrometers) aerodynamic diameter and smaller. These can be inhaled through the upper airways and deposited in the lower airways and gas exchange tissues in the lung. These particles are referred to as PM10. EPA initially promulgated ambient air quality standards for PM10 of 150 $\mu\text{g}/\text{m}^3$ averaged over a 24-hour period, and 50 $\mu\text{g}/\text{m}^3$ for an annual average. EPA has since rescinded the annual PM10 standard, but kept the 24-hour standard.

In recent years additional focus has been placed on particles having an aerodynamic diameter of 2.5 μm or less (PM2.5). A greater fraction of particles in this size range can penetrate and deposit deep in the lungs. The EPA recently lowered the air quality standards for PM2.5 to 35 $\mu\text{g}/\text{m}^3$ for a 24-hour average and reaffirmed 15 $\mu\text{g}/\text{m}^3$ for an annual average standard. There was considerable controversy and debate surrounding the review of particulate matter health effects and the consideration of ambient air quality standards (Kaiser, 1997; Vedal, 1997) when the EPA promulgated the initial PM2.5 standards in 1997.

Since that time, numerous studies have been published, and some of the key studies were closely scrutinized and analyses repeated. The result is that there are now substantial data confirming the adverse health effects of PM2.5 exposures.

There are also differences in the composition and sources of particles in the different size ranges that may have implications for health effects. The particles larger than 2.5 μm (often referred to as the coarse fraction) are mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and resuspension of particles from the ground or road surfaces by wind and human activities.

In contrast, particles smaller than 2.5 μm are mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary combustion sources. The particles are either directly emitted or are formed

in the atmosphere from gases that are emitted. Components from material in the earth's crust, such as dust, are also present, with the amount varying in different locations.

Attention to another range of very small particles has been increasing over the last few years. These are generally referred to as "ultrafine" particles, with diameters of 0.1 μm or less. These particles are mainly from fresh emissions of combustion sources, but are also formed in the atmosphere from photochemical reactions. Ultrafine particles have relatively short half lives (minutes to hours) and rapidly grow through condensation and coagulation process into larger particles within the PM_{2.5} size range. These particles are garnering interest since laboratory studies indicate that their toxicity may be higher on a mass basis than larger particles, and there is evidence that these small particles can translocate from the lung to the blood and to other organs of the body.

There have been several reviews of the health effects of ambient particulate matter (ATS, 1996; Brunekreef, 2002; U.S. EPA, 2004; U.S. EPA, 2009). In addition, the California Air Resources Board (CARB) and the Office of Environmental Health and Hazard Assessment (OEHHA) have reviewed the adequacy of the California Air Quality Standards for Particulate Matter (Cal EPA, 2002).

The major types of effects associated with particulate matter include:

- Increased mortality
- Exacerbation of respiratory disease and of cardiovascular disease as evidenced by increases in:
 - Respiratory symptoms
 - Hospital admissions and emergency room visits
 - Physician office visits
 - School absences
 - Work loss days
- Effects on lung function
- Changes in lung morphology

The current federal and California standards are listed below:

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although some studies show lower effects of UF

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you could add nonfatal MI, infant lower resp illness, adverse birth outcomes.

TABLE I-4

Ambient Air Quality Standards for Particulate Matter

STANDARD	FEDERAL	CALIFORNIA
PM10 24-Hour average	150 µg/m ³	50 µg/m ³
PM10 Annual Average	--	20 µg/m ³
PM 2.5 24-Hour Average	35 µg/m ³	--
PM 2.5 Annual Average	15 µg/m ³	12 µg/m ³

Author: BOstro Subject: Sticky Note Date: 10/1/2012 3:39:19 PM
 Unfortunately this 1996 is very dated. The 2010 Brook study and later Pope and Dockery review are more relevant. The brook focuses on PM2.5 long and short term studies and is an excellent review of the epi, tox, clinical studies as well as mechanisms.

Short-Term Exposure Effects

Epidemiological studies have provided evidence for most of the effects listed above. An association between increased daily or several-day-average concentrations of PM10 and excess mortality and morbidity is consistently reported from studies involving communities across the U.S. as well as in Europe, Asia, and South America. A review and analysis of epidemiological literature for acute adverse effects of particulate matter was published by the American Thoracic Society in 1996. Several adverse effects were listed as associated with daily PM10 exposures, as listed in Table I-5, undertaken by Dockery and Pope to estimate these effects as percent increase in mortality associated with each incremental increase of PM10 by 10 µg/m³. The estimates are presented in Table I-5. It also appears that individuals who are elderly or have preexistent lung or heart disease are more susceptible than others to the adverse effects of PM10 (ATS, 1996). Since then many more recent studies have confirmed that excess mortality and morbidity are associated with short term particulate matter levels (Pope, 2006).

Estimates of mortality effects from these studies of PM10 exposures range from 0.3 to 1.7% increase for a 10 µg/m³ increase in PM10 levels. The National Morbidity, Mortality, and Air Pollution Study (NMMAPS), a study of 20 of the largest U.S. cities, determined a combined risk estimate of about a 0.5% increase in total mortality for a 10 µg/m³ increase in PM10 (Samet, 2000a). This study also analyzed the effects of gaseous co-pollutants. The results indicated that the association of PM10 and mortality were not confounded by the presence of the gaseous pollutants. When the gaseous pollutants were included in the analyses, the significance of the PM10 estimates remained. The PM10 effects were reduced somewhat when O₃ was also considered and tended to be variably decreased when NO₂, CO, and SO₂ were

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added to the analysis. These results argue that the effects are likely due to the particulate exposures; they cannot readily be explained by coexisting weather stresses or other pollutants.

An expansion of the NMMAPS study to 90 U.S. Cities also reported association with PM10 levels and mortality (Samet 2000b). It was discovered that this study was one that used a flawed statistical software package. The investigators have reanalyzed the data using corrected settings for the software (Dominici, 2002a, Dominici 2002b). When the estimates for the 90 cities in the study were recalculated, the estimate changed from 0.41% increase in mortality for a 10 $\mu\text{g}/\text{m}^3$ increase in PM10 to a 0.27% increase. There remained a strong positive association between acute exposure to PM10 and mortality. Thus while the quantitative estimate was reduced, the major findings of the study did not change.

TABLE I-5

Combined Effect Estimates of Daily Mean Particulate Pollution (PM10)

	% CHANGE IN HEALTH INDICATOR PER EACH 10 $\mu\text{g}/\text{m}^3$ INCREASE IN PM10
Increase in Daily Mortality	
Total deaths	1.0
Respiratory deaths	3.4
Cardiovascular deaths	1.4
Increase in Hospital Usage (all respiratory diagnoses)	
Admissions	1.4
Emergency department visits	0.9
Exacerbation of Asthma	
Asthmatic attacks	3.0
Bronchodilator use	12.2
Emergency department visits*	3.4
Hospital admissions	1.9
Increase in Respiratory Symptom Reports	
Lower respiratory	3.0
Upper respiratory	0.7

TABLE I-5 (concluded)

Combined Effect Estimates of Daily Mean Particulate Pollution

	% CHANGE IN HEALTH INDICATOR PER EACH 10 µg/m³ INCREASE IN PM10
Cough	2.5
Decrease in Lung Function	
Forced expiratory volume	0.15
Peak expiratory flow	0.08

* One study only

(Source: American Journal of Respiratory and Critical Care Medicine, Vol. 153, 113-50, 1996)

Studies of PM2.5 also find associations with elevated mortality. The estimates for PM2.5 generally are in the range of 2.0 to 8.5% increase in total deaths per 25 µg/m³ increase in 24-hour PM2.5 levels. The estimates for cardiovascular related mortality range from 3.0 to 7.0% per 25 µg/m³ 24-hour PM2.5, and for respiratory mortality estimates range from 2.0 to 7.0% per 25 µg/m³ 24-hour PM2.5.

Several studies have attempted to assess the relative importance of particles smaller than 2.5 µm and those between 2.5 µm and 10 µm (PM10-2.5). While some studies report that PM2.5 levels are better predictors of mortality effects, others suggest that PM10-2.5 is also important. Most of the studies found higher mortality associated with PM2.5 levels than with PM10-2.5. For example, a study of six cities in the U.S. found that particulate matter less than 2.5 µm was associated with increased mortality, but that the larger particles were not. Other studies in Mexico City and Santiago, Chile reported that PM10-2.5 was as important as PM2.5. Overall effects estimates for PM10-2.5 fall in the range of 0.5 to 6.0 % excess mortality per 25 µg/m³ 24-hour average.

The relative importance of both PM2.5 and PM10-2.5 may vary in different regions depending on the relative concentrations and components, which can also vary by season. More research is needed to better assess the relative effects of fine (PM2.5) and coarse (PM10-2.5) fractions of particulate matter on mortality.

A number of studies have evaluated the association between particulate matter exposure and indices of morbidity such as hospital admissions, emergency room

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visits or physician office visits for respiratory and cardiovascular diseases. The effects estimates are generally higher than the effects for mortality. The effects are associated with measures of PM10 and PM2.5. Effects are also associated with PM10-2.5. Thus, it appears that when a relatively small number of people experience severe effects, larger numbers experience milder effects, which may relate either to the coarse or to the fine fraction of airborne particulate matter.

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In the NMMAPS study, hospital admissions for those 65 years or older were assessed in 14 cities. Hospital admissions for these individuals showed an increase of 6% for cardiovascular diseases and a 10% increase for respiratory disease admissions, per 50 $\mu\text{g}/\text{m}^3$ increase in PM10. The excess risk for cardiovascular disease ranges from 3-10% per 50 $\mu\text{g}/\text{m}^3$ PM10 and from 4-10% per 25 $\mu\text{g}/\text{m}^3$ PM2.5 or PM10-2.5.

Similarly, school absences, lost workdays and restricted activity days have also been used in some studies as indirect indicators of acute respiratory conditions. The results are suggestive of both immediate and delayed impact on these parameters following elevated particulate matter exposures. These observations are consistent with the hypothesis that increased susceptibility to infection follows particulate matter exposures.

Some studies have reported that short-term particulate matter exposure is associated with changes in lung function (lung capacity and breathing volume); upper respiratory symptoms (hoarseness and sore throat); and lower respiratory symptoms (increased sputum, chest pain and wheeze). The severity of these effects is widely varied and is dependent on the population studied, such as adults or children with and without asthma. Sensitive individuals, such as those with asthma or pre-existing respiratory disease, may have increased or aggravated symptoms associated with short-term particulate matter exposures. Several studies have followed the number of medical visits associated with pollutant exposures. A range of increases from 3% to 42% for medical visits for respiratory illnesses was found corresponding to a 50 $\mu\text{g}/\text{m}^3$ change in PM10. A limited number of studies also looked at levels of PM2.5 or PM10-2.5. The findings suggest that both the fine and coarse fractions may have associations with some respiratory symptoms.

The biological mechanisms by which particulate matter can produce health effects are being investigated in laboratory studies. Inflammatory responses in the respiratory system in humans and animals exposed to concentrated ambient particles have been measured. These include effects such as increases in neutrophils in the lungs. Other changes reported include increased release of cytokines and interleukins,

chemicals released as part of the inflammatory process. The effects of particulate matter may be mediated in part through the production of reactive oxygen species during the inflammatory process. Recent reviews discuss mechanistic studies in more detail (Brunekreef, 2002; Brook, 2004).

Long-Term Exposure Effects

While most studies have evaluated the acute effects, some studies specifically focused on evaluating the effects of chronic exposure to PM10 and PM2.5. Studies have analyzed the mortality of adults living in different U.S. cities. After adjusting for important risk factors, taken as a whole these studies found a positive association of deaths and exposure to particulate matter. A similar association was observable in both total number of deaths and deaths due to specific causes. The largest effects were observed from cardiovascular causes and ischemic heart disease. A shortening of lifespan was also reported in these studies.

Since the initial promulgation by EPA of the National Ambient Air Quality Standards for PM2.5, controversy has remained over the association of mortality and exposures to PM2.5. Thus an expanded discussion of these studies is presented below.

Significant associations for PM2.5 for both total mortality and cardiorespiratory mortality were reported in a study following a national cohort recruited by the American Cancer Society for a Cancer Prevention Study over several years. A re-analysis of the data from this study confirmed the initial finding (Krewski, 2000). In this study, mortality rates and PM2.5 levels were analyzed for 51 metropolitan areas of the U.S. Average levels from monitors in each area were used to estimate exposures. At these levels of aggregation, regional differences in the association of PM2.5 and mortality were noted, with higher associations in the Northeast, and lower or non-significant associations in the West.

The Harvard Six Cities Study evaluated several size ranges of particulate matter and reported significant associations with PM15, PM2.5, sulfates, and non-sulfate particles, but not with coarse particles (PM15 – PM2.5). An extension of the Harvard Six Cities Cohort confirmed the association of mortality with PM2.5 levels (Laden, 2006). These studies provide evidence that the fine particles, as measured by PM2.5, may be more strongly associated with mortality effects from long-term particulate matter exposures than are coarse compounds. An update to this study covering a follow-up over the years 1974 to 2009 (Lepeule, 2012) was recently published. Findings indicated a linear relationship of PM2.5 levels and mortality

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from all causes, cardiovascular causes, and from lung cancer. According to the authors, the PM2.5 levels decreased over time, but no evidence of a threshold for these effects was found.

A follow-up study of the American Cancer Society cohort confirmed and extended the findings in the initial study. The researchers estimated that, on average, a 10 ug/m3 increase in fine particulates was associated with approximately a 4% increase in total mortality, a 6% increase in cardiopulmonary mortality, and an 8% increase risk of lung cancer mortality (Pope, 2002). The magnitude of effects is larger in the long-term studies than in the short-term investigations. In an additional re analysis and extension of the American Cancer Society cohort from 1982 to 2000 (Krewski, 2009), and including additional metropolitan areas for the most recent years, effects estimates on mortality were similar, though somewhat higher, than those reported previously.

Other national studies include an analysis of mortality and PM2.5 exposures in a Medicare population. Zeger and Associates (2008) assembled a Medicare cohort by including all Medicare enrollees residing in zip codes with centroids within 6 miles of a PM2.5 monitor. PM2.5 data was obtained from the monitoring stations, and mean annual levels were called for the zip codes within six miles of each monitor. The estimated associations between exposures to PM2.5 and mortality for the eastern and central portions of the U.S were similar to those previously published in the Six Cities Study and the American Cancer Society cohorts. The authors reported that there were no significant associations between zip code levels of PM2.5 and mortality rates in the western region of the U.S. This lack of association was attributed largely to the higher PM2.5 levels in Los Angeles area counties compared to other western urban areas, but there were not higher mortality rates in these counties. The authors further reported that they found no associations of PM2.5 with mortality in persons aged 85 years or higher.

Analyses of mortality and PM2.5 levels specific to California have also been reported. A cohort of elderly individuals (average age of 65 yr in 1973) recruited from 11 California counties was followed over several years (Enstrom, 2005). An association for exposure with all cause deaths was reported from 1973–1982. However, no significant association was found in the later time period of 1983–2002. Pollutant levels were taken from ambient monitors and averaged over each county to estimate exposures.

Author: sgreen Subject: Sticky Note Date: 9/26/2012 1:59:40 PM
Also can add a recent study conducted in Canada by Crouse et al. 2012 (EHP 120:965-970). Study found 15% increase in all-cause mortality and 31% increase in ischemic heart disease mortality for each 10ug/m3 increase in PM 2.5. Mean concentration among all study subjects was only 8.7 ug/m3.

Two analyses of the American Cancer Society cohort focused [specifically](#) on the Los Angeles [Metropolitan](#) area using methods to estimate exposures on a finer geographical scale than previous studies that used geographic scales at the county or metropolitan area. Using data from monitoring stations in the Los Angeles area, ~~one~~ study applied interpolation methods (Jerrett, 2005) and another applied land use regression techniques (Krewski, 2009) to estimate exposures to the study individuals. Significant associations of PM2.5 with mortality from all causes and cardiopulmonary disease were reported, with the magnitude of risks being up to three times higher than those from the national studies of the American Cancer Society cohort. This provides evidence that using methods to provide more detailed exposure estimates can result in stronger associations of PM2.5 and mortality.

~~Two~~ recent reports have been released looking at air pollution and health effects in California. One study (Lipsett, 2011) followed school teachers recruited in 1995, and followed through 2005. Pollutant exposures at the subject residence were estimated using data from ambient monitors, and extrapolated using a distance weighted method. The authors reported significant association of PM2.5 levels and mortality from ischemic heart disease, but no associations were found with all cause, cardiovascular, or respiratory disease.

The second study (Jerrett, 2011) followed individuals in ~~the Los Angeles area~~ [California](#) from the American Cancer Society cohort recruited starting in 1982, with follow up to 2000. Pollutant levels at subject residences were estimated using several methods. All but one of the methods found no association of all-cause mortality with PM2.5 levels. All exposure estimation methods were reported to have found significant associations with ischemic heart disease mortality, however. The authors noted that mortality rates differ in urban areas compared to non-urban areas, and so included a variable for this in a land use regression model to estimate effects on mortality. When the authors applied the land use regression model including an urban indicator to estimate exposures, all-cause mortality, mortality from cardiovascular disease, and mortality from ischemic heart disease were all significantly associated with PM2.5 levels.

[The U.S. EPA has recently proposed to lower the annual National Ambient Air Quality Standard for PM2.5 \(U.S. EPA, 2012a\). EPA also released a Regulatory Impact Analysis \(U.S. EPA 2012b\) which looked at the costs and benefits of alternate PM2.5 stand levels. As part of the analysis, EPA also looked at California specific studies regarding PM2.5 and mortality published in the scientific literature. The EPA](#)

[analysis concluded "most of the cohort studies conducted in California report central effect estimates similar to the \(nation-wide\) all-cause mortality risk estimate we applied from Krewski et al. \(2009\) and Laden et al. \(2006\) albeit with wider confidence intervals. A couple cohort studies conducted in California indicate higher risks than the risk estimates we applied." Thus in EPA's judgment the California related studies provided estimates of mortality consistent with or higher than those from the national studies.](#)

Other studies report evidence indicating that particulate matter exposure early in pregnancy may be associated with lowered birth weights (Bobak, 1999). Studies from the U.S., the Czech Republic and Mexico City have reported that neonatal and early postnatal exposure to particulate matter may lead to increased infant mortality. A more recent study in Southern California found increased risks for infant deaths associated with exposures to particulates and other pollutants (Ritz, 2006). These results suggest that infants may be a subgroup affected by particulate matter exposures.

In addition, some long-term effect studies have reported an increased risk of mortality from lung cancer associated with particulate matter exposures. A study involving California Seventh Day Adventists (very few of whom smoke) has reported an association of lung cancer mortality with PM10 levels. It is not clear from these studies whether the association relates to causation of disease, or whether individuals with cancer are more susceptible to other effects of particles leading to the observed mortality association. A study that followed a large number of individuals living in the largest U.S. cities found elevated lung cancer risk associated with long-term average PM2.5 levels (Pope, 2002).

Several studies have assessed the effects of long-term particulate matter exposure on respiratory symptoms and lung function changes. Associations have been found with symptoms of chronic bronchitis and decreased lung function. A study of school children in 12 communities in Southern California showed significant association of particulate matter with bronchitis or phlegm in children with asthma. These effects were also associated with NO₂ and acid vapor levels.

A cohort of fourth graders from the Southern California communities was followed over a period of four years by the Children's Health Study. A lower rate of growth in lung function was found in children living in areas with higher levels of particulate pollution (Gauderman, 2000). Decreases in lung function growth were associated with PM10, PM2.5, PM10-2.5, acid vapor, and NO₂. There was no association with

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ozone levels. The investigators were not able to identify independent effects of the pollutants, but noted that motor vehicle emissions are a major source of the pollutants.

A follow-up study on a second cohort of children confirmed the findings that decreased lung function growth was associated with particulates, nitric oxides, and elemental carbon levels (Gauderman, 2002). Elemental carbon is often used as a measure for diesel particulate. Additionally, children who moved to areas with less air pollution were found to regain some of the lung function growth rate (Avol, 2001). By the time the fourth graders graduated from high school, a significant number showed lower lung function. The risk of lower lung function was about five times higher in children with the highest PM_{2.5} exposure when compared to the lowest exposure communities (Gauderman, 2004). These deficits are likely to persist since the children were at the end of their growth period.

Despite data gaps, the extensive body of epidemiological studies has both qualitative and quantitative consistency suggestive of causality. A considerable body of evidence from these studies suggests that ambient particulate matter, alone or in combination with other coexisting pollutants, is associated with significant increases in mortality and morbidity in a community.

In summary, the scientific literature indicates that an increased risk of mortality and morbidity is associated with particulate matter at ambient levels. The evidence for particulate matter effects is mostly derived from population studies with supportive evidence from clinical and animal studies. Although most of the effects are attributable to particulate matter, co-pollutant effects cannot be ruled out on the basis of existing studies. The difficulty of separating the effects may be due to the fact that particulate levels co-vary with other combustion source pollutants. That is, the particle measurements serve as an index of overall exposure to combustion-related pollution, and some component(s) of combustion pollution other than particles might be at least partly responsible for the observed health effects.

EPA staff has presented conclusions on causal determination of several health effects based on a recent review of the available scientific studies (EPA, 2009). These are depicted in the Table below.

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TABLE I-6Summary of Causal Determination of PM_{2.5} by Exposure Duration and Health Outcome

SHORT-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Causal
Respiratory effects	Likely to be causal
Central nervous system	Inadequate information to assess
Mortality	Causal
LONG-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Causal
Respiratory effects	Likely to be causal
Mortality	Causal
Reproductive and developmental	Suggestive of a causal relationship
Cancer, Mutagenicity, Genotoxicity	Suggestive of a causal relationship

From EPA, 2009

ULTRAFINE PARTICLES

As noted above, numerous studies have found association of particulate matter levels with adverse effects, including mortality, hospital admissions, and respiratory disease symptoms. The vast majority of these studies used particle mass of PM₁₀ or PM_{2.5} as the measure of exposure. Some researchers have postulated, however, that ultrafine particles may be responsible for some of the observed associations of particulate matter and health outcomes (Oberdorster, et al, 1995; Seaton, et al, 1995). Ultrafine particles are generally classified of 0.1 μm and small diameter.

Several potential mechanisms have been brought forward to suggest that the ultrafine portion may be important in determining the toxicity of ambient particulates, some of which are discussed below.

For a given mass concentration, ultrafine particles have much higher numbers and surface area compared to larger particles. Particles can act as carriers for other adsorbed agents, such as trace metals and organic compounds; and the larger surface area may transport more of such toxic agents than larger particles.

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Smaller particles can also be inhaled deep into the lungs. As much as 50% of 0.02 µm diameter particles are estimated to be deposited in the alveolar region of the lung. There is complex nature of the relation between deposition and particle size. The ultrafine particles generally have higher fractional deposition in the alveolar region. However, for the smaller nucleation mode (particles less than 0.01 µm size) the deposition in the alveolar region declines, but increases in the extrathoracic region.

Exposures of laboratory animals to ultrafine particles have found cardiovascular and respiratory effects. Mice exposed to concentrated near roadway ultrafine particles showed larger early atherosclerotic lesions than mice exposed to PM_{2.5} or filtered air (Arujo, 2008). In a mouse allergy model, exposures to concentrated ultrafine particles resulted in a greater response to antigen challenge to ovalbumin (Li, 2010), indicating that vehicular traffic exposure could exacerbate allergic inflammation in already-sensitized animals.

Controlled exposures of human volunteers to ultrafine particles either laboratory generated or as products of combustion, such as diesel exhaust containing particles, have found physiological changes related to vascular effects. Mills, 2011, for example found exposure to diesel exhaust particulate attenuated both acetylcholine and sodium-nitroprusside -induced vasorelaxation.

There are no long-term studies of human population exposure to ultrafine particle, as there is a lack of a monitoring network in the U.S. There have been several cross sectional epidemiological studies of ultrafine particles, mainly from Europe. Some of these studies found effects on hospital admissions, emergency department visits, for respiratory and cardiovascular effects. Other studies, however, have not found such effects (EPA, 2009). Concentrations of ultrafine particles can vary geographically, and it is not clear how well central site monitors may capture actual exposures.

EPA staff has presented conclusions on causal determination of several health effects of ultrafine PM based on a recent review of the available scientific studies (EPA, 2009). These are depicted in the table below.

[Additional discussion on the sources and health effects of ultrafine particles can be found in Chapter 9 of the 2012 AQMP.](#)

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TABLE I-7

Summary of Causal Determination of Ultrafine PM by Exposure Duration and Health Outcome

SHORT-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Suggestive
Respiratory effects	Suggestive
Central nervous system	Inadequate information to assess
Mortality	Inadequate
LONG-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular effects	Inadequate
Respiratory effects	Inadequate
Mortality	Inadequate
Reproductive and developmental	Inadequate
Cancer, Mutagenicity, Genotoxicity	Inadequate

From EPA, 2009

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CARBON MONOXIDE

The high affinity of carbon monoxide (CO) to bond with oxygen-carrying proteins (hemoglobin and myoglobin) results in reduced oxygen supply in the bloodstream of exposed individuals. The reduced oxygen supply is responsible for the toxic effects of CO which are typically manifested in the oxygen-sensitive organ systems. The effects have been studied in controlled laboratory environments involving exposure of humans and animals to CO, as well as in population-based studies of ambient CO exposure effects. People with deficient blood supply to the heart (ischemic heart disease) are known to be susceptible to the effects of CO. Protection of this group is the basis of the existing National Ambient Air Quality Standards for CO at 35 ppm for one hour and 9 ppm averaged over eight hours. The health effects of ambient CO have been recently reviewed (U.S. EPA, 2000, 2010).

Inhaled CO has no known direct toxic effect on lungs but rather exerts its effects by interfering with oxygen transport through the formation of carboxyhemoglobin (COHb, a chemical complex of CO and hemoglobin). Exposure to CO is often evaluated in terms of COHb levels in blood measured as percentage of total hemoglobin bound to CO. COHb levels in non-smokers range between 0.3 and 0.7% and 5 to 10% in smokers. COHb levels in excess of 1.5% in a significant proportion of urban non-smoking populations can be considered as evidence of widespread exposure to environmental CO.

Under controlled laboratory conditions, healthy subjects exposed to CO sufficient to result in 5% COHb levels exhibited reduced duration of maximal exercise performance and consumption of oxygen. Studies involving subjects with coronary artery disease who engaged in exercise during CO exposures have shown that COHb levels as low as 2.4% can lead to earlier onset of electrocardiograph changes indicative of deficiency of oxygen supply to the heart. Other effects include an earlier onset of chest pain, an increase in the duration of chest pain, and a decrease in oxygen consumption.

Findings of epidemiologic studies have observed associations between ambient CO concentration and emergency department visits and hospital admissions for ischemic heart disease and other cardiovascular diseases.

Animal studies associated with long-term exposure to CO resulting in COHb levels that are equivalent to those observed in smokers have shown indication of reduction in birth weight and impaired neurobehavior in the offspring of exposed animals.

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Epidemiological studies conducted in Southern California have indicated an association with CO exposure during pregnancy to increases in pre-term births. (Ritz, 2000). However, the results were not consistent in different areas studied. The increase in the pre-term births was also associated with PM10 levels. Another study found increased risks for cardiac related birth defects with carbon monoxide exposure in the second month of pregnancy (Ritz, 2002). Toxicological studies in laboratory animals with higher than ambient levels of CO have also reported decrements in birth weight and prenatal growth.

EPA staff has presented conclusions on causal determination of the health effects of carbon monoxide based on a recent review of the available scientific studies (EPA, 2010). These are depicted in the table below.

TABLE I-8

Causal Determination for Health Effects of Carbon Monoxide

SHORT-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular morbidity	Likely to be a causal relationship
Central nervous system	Suggestive
Respiratory morbidity	Suggestive
Mortality	Suggestive
LONG-TERM EXPOSURES	
Health Outcome	Causality Determination
Cardiovascular morbidity	Inadequate
Central nervous system	Suggestive
Birth outcomes and developmental effects	Suggestive
Respiratory morbidity	Inadequate
Mortality	Not likely to be a causal relationship

From EPA, 2010

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NITROGEN DIOXIDE

The U.S. EPA has recently reviewed the health effects of nitrogen dioxide (U.S. EPA, 2008a). Evidence for low-level nitrogen dioxide (NO₂) exposure effects is derived from laboratory studies of asthmatics and from epidemiological studies. Additional supportive evidence is derived from animal studies.

Epidemiological studies using the presence of an unvented gas stove as a surrogate for indoor NO₂ exposures suggest an increased incidence of respiratory infections or symptoms in children.

Recent studies related to outdoor exposure have found health effects associated with ambient NO₂ levels, including respiratory symptoms, respiratory illness, decreased lung function, increased emergency room visits for asthma, and cardiopulmonary mortality. However, since NO₂ exposure generally occurs in the presence of other pollutants, such as particulate matter, these studies are often unable to determine the specific role of NO₂ in causing effects.

The Children's Health Study in Southern California found associations of air pollution, including NO₂, PM₁₀, and PM_{2.5}, with respiratory symptoms in asthmatics (McConnell, 1999). Particles and NO₂ were correlated, and effects of individual pollutants could not be discerned. A subsequent analysis indicated a stronger role for NO₂ (McConnell, 2002).

Ambient levels of NO₂ were also associated with a decrease in lung function growth in a group of children followed for eight years. In addition to NO₂, the decreased growth was also associated with particulate matter and airborne acids. The study authors postulated that these may be a measure of a package of pollutants from traffic sources. (Gauderman, 2004).

Results from controlled exposure studies of asthmatics demonstrate an increase in the tendency of airways to contract in response to a chemical stimulus (bronchial reactivity). Effects were observed with exposures from 0.1 to 0.3 ppm NO₂ for periods ranging from 30 minutes to 3 hours. A similar response is reported in some studies with healthy subjects at higher levels of exposure (1.5 - 2.0 ppm). Mixed results have been reported when people with chronic obstructive lung disease are exposed to low levels of NO₂.

Short-term controlled studies of animals exposed to NO₂ over a period of several hours indicate cellular changes associated with allergic and inflammatory response and interference with detoxification processes in the liver. In some animal studies

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the severity of the lung structural damage observed after relatively high levels of short-term ozone exposure is observed to increase when animals are exposed to a combination of ozone and NO₂.

In animals, longer-term (3-6 months) repeated exposures at 0.25 ppm appear to decrease one of the essential cell-types (T-cells) of the immune system. Non-specific changes in cells involved in maintaining immune functions (cytotoxic T-cells and natural killer cells) have been observed in humans after repeated exposure (4-6 days) to >0.6 ppm of NO₂ (20 min. - 2 hours). All these changes collectively support the observation reported both in population and animal studies of increased susceptibility to infections, as a result of NO₂ exposure.

The U.S. EPA recently adopted a new short-term standard of 100 ppb (0.1 ppm) averaged over 1 hour. The standard was designed to protect against increases in airway reactivity in individuals with asthma observed in controlled exposure studies, as well as respiratory symptoms observed in epidemiological studies.

SULFUR DIOXIDE

Controlled laboratory studies involving human volunteers have clearly identified asthmatics as the most sensitive group to the effects of ambient sulfur dioxide (SO₂) exposures. Healthy subjects have failed to demonstrate any short-term respiratory functional changes at exposure levels up to 1.0 ppm over 1-3 hours.

In exercising asthmatics, brief exposure (5-10 minutes) to SO₂ at levels between 0.2-0.6 ppm can result in significant alteration of lung function, such as increases in airway resistance and decreases in breathing capacity. In some, the exposure can result in severe symptoms necessitating the use of medication for relief. The response to SO₂ inhalation is observable within 2 minutes of exposure, increases further with continuing exposure up to 5 minutes then remains relatively steady as exposure continues. SO₂ exposure is generally not associated with any delayed reactions or repetitive asthmatic attacks.

In epidemiologic studies, associations of SO₂ levels with increases in respiratory symptoms, increases in emergency department visits and hospital admissions for respiratory-related causes have been reported.

The U.S. EPA has recently revised the SO₂ air quality standard. The previous 24-hour standard was rescinded and replaced with a new 1-hour standard at 75 ppb (0.075 ppm) to protect against high short-term exposures.

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Animal studies have shown that despite SO₂ being a respiratory irritant, it does not cause substantial acute or chronic toxicity in animals exposed at ambient concentrations. However, relatively high exposures (10 ppm of SO₂ for 72 hours) in mice can lead to tissue damage, fluid accumulation and sloughing of respiratory lining. Sensitization to allergies is observable in guinea pigs repeatedly exposed to high levels (72 ppm) of SO₂. This effect needs further evaluation in clinical and population studies to identify any chronic exposure impact on both asthmatic incidence and attacks in a population.

Some epidemiological studies indicate that the mortality and morbidity effects associated with the fine fraction of particles show a similar association with ambient SO₂ levels. In these studies, efforts to separate the effects of SO₂ from fine particles have not been successful. Thus, it is not clear whether the two pollutants act synergistically, or whether being generated from similar combustion sources, they represent the same pollution index for the observed effects.

SULFATES

Based on a level determined necessary to protect the most sensitive individuals, the California Air Resources Board (CARB) in 1976 adopted a standard of 25 µg/m³ (24-hour average) for sulfates. There is no federal air quality standard for sulfates.

In recent years, a vast majority of effects (mortality and morbidity) associated with fine particles (PM_{2.5}) and sulfur dioxide have shown a similar association with ambient sulfate levels in some population studies. The efforts to fully separate the effects of sulfates from other coexisting pollutants have not been successful. This may be due to the fact that these pollutants covary under ambient conditions, having been emitted from common sources; and the effects observed may be due to the combination of pollutants, rather than a single pollutant.

A clinical study involving exposure of human subjects to sulfuric acid aerosol indicated that adolescent asthmatics may be a susceptible population subgroup with some changes in lung function observed with exposures below 100 µg/m³. In general, however, laboratory exposures of human volunteers to sulfates at or near ambient levels have not found significant changes in lung function.

Results from animal studies involving exposures to sulfuric acid aerosol, ammonium bisulfate and ammonium sulfate indicate that acidic particles (former two) are more toxic than non-acidic particles (latter). In addition, the severity or magnitude of both

mortality and morbidity effects is relatively higher in population studies of the eastern United States and Canada where sulfate concentrations are higher than for those observed in the western United States. Mixed results have been reported from studies which attempted to ascertain the role of acidity in determining the observed toxicity.

LEAD

The U.S. EPA has recently reviewed the health effects of ambient lead exposures in conjunction with a review of the NAAQS for lead. (U.S. EPA 2006b; U.S. EPA 2007b). The following summary is taken from these reviews.

There are a number of potential public health effects at low level exposures. The health implications are generally indexed by blood lead levels, which are related to lead exposures both from inhalation as well as from ingestion. As identified by EPA, effects include impacts on population IQ, as well as heart disease and kidney disease. The array of health effects includes the following.

- Heme biosynthesis and related functions;
- Neurological development and function;
- Reproduction and physical development;
- Kidney function;
- Cardiovascular function
- Immune function

Children appear to be sensitive to the neurological toxicity of lead, with effects observed at blood lead concentration ranges of 5 – 10 µg/dL, or possibly lower. No clear threshold has yet been established for such effects.

According to the EPA review, the most important effects observed are neurotoxic effects in children and cardiovascular effects in adults. The effects in children include impacts on intellectual attainment and school performance.

EPA has recently revised the NAAQS for lead to a level of 0.15 µg/m³ averaged over a 3 month period to protect against lead toxicity. The following two charts, taken from the U.S. EPA review, depict the health effects of lead in relation to blood levels.

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Lowest Observed Effect Blood Lead Level	Neurological Effects	Hematological Effects	Immune Effects
30 µg/dL		Increased urinary δ-aminolevulinic acid	
15 µg/dL	Behavioral disturbances (e.g., inattention, delinquency) Altered electrophysiological responses	Erythrocyte protoporphyrin (EP) elevation	
10 µg/dL	Effects on neuromotor function CNS cognitive effects (e.g., IQ deficits)	Inhibition of δ-aminolevulinic acid dehydratase (ALAD) ↓ Pyrimidine-5'-nucleotidase (Py5N) activity inhibition	Effects on humoral (↑ serum IgE) and cell-mediated (↓ T-cell abundance) immunity
5 µg/dL	↓ (???)	↓ (???)	
0 µg/dL			

FIGURE I-2

Summary of Lowest Observed Effect Levels for Key Lead- Induced Health Effects in Children
(From U.S. EPA 2007b)

Lowest Observed Effect Blood Lead Level	Neurological Effects	Hematological Effects	Cardiovascular Effects	Renal Effects
30 µg/dL	Peripheral sensory nerve impairment	Erythrocyte protoporphyrin (EP) elevation in males		Impaired Renal Tubular Function
20 µg/dL	Cognitive impairment			
15 µg/dL	Postural sway	Erythrocyte protoporphyrin (EP) elevation in females Increased urinary δ-aminolevulinic acid		
10 µg/dL		Inhibition of δ-aminolevulinic acid dehydratase (ALAD)	Elevated blood pressure	
5 µg/dL			↓ (???)	Elevated serum creatine (↓ creatine clearance)
0 µg/dL				

FIGURE I-3

Summary of Lowest Observed Effect Levels for Key Lead- Induced Health Effects in Adults
(From U.S. EPA 2007b)

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TOXIC AIR CONTAMINANTS

Toxic air contaminants are pollutants for which there generally are no ambient air quality standards. Under California's Air Toxics Program, CARB staff and Office of Environmental Health Hazard Assessment (OEHHA) assess the health effects of substances that may pose a risk of adverse health effects. These effects are usually an increased risk for cancer or adverse birth outcome. After review by the state Scientific Review Panel, CARB holds a public hearing on whether to formally list substances that may pose a significant risk to public health as a Toxic Air Contaminant.

CARB and OEHHA also establish potency factors for air toxics that are carcinogenic. The potency factors can be used to estimate the additional cancer risk from ambient levels of toxics. This estimate represents the chance of contracting cancer in an individual over a lifetime exposure to a given level of an air toxic and is usually expressed in terms of additional cancer cases per million people exposed.

The District conducted studies on the ambient concentrations and estimated the potential health risks from air toxics (SCAQMD, 2008). In the latest study, a two year monitoring program was undertaken at 10 sites throughout the SCAB over the time period 2004-2006. Over 30 substances were measured, and annual average levels were calculated. The results showed that the overall risk for excess cancer from a 70-year lifetime exposure to the levels of air toxics calculated as the average level at the 10 sites was about 1,200 in a million. The largest contributor to this risk was diesel ~~exhaust~~particulate matter, accounting for about 84% of the air toxics risk. A breakdown of the major contributors to the air toxics risk is shown in ~~FIGURE 1-2~~FIGURE I-4.

[While the California Air Resources Board listed Diesel Particulate Matter as a Toxic Air Contaminant in 1989, the International Agency for Research on Cancer, an arm of the World Health Organization, recently convened an international panel of scientists to review the published literature regarding the carcinogenicity of diesel combustion emissions. The panel concluded that Diesel Exhaust is a substance that causes cancer in humans \(Benbrahim-Tallaa, 2012\).](#)

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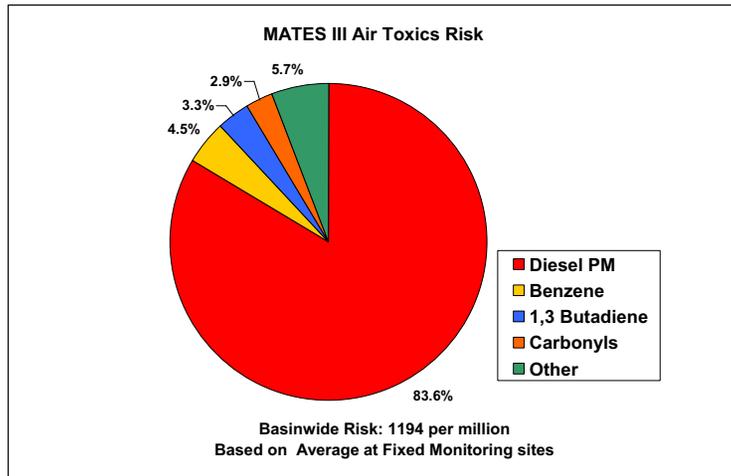


FIGURE I-42

Major Pollutants Contributing to Air Toxics Cancer Risk in the South Coast Air Basin

For non-cancer health effects, OEHHA has developed acute and chronic Reference Exposure Levels (RELs). RELs are concentrations in the air below which adverse health effects are not likely to occur. Acute RELs refer to short-term exposures, generally of one-hour duration. Chronic RELs refer to long-term exposures of several years. The ratio of ambient concentration to the appropriate REL can be used to calculate a Hazard Index. A Hazard Index of less than one would not be expected to result in adverse effects. The measured levels from the most recent study were below the applicable Reference Exposure Levels.

The key air toxics contributing to risk from mobile and stationary sources are listed in TABLE I-9.

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TABLE I-9

Key Toxic Air Contaminants in the SCAB

MOBILE SOURCES	STATIONARY SOURCES
Acetaldehyde	Hexavalent Chromium
Benzene	Methylene Chloride
1,3 Butadiene	Nickel
Diesel Exhaust Particulate Matter	Perchloroethylene
Formaldehyde	Trichloroethylene

CONCLUSION

A large body of scientific evidence shows that the adverse impacts of air pollution in human and animal health are clear. A considerable number of population-based and laboratory studies have established a link between [air pollution and](#) increased morbidity and, in some instances, earlier mortality ~~and air pollution~~.

[As the scientific methods for the study of air pollution health effects has progressed over the past decades, adverse effects have been shown to occur at lower levels of exposure. For some pollutants, no clear thresholds for effects have been demonstrated. The new findings have, in turn, led to the revision and lowering of National Ambient Air Quality Standards which, in the judgment of the Administrator of the U.S. EPA, are necessary to protect public health. The figures below are meant to convey some of the historical context to recent revisions to the NAAQS for ozone and for particulate matter.](#)

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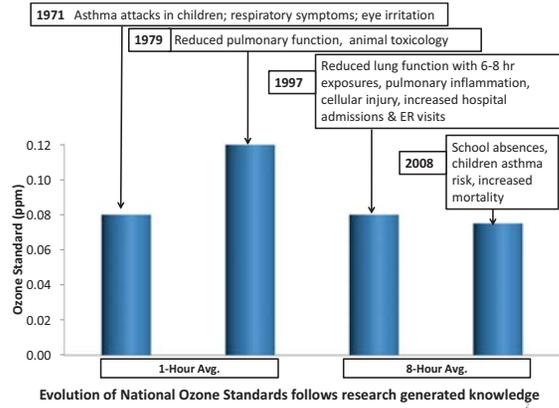


FIGURE I-4

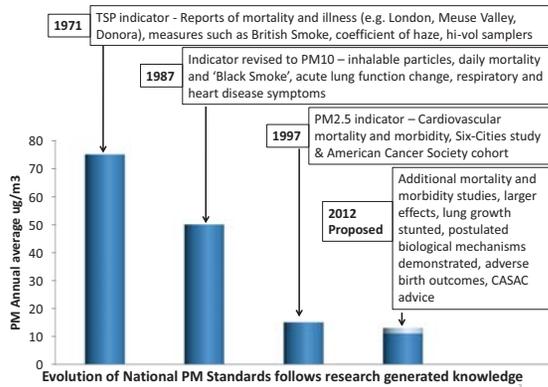


FIGURE I-5

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ATTACHMENT 3

COMMENTS RECEIVED ON DRAFT APPENDIX I FROM SCAQMD ADVISORY COUNCIL

Section 40471 of the California Health and Safety Code calls for the periodic preparation of a report on the health impacts of particulate matter air pollution in the South Coast Air Basin as part of the Air Quality Management Plan (AQMP) revisions. The report is to be submitted to the Advisory Council for review and comment.

The correspondence requesting comments from the Advisory Council and a copy of their comments received through October 5, 2012, follow.

-----Original Message-----

From: Jean Ospital

Sent: Thursday, June 07, 2012 11:47 AM

To: Afif El-Hasan (Afif.h.el-hasan@kp.org); David Czamanske (dczamanske@hotmail.com); Ed Laird (elaird@coatingsresource.com); Emily Nelson (dremilynelson@gmail.com); makeoverearth.com, gary; Greg Adams (gadams@lacsds.org); J. Wayne Miller (wayne.miller@ucr.edu); John Froines (jfroines@ucla.edu); Lester, Julia; Mike Wang (mwang@wspa.org); radtech.org, rita; Robert McConnell (rmcconne@usc.edu); Sam Soret (ssoret@llu.edu); Todd Campbell (tcampbell@cleanenergyfuels.com); Walter Siembab (ws@siembab.com); William LaMarr (BillLaMarr@msn.com)

Cc: Elaine Chang; Barbara Baird; Michael Krause; Marilyn Traynor

Subject: Review of Health Effects - 2012 AQMP Draft Appendix I

Greetings to all,

I want to thank all of you for agreeing to participate on the AQMD's Advisory Council, and provide an update to our schedule.

As you know, Section 40471 of the California Health and Safety Code calls for the periodic preparation of a report on the health impacts of particulate matter air pollution in the South Coast Air Basin as part of the Air Quality Management Plan (AQMP) revisions. The report is to be submitted to the Advisory Council for review and comment.

We have prepared a draft of the report on PM_{2.5}, which also includes other air pollutant health impacts, as a draft Appendix I to the 2012 AQMP. The draft Appendix I is attached for your review.

We have scheduled a meeting of the Advisory Council to provide comments to District staff. The details are below.

Date: Wednesday, July 11, 2012

Time: 2:00 p.m.-4:00 p.m.

Place: SCAQMD Conference Room CC-8

Please send any written comments you might have to me by July 11, 2012. Electronic format is preferred. All comments received will be attached to the Appendix when it is released in final form.

The Advisory Council is subject to the California open meetings regulations. Please do not copy other Advisory Council members regarding your comments. There will be opportunity for discussion at the meeting on July 11. The Advisory Council Roster is attached for your information.

Thanks again, and please let me know if I can provide any additional information.

Jean Ospital

Health Effects Officer

South Coast Air Quality Management District

21865 Copley Drive

Diamond Bar, CA 91765

Phone: 909-396-2582

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GRACE ROBINSON CHAN
Chief Engineer and General Manager

July 10, 2012
File No.: 31-380.10

Jean Ospital, Dr.P.H.
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4182

Dear Dr. Ospital:

Comments on Appendix I: Health Effects Draft 2012 Air Quality Management Plan

Thank you for the opportunity to represent Los Angeles County Sanitation Districts and Supervisor Antonovich in submitting these brief comments on Appendix I of the 2012 Draft Air Quality Management Plan. As you well know, the AQMP presents varying degrees of significant impacts on all the residents of the air basin, and we recognize the staff's considerable efforts to address many of those in the AQMP as specifically as possible and applaud your efforts. We have the following comments on Appendix I and the health aspects draft 2012 AQMP.

1. Consider implementing the most beneficial control measures healthwise-speaking first. While there is the obligatory ranking of control measures with respect to cost effectiveness, another permutation on this might be showing the reduction in population exposure per control measure, if such a calculation can be made. Implementing the most beneficial measures healthwise first might also garner more popular support for the plan.
2. We raised a concern as to the focus of air toxics measures in the 2007 AQMP and are not certain we ever got a response and will take this opportunity to raise it again. On Page I-25 of the 2012 Appendix I, the basinwide cancer risk is reported to be 1200 in a million, largely the impact of Diesel particulate matter and other mobile source emissions. We also look again at Dr. Thomas Mack's 2004 work Cancers in the Urban Development¹, a detailed study "atlas" of three quarters of a million cancer types reported to the Cancer Surveillance Program at USC by mostly L.A. County doctors between 1972 and 1998. With the exception of high-risk tracts around the 405, 605, 105, and 710 freeways and some areas between the two ports (we will return to this) the L.A. County rates for nose and throat, all types of lung and bronchus carcinomas, papillary

¹ Cancers in the Urban Environment *Patterns of Malignant Disease in Los Angeles County and Its Neighborhoods*; Thomas Mack, Dept. of Preventive Medicine, Keck School of Medicine, Norris Comprehensive Cancer Center, University of Southern California; Elsevier Academic Press, 2004.

carcinoma of the thyroid, squamous bladder carcinoma, diffuse mixed B-cell non-Hogkin lymphoma were similar to the national rate while prostate carcinoma, brain malignancies, small cell carcinoma of the lung and bronchus, adenocarcinoma of the lung and bronchus were slightly lower than the national rate. In the last paragraph on Page 7 of the 645 page tome, in a section entitled *Environmental and Other Causes of Cancer* the author states, "...no local increase in cancer due to pollution has yet been clearly identified in the United States. Even such highly publicized sites of pollution as the Love Canal, Three Mile Island and those popularized in the movies *Erin Brockovich* and *A Civil Action* did not produce clear evidence of a cancer excess, although each of these examples of irresponsible industrial contamination represented a clear potential danger to local residents and may have produced other medical problems." In the very last sentence of that same book on Page 645, Dr. Mack also states, "As of this writing, no evidence of a malignancy caused by a strictly environmental carcinogen has yet been confirmed."

Several types of cancers unfortunately seem more prevalent around certain freeways and between the ports and these are worthy of more study. We believe the AQMP should focus on acute and chronic effects of non-carcinogenic air pollution as a priority, while the localized impacts around freeways and ports is further studied for their carcinogenic health effects.

3. We believe that some analysis of indoor air quality and the PM2.5 attainment plan is appropriate at this time. A significant portion of human exposure to PM2.5 occurs indoors where people spend ~85-90% of their time.²

We thank you for this opportunity to comment.

Very truly yours,

Grace Robinson Chan



Gregory M. Adams
Assistant Departmental Engineer
Air Quality Engineering
Technical Services Department

GMA:bb

cc: Debbie Mendelsohn

² *Journal of the Air and Waste Management Association*, March 2007, *Indoor/Outdoor Relationships, Trends, and Carbonaceous Content of Fine Particulate Matter in Retirement Homes of the Los Angeles Basin*, p.366.

From: [Afif Elhasan](#)
To: [Jean Ospital](#)
Cc: [Elaine Chang](#)
Subject: AQMP comments-Elhasan
Date: Tuesday, July 10, 2012 5:59:42 AM
Attachments: [AQMP-Elhasan1.doc](#)

I'll see you at the meeting tomorrow. Attached are some comments.

best regards-afif

Comments on the “Draft 2012 AQMP Appendix I-Health Effects”

From Afif El-Hasan, MD, Member-Environmental Justice Committee, AQMD

The 2012 AQMP Draft Report on Health Effects summarized the deleterious effects of a number of airborne pollutants. I would like to make the following comments:

Lower income populations tend to live in closer proximity to freeways, large volume transportation corridors or other sources of man-made air pollution. Other factors compounding the issue include reduced use of air conditioning (more open windows) and less use of auto transportation (more walking in polluted areas and using bikes/buses). This population also has less access to routine medical care, inhaled anti-inflammatory medication for chronic lung disease, and antibiotics for infection. These environmental and socioeconomic factors must be taken into account in future population studies on the effects of air pollution.

Obesity must be addressed in these studies. Decreased activity due to poor outside air quality, lung disease, asthma, and lack of access to healthier (more expensive) food are all contributors to obesity. In turn, obesity increases the prevalence of asthma, lung disease, cardiovascular disease and cancer. Physical activity then becomes further decreased which leads to further health issues. Fat cells can also store lipid soluble chemicals that are absorbed from the environment. This may possibly contribute to the body’s deterioration with chronic exposure to pollutants.

Pregnancy is another unique and serious issue. Pregnancy is associated with reduced lung function at a time when the mother’s lungs and cardiovascular system are supporting both the mother and the child. At the same time, the fetus is vulnerable to chemical exposure at a critical time in development. The human toll to the family of a baby with health problems and the cost to society of a premature infant or an infant with birth defects makes protection of the pregnant women a priority from a public health standpoint.

Studies have suggested a decrease in mental function associated with exposure to air pollution. This has been documented in adults with chronic exposure to high levels of air pollution, and in children born and raised in these areas. When establishing values for safe levels of pollution in the air, risks to cognitive function must be addressed. This is especially important for children who may attend schools or use parks that are in close proximity to freeways and other transportation corridors.

July 11, 2012

Jean Ospital, Dr. P.H.
Health Effects Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

California Autobody
Association

California Cleaners
Association

California Film Extruders
& Converters Association

California Furniture
Manufacturers Association

California Independent
Petroleum Association

Construction Industry
Air Quality Coalition

Korean Drycleaners-Laundry
Association of Southern California

Metal Finishing Association
of Southern California

Printing Industries
of California

Screenprinting & Graphic Imaging
Association International

Southern California
Rock Products Association

Subject: Comments on Appendix I Draft 2012 Air Quality Management Plan

Dear Dr. Ospital:

I appreciate the opportunity to represent the Home Rule Advisory Group (HRAG) in submitting comments on the draft report on PM_{2.5}, and other air pollutant health impacts, as they are set forth in Appendix I of the 2012 Draft Air Quality Management Plan (AQMP). Speaking on behalf of the HRAG, we understand that the AQMP promises to have significant impacts on all who are participating in the process and applaud the time and effort required to produce a thorough and feasible plan.

Following are my comments:

In the draft, considerable effort has gone into explaining the adverse health effects associated with exposure to air pollutants and toxic air contaminants and linking it with increases in illness (morbidity) and increases in death rates (mortality). On Page I-25, for example, the report states that the cancer risk throughout the South Coast Air Basin (SCAB) is 1200 in a million and largely attributable to diesel exhaust from mobile sources, accounting for as much as 84% of the air toxics risk. This is confirmed by the chart (Figure 2) on Page I-26, showing "*Major pollutants contributing to Air Toxics Cancer Risks in the South Coast Air Basin,*" and Table 9, on Page I-26: "*Key Toxic Air Contaminants in the SCAB.*"

While stationary sources and mobile sources contribute to the overall cancer risk, clearly, the latter is the major contributor and should warrant the greatest and most immediate attention from a regulatory, as well as a health effects perspective. It has been discouraging, from our participation in the AQMP Advisory Group meetings, to learn that suggested strategies for reducing diesel exhaust from mobile sources seem to be more voluntary than prescriptive and don't appear to have the same degree of urgency as those for stationary sources.

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We also noticed that a number of reviews, analyses and studies on the effects of air pollution, ozone, and particulate matter are cited throughout the report. Some of this research was done on a national and international level, and some was done in specific cities throughout the United States. One study which is specific to California, and involved a cohort of individuals from 11 California counties, was conducted by Dr. James E. Enstrom, and represents a contrarian perspective of the PM_{2.5} and mortality relationship. Little coverage of the study, and the significance of the findings, is given in the report. Other relevant scientific data which can be found in research by Dr. Robert Phalen's book: "*The Particulate Air Pollution Controversy*" would be a useful and instructive addition to the final version of this report. One other body of research which has been completely overlooked or disregarded in this report is "*Cancers in the Urban Environment*," by Dr. Thomas M. Mack.

This research appears to be extremely relevant because it is focused on patterns of malignant disease in Los Angeles County and its neighborhoods. In his book, Dr. Mack discusses many cases involving nonrandom, geographic variations, thus indicating that factors other than chance determine the pattern of community incidence. Among the factors known to be responsible for individual malignancies are personal experiences other than occupational exposures. Some of these are habits, recreational preferences, past reproductive and medical events, and genetic inheritance.

In at least six instances in his book the geographic distribution of high risk of disease was clearly nonrandom, but did not conform to the pattern that would have been predicted by available knowledge. The malignancies in question included oropharyngeal carcinoma, small cell carcinoma and adenocarcinoma of the lung, papillary carcinoma of the thyroid, squamous carcinoma of the bladder, and diffuse mixed B-cell non-Hodgkin lymphoma. According to Dr. Mack, the true explanation for none of these patterns is currently known, although educated guesses provide tentative hypotheses that are currently still to be evaluated. As a final statement in his book, Dr. Mack states that "*as of this writing, no evidence of a malignancy caused by a strictly environmental carcinogen has yet been confirmed.*"

In December 2006, when commenting on the 2007 AQMP, I raised a concern about the methodology used by a district consultant when attempting to quantify the health effects from improvements in levels of PM_{2.5} and ozone and assigning economic values to those same health effects for that AQMP. Our comments were made out of concern for the environment, as well as for the health and welfare of the workforce, our families, and the general public. Another reason for expressing my concern and commenting on this aspect of the 2007 AQMP was over the alarming and ever increasing cost of compliance with the rules that are ultimately promulgated after every AQMP. Just as the cost of health care continues to rise, so does the cost of compliance.

We were encouraged to read on Page I-13 of the report that the district acknowledges that more research is needed to better assess the relative effects of fine (PM_{2.5}) and coarse (PM_{10-2.5}) fractions of particulate matter on mortality. It is common knowledge that the district and much if not all of the business community differs over the methodology used to measure the costs and

benefits associated with certain emissions and/or risk reduction strategies. We hope that these differences can be quickly and amicably resolved.

As a way of emphasizing the importance of realistically measuring costs and benefits for control strategies, I would like to mention that at the time the 2007 AQMP was being drafted the unemployment rate in the Los Angeles County was 4.7%. The 2007 Budget Act signed by then Governor Schwarzenegger included the largest reserve of any budget act in the state's history. Today, while the state of our air quality continues to improve the state of our economy and the availability of jobs has worsened. If the goal of the AQMP is to improve air quality, reduce the adverse health impacts of particulate matter and exposure to toxic air contaminants, it is essential that the Plan represents the needs of all stakeholders. For the business community this means that control measures must be more than just feasible, they must be reasonable, acceptable to industry, and cost effective, as measured by a standard or standards which are suitable to business.

Finally, when reading the last sentence on Page I-3: "*Another long-term study of a national cohort found that long-term exposures to ozone were associated with respiratory-related causes of mortality, **but not cardiovascular causes, when PM2.5 exposure were also included in the analysis,***" we believe there is a conflict with a statement made on Page I-10, halfway down the page beginning with the sentence: "*The major types of effects associated with particulate matter include:*

- *Increased mortality*
- *Exacerbation of respiratory disease **and of cardiovascular disease** as evidenced by increases in:*
 - *Respiratory symptoms*
 - *Hospital admissions and emergency room visits*
 - *Physician office visits*
 - *School absences*
 - *Work loss days*
- *Effects on lung function*
- *Changes in lung morphology*

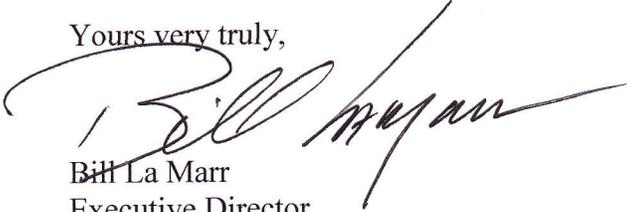
Legitimate scientific research - regardless of the point of view - should be part of the collaborative process between the district and relevant stakeholders, if we are to create a better consensus on how to improve air quality as required by existing law while simultaneously improving the region's economy.

Jean Ospital, Dr. P.H.
Health Effects Officer
South Coast Air Quality Management District

**Comments on Appendix I Draft
2012 Air Quality Management Plan**

In closing, I want to express my sincere appreciation for inviting me to serve on the AQMP Advisory Group and on the AQMD Advisory Council, and thank you for the opportunity to comment on this important Appendix to the 2012 AQMP.

Yours very truly,

A handwritten signature in black ink, appearing to read "Bill La Marr", written in a cursive style.

Bill La Marr
Executive Director
California Small Business Alliance

From: Julia Lester [<mailto:JLester@environcorp.com>]
Sent: Wednesday, July 11, 2012 9:36 PM
To: Jean Ospital
Subject: Great meeting today!

Jean,

At our meeting today, I promised to send you two things tonight. Here you go:

- Latest MSAT list
 - Reference:
http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/100109guidmem.pdf
 - From the document:
“EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (<http://www.epa.gov/ttn/atw/nata1999/>). These are *acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter.*”
- EPA figure on progression of new standards
 - I’m still checking my citations for the presentation I remember. I will have to send it later.

I thought that the discussion at the meeting today was very thought provoking. As I mentioned, I thought that the draft Appendix I did a nice job describing and summarizing the latest pertinent health studies (by pollutant).

Regards,

Julia



Julia C. Lester, PhD | Principal
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From: [Rob McConnell](#)
To: [Jean Ospital](#)
Cc: [Marilyn Traynor](#)
Subject: FW: Review of Health Effects - 2012 AQMP Draft Appendix I
Date: Monday, July 09, 2012 7:28:20 AM
Attachments: [2012 AQMP Appendix I Draft 06-05-2012.pdf](#)

Dear Dr. Ospital,

I attach the AQMP health effects appendix with a few comments embedded in the text. In general, I think this is a good summary drawing on the key studies and reviews conducted as the foundation for regulatory decisions by EPA staff and CARB.

Although there is a review of toxicity of ultrafine particles, there is no mention of the strong emerging epidemiological evidence that near-roadway exposures cause asthma and ischemic heart disease. Ultrafine particles are a leading candidate for the causal component of the near-roadway mixture. I know you have administrative constraints based on the current regulatory framework and the evidence base, and the current lack of a standard covering UF particles. However, if ultrafine particles are to be reviewed, the near-roadway literature may deserve some mention. Dr. Nino Kunzli, a world expert on the health effects of air pollution, recently published an editorial (I believe it was in the European Respiratory Journal) calling for regulation of ultrafine PM fraction.

Hope this is useful. Will there be a full AQMP that we will be asked to review later or is the extent of our commitment/obligation in this regard?

As I indicated to you earlier, it's unlikely I'll be able to join you on the 11th, but I'd be happy to review any follow-up documents or comment on any discussion items that correspond to my area of expertise.

Sincerely,

Rob McConnell MD
Professor of Preventive Medicine.
Keck School of Medicine
University of Southern California

Summary of Comments on 2012 AQMP Appendix I Draft 06-05-2012.pdf

Page: 11

The major subgroups of the population considered to be at increased risk from ozone exposure are outdoor exercising individuals, including children, and people with preexisting respiratory disease(s) such as asthma. The data base identifying the former group as being at increased risk to ozone exposure is much stronger and more quantitative than that for the latter group, probably because of a larger number of studies conducted with healthy individuals. The adverse effects reported with short-term ozone exposure are greater with increased activity because activity increases the breathing rate and the volume of air reaching the lungs, resulting in an increased amount of ozone reaching the lungs. Children may be a particularly vulnerable population to air pollution effects because they spend more time outdoors, are generally more active, and have a higher ventilation rate than adults.

A number of adverse health effects associated with ambient ozone levels have been identified from laboratory and epidemiological studies (EPA, 1996; 2006, 2011; ATS, 1996). These include increased respiratory symptoms, damage to cells of the respiratory tract, decrease in lung function, increased susceptibility to respiratory infection, and increased risk of hospitalization.

Increases in ozone levels are associated with elevated absences from school. The Children's Health Study, conducted by researchers at the University of Southern California, followed a cohort of children that live in 12 communities in Southern California with differing levels of air pollution for several years. A publication from this study reported that school absences in fourth graders for respiratory illnesses were associated with ambient ozone levels. An increase of 20 ppb ozone was associated with an 83% increase in illness-related absence rates (Gilliland, 2001).

The number of hospital admissions and emergency room visits for all respiratory causes (infections, respiratory failure, chronic bronchitis, etc.) including asthma shows a consistent increase as ambient ozone levels increase in a community. These excess hospital admissions and emergency room visits are observed when hourly ozone concentrations are as low as 0.06 to 0.10 ppm.

Numerous recent studies have found positive associations between increases in ozone levels and excess risk of mortality. These associations persist even when other variables including season and levels of particulate matter are accounted for. This indicates that ozone mortality effects may be independent of other pollutants (Bell, 2004).

Multicity studies of short-term ozone exposures (days) and mortality have also examined regional differences. Evidence was provided that there were generally higher ozone-mortality risk estimates in northeastern U.S. cities, with the southwest and urban mid-west cities showing lower or no associations (Smith, 2009; Bell, 2008). Another long-term study of a national cohort found that long-term exposures to ozone were associated with respiratory-related causes of mortality, but not

Author: rmcconne Subject: Sticky Note Date: 7/10/2012 10:54:29 AM

Not mutually exclusive. I think the exercising asthmatic children are one of the more studied at risk groups. Exercise in non-asthma causing new onset depends largely on our study, which has gotten a lot of attention because design was strong.

For a given mass concentration, ultrafine particles have much higher numbers and surface area compared to larger particles. Particles can act as carriers for other adsorbed agents, such as trace metals and organic compounds; and the larger surface area may transport more of such toxic agents than larger particles.

Smaller particles can also be inhaled deep into the lungs. As much as 50% of 0.02 µm diameter particles are estimated to be deposited in the alveolar region of the lung. There is complex nature of the relation between deposition and particle size. The ultrafine particles generally have higher fractional deposition in the alveolar region. However, for the smaller nucleation mode (particles less than 0.01 µm size) the deposition in the alveolar region declines, but increases in the extrathoracic region.

Exposures of laboratory animals to ultrafine particles have found cardiovascular and respiratory effects. Mice exposed to concentrated near roadway ultrafine particles showed larger early atherosclerotic lesions than mice exposed to PM2.5 or filtered air (Arya 2008). In a mouse allergy model, exposures to concentrated ultrafine particles resulted in a greater response to antigen challenge to ovalbumin (Li, 2010), indicating that vehicular traffic exposure could exacerbate allergic inflammation in already-sensitized animals.

Controlled exposures of human volunteers to ultrafine particles either laboratory generated or as products of combustion, such as diesel exhaust containing particles, have found physiological changes related to vascular effects. Mills, 2011, for example found exposure to diesel exhaust particulate attenuated both acetylcholine and sodium-nitroprusside -induced vasorelaxation.

There are no long-term studies of human population exposure to ultrafine particles, as there is a lack of a monitoring network in the U.S. There have been several cross sectional epidemiological studies of ultrafine particles, mainly from Europe. Some of these studies found effects on hospital admissions, emergency department visits, for respiratory and cardiovascular effects. Other studies, however, have not found such effects (EPA, 2009). Concentrations of ultrafine particles can vary geographically, and it is not clear how well central site monitors may capture actual exposures.

EPA staff has presented conclusions on causal determination of several health effects of ultrafine PM based on a recent review of the available scientific studies (EPA, 2009). These are depicted in the table below.

- Author: rmconne Subject: Sticky Note Date: 7/10/2012 10:54:29 AM
spelled Araujo
- Author: rmconne Subject: Sticky Note Date: 7/10/2012 10:54:29 AM
I think most have been time series studies rather than cross sectional, but you might check to be sure.

The Children's Health Study in Southern California found associations of air pollution, including NO₂, PM10, and PM2.5, with respiratory symptoms in asthmatics (McConnell, 1999). Particles and NO₂ were correlated, and effects of individual pollutants could not be discerned. A subsequent analysis indicated a stronger role for NO₂ (McConnell, 2002).

Ambient levels of NO₂ were also associated with a decrease in lung function growth in a group of children followed for eight years. In addition to NO₂, the decreased growth was also associated with particulate matter and airborne acids. The study authors postulated that these may be a measure of a package of pollutants from traffic sources. (Gauderman, 2004).

Results from controlled exposure studies of asthmatics demonstrate an increase in the tendency of airways to contract in response to a chemical stimulus (bronchial reactivity). Effects were observed with exposures from 0.1 to 0.3 ppm NO₂ for periods ranging from 30 minutes to 3 hours. A similar response is reported in some studies with healthy subjects at higher levels of exposure (1.5 - 2.0 ppm). Mixed results have been reported when people with chronic obstructive lung disease are exposed to low levels of NO₂.

Short-term controlled studies of animals exposed to NO₂ over a period of several hours indicate cellular changes associated with allergic and inflammatory response and interference with detoxification processes in the liver. In some animal studies the severity of the lung structural damage observed after relatively high levels of short-term ozone exposure is observed to increase when animals are exposed to a combination of ozone and NO₂.

In animals, longer-term (3-6 months) repeated exposures at 0.25 ppm appear to decrease one of the essential cell-types (T-cells) of the immune system. Non-specific changes in cells involved in maintaining immune functions (cytotoxic T-cells and natural killer cells) have been observed in humans after repeated exposure (4-6 days) to >0.6 ppm of NO₂ (20 min. - 2 hours). All these changes collectively support the observation reported both in population and animal studies of increased susceptibility to infections, as a result of NO₂ exposure.

The U.S. EPA recently adopted a new short-term standard of 100 ppb (0.1 ppm) averaged over 1 hour. The standard was designed to protect against increases in airway reactivity in individuals with asthma observed in controlled exposure studies, as well as respiratory symptoms observed in epidemiological studies.

SULFUR DIOXIDE

Controlled laboratory studies involving human volunteers have clearly identified asthmatics as the most sensitive group to the effects of ambient sulfur dioxide (SO₂) exposures. Healthy subjects have failed to demonstrate any short-term respiratory functional changes at exposure levels up to 1.0 ppm over 1-3 hours.

Jean Ospital

From: Wayne Miller [wayne@cert.ucr.edu]
Sent: Wednesday, July 11, 2012 11:06 AM
To: Jean Ospital
Cc: Marilyn Traynor
Subject: RE: Advisory Council meeting at 2:00 p.m. on July 11, 2012 @ SCAQMD in CC-8 re: Review of Health Effects-2012 AQMP Draft Appendix I
Attachments: June 2012 IARC.pdf

Jean .. Nice work and addition for the AQMP. My two suggestions focus on the PM section.

First, while PM is a criteria pollutant and part of NAAQS, the introduction should mention that it is legally a Toxic Air Contaminant California and words along CARB's introductory language for diesel PM might be appropriate.

Background on Diesel Health Effects

(<http://www.arb.ca.gov/research/diesel/diesel-health.htm>)

Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are known as particulate matter or PM. In 1998, California identified diesel exhaust particulate matter (PM) as a [toxic air contaminant](#) based on its potential to cause cancer, premature death, and other health problems. Diesel engines also contribute to California's fine particulate matter (PM2.5) air quality problems. Those most vulnerable are children whose lungs are still developing and the elderly who may have other serious health problems. Based on year 2006-2008 emissions in California, diesel PM contributes each year to approximately 2,000 premature deaths, with an uncertainty range of 1,500 to 2,400.

Second, while their report came out after your report, it would be valuable to add the recent finding of IRAC: " as of June 12, 2012 " the International Agency for Research on Cancer (IARC), which is part of the World Health Organization (WHO), today classified diesel engine exhaust as carcinogenic to humans (Group 1), based on sufficient evidence that exposure is associated with an increased risk for lung cancer." The press release is attached ..

Respectfully submitted, Wayne Miller, PhD

IARC: DIESEL ENGINE EXHAUST CARCINOGENIC

Lyon, France, June 12, 2012 -- After a week-long meeting of international experts, the International Agency for Research on Cancer (IARC), which is part of the World Health Organization (WHO), today classified diesel engine exhaust as **carcinogenic to humans (Group 1)**, based on sufficient evidence that exposure is associated with an increased risk for lung cancer.

Background

In 1988, IARC classified diesel exhaust as *probably carcinogenic to humans (Group 2A)*. An Advisory Group which reviews and recommends future priorities for the IARC Monographs Program had recommended diesel exhaust as a high priority for re-evaluation since 1998.

There has been mounting concern about the cancer-causing potential of diesel exhaust, particularly based on findings in epidemiological studies of workers exposed in various settings. This was re-emphasized by the publication in March 2012 of the results of a large US National Cancer Institute/National Institute for Occupational Safety and Health study of occupational exposure to such emissions in underground miners, which showed an increased risk of death from lung cancer in exposed workers (1).

Evaluation

The scientific evidence was reviewed thoroughly by the Working Group and overall it was concluded that there was *sufficient evidence* in humans for the carcinogenicity of diesel exhaust. The Working Group found that diesel exhaust is a cause of lung cancer (*sufficient evidence*) and also noted a positive association (*limited evidence*) with an increased risk of bladder cancer (Group 1).

The Working Group concluded that gasoline exhaust was possibly carcinogenic to humans (Group 2B), a finding unchanged from the previous evaluation in 1989.

Public health

Large populations are exposed to diesel exhaust in everyday life, whether through their occupation or through the ambient air. People are exposed not only to motor vehicle exhausts but also to exhausts from other diesel engines, including from other modes of transport (e.g. diesel trains and ships) and from power generators.

Given the Working Group's rigorous, independent assessment of the science, governments and other decision-makers have a valuable evidence-base on which to consider environmental standards for diesel exhaust emissions and to continue to work with the engine and fuel manufacturers towards those goals.

Increasing environmental concerns over the past two decades have resulted in regulatory action in North America, Europe and elsewhere with successively tighter emission standards for both diesel and gasoline engines. There is a strong interplay between standards and technology – standards drive technology and new technology enables more stringent standards. For diesel engines, this required changes in the fuel such as marked decreases in sulfur content, changes in engine design to burn diesel fuel more efficiently and reductions in emissions through exhaust control technology.

However, while the amount of particulates and chemicals are reduced with these changes, it is not yet clear how the quantitative and qualitative changes may translate into altered health effects; research into

IARC: Diesel engines exhaust carcinogenic

this question is needed. In addition, existing fuels and vehicles without these modifications will take many years to be replaced, particularly in less developed countries, where regulatory measures are currently also less stringent. It is notable that many parts of the developing world lack regulatory standards, and data on the occurrence and impact of diesel exhaust are limited.

Conclusions

Dr Christopher Portier, Chairman of the IARC working Group, stated that “The scientific evidence was compelling and the Working Group’s conclusion was unanimous: diesel engine exhaust causes lung cancer in humans.” Dr Portier continued: “Given the additional health impacts from diesel particulates, exposure to this mixture of chemicals should be reduced worldwide.”(2)

Dr Kurt Straif, Head of the IARC Monographs Program, indicated that “The main studies that led to this conclusion were in highly exposed workers. However, we have learned from other carcinogens, such as radon, that initial studies showing a risk in heavily exposed occupational groups were followed by positive findings for the general population. Therefore actions to reduce exposures should encompass workers and the general population.”

Dr Christopher Wild, Director, IARC, said that “while IARC’s remit is to establish the evidence-base for regulatory decisions at national and international level, today’s conclusion sends a strong signal that public health action is warranted. This emphasis is needed globally, including among the more vulnerable populations in developing countries where new technology and protective measures may otherwise take many years to be adopted.”

Summary evaluation

The summary of the evaluation will appear in [The Lancet Oncology](#) as an online publication ahead of print on June 15, 2012.

(1) JNCI J Natl Cancer Inst (2012) doi:10.1093/jnci/djs034
<http://jnci.oxfordjournals.org/content/early/2012/03/05/jnci.djs034.abstract>; and
JNCI J Natl Cancer Inst (2012) doi: 10.1093/jnci/djs035
<http://jnci.oxfordjournals.org/content/early/2012/03/05/jnci.djs035.abstract>

(2) Dr Portier is Director of the National Center for Environmental Health and the Agency for Toxic Substances and Disease Registry at the Centers for Disease Control and Prevention (USA).

For more information, please contact

Dr Kurt Straif, IARC Monographs Section, at +33 472 738 507, or straifk@iarc.fr;
Dr Lamia Tallaa, IARC Monographs Section, at +33 472 738 385, or tallaal@iarc.fr;
Nicolas Gaudin, IARC Communications Group, at +33 472 738 478, or com@iarc.fr;
Fadela Chaib, WHO News Team, at +41 79 475 55 56, or chaibf@who.int.

Link to the **audio file** posted shortly after the media briefing:

http://terrance.who.int/mediacentre/audio/press_briefings/

About IARC

The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships.

IARC: Diesel engines exhaust carcinogenic

Annexes

Evaluation groups - Definitions

Group 1: The agent is carcinogenic to humans.

This category is used when there is *sufficient evidence of carcinogenicity* in humans. Exceptionally, an agent may be placed in this category when evidence of carcinogenicity in humans is less than *sufficient* but there is *sufficient evidence of carcinogenicity* in experimental animals and strong evidence in exposed humans that the agent acts through a relevant mechanism of carcinogenicity.

Group 2.

This category includes agents for which, at one extreme, the degree of evidence of carcinogenicity in humans is almost *sufficient*, as well as those for which, at the other extreme, there are no human data but for which there is evidence of carcinogenicity in experimental animals. Agents are assigned to either Group 2A (*probably carcinogenic to humans*) or Group 2B (*possibly carcinogenic to humans*) on the basis of epidemiological and experimental evidence of carcinogenicity and mechanistic and other relevant data. The terms *probably carcinogenic* and *possibly carcinogenic* have no quantitative significance and are used simply as descriptors of different levels of evidence of human carcinogenicity, with *probably carcinogenic* signifying a higher level of evidence than *possibly carcinogenic*.

- **Group 2A: The agent is probably carcinogenic to humans.**
This category is used when there is *limited evidence of carcinogenicity* in humans and *sufficient evidence of carcinogenicity* in experimental animals. In some cases, an agent may be classified in this category when there is *inadequate evidence of carcinogenicity* in humans and *sufficient evidence of carcinogenicity* in experimental animals and strong evidence that the carcinogenesis is mediated by a mechanism that also operates in humans. Exceptionally, an agent may be classified in this category solely on the basis of *limited evidence of carcinogenicity* in humans. An agent may be assigned to this category if it clearly belongs, based on mechanistic considerations, to a class of agents for which one or more members have been classified in Group 1 or Group 2A.
- **Group 2B: The agent is possibly carcinogenic to humans.**
This category is used for agents for which there is *limited evidence of carcinogenicity* in humans and less than *sufficient evidence of carcinogenicity* in experimental animals. It may also be used when there is *inadequate evidence of carcinogenicity* in humans but there is *sufficient evidence of carcinogenicity* in experimental animals. In some instances, an agent for which there is *inadequate evidence of carcinogenicity* in humans and less than *sufficient evidence of carcinogenicity* in experimental animals together with supporting evidence from mechanistic and other relevant data may be placed in this group. An agent may be classified in this category solely on the basis of strong evidence from mechanistic and other relevant data.

Group 3: The agent is not classifiable as to its carcinogenicity to humans.

This category is used most commonly for agents for which the evidence of carcinogenicity is *inadequate* in humans and *inadequate* or *limited* in experimental animals.

Exceptionally, agents for which the evidence of carcinogenicity is *inadequate* in humans but *sufficient* in experimental animals may be placed in this category when there is strong evidence that the mechanism of carcinogenicity in experimental animals does not operate in humans.

Agents that do not fall into any other group are also placed in this category.

An evaluation in Group 3 is not a determination of non-carcinogenicity or overall safety. It often means that further research is needed, especially when exposures are widespread or the cancer data are consistent with differing interpretations.

IARC: Diesel engines exhaust carcinogenic

Group 4: The agent is *probably not carcinogenic to humans*.

This category is used for agents for which there is *evidence suggesting lack of carcinogenicity* in humans and in experimental animals. In some instances, agents for which there is *inadequate evidence of carcinogenicity* in humans but *evidence suggesting lack of carcinogenicity* in experimental animals, consistently and strongly supported by a broad range of mechanistic and other relevant data, may be classified in this group.

Evidence for studies in humans - Definition

As shown previously, the evidence relevant to carcinogenicity is evaluated using standard terms. For studies in humans, evidence is defined into one of the following categories:

Sufficient evidence of carcinogenicity: The Working Group considers that a causal relationship has been established between exposure to the agent and human cancer. That is, a positive relationship has been observed between the exposure and cancer in studies in which chance, bias and confounding could be ruled out with reasonable confidence. A statement that there is *sufficient evidence* is followed by a separate sentence that identifies the target organ(s) or tissue(s) where an increased risk of cancer was observed in humans. Identification of a specific target organ or tissue does not preclude the possibility that the agent may cause cancer at other sites.

Limited evidence of carcinogenicity: A positive association has been observed between exposure to the agent and cancer for which a causal interpretation is considered by the Working Group to be credible, but chance, bias or confounding could not be ruled out with reasonable confidence.

Inadequate evidence of carcinogenicity: The available studies are of insufficient quality, consistency or statistical power to permit a conclusion regarding the presence or absence of a causal association between exposure and cancer, or no data on cancer in humans are available.

Evidence suggesting lack of carcinogenicity: There are several adequate studies covering the full range of levels of exposure that humans are known to encounter, which are mutually consistent in not showing a positive association between exposure to the agent and any studied cancer at any observed level of exposure. The results from these studies alone or combined should have narrow confidence intervals with an upper limit close to the null value (e.g. a relative risk of 1.0). Bias and confounding should be ruled out with reasonable confidence, and the studies should have an adequate length of follow-up. A conclusion of *evidence suggesting lack of carcinogenicity* is inevitably limited to the cancer sites, conditions and levels of exposure, and length of observation covered by the available studies. In addition, the possibility of a very small risk at the levels of exposure studied can never be excluded.

In some instances, the above categories may be used to classify the degree of evidence related to carcinogenicity in specific organs or tissues.

From: Soret, Samuel (LLU) [<mailto:ssoret@llu.edu>]
Sent: Wednesday, July 11, 2012 9:12 PM
To: Jean Ospital
Subject: Appendix I: comments and articles

Jean:

Per our conversation during this afternoon's meeting, I am enclosing the mentioned articles:

1) Two studies provide new evidence that prenatal exposure to PAHs, at levels commonly encountered in New York City (and other urban areas), is associated with obesity in childhood (Rundle et al., 2012) and may adversely affect child behavior (anxiety, depression and attention problems; Perera et al., 2012).

Rundle et al. Association of Childhood Obesity With Maternal Exposure to Ambient Air Polycyclic Aromatic Hydrocarbons During Pregnancy. *Am J Epidemiol.* 2012 Jun 1;175(11):1163-72.

Perera et al. Prenatal Polycyclic Aromatic Hydrocarbon (PAH) Exposure and Child Behavior at Age 6-7 Years. *Environ Health Perspect.* 2012 Jun;120(6):921-6.

2) According to a recent investigation by Loma Linda University scientists (Spencer-Hwang et al., 2011), for kidney transplant recipients, ambient ozone levels potentially are associated with higher risk of fatal CHD. For each 10-ppb increase in O₃, risk of fatal coronary heart disease increased by 34% (95% confidence interval, 3%-76%) in models adjusted for sex, race, age, year of transplant, primary cause of kidney failure, months of pre-transplant dialysis, and PM₁₀. Please note that the publication of this article was accompanied by an invited editorial (see attached pdf: "Laden editorial") on the same issue of the *American Journal of Kidney Diseases* by Francine Laden (Harvard School of Public Health) and Wolfgang Winkelmayr (Stanford University School of Medicine). While numerous studies exist on the effects of air pollution on health-related outcomes in the general population or certain subpopulations, this is the first study in patients with kidney disease. As pointed out by Laden, the overarching question is whether kidney transplant recipients (and possibly other organ recipients) should be considered a susceptible subpopulation in the context of the Clean Air Act. These patients experience states of increased inflammation and oxidative stress, which may make enhance their susceptibility to air pollution. In addition, transplant patients receive long-term immunosuppressive medication. Immunosuppression per se may increase subsequent health risks among these patients.

Spencer-Hwang et al. Ambient air pollutants and risk of fatal coronary heart disease among kidney transplant recipients. *Am J Kidney Dis.* 2011 Oct;58(4):608-16.

Best.

Sam

Sam Soret, PhD, MPH —*Chair, Department of Environmental Health & Geoinformatics Sciences*
LOMA LINDA UNIVERSITY | School of Public Health
24951 North Circle Drive, Nichol Hall 1202, Loma Linda, California 92350
(909) 558-8750, Fax (909) 558 -0493

From: Froines, John [jfroines@ucla.edu]
Sent: Monday, August 06, 2012 2:49 PM
To: Marilyn Traynor; Afif El-Hasan (Afif.h.el-hasan@bp.org); Afif El-Hasan (afifhaitham@yahoo.com); Bill LaMarr (BillLaMarr@msn.com); David Czamanske (dczamanske@hotmail.com); Ed Laird (elaird@coatingsresource.com); Emily Nelson (dremilynelson@gmail.com); makeoverearth.com, gary; Greg Adams (gadams@lacsds.org); Lester, Julia; wang, Michael; Mike Wang (mwang@wsps.org); radtech.org, rita; Rob McConnell (rmcconne@hsc.usc.edu); Rob McConnell (rmcconne@usc.edu); 'Soret, Samuel (LLU)'; Todd Campbell (tcampbell@cleanenergyfuels.com); Walter Siembab (ws@siembab.com); Wayne Miller (wayne.miller@ucr.edu); Wayne Miller (wayne@cert.ucr.edu)
Cc: Jean Ospital; Barbara Baird; Patti Anderson; Batteate, Christina
Subject: RE: The Advisory Council re: AQMP's Appendix I: comments and articles--Articles from Dr. Soret

To all: I have read the articles that were attached from Marilyn Traynor, and I feel it is important to comment on the PAH issue. There appears to be some belief that PAHs are the etiologic agents associated with increased health risk. However, the true etiologic agents are either epoxides, radical cations, or quinones, that is, products of metabolism or atmospheric chemistry. We have published research demonstrating that naphthalene and phenanthrene decreases as one goes east in the LA Basin whereas the levels of quinones increases as one travels from Santa Monica/Long Beach to Riverside.

The quinones are highly reactive and likely the key agents in the toxicity of PAHs. PAHs are surrogates, but there are important issues about the levels of PAHs in relation to PAH quinones. The research on PAHs is well meaning, but there needs to be a better understanding of the chemistry that results in toxicity. This is quite important. Our research at the Long Beach Railyard showed the highest PAHs, but the inflammatory markers were off the charts in San Bernadino. It makes a difference whether the key agents are properly understood. See Trevor Penning et al, Chemical Research in Toxicology, volume 12(1), 1999 and the myriad of papers that followed to the present. I hope this is of interest. The key in all this is that the primary etiologic agents from fossil fuels are prooxidant (ROS) pathways or binding with electrophilic agents. PAHs themselves require bioactivation or atmospheric chemistry to act toxicologically.
John Froines

From: Marilyn Traynor [<mailto:MTraynor@aqmd.gov>]
Sent: Thursday, August 02, 2012 10:22 AM
To: Afif El-Hasan (Afif.h.el-hasan@bp.org); Afif El-Hasan (afifhaitham@yahoo.com); Bill LaMarr (BillLaMarr@msn.com); David Czamanske (dczamanske@hotmail.com); Ed Laird (elaird@coatingsresource.com); Emily Nelson (dremilynelson@gmail.com); makeoverearth.com, gary; Greg Adams (gadams@lacsds.org); Froines, John; Lester, Julia; wang, Michael; Mike Wang (mwang@wsps.org); radtech.org, rita; Rob McConnell (rmcconne@hsc.usc.edu); Rob McConnell (rmcconne@usc.edu); 'Soret, Samuel (LLU)'; Todd Campbell (tcampbell@cleanenergyfuels.com); Walter Siembab (ws@siembab.com); Wayne Miller (wayne.miller@ucr.edu); Wayne Miller (wayne@cert.ucr.edu)
Cc: Jean Ospital; Barbara Baird; Patti Anderson
Subject: To: The Advisory Council re: AQMP's Appendix I: comments and articles--Articles from Dr. Soret

TO: The Advisory Council
RE: AQMP Appendix I-Health Effects

This message is sent by Marilyn Traynor on behalf of Jean Ospital, Health Effects Officer, SCAQMD
.....
Attached are the studies that Dr. Soret discussed at the Advisory Council meeting on July 11, 2012.

Marilyn Traynor
Administrative Secretary
SCAQMD
21865 Copley Drive
Diamond Bar, CA 91765

(909) 396-3951
mtraynor@aqmd.gov

From: Soret, Samuel (LLU) [<mailto:ssoret@llu.edu>]
Sent: Wednesday, July 11, 2012 9:12 PM
To: Jean Ospital
Subject: Appendix I: comments and articles

Jean:

Per our conversation during this afternoon's meeting, I am enclosing the mentioned articles:

1) Two studies provide new evidence that prenatal exposure to PAHs, at levels commonly encountered in New York City (and other urban areas), is associated with obesity in childhood (Rundle et al., 2012) and may adversely affect child behavior (anxiety, depression and attention problems; Perera et al., 2012).

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Perera et al. Prenatal Polycyclic Aromatic Hydrocarbon (PAH) Exposure and Child Behavior at Age 6-7 Years. *Environ Health Perspect.* 2012 Jun;120(6):921-6.

2) According to a recent investigation by Loma Linda University scientists (Spencer-Hwang et al., 2011), for kidney transplant recipients, ambient ozone levels potentially are associated with higher risk of fatal CHD. For each 10-ppb increase in O₃, risk of fatal coronary heart disease increased by 34% (95% confidence interval, 3%-76%) in models adjusted for sex, race, age, year of transplant, primary cause of kidney failure, months of pre-transplant dialysis, and PM₁₀. Please note that the publication of this article was accompanied by an invited editorial (see attached pdf: "Laden editorial") on the same issue of the *American Journal of Kidney Diseases* by Francine Laden (Harvard School of Public Health) and Wolfgang Winkelmayr (Stanford University School of Medicine). While numerous studies exist on the effects of air pollution on health-related outcomes in the general population or certain subpopulations, this is the first study in patients with kidney disease. As pointed out by Laden, the overarching question is whether kidney transplant recipients (and possibly other organ recipients) should be considered a susceptible subpopulation in the context of the Clean Air Act. These patients experience states of increased inflammation and oxidative stress, which may make enhance their susceptibility to air pollution. In addition, transplant patients receive long-term immunosuppressive medication. Immunosuppression per se may increase subsequent health risks among these patients.

Spencer-Hwang et al. Ambient air pollutants and risk of fatal coronary heart disease among kidney transplant recipients. *Am J Kidney Dis.* 2011 Oct;58(4):608-16.

Best.

Sam

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From: [Emily Nelson](#)
To: [Jean Ospital](#)
Cc: [John J. Benoit](#)
Subject: AQMP Appendix I comments
Date: Friday, August 31, 2012 12:33:28 PM

Hello Jean,

Thank you for the opportunity to participate in the SCAQMD Advisory Council with focus on health effects of PM10. I believe your summary of Health Effects of Air Pollution included as Appendix I of the Draft 2012 AQMP is a thorough and comprehensive update on the latest published scientific research.

The discussion at our Advisory Council meeting on July 11, 2012 was excellent. After a review of the Draft published in July, I am confident that you included our substantive comments within the scope of purpose for Appendix I. As new and ongoing research is conducted, it clarifies the mechanisms of the health effects and drives the regulatory standard review process.

It is exciting progress to have the Multiple Air Toxics Exposure Study IV include a year of ultrafine particulate monitoring at ten stations as well as near sources. For personal reasons, it would be rewarding to have the MATES from 1987 included in your references!

I look forward to reviewing your Draft Final in early September.

Sincerely,
Emily Nelson, D.Env.

Health and Environmental Risk Consultant
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T (760)333-1776
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dremilynelson@gmail.com

Marilyn Traynor

From: Marilyn Traynor
Sent: Wednesday, October 03, 2012 1:48 PM
To: Marilyn Traynor
Subject: FW: synthesis paper
Attachments: EHP-117-167.pdf

From: Froines, John [<mailto:jfroines@ucla.edu>]
Sent: Monday, September 17, 2012 9:10 AM
To: Jean Ospital
Cc: Batteate, Christina
Subject: FW: synthesis paper

Jean: Please use the attached as my contribution to the AQMP. One paper reflects Particle Center work up to 2009 and the second paper represents work to the present and it is in press. The two papers reflect the overview of the Particle Center efforts and are comprehensive in nature. These papers are the most advanced documents on the topic of airborne particulate matter including ultrafines. Note that the papers represent my thinking as I am an author on both and was very actively involved in their preparation. You will see references to our work in the papers. The authors in the second paper (most recent) include two distinguished epidemiologists, Jonathan Samet and Ralph Delfino. As you know Ralph is a member of our Center and his work has been funded by AQMD. These papers represent the most advanced work in the field. You should use the papers as my comments since I am an author and they reflect my knowledge base.

Rob McConnell should review the epidemiology that is directly pertinent to issues in California including work by Burt Brunekreef on the mortality issues. I am not an epidemiologist and Rob would be the more appropriate person, since he can discuss the work of Jerrett, Enstrom, and Brunekreef. In addition AQMD is currently funding Dr. Art Cho on mechanistic issues relating to particles and vapors in relation to inflammation. This funded proposal reflects our mechanistic considerations.

The two EHP papers should be read and considered carefully as they represent the state of the art. The 2012 paper is in press and should not be quoted until I give the go ahead. Get back to me with questions.
John

NOTE: The first paper referenced above follows. The second paper is in press and is not included at this time. The reference follows:

[Breyse PN, Delfino RJ, Dominici F, Elder ACP, Frampton MW, Froines JR, Geyh AS, Godleski JJ, Gold DR, Hopke PK, Koutrakis P, Li N, Oberdörster G, Pinkerton KE, Samet JM, Utell MJ, Wexler AS. U.S. EPA Particulate Matter Research Centers: Summary of Research Results for 2005–2011. Air Quality, Atmosphere and Health. In Press (2012).]

A link will be provided to this document once it is published.

Particulate Matter (PM) Research Centers (1999–2005) and the Role of Interdisciplinary Center-Based Research

Elinor W. Fanning,¹ John R. Froines,¹ Mark J. Utell,² Morton Lippmann,³ Gunter Oberdörster,² Mark Frampton,² John Godleski,⁴ and Tim V. Larson⁵

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OBJECTIVE: The U.S. Environmental Protection Agency funded five academic centers in 1999 to address the uncertainties in exposure, toxicity, and health effects of airborne particulate matter (PM) identified in the “Research Priorities for Airborne Particulate Matter” of the National Research Council (NRC). The centers were structured to promote interdisciplinary approaches to address research priorities of the NRC. In this report, we present selected accomplishments from the first 6 years of the PM Centers, with a focus on the advantages afforded by the interdisciplinary, center-based research approach. The review highlights advances in the area of ultrafine particles and traffic-related health effects as well as cardiovascular and respiratory effects, mechanisms, susceptibility, and PM exposure and characterization issues.

DATA SOURCES AND SYNTHESIS: The collective publications of the centers served as the data source. To provide a concise synthesis of overall findings, authors representing each of the five centers identified a limited number of topic areas that serve to illustrate the key accomplishments of the PM Centers program, and a consensus statement was developed.

CONCLUSIONS: The PM Centers program has effectively applied interdisciplinary research approaches to advance PM science.

KEY WORDS: acute effects, biological mechanisms, chronic effects, criteria pollutants, dosimetry, exposure assessment, morbidity, mortality, particulate matter. *Environ Health Perspect* 117:167–174 (2009). doi:10.1289/ehp.11543 available via <http://dx.doi.org/> [Online 15 September 2008]

The U.S. Environmental Protection Agency (EPA) funded five academic centers in 1999 to address the uncertainties in exposure, toxicity and health effects of airborne particulate matter (PM) identified in the “Research Priorities for Airborne Particulate Matter” of the National Research Council (NRC 1998). Centers were established at Harvard University (Boston, MA), New York University (New York, NY), University of Rochester (Rochester, NY), University of Washington (Seattle, WA), University of California (Irvine, CA), University of California (Los Angeles, CA), and University of Southern California (Los Angeles, CA). All centers were structured to promote interdisciplinary approaches to address the research priorities of the NRC. A midterm report of PM Center findings was published previously (Lippmann et al. 2003). This report highlights selected accomplishments from the first 6 years of the PM Centers, with a focus on the advantages of interdisciplinary, center-based research. A more detailed summary of research findings and bibliography may be found in supplemental material available from the U.S. EPA PM Centers website (U.S. EPA 2008).

PM Exposure Research Highlights

Characterization of ambient PM. The PM Centers worked to characterize ambient PM and the substantial variation of concentration

and composition with source, region, seasonal and diurnal patterns, and size fraction. Examples of these findings follow. In the eastern United States, PM_{2.5} (PM with aerodynamic diameter < 2.5 μm) composition varies seasonally, with relatively more sulfate from long-range transport in the winter, and nitrate in the summer. Substantial spatial variability in PM components and copollutants was observed (Maciejczyk and Chen 2005). In the Pacific Northwest, organic carbon (OC) derived from wood burning is a major contributor to fine particle mass (Larson et al. 2006). PM₁₀ (PM < 10 μm in aerodynamic diameter) collected in Southern California derives largely from road dust and soil and contains significant quantities of metals, whereas PM_{2.5} from the same locations contains primarily nitrates, OC, and elemental carbon (EC). Ultrafine PM (UFP; PM < 0.1 μm in aerodynamic diameter) is especially high in OC (Sardar et al. 2005). Semivolatile components of PM have received increased attention in recent investigations, especially with regard to combustion-derived UFP in which a significant fraction of emissions by mass can consist of semivolatile material that has condensed onto a nonvolatile, primarily carbon core (Kuhn et al. 2005a; Robinson et al. 2007). Atmospheric processes generate UFP in regions of the Los Angeles, California, air basin that receive advected pollutant air masses (Fine et al. 2004; Singh et al.

2006). The role of atmospheric chemistry in formation of UFP is important: photo-oxidation of diesel emissions rapidly generates organic PM (Ntziachristos et al. 2007).

Source apportionment. Research on sources emphasized mobile sources/traffic during the first 6 years of the PM Centers (see below). A workshop was held by the PM Centers to compare different methods for source apportionment of PM. The outcomes of different analytical methods found good agreement across different investigators and methods in apportioning sources of PM_{2.5} mass in two U.S. cities: Phoenix, Arizona, and Washington, D.C. (Hopke et al. 2006; Thurston et al. 2005). Center research also included identification of tracer compounds for use in identifying sources of ambient particles (Fine et al. 2004).

Personal exposure. A significant body of data on personal exposure resulted from field studies of the PM Centers, including longitudinal studies conducted in different airsheds, populations, and housing. Extensive intrapersonal and interpersonal variability in the ratio of personal to ambient exposure measures was observed in some studies (Liu et al. 2003), but taken collectively the data establish that ambient air concentrations at central site monitors can yield valid estimates of average personal exposure for population-based epidemiologic studies (Sarnat et al. 2000, 2002). The location of central site monitors, extent of PM penetration into indoor environments, personal activities, and the influence of

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Progress reports and citations to additional PM Center publications are available on the U.S. Environmental Protection Agency (U.S. EPA) Web site at <http://es.epa.gov/ncer/science/pm/centers.html>

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indoor PM sources can affect personal/ambient exposure ratios (Larson et al. 2004; Sarnat et al. 2006). The effects of these factors differ with PM size and composition; for example, freeway-derived UFP in the 70- to 100-nm range penetrated indoors to a greater extent than 10- to 20-nm PM (Zhu et al. 2005). The relationship of ambient criteria pollutant concentrations to ambient and personal PM_{2.5} was explored. Ambient criteria pollutant levels were better predictors of personal PM_{2.5} than they were of personal exposure to the gaseous species themselves, suggesting that the criteria pollutants may be useful as surrogates of PM_{2.5} exposure, but are unlikely to act as confounders in epidemiologic studies (Sarnat et al. 2005). In a study of ambient UFP, hourly and 24-hr number concentrations were not significantly associated with concentrations of gaseous copollutants (Sardar et al. 2004).

PM Health Effects and Mechanisms of Injury Highlights

During the effort of the U.S. EPA to establish a national ambient air quality standard for fine particles, considerable questions about the biological plausibility of epidemiologic findings on hospitalization and mortality from cardiopulmonary effects arose. As a result the NRC committee recommended research into the mechanisms of injury that underlie PM health effects, especially daily mortality. Developments in defining toxicologic

mechanisms and intermediate clinical conditions that may explain the observed cardiovascular mortality are one of the highest impact areas of the scientific contributions of the PM Centers, in particular by addressing PM size-specific research, for example, ultrafine, fine, and coarse PM.

PM effects on the cardiovascular system. The PM Centers convened a workshop to discuss potential mechanisms of PM-associated cardiovascular effects and to identify fruitful research approaches [Frampton et al. 2009 (in press; Utell et al. 2002)] (Figure 1). During the first 6 years, center investigators have contributed to several review papers on cardiovascular responses to inhaled UFP and PM_{2.5} (Brook et al. 2004; Delfino et al. 2005; Godleski 2006; Mar et al. 2006; Pope and Dockery 2006). New statistical methodology was developed and applied to strengthen the interpretation of acute mortality studies (Coull et al. 2001; Janes et al. 2005; Schwartz and Coull 2003; Zanobetti et al. 2000, 2001; Zeka and Schwartz 2004). Epidemiologic studies that focused on specific cardiovascular outcomes, such as myocardial infarction (Peters et al. 2001, 2004; Zanobetti and Schwartz 2005) or cause-specific mortality (Franklin et al. 2007; Miller et al. 2007; Pope et al. 2002; Zeka et al. 2005) produced hypotheses for testing in laboratory animal research and human clinical studies. Toxicologists have contributed by identifying cellular and biomolecular mechanisms involved in the cardiovascular

effects that result from acute and long-term exposures to ambient PM (Araujo et al. 2008; Corey et al. 2006; Lippmann et al. 2005a, 2006; Sun et al. 2005). Most recently, toxicologic studies (Ghelfi et al. 2008) have shown that increases in reactive oxygen species (ROS) in the heart associated with inhalation of concentrated ambient particles (CAPs) may be abrogated by blocking neural receptors in the lung (Figure 2).

Investigations in the PM Centers and elsewhere supported the hypothesis that inflammatory responses contribute to cardiovascular toxicity. Possible mechanisms were proposed. Pulmonary inflammation could release ROS, cytokines, and chemokines from the lung to the systemic circulation (Frampton et al. 2006b). Vascular inflammatory markers were associated with PM_{2.5} exposure in a subchronic mouse study (Sun et al. 2005). Gong et al. (2007), which demonstrated that both diesel extract and oxidized lipid components synergistically affect the expression profile of several gene modules related to vascular inflammatory processes. Evidence for an increase in C-reactive protein and a shift to a procoagulatory state of the blood was seen in coronary artery disease patients exposed to various size fractions of PM (Rückerl et al. 2006). Temporal and other parameters differed with the specific air pollution mixture in this study, which limited interpretation. Pope et al. (2004) concluded that fine particulate air pollution is a risk for cause-specific cardiovascular disease mortality via inflammation, accelerated atherosclerosis, and altered autonomic function. Zeka et al. (2006) reached similar conclusions. Their epidemiologic study supports the hypothesis that particles can induce cardiovascular disease through inflammatory pathways and suggests greater toxicity of traffic-related particles.

Autonomic function effects manifested as alterations in heart rate and heart rate variability (HRV) have been associated with PM_{2.5} exposure. Decreased HRV was associated with

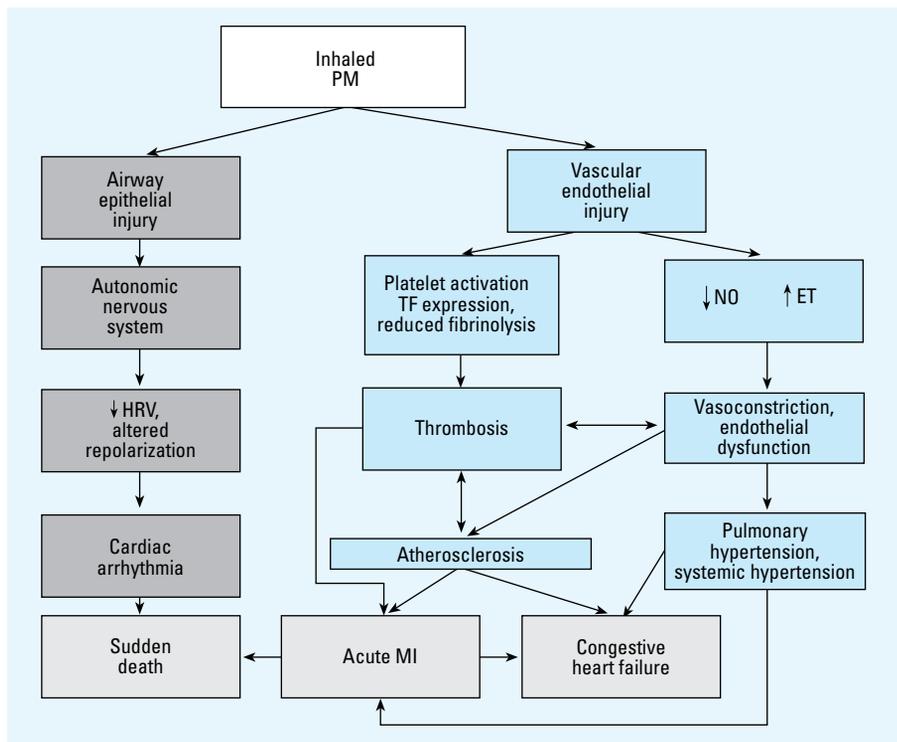


Figure 1. Mechanistic pathways for PM cardiovascular effects. Abbreviations: ET, endothelin; MI, myocardial infarction; NO, nitric oxide; TF, tissue factor. Modified from Frampton et al. 2009 (in press) with permission from Wolters Kluwer.

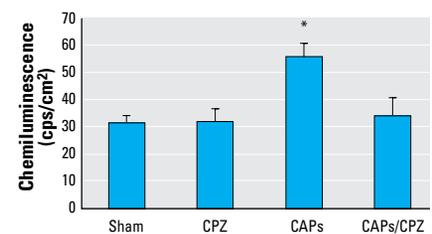


Figure 2. Capsazepine (CPZ) aerosolization prevents oxidative stress and damage in the heart of rats exposed to CAPs. Adult Sprague-Dawley rats received aerosols containing either 500 μM CPZ or saline for 20 min immediately prior to exposure to CAPs. Values represent the mean of eight independent determinations ± SEM. Reproduced from Ghelfi et al. (2008) with permission from Society of Toxicology. *p < 0.05.

PM_{2.5} exposure in panel studies of elderly subjects (Adar et al. 2007; Henneberger et al. 2005; Schwartz et al. 2005a). No associations with altered heart rate or HRV were seen in Seattle during the winter woodburning season (Mar et al. 2005b; Sullivan et al. 2005). A population-based study that drew on an established cohort (the Normative Aging Study) confirmed the association between decreased HRV and PM_{2.5} seen in other studies; history of ischemic heart disease, hypertension, and diabetes modified the effects of PM_{2.5} (Park et al. 2005). Cardiac arrhythmias and vascular changes such as endothelial cell responses and alterations in blood pressure are other important clinical signs of cardiovascular toxicity that have been identified in both humans and animals exposed to PM (Frampton et al. 2006b; Gong et al. 2004; Nadziejko et al. 2002).

Atherosclerosis is emerging as an important toxic end point of PM_{2.5} exposure. Atherosclerosis findings may be related to reports of myocardial infarction associated with PM_{2.5} in epidemiologic studies (Peters et al. 2004; Zanobetti and Schwartz 2005). The Peters study relates traffic exposures and myocardial infarction. Atherosclerotic lesions in a susceptible mouse model were enhanced by PM_{2.5} exposure in a number of reports (Araujo et al. 2008; Chen and Hwang 2005; Chen and Nadziejko 2005; Lippmann et al. 2005b; Sun et al. 2005). Araujo et al. (2008) compared the proatherogenic effects of ambient UFP with PM_{2.5} in apolipoprotein E-deficient mice. UFP-exposed mice exhibited significantly larger atherosclerotic lesions than mice exposed to PM_{2.5} or filtered air (Figure 3).

Respiratory effects of PM exposure. PM Centers research has added to a wide body of literature investigating toxicologic mechanisms and effects of PM in the respiratory system. Overall, the issue of respiratory effects and PM exposure has been reviewed recently with reference to work produced by the PM Centers as well as others (Boothe and Shendell 2008; Salam et al. 2008). Salam focuses on asthma, whereas the Boothe and Shendell paper addresses some other end points in addition to respiratory effects. Results from clinical and panel studies in asthmatic and elderly subjects, as well as experimental studies in animals and *in vitro* cellular systems with relevance to respiratory tissues were reported. The discovery that UFP deposition is increased in asthmatic subjects during exercise has important implications for defining populations at greater risk of PM-related effects (Chalupa et al. 2004; Daigle et al. 2003). Adjuvant effects of ambient PM in promoting allergic airways responses occurred in a sensitized mouse model (Kleinman et al. 2005). Acute exposures to ambient PM in Seattle were associated with increased inflammation in asthmatic subjects, as measured by exhaled nitric

oxide (Jansen et al. 2005; Koenig et al. 2005; Mar et al. 2005a). Respiratory effects in children were also a focus. Increased risk of infant hospitalization for bronchiolitis was significantly associated with subchronic and chronic exposures to PM in Los Angeles (Karr et al. 2007), where exposures in the month prior to hospitalization (subchronic) and mean lifetime exposure (chronic) referenced to the case diagnosis date were assessed on the basis of data derived from the California Air Resources Board. Epidemiologic studies that linked the PM Centers and the Children's Health Study (CHS) contributed findings that identify infants and children as important populations of concern for respiratory effects of PM (Gauderman et al. 2004, 2005, 2007; Molitor et al. 2007; Trenga et al. 2006). These studies demonstrate that exposure to PM_{2.5} and other air pollutants were associated with reduced lung function growth in children and provided evidence for compromised lung function. The CHS/PM Center studies identified traffic as a risk factor (Gauderman et al. 2004, 2005, 2007; McConnell et al. 2006).

Identification of new target tissues. UFP of carbon-13 were detected in the olfactory bulbs of rats after inhalation exposure (Oberdörster et al. 2004), suggesting that the central nervous system is a potentially important toxicologic target of PM_{2.5} (Figure 4). In support of this significant result, studies of mice chronically exposed to ambient PM_{2.5} documented loss of brain neurons (Veronesi et al. 2005) and changes in gene expression in the brain consistent with inflammatory effects (Gunnison and Chen 2005). In another study, proinflammatory cytokines were increased in brains of mice exposed to concentrated PM_{2.5} compared with those of control animals (Campbell et al. 2005).

Chemical mechanisms of PM toxicity. To better identify the most toxic PM components and sources, the PM Centers have pursued experimental linkages between toxicologic properties and specific physical/chemical characteristics of particles including size, surface area, and PM components such as transition metals, endotoxin, and organics including reactive organic compounds. Multiple chemical and biological mechanisms by which PM can induce toxic effects in a variety of target cell types have been proposed (Frampton 2006; Yang et al. 2008). Oxidative stress, a common effect of toxicant exposure, is a change in the redox environment of the cell (Schafer and Buettner 2001) through changes in the ratios of concentrations of oxidized to reduced cellular antioxidants. Oxidative stress occurs by increasing intracellular ROS or by depleting glutathione (GSH). GSH is the predominant antioxidant in cells and plays important roles in protecting against oxidative and electrophile stress (Rahman and MacNee 2000). A number

of PM Center studies during the first 6 years contributed to what is now a strong evidentiary basis for oxidative damage as a general toxicologic mechanism of PM injury (Delfino et al. 2005; Ghelfi et al. 2008; González-Flecha 2004; Gurgueira et al. 2002; Li et al. 2003a, 2003b; Rhoden et al. 2004, 2005; Tao et al. 2003; Xia et al. 2006). There is widespread agreement throughout the PM Centers that oxidative stress may be a mechanism of major importance for cardiorespiratory effects.

Studies of reactive chemical components of ambient PM samples reported that particles possess intrinsic chemical reactivity

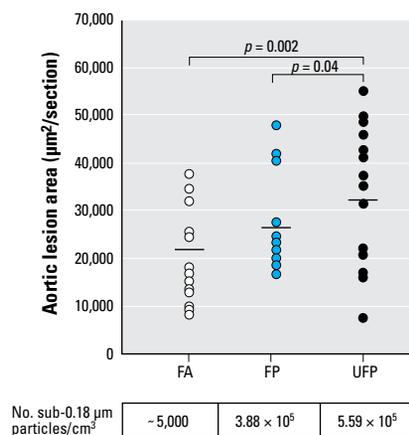


Figure 3. UFP is the most proatherogenic fraction. Atherosclerotic lesions were quantitatively analyzed in serial aortic root sections and stained with oil red O. Lesional area was scored as square micrometers per section and averaged ≥ 25 sections per animal. Group averages are indicated by straight horizontal bars. One mouse exposed to filtered air (FA) was an obvious outlier in its group and was removed from the atherosclerotic lesion analysis. However, its inclusion did not modify the overall significance. Mice exposed to FA are represented by white circles ($n = 14$), fine particles (FP) by blue circles ($n = 16$), and UFPs by black circles ($n = 15$). Reproduced from Araujo et al. (2008) with permission from Wolters Kluwer.

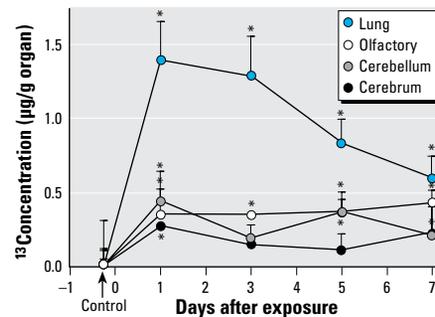


Figure 4. Time course of ¹³C tissue concentrations in lung, olfactory bulb, cerebellum, and cerebrum of rats after a 6-hr inhalation exposure to ultrafine (36 nm count median diameter) elemental ¹³C particles ($n = 3$ rats per time point). Adapted from Oberdörster et al. (2004) with permission from Taylor and Francis. * $p < 0.05$ (ANOVA).

that may play an important role in toxicity (Cho et al. 2005; Venkatchari et al. 2005). Covalent modification of biological molecules by reactive electrophilic compounds, particularly organics, and ROS production are two key chemical mechanisms by which PM can disrupt intracellular biochemistry, ultimately altering gene expression and subcellular organelle function in target cells. Center investigators demonstrated covalent binding of a cellular enzyme by electrophilic agents, including organic compounds, present in ambient PM (Rodriguez et al. 2005; Samet et al. 1999) and reported that PM can directly inhibit the activity of enzymes involved in oxidative stress response in a cell-free assay (Hatzis et al. 2006). There is accumulating evidence that transition metals such as copper, vanadium, chromium, nickel, cobalt, and iron, as well as aromatic and polar organic substances, play a role in ROS production. An important role of metals may be alteration of signal transduction pathways involving oxidative stress (Samet et al. 2003). Assays that can screen for both oxidative and covalent binding properties of PM are of interest for comparing the toxicologic potential of PM from different sources, locations of interest, season, and other parameters of interest (Borm et al. 2007).

Life shortening associated with exposure to PM. In analyses at the Harvard Center in which daily deaths in 10 European cities were investigated by examining all-cause, respiratory, and cardiovascular deaths for all ages and stratifying by age groups, it was found that the effect of air pollution is not limited to advancing mortality by a few weeks, but that effects persist for over a month after exposure. The short-term mortality effect size estimate for PM₁₀ doubles when longer-term effects for all mortality and cardiovascular mortality are considered and becomes five times higher for respiratory mortality (Zanobetti et al. 2003). Reduction of ambient air pollution levels was associated with reduced total, cardiovascular, and lung cancer mortality in the Harvard Six Cities Cohort (Laden et al. 2006). Long-term exposure was associated with excess lung cancer in cohort studies of Pope et al. (2002), Laden et al. (2006), and Pope and Dockery (2006).

Susceptibility factors and populations of concern for PM-induced health effects. When the PM Centers research was initiated, epidemiologic studies had indicated that the elderly and people with cardiovascular or chronic lung disease were at greater risk for morbidity and mortality associated with acute PM exposure. The PM Centers explored the basis for this susceptibility and also produced research findings that expand the spectrum of populations of concern. Support for the epidemiologic observations that elderly and chronic obstructive pulmonary disease patients have higher rates of hospitalization and mortality

associated with acute PM exposure has come from human clinical studies showing that elderly people experience greater effects of PM on HRV and blood parameters (Park et al. 2005; Pope and Dockery 2006; Schwartz et al. 2005a, 2005b). Further support for the elderly as a population of concern comes from studies of geriatric laboratory animals (Elder et al. 2004a, 2004b).

A study of PM-related daily mortality found greater effects in diabetic subjects (Zeka et al. 2006). The increase in mortality in diabetics may be related to increased susceptibility to the cardiovascular effects of PM exposure, as indicated by greater rate of hospitalization for heart disease (Zanobetti and Schwartz 2002), sensitivity to changes in HRV (Park et al. 2005), and altered vasomotor function (O'Neill et al. 2005) in diabetic subjects. It is possible that these patients may be more susceptible to inflammatory effects of PM, which in turn affect vascular tissues (O'Neill et al. 2007). In contrast, recent results from the Women's Health Initiative suggest that diabetics in this cohort were not at increased risk (Miller et al. 2007). More work on this subject is needed, and controlled human exposures in diabetic studies have been initiated by the PM Centers (Frampton et al. 2006a). Schwartz et al. (2005b) reported an association between presence or absence of the allele for glutathione-S-transferase M1 and the high frequency component of HRV. Genetic susceptibility is an area in which the PM Centers are currently increasing research focus.

Advances in Critical Interdisciplinary Research Areas

Interdisciplinary research has been a hallmark of the PM Centers since their inception. Two subject areas that were exemplary in terms of bringing together multiple investigative perspectives were investigations of UFP and mobile sources.

Ultrafine particles: unique in composition and toxicity. Center-based research allowed a major effort to characterize size distributions, chemical speciation, and the effect of atmospheric processes of UFP to be integrated with toxicologic research (Donaldson and Stone 2003). UFP in urban airsheds are largely derived from fresh combustion sources, although secondary formation of UFP from atmospheric photochemical processes is also an important source (Sioutas et al. 2005). UFP freshly generated by combustion are short-lived and subsequently grow to form aggregates. UFP dominate particle number concentration in ambient PM samples while contributing little to PM mass concentrations. In part because of a complex fractal structure (Friedlander and Xiong 2000), UFP possess much greater surface area per unit mass than larger ambient particles. The large surface

area, in turn, allows greater per-mass concentrations of adsorbed or condensed toxic air pollutants (oxidant gases, organic compounds, transition metals) to collect on UFP (Sioutas et al. 2005). Studies on ambient and model particles have concluded that the large specific surface area of UFP may be a key component in their toxicology (Oberdörster 2001).

The PM Centers produced an integrated body of exposure and toxicologic studies on ambient and model UFP as well as studies of controlled human exposures. Dosimetry work showed that UFP will have significant accumulation in the lung (Kreyling et al. 2006). In addition, UFP of varying composition can cross cellular membranes by diffusion (Geiser et al. 2005) and gain access to vulnerable targets within cells. The potential for translocation from the site of lung deposition into systemic circulation, although rates have been low with test particles (Kreyling et al. 2002), could have major mechanistic implications (Elder and Oberdörster 2006). Electron microscopy indicated subcellular penetration and mitochondrial damage by UFP in *in vivo* studies and, to a lesser extent, by fine particles (Li et al. 2003b). Disruption of mitochondrial functions may play an important role in PM-mediated health effects (Xia et al. 2007).

In a study of size-segregated concentrated ambient PM samples, the ability of PM to catalyze ROS generation, an initial step in the induction of oxidative stress, was greatest in the UFP fraction (Cho et al. 2005). Li et al. (2003a) summarized contrasting features of coarse, fine, and ultrafine particles from Southern California, including relevant chemical and biological parameters. The toxicologic findings correlated with PM OC and polycyclic aromatic hydrocarbon (PAH) composition, suggesting a role of organic agents in generating redox activity (Table 1).

The PM Centers conducted controlled human exposure studies with UFP. Results from these studies were limited, because of small group sizes and because these exposures are necessarily brief and conducted at low concentrations compared with the background PM exposures that may be experienced by urban study subjects. In the first set of studies, short-term exposures were conducted with 10–50 µg/m³ carbon UFP generated in the laboratory. Alterations in blood cell adhesion molecules and in a marker of vascular perfusion suggest that UFP exposure may produce subtle changes in pulmonary vasoconstriction (Frampton 2007; Pietropaoli et al. 2004). A small but statistically significant reduction in arterial oxygen saturation and some evidence for reduced HRV were found, although the small study size limited interpretation (Gong et al. 2008). An expanded focus on UFP in epidemiologic studies is needed but has been limited to date by the challenges of assessing exposure to UFP.

Traffic: mobile sources are highly relevant to the public health impacts of PM. The center-based research context was particularly useful in advancing the science on mobile sources of PM, the focus of an extensive international research effort. Numerous investigations of the physical and chemical attributes of PM collected alongside freeways and in roadway tunnels were performed. The results have yielded data on size distribution, number and mass concentrations, chemical speciation, emissions factors, volatility, penetration indoors, and the impact of atmospheric processes on roadway PM (Biswas et al. 2007; Fine et al. 2004; Geller et al. 2006; Kuhn et al. 2005b, 2005c; Phuleria et al. 2007; Sardar et al. 2005; Zhu et al. 2005). Detailed spatial profiles of UFP concentration at varying distances from freeways were generated (Zhu et al. 2002a, 2002b). Concentrations of UFP drop exponentially with distance from the center of the freeway, reaching upwind levels at approximately 300 meters. The size distribution of UFP also changed markedly with distance reflective of coagulation and other atmospheric particle processes. Winter particle number concentrations are greater than summer, indicating formation of UFP from vapor condensation. Exposure to motor vehicle exhaust emissions during commuting may constitute a substantial fraction of daily personal PM exposure, especially to UFP (Sioutas et al. 2005; Zhu et al. 2007).

Toxicologic studies of traffic-derived aerosols studied by PM Centers included *in vitro* findings that implicate PM collected in freeway microenvironments in the production of reactive chemical species, stimulation of proinflammatory effects, and altered gene expression in cellular test systems. UFP fraction, carbonaceous content, and an organic tracer for vehicles were linked with toxicologic activity of PM in a variety of assays (Cho et al. 2005; Li et al. 2003a, 2003b). Several studies of laboratory animals exposed to PM on or near busy roadways have identified cardiovascular and allergic airways effects (Elder et al. 2004b, 2007; Kleinman et al. 2005). Evidence that traffic-derived air pollution affects humans has expanded significantly during the first 6 years of PM Centers funding, implicating mobile source in respiratory effects in children (Gauderman et al. 2004, 2005, 2007; McConnell et al. 2006), cardiovascular effects (Riediker et al. 2004) including myocardial infarction (Peters et al. 2004; Tonne et al. 2007), and low birth weight (Wilhelm and Ritz 2003). Toxicologic studies are needed to follow up the epidemiologic findings of effects on the fetus. In a reanalysis of data from the Harvard Six Cities study of daily mortality and PM, source apportionment approaches identified the mobile source factor as most strongly associated with increased daily mortality (Laden et al. 2000).

Policy Implications of PM Centers Research

Research findings from the PM Centers have had a significant influence on science policy, most directly in terms of the science that underlies the National Ambient Air Quality Standards (NAAQS) for PM. The findings of morbidity and mortality that form the scientific basis for the short-term and annual PM NAAQS were strengthened through epidemiologic and statistical research. Mechanistic investigations and studies of preclinical markers established biological plausibility for observed relationships between ambient air PM and observed acute mortality. In personal exposure studies, validation of the use of central site ambient concentrations provided crucial support to the interpretation of epidemiologic results.

The PM NAAQS are based on mass concentration. The state of the science suggests that no single parameter, whether mass, size fraction, surface area, or a particular chemical component, is responsible for all the diverse mechanisms and toxicologic end points that have been associated with PM, and a more sophisticated approach to standards will be needed. Based on findings from the PM Centers and others, the potential efficacy of number and component based standards should be assessed. As more data become available to link specific PM emissions sources, chemical composition, and physical characteristics with quantitative measures of toxicity, the question of source-specific control strategies to maximize public health protection also needs to be considered.

The increasing level of evidence that UFP are toxic but may not be controlled well by existing regulatory approaches raises other policy issues including mitigation of the risk of health effects associated with housing, schools, parks, and other heavily populated public facilities located near heavily traveled roadways, busy seaports, and other combustion sources that are the major urban sources of exposure to UFP. There are potential environmental justice concerns associated with transportation-derived combustion, as it is often areas of lower socioeconomic status that are most affected by proximity to these sources.

Looking Forward: Research Priorities and Current Directions

As the PM Centers program moved forward into the second phase, the original guiding research priorities were reevaluated, and new priorities have emerged. Several areas of investigation identified during the development of the 1997 PM NAAQS are still of critical relevance today, but the scientific questions being asked have been refined. Some research topics being pursued in the current round of PM Centers are described below.

Particle source characterization and PM components as factors in PM toxicity. The PM Centers current research agenda includes detailed studies of the physical and chemical attributes of ambient PM associated with specific sources. The current science indicates that multiple mechanisms of injury, in backgrounds modified by host susceptibility factors, can be activated by a variety of PM components and characteristics. To address the complexity associated with assessing the health effects associated with specific PM components, the current PM Centers research agenda compares toxicologic properties of PM by source type in addition to compositional attributes. Mobile sources continue to be a priority focus, and there is a need to better understand the fate of fossil fuel combustion emissions from a variety of mobile and stationary sources, including airports, seaports, and other sources as well as roadways. Building upon the productive body of work on mobile source PM in the first 6 years of PM Center work, the current PM Centers include human panel and clinical studies and toxicologic studies in laboratory animals and *in vitro* systems that test hypotheses about the effects of mobile source PM exposures. Source apportionment efforts are ongoing as well, to build on previous work that found mobile sources are dominant contributors to urban UFP loads. *In vitro* studies will pay particular attention to UFP, organic compounds, and transition metals. UFP formed from nucleation of ambient air vapors are a new focus, as they may be especially toxic.

Dosimetry and toxicokinetics. Research at the PM Centers is addressing particle deposition, uptake, distribution, and fate, including

Table 1. Contrasting features of coarse, fine, and ultrafine particles.

Parameters	Coarse PM ₁₀	Fine PM ₁₀	Ultrafine PM ₁₀
Size (µm)	2.5–10	2.5–0.15	< 0.15
OC content	+	++	+++
EC content	+	++	+++
Metals (% of total elements)	+++	++	+
PAH content	+	+	+++
Redox activity (DTT assay)	+	++	+++
HO-1 induction	+	++	+++
GSH depletion	+	+++	+++
Mitochondrial damage	None	Some	Extensive

Data from Li et al. (2003a).

the effects of developmental stage on disposition of PM. Cell culture systems with gene expression and proteomics methods are being used for studies of metabolic and genetic responses that will be useful for toxicokinetics. Studies of the dosimetry and toxicokinetics associated with UFP are especially important, given previous PM Centers findings that these particles distribute into systemic circulation and secondary target organs such as the CNS, and can enter cells and subcellular organelles.

Mechanisms. All the current PM Centers have a strong focus on continuing to develop understanding of the toxic mechanisms that underlie clinically and epidemiologically defined adverse health effects of PM. Mechanisms being pursued include reactive chemical species that cause cellular oxidative stress responses. In the first 6 years, studies of oxidative damage associated with PM were performed using diverse chemical species, cell culture experiments, and laboratory animal studies. Evolving from that work, the current PM Centers studies are looking at markers of oxidative stress processes in humans and a range of clinical and preclinical biomarkers. The list of gene products that can be used as indicators of PM exposure or toxicity in various cell types has expanded. Mechanistic hypotheses are being tested in panel and other epidemiologic studies.

Susceptibility. Susceptibility is a major theme, drawing on the work from the earlier center and noncenter investigators showing that individuals with pulmonary and cardiac health conditions, elderly, children, diabetics, and others may be more susceptible to the adverse effects of PM exposure than the general population. The PM Centers are looking at early life exposures to PM in animal models, performing panel studies of elderly subjects or subjects with compromised health status, using a large established cohort to identify how risk factors for PM-related health outcomes may be modified by individual factors such as medication use, diet, and genotype. Compromised animal models are a key theme of current research into susceptibility. PM exposure studies on ApoE^{-/-} mice (an atherosclerosis-prone model), hypertensive rats, and diabetic rats are all planned or underway.

Conclusions

In 1998, a committee of the NRC published the first of a four-volume report titled "Research Priorities for Airborne Particulate Matter" that identified the 10 highest-priority targets for PM research (NRC 1998). Within the research portfolio of the PM Centers, the priority areas have been addressed. A subsequent NRC report (2001) emphasized that these research priorities require multidisciplinary approaches. Recognizing that progress in understanding the health effects consequent

to air pollution exposure requires talents from highly divergent fields, we believe that the PM Centers effectively promote interdisciplinary cross-fertilization. The next 5 years of this program will bring the experience and results of the first centers to fruition in new, focused studies that we hope will be instrumental in addressing the difficult scientific and public health policy problems that arise from ubiquitous particulate air pollution.

CORRECTION

In the title of the manuscript originally published online, the date range in the title was incorrect. It has been corrected here.

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ATTACHMENT 4

EXTERNAL REVIEWERS' COMMENTS

Appendix I-Health Effects was submitted to the following individuals for review and comment:

Dr. Jonathan M. Samet, M.D., M.S.
University of Southern California
Department of Preventive Medicine
USC Institute for Global Health

Dr. Michael Kleinman, Ph.D., M.S.
University of California, Irvine
Department of Medicine/Occupational and Environmental Medicine

Copies of their comments follow.

Keck School of Medicine of USC

Department of Preventive Medicine
Jonathan M. Samet, MD, MS
Professor and Flora L. Thornton Chair
Director, USC Institute of Global Health

September 25, 2012

Jean Ospital, MPH, PhD
Health Effects Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Dear Jean,

As you requested, I attach comments concerning the Health Effects Appendix of the District's draft Air Quality Management Plan. Please do not hesitate to contact me if you have questions with regard to these comments.

Yours sincerely,



Jonathan M. Samet, MD, MS
Professor and Flora L. Thornton Chair
Department of Preventive Medicine
Director, USC Institute for Global Health



**Review: Health Effects Appendix
South Coast Air Quality Management District
Jonathan M. Samet, MD, MS**

General Comments:

This relatively brief document provides an overview of the health effects of various air pollutants, giving emphasis to pollution by airborne particulate matter. The document also covers other “criteria pollutants” as well as ultrafine particulate matter and toxic air contaminants. This range of topics is appropriate to the development of an Air Quality Management Plan.

As presented, the document represents a summary, and an apparent updating of an earlier report. It is necessarily selective in its coverage and relies to an extent on the review documents prepared by the US Environmental Protection Agency for the “criteria” pollutants. I have the following general comments:

- Preparation of reviews of the health effects of air pollution is a daunting task, given the extensive data available and its continuing and rapid accrual. The South Coast Air Quality Management District is not well positioned to prepare a comprehensive and up-to-date review. Consequently, there are deficiencies of this review related to its scope and timeliness. The basis for the document’s development is provided in the last paragraph on page I-2. While the statement is clear, the methods are not fully transparent. In particular, several older reviews are mentioned, along with more recent documents from the US Environmental Protection Agency and several prepared by the California EPA. I suggest that more careful attention be given to describing the basis for this review and to consideration of its methodology. For example, given the complexity and scope of the literature, the developers of the review might rely solely on summary documents or to also summarize documents and research published based on studies in California. In the present version, I could not readily identify why particular studies were included.
- I understand that the South Coast Air Quality Management District is required to provide a review in support of its air quality management plan. As stated, the California Health and Safety Code Section 40471(b) requires the preparation of report on “the health impacts of particulate matter in the South Coast Air Basin (SCAB) in conjunction with the preparation of the Air Quality Management Plan revisions.” This document does not directly address the health impacts, if some quantification of burden is implicit in the requirement. The identification of health effects and selected of examples of risks from the literature represents a starting point in estimating the health impact. As noted in my next comment, the review might have establishing the relevance of the broad body of evidence to the South Coast Air Quality Management District as one objective.

- There is an extensive literature on airborne particulate matter and health, as well as on the risks of various other air pollutants. One question that might be reasonably addressed in this report is the generalizability of findings from this broad literature to California. Here, a careful review of studies in California might be of benefit. Additionally, considerations might be given to the mixture of pollutants in the South Coast Air Basin to support conclusions about the generalizability of findings.
- The document needs further editing in part to improve clarity and in part to bring in some of the most recent and relevant references. Additionally, if the most recent US EPA documents are to be used as the basis of the report, some updating is needed.

Specific comments:

See attached.

INTRODUCTION

This document presents a summary of scientific findings on the health effects of ambient air pollutants. The California Health and Safety Code Section 40471(b) requires that the South Coast Air Quality Management District prepare a report on the health impacts of particulate matter in the South Coast Air Basin (SCAB) in conjunction with the preparation of the Air Quality Management Plan revisions. This document, which was prepared to satisfy that requirement, also includes the effects of the other major pollutants.

HEALTH EFFECTS OF AIR POLLUTION

Ambient air pollution is a major public health concern. Excess deaths and increases in illnesses associated with high air pollution levels have been documented in several episodes as early as 1930 in Meuse Valley, Belgium; 1948 in Donora, Pennsylvania; and 1952 in London. Although levels of pollutants that occurred during these acute episodes are now unlikely in the United States, ambient air pollution continues to be linked to increases in illness, (morbidity) and increases in death rates (mortality).

The adverse health effects associated with air pollution are diverse and include:

- ^{Premature} ~~Increased~~ mortality
- Increased health care utilization (hospitalization, physician and emergency room visits)
- Increased respiratory illness (symptoms, infections, and asthma exacerbation) ^{and other morbidity}
- Decreased lung function (breathing capacity)
- Lung inflammation
- Potential immunological changes
- Increased airway reactivity to a known ~~chemical~~ ^{pharmacological agent} exposure - a method used in laboratories to evaluate the tendency of airways to have an increased possibility of developing an asthmatic response
- A decreased tolerance for exercise.

The list needs to include cardiovascular effects.

Biomarkers??

The evidence linking these effects to air pollutants is derived from population-based observational and field studies (epidemiological) as well as controlled laboratory studies involving human subjects and animals. There have been an increasing number of studies focusing on the mechanisms (that is, on learning how specific organs, cell types, and biochemicals are involved in the human body's response to air pollution) and specific pollutants responsible for individual effects. Yet the underlying biological pathways for these effects are not always clearly understood.

Although individuals inhale pollutants as a mixture under ambient conditions, the regulatory framework and the control measures developed are ~~mostly~~ pollutant-specific. This is appropriate, in that different pollutants usually differ in their sources, their times and places of occurrence, the kinds of health effects they may cause, and their overall levels of health risk. Different pollutants, from the same or different sources, may sometimes act together to harm health more than they would acting separately. Nevertheless, as a practical matter, health scientists, as well as regulatory officials, usually must deal with one pollutant at a time in determining health effects and in adopting air quality standards. To meet the air quality standards, comprehensive plans are developed such as the Air Quality Management Plan (AQMP), and to minimize toxic exposure a local air toxics control plan is also prepared. These plans examine multiple pollutants, cumulative impacts, and transport issues related to attaining healthful air quality. A brief overview of the effects observed and attributed to various air pollutants is presented in this document.

For six major outdoor pollutants covered under Sections 108 + 109 of the CAA

This summary is drawn substantially from reviews presented previously (SCAQMD, 1996, 2003, 2007), and from reviews on the effects of air pollution by the American Thoracic Society (ATS, 1996), the U.S. EPA reviews for ozone (U.S. EPA, 2006), Carbon Monoxide (U.S. EPA, 2010), and Particulate Matter (U.S. EPA, 2004, 2009), from a published review of the health effects of air pollution (Brunekreef and Holgate, 2002), and from reviews prepared by the California EPA Office of the Environmental Health Hazard Assessment for Particulate Matter (Cal EPA, 2002) and for Ozone (Cal EPA, 2005). Additional materials are from EPA's current review of the ozone standard and health effects (EPA, 2011). More detailed citations and discussions on air pollution health effects can be found in these references.¹

and ongoing

¹ Most of the studies referred to in this appendix are cited in the above sources. Only more recent specific references will be cited in this summary.

OZONE

Ozone is a highly reactive compound, and is a strong oxidizing agent. When ozone comes into contact with the respiratory tract, it can react with tissues and cause damage in the airways. Since it is a gas, it can penetrate into the gas exchange region of the deep lung.

The EPA primary standard for ozone, adopted in 2008, is 0.075 ppm averaged over eight hours. The California Air Resources Board (CARB) has established standards of 0.09 ppm averaged over one hour and at 0.070 ppm averaged over eight hours.

*see latest
ESA to
update* { The major subgroups of the population considered to be at increased risk from ozone exposure are outdoor exercising individuals, including children, and people with preexisting respiratory disease(s) such as asthma. The data base identifying the former group as being at increased risk to ozone exposure is much stronger and more quantitative than that for the latter group, probably because of a larger number of studies conducted with healthy individuals. The adverse effects reported with short-term ozone exposure are greater with increased activity because activity increases the breathing rate and the volume of air reaching the lungs, resulting in an increased amount of ozone reaching the lungs. Children may be a particularly vulnerable population to air pollution effects because they spend more time outdoors, are generally more active, and have a higher ventilation rate than adults.

A number of adverse health effects associated with ambient ozone levels have been identified from laboratory and epidemiological studies (EPA, 1996; 2006, 2011; ATS, 1996). These include increased respiratory symptoms, damage to cells of the respiratory tract, decrease in lung function, increased susceptibility to respiratory infection, and increased risk of hospitalization. *mortality?*

Increases in ozone levels are associated with elevated absences from school. The Children's Health Study, conducted by researchers at the University of Southern California, followed a cohort of children that live in 12 communities in Southern California with differing levels of air pollution for several years. A publication from this study reported that school absences in fourth graders for respiratory illnesses were associated with ambient ozone levels. An increase of 20 ppb ozone was associated with an 83% increase in illness-related absence rates (Gilliland, 2001). *positively*

The number of hospital admissions and emergency room visits for all respiratory causes (infections, respiratory failure, chronic bronchitis, etc.) including asthma

shows a consistent increase as ambient ozone levels increase in a community. These excess hospital admissions and emergency room visits are observed when hourly ozone concentrations are as low as 0.06 to 0.10 ppm.

Numerous recent studies have found positive associations between increases in ozone levels and excess risk of mortality. These associations persist even when other variables including season and levels of particulate matter are accounted for. This indicates that ozone mortality effects may be independent of other pollutants (Bell, 2004).

Multicity studies of short-term ozone exposures (days) and mortality have also examined regional differences. Evidence was provided that there were generally higher ozone-mortality risk estimates in northeastern U.S. cities, with the southwest and urban mid-west cities showing lower or no associations (Smith, 2009; Bell, 2008). Another long-term study of a national cohort found that long-term exposures to ozone were associated with respiratory-related causes of mortality, but not cardiovascular-related causes, when PM_{2.5} exposure were also included in the analysis.

at risk?

Several population-based studies suggest that asthmatics are more adversely affected by ambient ozone levels, as evidenced by increased hospitalizations and emergency room visits. Laboratory studies have attempted to compare the degree of lung function change seen in age and gender-matched healthy individuals versus asthmatics and those with chronic obstructive pulmonary disease. While the degree of change evidenced did not differ significantly, that finding may not accurately reflect the true impact of exposure on these respiration-compromised individuals. Since the respiration-compromised group may have lower lung function to begin with, the same degree of change may represent a substantially greater adverse effect overall.

→ There are two issues: 1) Is asthma adversely affected by ozone? and 2) Is the lung function response to ozone different in asthmatics and non-asthmatics

Another publication from the Children's Health Study focused on children and outdoor exercise. In communities with high ozone concentrations, the relative risk of developing asthma in children playing three or more sports was found to be over three times higher than in children playing no sports (McConnell, 2002). These findings indicate that new cases of asthma in children are associated with heavy exercise in communities with high levels of ozone. While it has long been known that air pollution can exacerbate symptoms in individuals with respiratory disease, this is among the first studies that indicate ozone exposure may be causally linked to asthma onset.

associated with episodic and chronic exposure effects may not exhibit similar adaptation. That is, internal damage to the respiratory system may continue with repeated ozone exposures, even if externally observable effects (chest symptoms and reduced lung function) disappear.

In a laboratory, exposure of human subjects to low levels of ozone causes reversible decrease in lung function as assessed by various measures such as respiratory volumes, airway resistance and reactivity, irritative cough and chest discomfort. Lung function changes have been observed with ozone exposure as low as 0.06 to 0.12 ppm for 6-8 hours under moderate exercising conditions. Similar lung volume changes have also been observed in adults and children under ambient exposure conditions (0.10 - 0.15 ppm). The responses reported are indicative of decreased breathing capacity and are reversible. *update with Kim study?*

The results of several studies where human volunteers were exposed to ozone for 6.6 hours at levels between 0.04 and 0.12 ppm were recently summarized (Brown, 2008). As shown in the figure below, there is an increasing response on lung function with increasing exposure levels in moderately exercising subjects.

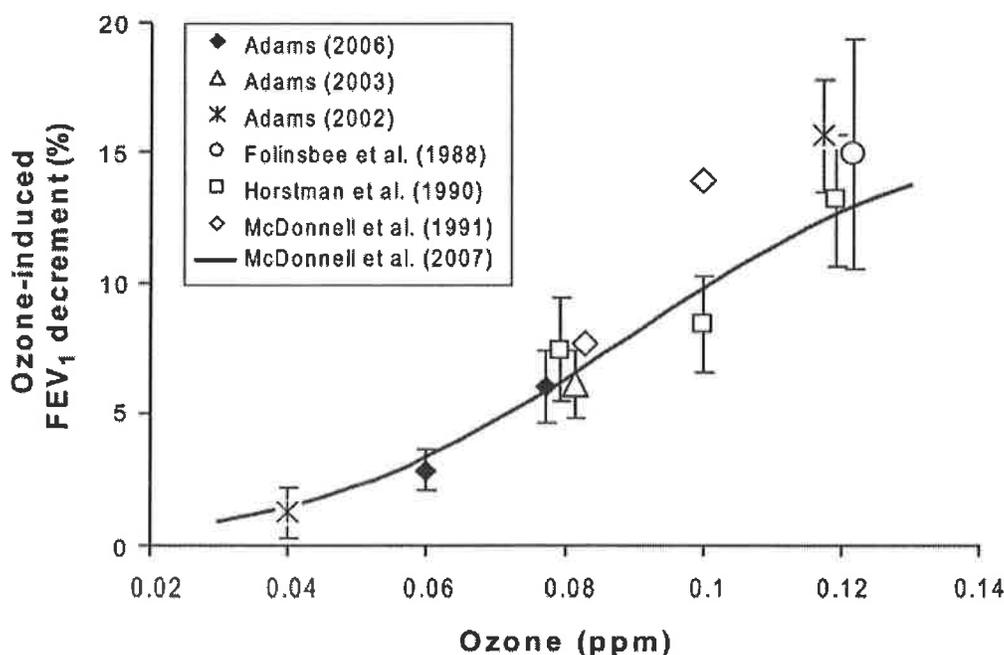


FIGURE I-1

Comparison of mean ozone-induced decrements in lung function following 6.6 hours of ozone exposure (from Brown, 2008)

In addition to controlled laboratory conditions, studies of individuals exercising outdoors, including children attending summer camp, have shown associations of reduced lung function with ozone exposure. There were wide ranges in responses among individuals.

Results of epidemiology studies support the relationship between ozone exposure and respiratory effects. Several, but not all, studies have found associations of short-term ozone levels and hospital admissions and emergency department admissions for respiratory-related conditions (EPA, 2011).

In laboratory studies, cellular and biochemical ^{changes} associated with respiratory tract inflammation have also been consistently ~~reported~~ ^{found} in the airway lining after low level exposure to ozone. These changes include an increase in specific cell types and in the concentration of biochemical mediators of inflammation and injury such as cytokines and fibronectin. Indications of lung injury and inflammatory changes have been observed in healthy adults exposed to ozone in the range of 0.06 to 0.10 ppm.

The susceptibility to ozone observed under ambient conditions could be due to the combination of pollutants that coexist in the atmosphere or ozone may actually sensitize these subgroups to the effects of other pollutants.

Some animal studies show results that indicate possible chronic effects including functional and structural changes of the lung. These changes indicate that repeated inflammation associated with ozone exposure over a lifetime may result in sufficient damage to respiratory tissue such that individuals later in life may experience a reduced quality of life in terms of respiratory function and activity level achievable. An autopsy study involving Los Angeles County residents provided supportive evidence of lung tissue damage (structural changes) attributable to air pollution.

A study of birth outcomes in southern California found an increased risk for birth defects in the aortic and pulmonary arteries associated with ozone exposure in the second month of pregnancy (Ritz et al., 2002). This ^{was} is the first study linking ambient air pollutants to birth defects in humans. Studies conducted since mostly focusing on cardiac and oral cleft defects have found mixed results, with some showing associations, but others did not. ~~Confirmation by further studies is needed.~~

In summary, adverse effects associated with ozone exposures have been well documented, although the specific causal mechanism is still somewhat unclear.

Need to acknowledge the mechanistic work.

PARTICULATE MATTER

Airborne particulates are a complex group of pollutants that vary in source, size and composition, depending on location and time. The components include nitrates, sulfates, elemental carbon, organic carbon compounds, acid aerosols, trace metals, and material from the earth's crust. Substances of biological origin, such as pollen and spores, may also be present.

Until several years ago, the health effects of particulates were focused on those sized 10 μm (micrometers) aerodynamic diameter and smaller. These can be inhaled through the upper airways and deposited in the lower airways and gas exchange tissues in the lung. These particles are referred to as PM10. EPA initially promulgated ambient air quality standards for PM10 of 150 $\mu\text{g}/\text{m}^3$ averaged over a 24-hour period, and 50 $\mu\text{g}/\text{m}^3$ for an annual average. EPA has since rescinded the annual PM10 standard, but kept the 24-hour standard.

In recent years additional focus has been placed on particles having an aerodynamic diameter of 2.5 μm or less (PM2.5). A greater fraction of particles in this size range can penetrate and deposit deep in the lungs. The EPA (recently) lowered the air quality standards for PM2.5 to 35 $\mu\text{g}/\text{m}^3$ for a 24-hour average and reaffirmed 15 $\mu\text{g}/\text{m}^3$ for an annual average standard. There was considerable controversy and debate surrounding the review of particulate matter health effects and the consideration of ambient air quality standards (Kaiser, 1997; Vedal, 1997) when the EPA promulgated the initial PM2.5 standards in 1997.

Since that time, numerous studies have been published, and some of the key studies were closely scrutinized and analyses repeated. The result is that there are now substantial data confirming the adverse health effects of PM2.5 exposures.

There are also differences in the composition and sources of particles in the different size ranges that may have implications for health effects. The particles larger than 2.5 μm (often referred to as the coarse fraction) are mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and resuspension of particles from the ground or road surfaces by wind and human activities.

In contrast, particles smaller than 2.5 μm are mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary combustion sources. The particles are either directly emitted or are formed

in the atmosphere from gases that are emitted. Components from material in the earth's crust, such as dust, are also present, with the amount varying in different locations.

Attention to another range of very small particles has been increasing over the last few years. These are generally referred to as "ultrafine" particles, with diameters of 0.1 μm or less. These particles are mainly from fresh emissions of combustion sources, but are also formed in the atmosphere from photochemical reactions. Ultrafine particles have relatively short half lives (minutes to hours) and rapidly grow through condensation and coagulation process into larger particles within the PM_{2.5} size range. These particles are garnering interest since laboratory studies indicate that their toxicity may be higher on a mass basis than larger particles, and there is evidence that these small particles can translocate from the lung to the blood and to other organs of the body.

There have been several reviews of the health effects of ambient particulate matter (ATS, 1996; Brunekreef, 2002; U.S. EPA, 2004; U.S. EPA, 2009). In addition, the California Air Resources Board (CARB) and the Office of Environmental Health and Hazard Assessment (OEHHA) have reviewed the adequacy of the California Air Quality Standards for Particulate Matter (Cal EPA, 2002).

The major types of effects associated with particulate matter include:

- Increased mortality
- Exacerbation of respiratory disease and of cardiovascular disease as evidenced by increases in:
 - Respiratory symptoms
 - Hospital admissions and emergency room visits
 - Physician office visits
 - School absences
 - Work loss days
- Effects on lung function
- Changes in lung morphology

Not mentioned on page 1-1

The current federal and California standards are listed below:

TABLE I-4

Ambient Air Quality Standards for Particulate Matter

STANDARD	FEDERAL	CALIFORNIA
PM10 24-Hour average	150 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$
PM10 Annual Average	--	20 $\mu\text{g}/\text{m}^3$
PM 2.5 24-Hour Average	35 $\mu\text{g}/\text{m}^3$	--
PM 2.5 Annual Average	15 $\mu\text{g}/\text{m}^3$	12 $\mu\text{g}/\text{m}^3$

Short-Term Exposure Effects

Epidemiological studies have provided evidence for most of the effects listed above. An association between increased daily or several-day-average concentrations of PM10 and excess mortality and morbidity is consistently reported from studies involving communities across the U.S. as well as in Europe, Asia, and South America. A review and analysis of epidemiological literature for acute adverse effects was undertaken by Dockery and Pope to estimate these effects as percent increase in mortality associated with each incremental increase of PM10 by 10 $\mu\text{g}/\text{m}^3$. The estimates are presented in Table I-5. It appears that individuals who are elderly or have preexistent lung or heart disease are more susceptible than others to the adverse effects of PM10.

Many recent studies have confirmed that excess mortality and morbidity are associated with particulate matter levels. Estimates of mortality effects from these studies range from 0.3 to 1.7% increase for a 10 $\mu\text{g}/\text{m}^3$ increase in PM10 levels. The National Morbidity, Mortality, and Air Pollution Study (NMMAPS), a study of 20 of the largest U.S. cities, determined a combined risk estimate of about a 0.5% increase in total mortality for a 10 $\mu\text{g}/\text{m}^3$ increase in PM10 (Samet, 2000a). This study also analyzed the effects of gaseous co-pollutants. The results indicated that the association of PM10 and mortality were not confounded by the presence of the gaseous pollutants. When the gaseous pollutants were included in the analyses, the significance of the PM10 estimates remained. The PM10 effects were reduced somewhat when O₃ was also considered and tended to be variably decreased when NO₂, CO, and SO₂ were added to the analysis. These results argue that the effects are likely due to the particulate exposures; they cannot readily be explained by coexisting weather stresses or other pollutants.

Never reports available.

Not flawed, but not appropriate set in its defaults.

An expansion of the NMMAPS study to 90 U.S. Cities also reported association with PM10 levels and mortality (Samet 2000b). It was discovered that this study was one that used a flawed statistical software package. The investigators have reanalyzed the data using corrected settings for the software (Dominici, 2002a, Dominici 2002b). When the estimates for the 90 cities in the study were recalculated, the estimate changed from 0.41% increase in mortality for a 10 $\mu\text{g}/\text{m}^3$ increase in PM10 to a 0.27% increase. There remained a strong positive association between acute exposure to PM10 and mortality. Thus while the quantitative estimate was reduced, the major findings of the study did not change.

refer to the full set of reanalyses?

TABLE I-5

Combined Effect Estimates of Daily Mean Particulate Pollution

% CHANGE IN HEALTH INDICATOR PER EACH 10 $\mu\text{g}/\text{m}^3$ INCREASE IN PM10	
Increase in Daily Mortality	
Total deaths	1.0
Respiratory deaths	3.4
Cardiovascular deaths	1.4
Increase in Hospital Usage (all respiratory diagnoses)	
Admissions	1.4
Emergency department visits	0.9
Exacerbation of Asthma	
Asthmatic attacks	3.0
Bronchodilator use	12.2
Emergency department visits*	3.4
Hospital admissions	1.9
Increase in Respiratory Symptom Reports	
Lower respiratory	3.0
Upper respiratory	0.7
Cough	2.5
Decrease in Lung Function	
Forced expiratory volume	0.15

severe effects, larger numbers experience milder effects, which may relate either to the coarse or to the fine fraction of airborne particulate matter.

In the NMMAPS study, hospital admissions for those 65 years or older were assessed in 14 cities. Hospital admissions for these individuals showed an increase of 6% for cardiovascular diseases and a 10% increase for respiratory disease admissions, per 50 $\mu\text{g}/\text{m}^3$ increase in PM10. The excess risk for cardiovascular disease ranges from 3-10% per 50 $\mu\text{g}/\text{m}^3$ PM10 and from 4-10% per 25 $\mu\text{g}/\text{m}^3$ PM2.5 or PM10-2.5.

Similarly, school absences, lost workdays and restricted activity days have also been used in some studies as indirect indicators of acute respiratory conditions. The results are suggestive of both immediate and delayed impact on these parameters following elevated particulate matter exposures. These observations are consistent with the hypothesis that increased susceptibility to infection follows particulate matter exposures.

Some studies have reported that short-term particulate matter exposure is associated with changes in lung function (lung capacity and breathing volume); upper respiratory symptoms (hoarseness and sore throat); and lower respiratory symptoms (increased sputum, chest pain and wheeze). The severity of these effects is widely varied and is dependent on the population studied, such as adults or children with and without asthma. Sensitive individuals, such as those with asthma or pre-existing respiratory disease, may have increased or aggravated symptoms associated with short-term particulate matter exposures. Several studies have followed the number of medical visits associated with pollutant exposures. A range of increases from 3% to 42% for medical visits for respiratory illnesses was found corresponding to a 50 $\mu\text{g}/\text{m}^3$ change in PM10. A limited number of studies also looked at levels of PM2.5 or PM10-2.5. The findings suggest that both the fine and coarse fractions may have associations with some respiratory symptoms.

The biological mechanisms by which particulate matter can produce health effects are being investigated in laboratory studies. Inflammatory responses in the respiratory system in humans and animals exposed to concentrated ambient particles have been measured. These include effects such as increases in neutrophils in the lungs. Other changes reported include increased release of cytokines and interleukins, chemicals released as part of the inflammatory process. The effects of particulate matter may be mediated in part through the production of reactive oxygen species during the inflammatory process. (Recent reviews discuss mechanistic studies in more detail (Brunekreef, 2002; Brook, 2004).)

↳ no longer recent!

Long-Term Exposure Effects

While most studies have evaluated the acute effects, some studies specifically focused on evaluating the effects of chronic exposure to PM10 and PM2.5. Studies have analyzed the mortality of adults living in different U.S. cities. After adjusting for important risk factors, taken as a whole these studies found a positive association of deaths and exposure to particulate matter. A similar association was observable in both total number of deaths and deaths due to specific causes. The largest effects were observed from cardiovascular causes and ischemic heart disease. A shortening of lifespan was also reported in these studies.

→ there are other recent studies not included

Since the initial promulgation by EPA of the National Ambient Air Quality Standards for PM2.5, controversy has remained over the association of mortality and exposures to PM2.5. Thus an expanded discussion of these studies is presented below.

Significant associations for PM2.5 for both total mortality and cardiorespiratory mortality were reported in a study following a national cohort recruited by the American Cancer Society for a Cancer Prevention Study over several years. A re-analysis of the data from this study confirmed the initial finding (Krewski, 2000). In this study, mortality rates and PM2.5 levels were analyzed for 51 metropolitan areas of the U.S. Average levels from monitors in each area were used to estimate exposures. At these levels of aggregation, regional differences in the association of PM2.5 and mortality were noted, with higher associations in the Northeast, and lower or non-significant associations in the West.

The Harvard Six Cities Study evaluated several size ranges of particulate matter and reported significant associations with PM15, PM2.5, sulfates, and non-sulfate particles, but not with coarse particles (PM15 – PM2.5). An extension of the Harvard Six Cities Cohort confirmed the association of mortality with PM2.5 levels (Laden, 2006). These studies provide evidence that the fine particles, as measured by PM2.5, may be more strongly associated with mortality effects from long-term particulate matter exposures than are coarse compounds. An update to this study covering a follow-up over the years 1974 to 2009 (Lepeule, 2012) was recently published. Findings indicated a linear relationship of PM2.5 levels and mortality from all causes, cardiovascular causes, and from lung cancer. According to the authors, the PM2.5 levels decreased over time, but no evidence of a threshold for these effects was found.

methods (Jerrett, 2005) and another applied land use regression techniques (Krewski, 2009) to estimate exposures to the study individuals. Significant associations of PM_{2.5} with mortality from all causes and cardiopulmonary disease were reported, with the magnitude of risks being up to three times higher than those from the national studies of the American Cancer Society cohort. This provides evidence that using methods to provide more detailed exposure estimates can result in stronger associations of PM_{2.5} and mortality.

Two recent reports have been released looking at air pollution and health effects in California. One study (Lipsett, 2011) followed school teachers recruited in 1995, and followed through 2005. Pollutant exposures at the subject residence were estimated using data from ambient monitors, and extrapolated using a distance weighted method. The authors reported significant association of PM_{2.5} levels and mortality from ischemic heart disease, but no associations were found with all cause, cardiovascular, or respiratory disease.

The second study (Jerrett, 2011) followed individuals in the Los Angeles area from the American Cancer Society cohort recruited starting in 1982, with follow up to 2000. Pollutant levels at subject residences were estimated using several methods. All but one of the methods found no association of all-cause mortality with PM_{2.5} levels. All exposure estimation methods were reported to have found significant associations with ischemic heart disease mortality, however. The authors noted that mortality rates differ in urban areas compared to non-urban areas, and so included a variable for this in a land use regression model to estimate effects on mortality. When the authors applied the land use regression model including an urban indicator to estimate exposures, all-cause mortality, mortality from cardiovascular disease, and mortality from ischemic heart disease were all significantly associated with PM_{2.5} levels.

Other studies report evidence indicating that particulate matter exposure early in pregnancy may be associated with lowered birth weights (Bobak, 1999). Studies from the U.S., the Czech Republic and Mexico City have reported that neonatal and early postnatal exposure to particulate matter may lead to increased infant mortality. A more recent study in Southern California found increased risks for infant deaths associated with exposures to particulates and other pollutants (Ritz, 2006). These results suggest that infants may be a subgroup affected by particulate matter exposures.

ULTRAFINE PARTICLES

As noted above, numerous studies have found association of particulate matter levels with adverse effects, including mortality, hospital admissions, and respiratory disease symptoms. The vast majority of these studies used particle mass of PM10 or PM2.5 as the measure of exposure. Some researchers have postulated, however, that ultrafine particles may be responsible for some of the observed associations of particulate matter and health outcomes (Oberdorster, et al, 1995; Seaton, et al, 1995).

Ultrafine particles are generally classified of 0.1 μm and small diameter.

Several potential mechanisms have been brought forward to suggest that the ultrafine portion may be important in determining the toxicity of ambient particulates, some of which are discussed below.

For a given mass concentration, ultrafine particles have much higher numbers and surface area compared to larger particles. Particles can act as carriers for other adsorbed agents, such as trace metals and organic compounds; and the larger surface area may transport more of such toxic agents than larger particles.

Smaller particles can also be inhaled deep into the lungs. As much as 50% of 0.02 μm diameter particles are estimated to be deposited in the alveolar region of the lung. There is complex nature of the relation between deposition and particle size. The ultrafine particles generally have higher fractional deposition in the alveolar region. However, for the smaller nucleation mode (particles less than 0.01 μm size) the deposition in the alveolar region declines, but increases in the extrathoracic region.

Exposures of laboratory animals to ultrafine particles have found cardiovascular and respiratory effects. Mice exposed to concentrated near roadway ultrafine particles showed larger early atherosclerotic lesions than mice exposed to PM2.5 or filtered air (Arujo, 2008). In a mouse allergy model, exposures to concentrated ultrafine particles resulted in a greater response to antigen challenge to ovalbumin (Li, 2010), indicating that vehicular traffic exposure could exacerbate allergic inflammation in already-sensitized animals.

Controlled exposures of human volunteers to ultrafine particles either laboratory generated or as products of combustion, such as diesel exhaust containing particles, have found physiological changes related to vascular effects. Mills, 2011, for example found exposure to diesel exhaust particulate attenuated both acetylcholine and sodium-nitroprusside -induced vasorelaxation.

NITROGEN DIOXIDE

The U.S. EPA has recently reviewed the health effects of nitrogen dioxide (U.S. EPA, 2008a). Evidence for low-level nitrogen dioxide (NO₂) exposure effects is derived from laboratory studies of asthmatics and from epidemiological studies. Additional supportive evidence is derived from animal studies.

Epidemiological studies using the presence of an unvented gas stove as a surrogate for indoor NO₂ exposures suggest an increased incidence of respiratory infections or symptoms in children. *Some studies, evidence mixed.*

Recent studies related to outdoor exposure have found health effects associated with ambient NO₂ levels, including respiratory symptoms, respiratory illness, decreased lung function, increased emergency room visits for asthma, and cardiopulmonary mortality. However, since NO₂ exposure generally occurs in the presence of other pollutants, such as particulate matter, these studies are often unable to determine the specific role of NO₂ in causing effects.

The Children's Health Study in Southern California found associations of air pollution, including NO₂, PM₁₀, and PM_{2.5}, with respiratory symptoms in asthmatics (McConnell, 1999). Particles and NO₂ were correlated, and effects of individual pollutants could not be discerned. A subsequent analysis indicated a stronger role for NO₂ (McConnell, 2002).

Ambient levels of NO₂ were also associated with a decrease in lung function growth in a group of children followed for eight years. In addition to NO₂, the decreased growth was also associated with particulate matter and airborne acids. The study authors postulated that ^{is} these ^{result} may be a ^{measure} of a package of pollutants from traffic sources. (Gauderman, 2004). *effect*

Results from controlled exposure studies of asthmatics demonstrate an increase in the tendency of airways to contract in response to a chemical stimulus (bronchial reactivity). Effects were observed with exposures from 0.1 to 0.3 ppm NO₂ for periods ranging from 30 minutes to 3 hours. A similar response is reported in some studies with healthy subjects at higher levels of exposure (1.5 - 2.0 ppm). Mixed results have been reported when people with chronic obstructive lung disease are exposed to low levels of NO₂.

Short-term controlled studies of animals exposed to NO₂ over a period of several hours indicate cellular changes associated with allergic and inflammatory response and interference with detoxification processes in the liver. In some animal studies

a number of these studies have looked at consequences of inhaled allergens

the severity of the lung structural damage observed after relatively high levels of short-term ozone exposure is observed to increase when animals are exposed to a combination of ozone and NO₂.

In animals, longer-term (3-6 months) repeated exposures at 0.25 ppm appear to decrease one of the essential cell-types (T-cells) of the immune system. Non-specific changes in cells involved in maintaining immune functions (cytotoxic T-cells and natural killer cells) have been observed in humans after repeated exposure (4-6 days) to >0.6 ppm of NO₂ (20 min. - 2 hours). All these changes collectively support the observation reported both in population and animal studies of increased susceptibility to infections, as a result of NO₂ exposure.

The U.S. EPA recently adopted a new short-term standard of 100 ppb (0.1 ppm) averaged over 1 hour. The standard was designed to protect against increases in airway reactivity in individuals with asthma observed in controlled exposure studies, as well as respiratory symptoms observed in epidemiological studies.

SULFUR DIOXIDE

Controlled laboratory studies involving human volunteers have clearly identified asthmatics as ^{a very} ~~the most~~ sensitive group to the effects of ambient sulfur dioxide (SO₂) exposures. Healthy subjects have failed to demonstrate any short-term respiratory functional changes at exposure levels up to 1.0 ppm over 1-3 hours.

NOT proven to be "most" sensitive

In exercising asthmatics, brief exposure (5-10 minutes) to SO₂ at levels between 0.2-0.6 ppm can result in significant alteration of lung function, such as increases in airway resistance and decreases in breathing capacity. In some, the exposure can result in severe symptoms necessitating the use of medication for relief. The response to SO₂ inhalation is observable within 2 minutes of exposure, increases further with continuing exposure up to 5 minutes then remains relatively steady as exposure continues. SO₂ exposure is generally not associated with any delayed reactions or repetitive asthmatic attacks.

In epidemiologic studies, associations of SO₂ levels with increases in respiratory symptoms, increases in emergency department visits and hospital admissions for respiratory-related causes have been reported.

The U.S. EPA has recently revised the SO₂ air quality standard. The previous 24-hour standard was rescinded and replaced with a new 1-hour standard at 75 ppb (0.075 ppm) to protect against high short-term exposures.



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Dr. Jean Ospital
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Dear Dr. Ospital:

I have completed my review of Appendix I. The comments follow.

General Comments:

The health literature in the Appendix provides valid support for the CA air quality standards. I do agree with Dr. McConnell who suggested in his comments the utility of expanding the section on epidemiological evidence showing that near roadway exposures are associated with asthma and ischemic heart disease.

With regard to air toxics it might be useful to recognize that emissions from modern diesel engines and retrofitted older diesels are quantitatively and perhaps qualitatively different from that of the older unmodified diesels which are still part of the fleet but of diminishing numbers. There is a gap in our knowledge at this time as to whether health impacts are indeed reduced (as one would expect) and better information on how long it would take to phase out unmodified diesels would be useful for future projections.

I noted a comment from Bill La Marr (California Small Business Assoc) regarding a possible conflict on I-3 and I-10. Note that I-3 deals with cardiovascular mortality studies whereas I-10 speaks to exacerbation of cardiovascular disease (i.e. morbidity) not mortality, so there is no conflict.

I also read Dr. Enstrom's comments. I considered the contention that there is "NO relationship in California between PM and total mortality". First, total mortality might not be the most useful metric to use since the most sensitive individuals include those with respiratory and cardiovascular disease. I think that Dr. Jarrett's paper using land use regression to provide improved exposure metrics demonstrate significant health effects.

I have several specific comments which are tabulated below. I also have some additional editorial suggestions that I will send by mail rather than transcribe them here.

Pg	Comment
I-2 Para 2	<p>Although individuals inhale pollutants as a mixture under ambient conditions, the regulatory framework and the control measures developed are mostly pollutant-specific. This is appropriate, in that different pollutants usually differ in their sources, their times and places of occurrence, the kinds of health effects they may cause, and their overall levels of health risk. Different pollutants, from the same or different sources, may sometimes act together to harm health more than they would acting separately. Nevertheless, <u>evidence for more than additive effects have not been strong and</u>, as a practical matter, health scientists, as well as regulatory officials, usually must deal with one pollutant at a time in determining health effects and in adopting air quality standards. To meet the air quality standards, comprehensive plans are developed such as the Air Quality Management Plan (AQMP), and to minimize toxic exposure a local air toxics control plan is also prepared. These plans examine multiple pollutants, cumulative impacts, and transport issues related to attaining healthful air quality. A brief overview of the effects observed and attributed to various air pollutants is presented in this document.</p>
I-3 Para3	<p>Children may be a particularly vulnerable population to air pollution effects because they spend more time outdoors, are generally more active, and have a higher <u>specific</u> ventilation rate than adults (<u>i.e. after normalization for body mass</u>).</p>
I-3 Para 5	<p>Increases in ozone levels are associated with elevated <u>increased numbers of</u> absences from school.</p>
I-4 Para 2	<p>Numerous recent studies have found positive associations between increases in ozone levels and excess risk of mortality. These associations <u>are strongest during warmer months but overall</u> persist even when other variables including season and levels of particulate matter are accounted for. This indicates that ozone mortality effects may be independent of other pollutants (Bell, 2004).</p>
I-4 Para 4	<p>Since the respiration-compromised group may have lower lung function to begin with, the same total degree of change may represent a substantially greater <u>relative</u> adverse effect overall.</p>
I-4 Para 5	<p>Another publication from the Children's Health Study focused on children and outdoor exercise. In <u>California</u> communities with high ozone concentrations, the relative risk of developing asthma in children</p>

	<p>playing three or more sports was found to be over three times higher than in children playing no sports (McConnell, 2002). These findings indicate that new cases of asthma in children are associated with <u>their performance of</u> heavy exercise in communities with high levels of ozone. While it has long been known that air pollution can exacerbate <u>or trigger</u> symptoms in individuals with <u>preexisting</u> respiratory disease, this is among the first studies that indicate ozone exposure may be causally linked to asthma onset.</p>
<p>I-5 Table I-1 Row 1, Col 2</p>	<p>exposure, <u>decreased temperature</u>, and other environmental factors resulting in increased summertime hospital admissions and emergency department visits for respiratory causes (<u>NOTE: while cold air can trigger asthma, this is confusing in the face of increased effects during warmer weather</u>)</p> <p>Exacerbation of respiratory symptoms (e.g., cough, chest pain) in individuals with preexisting disease (e.g., asthma) with low ambient</p>
<p>I-5 Table I-1 Row 2, Col 2</p>	<p><u>NOTE: include reference to the latest Kim paper that shows effects at 0.06ppm Kim, C. S., N. E. Alexis, et al. (2011). "Lung function and inflammatory responses in healthy young adults exposed to 0.06 ppm ozone for 6.6 hours." American Journal of Respiratory and Critical Care Medicine 183(9): 1215-1221.</u></p> <p><u>RATIONALE: Exposure to ozone causes a decrease in spirometric lung function and an increase in airway inflammation in healthy young adults at concentrations as low as 0.08 ppm, close to the National Ambient Air Quality Standard for ground level ozone. OBJECTIVES: To test whether airway effects occur below the current ozone standard and if they are more pronounced in potentially susceptible individuals, such as those deficient in the antioxidant gene glutathione S-transferase mu 1 (GSTM1). METHODS: Pulmonary function and subjective symptoms were measured in 59 healthy young adults (19-35 yr) immediately before and after exposure to 0.0 (clean air, CA) and 0.06 ppm ozone for 6.6 hours in a chamber while undergoing intermittent moderate exercise. The polymorphonuclear neutrophil (PMN) influx was measured in 24 subjects 16 to 18 hours postexposure. MEASUREMENTS AND MAIN RESULTS: Subjects experienced a significantly greater (P = 0.008) change in FEV(1) (+/- SE) immediately after exposure to 0.06 ppm ozone compared with CA (-1.71 +/- 0.50% vs. -0.002 +/- 0.46%). The decrement in FVC was also greater (P = 0.02) after ozone versus CA (-2.32 +/- 0.41% vs. -1.13 +/- 0.34%). Similarly, changes in %PMN were greater after ozone (54.0 +/- 4.6%) than CA (38.3 +/- 3.7%) exposure (P < 0.001). Symptom scores were not different between ozone versus CA. There were no significant differences in changes in FEV(1), FVC, and %PMN between subjects with GSTM1-positive and GSTM1-null genotypes. CONCLUSIONS: Exposure of healthy young adults to 0.06 ppm ozone for 6.6 hours causes a significant decrement of FEV(1) and an increase in neutrophilic inflammation in the airways. GSTM1 genotype alone appears to have no significant role in modifying the effects.</u></p>
<p>I-6 Fig I-1</p>	<p><u>Add data point from Kim (2011) O3 vs CA (-1.71 +/- 0.50% vs. -0.002 +/- 0.46%)</u></p>
<p>I-7 Para 1</p>	<p><u>One could note in Figure I-1 that, not surprisingly, the results of studies</u></p>

	<p><u>conducted using subjects residing in California (Adams, et. al.) are consistent with measurements made with residents of other states (e.g. Kim et al., 2011)</u></p> <p>In addition to controlled laboratory conditions, studies of individuals exercising outdoors, including children attending summer camp, have shown associations of reduced lung function with ozone exposure. There were wide ranges in responses among individuals.</p>
I-7 Para 2	<p>In laboratory studies, cellular and biochemical changes associated with respiratory tract inflammation have also been consistently reported in the airway lining after low level exposure to ozone. These changes include an increase in specific cell types and in the concentration of biochemical mediators of inflammation and injury such as <u>eytokines Interleukin-1, Tumor Necrosis Factor α</u> and fibronectin.</p>
I-7 Para 4	<p><u>There may be interactions between ozone and other ambient pollutants.</u> The susceptibility to ozone observed under ambient conditions could be <u>modified</u> due to the combination of pollutants that coexist in the atmosphere, or ozone <u>may actually might</u> sensitize these subgroups to the effects of other pollutants.</p>
I-7 Para 5	<p>Some animal studies show results that indicate possible chronic effects including functional and structural changes of the lung. These changes indicate that repeated inflammation associated with ozone exposure over a lifetime may result in <u>suffieient-cumulative</u> damage to respiratory tissue such that individuals later in life may experience a reduced quality of life in terms of respiratory function and activity level achievable.</p>
I-7 Para 7	<p>In summary, adverse effects associated with ozone exposures have been well documented. <u>–Although the specific causal-mechanisms of action are not fully identified-is still somewhat unclearthere is a strong likelihood that oxidation of key enzymes and proteins and inflammatory responses play important roles.</u></p>
I-8 Para 1	<p><u>NOTE: It might be useful to add the following:</u> <u>On the basis of the most recent evaluations of ozone health effects the CASAC has recommended to the USEPA Administrator that the NAAQS be reduced and recommended a range in which 0.070 ppm would be the upper limit, i.e. moving the national standard to be consistant with the CA standard.</u></p>
I-9 P 3-4	<p>In recent years additional focus has been placed on particles having an aerodynamic diameter of 2.5 μm or less (PM2.5). A greater <u>f</u>raction of particles in this size range can penetrate and deposit deep in the lungs. The EPA recently lowered the air quality standards for PM2.5 to 35 $\mu\text{g}/\text{m}^3$ for a 24-hour average and reaffirmed 15 $\mu\text{g}/\text{m}^3$ for an annual average standard.</p> <p>There was considerable controversy and debate surrounding the review</p>

	of particulate matter health effects and the consideration of ambient air quality standards (Kaiser, 1997; Vedal, 1997) when the EPA promulgated the initial PM _{2.5} standards in 1997. Since that time, numerous studies have been published, and some of the key studies were closely scrutinized and analyses repeated <u>the data were reanalyzed by additional investigators</u> . The result is that there are now substantial data analyses confirming <u>confirmed</u> the <u>significant findings of</u> adverse health effects of PM _{2.5} exposures <u>and some additional studies demonstrated adverse effects at ambient concentrations at or below the current NAAQS</u> .
I-10 P 1	in the atmosphere from gases <u>by condensation of vapors</u> that are emitted <u>or by chemical or photochemical reactions with other contaminants in the air</u> .
I-10 P 2	These particles are garnering interest since <u>a limited number of epidemiological and several</u> laboratory studies indicate that their toxicity may be higher on a mass basis than larger particles, and there is evidence that these small particles, <u>or toxic components carried on their surface</u> , can translocate from the lung to the blood and to other organs of the body.
I-10 P 4	The major types of effects associated with particulate matter include <u>are shown in Table I-4</u> . <u>California did not set a separate 24-hr average PM_{2.5} standard; the 35 µg/m³ NAAQS applies</u> .
I-11 Table I-4	<u>COMMENT: Insert NAAQS for 24 hr PM_{2.5} in brackets? Indicate in a footnote if the forms of the standard are not the same</u> .
I-11 P2 L7	<u>Was the mortality CV, Resp. total, all of the above??</u>
I-11 P2	<u>There are statistical associations between PM₁₀ and several of the gaseous co-pollutants and therefore the association of PM₁₀ and health</u> effects were reduced somewhat when O ₃ was also considered and tended to be variably decreased when NO ₂ , CO, and SO ₂ were added to the analysis. <u>However, in many studies there are significant independent associations of PM and health effects</u> These results argue thus supporting the contention that the effects are likely due to the particulate exposures; they cannot readily be explained by coexisting weather stresses or other pollutants.
I-13	<u>COMMENT: It gets confusing when the basis changes from 10 µg/m³ to 25 µg/m³ or other metrics.</u> <u>There should be a reference for the Mexico City and Chile studies.</u>
I-13 P3	The relative importance of both PM _{2.5} and PM _{10-2.5} may vary in different regions depending on the relative concentrations and components, which can also vary by season. <u>A major knowledge gap is the relative paucity of direct measurements of PM_{2.5-10}. Most estimates are made by subtracting PM_{2.5} from PM₁₀ measured at co-located samplers, a process that is subject to large errors that are</u>

	<u>inherent in the subtracting of one relatively large number from another.</u> More research is needed to better assess the relative effects of fine (PM2.5)
I-14 P3	These observations are consistent with the hypothesis that increased susceptibility to infection follows particulate matter exposures, <u>which is consistent with mechanistic studies that show that PM exposures suppress the innate immune system.</u>
I-14 P 4	The findings suggest that both the fine and coarse fractions may have associations with some respiratory symptoms, <u>consistent with mechanistic studies that both coarse and fine PM suppress innate immune functions.</u>
I-15 P4	<u>COMMENT: This might also be a reflection that mortality in general is lower in the western states – perhaps analogous to the “healthy worker” effect seen in occupational studies. However effects are seen more clearly when analyses are focused on susceptible groups and when more personal metrics of exposure are used as shown by Jerrit et al.</u>
I-16 P4	<u>COMMENT: Pollutant levels dropped dramatically from 83-02. The impact of pollution on mortality would have dropped as well. When looking at a changing independent variable it may be more appropriate to look at the changes in mortality vs the changes in pollution over the entire period rather than arbitrary slices.</u>
I-18 P1 L4	<u>...couple OF cohort...</u>
I-18 P2	<u>...fetuses and infants may be subgroups...</u>
I-21 P2 L4	<u>Araujo,2008</u>
I-26 P6 L3	...have been reported. <u>Coupled with the human clinical studies, these data suggest that SO2 can trigger asthmatic episodes in individuals with pre-existing asthma.</u>
I-26 P7	...to protect against high short term exposure <u>accute asthma attacks in sensitive individuals.</u>

Sincerely,



Michael T. Kleinman

ATTACHMENT 5

PUBLIC COMMENTS

Appendix I-Health Effects was released for public review and comment in July and September 2012.

Copies of public comments on Appendix I Health Effects follow.

**Criticism of Draft 2012 South Coast Air Quality Management District
Air Quality Management Plan Appendix I Health Effects
and
Request for California Health and Safety Code Section 40471 (b) Hearing on
Health Impacts of Particulate Matter Air Pollution in South Coast Air Basin**

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August 30, 2012

Summary of Attached Pages:

- 1) Enstrom Criticism of Draft 2012 AQMD AQMP Appendix I Health Effects makes the primary points that a) overwhelming epidemiologic evidence indicates particulate matter is not killing Californians; b) since 2001 AQMD has not prepared reports on “the health impacts of particulate matter in the South Coast Air Basin” in accord with California Health and Safety Code (CHSC) Section 40471 (b); c) the AQMD Advisory Council failed to properly peer review AQMP Appendix I Health Effects; and d) AQMD must hold a Governing Board Hearing on AQMP Appendix I Health Effects before the 2012 AQMP is finalized.
- 2) Enstrom Op-Ed for The Desert Sun on particulate matter in the Coachella Valley, which was scheduled to be published on April 4, 2012 but which has never been published, makes a strong case that a) particulate matter is not currently harming Coachella Valley residents and b) there will be no health risk from particulate matter after the Sentinal Power Plant is operational.
- 3) Figure 21 from 2000 Health Effects Institute Reanalysis Report by Krewski, Jerrett, et al., shows clear and large variation in PM_{2.5} mortality risk across the US, with low risk in California
- 4) Enstrom Table 1 summary of the epidemiologic evidence shows NO relationship between PM_{2.5} and total mortality in California.
- 5) Enstrom Table 2 summary of the epidemiologic evidence shows NO relationship between PM₁₀ and total mortality in California; also, US EPA summary of PM NAAQS indicates revocation of the annual PM₁₀ standard in 2006 due to lack of long-term health effects.
- 6) NCHS US map shows 2009 age-adjusted total death rate by state, with California third lowest; also, California county data shows that the death rate in the South Coast Air Basin is lower than the death rate in every state except Hawaii.

Criticism of Draft 2012 South Coast Air Quality Management District Air Quality Management Plan Appendix I Health Effects

The Southern California Air Quality Management District (AQMD) has released its Draft 2012 Air Quality Management Plan (AQMP) (<http://www.aqmd.gov/aqmp/2012aqmp/index.htm>). This plan proposes aggressive and costly emission control measures, such as, increased use of zero emission vehicles and severe restrictions on wood-burning fireplaces, in order to reduce air pollution in the South Coast Air Basin (SCAB). This air basin includes about 17 million residents in Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino Counties. The primary goal of the AQMP is to bring the SCAB into compliance with the US Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS) for criteria pollutants, such as, particulate matter (PM2.5 and PM10) and ozone. These standards are based on the nationwide health effects of these pollutants (<http://www.epa.gov/air/criteria.html>).

However, the AQMP needs to address the health effects of air pollution in the SCAB. In particular, California Health and Safety Code (CHSC) Section 40471 (b) specifically states “On or before December 31, 2001, and every three years thereafter, as part of the preparation of the air quality management plan revisions, the south coast district board, in conjunction with a public health organization or agency, shall prepare a report on the health impacts of particulate matter air pollution in the South Coast Air Basin. The south coast district board shall submit its report to the advisory council appointed pursuant to Section 40428 for review and comment. The advisory council shall undertake peer review concerning the report prior to its finalization and public release. The south coast district board shall hold public hearings concerning the report and the peer review, and shall append to the report any additional material or information that results from the peer review and public hearings.” (<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=40001-41000&file=40460-40471>).

As best I can determine, AQMD never prepared a “report on the health impacts of particulate matter air pollution in the South Coast Air Basin” at the end of 2001, 2004, 2007, or 2010. The only “health impacts” reports that I can find are Appendix I “Health Effects” of the 2003 AQMP, 2007 AQMP, and Draft 2012 AQMP. However these reports do not specifically address “the health impacts of particulate matter air pollution in the South Coast Air Basin.” Indeed, the 2003 AQMP Appendix I states “The purpose of this appendix is to provide an overview of air pollution health effects, rather than to provide estimates of health risk from current ambient levels of pollutants in specific areas of the SCAB.” (http://www.aqmd.gov/aqmp/docs/2003AQMP_AppI.pdf).

Failure to comply with CHSC Section 40471 (b) is a serious matter because the local health effects of PM provide the primary public health justification for the entire AQMP. Overwhelming epidemiologic evidence now indicates that there is NO relationship in California between PM and total mortality (also known as "premature deaths"), as I explained in the June 4, 2012 Orange County Register (<http://www.ocregister.com/articles/air-357230-california-pollution.html>).

This null relationship in California has been known since 2000, but the specific null evidence is only partially presented in the Draft 2012 AQMP and was entirely omitted from the earlier AQMPs. For instance, each AQMP Appendix I cites the 2000 Health Effects Institute Special Report "Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality," a major report relied upon by EPA and AQMD. However, only the nationwide PM2.5 mortality risk results in this report are cited in the AQMP, whereas Figures 5 and 21 show substantial geographic variation in PM2.5 mortality risk across the US, with Los Angeles ranking fifth lowest among 49 cities (<http://www.scientificintegrityinstitute.org/HEIFigure5093010.pdf>).

In total, ten separate analyses of five major California cohorts have found no relationship between PM2.5 and total mortality. Indeed, detailed analyses of two of these cohorts, funded by AQMD and completed in 2011, have found no relationship between any criteria pollutant and total mortality in California (www.scientificintegrityinstitute.org/Enstrom081512.pdf). Keep in mind, total mortality is the primary health impact that justifies the NAAQS. However, these national standards are not based on health effects or mortality in California or the SCAB. In 2009 the SCAB had an age-adjusted total death rate lower than the death rate in every state in the continental US (<http://www.scientificintegrityinstitute.org/NCHSRR070811.pdf>).

The 16 members of the 2012 AQMD Advisory Council were asked on June 7, 2012 to review and comment on Appendix I, particularly regarding the "health impacts of particulate matter air pollution in the South Coast Air Basin," and to attend a July 11, 2012 meeting at AQMD regarding Appendix I. Only 7 members submitted any written comments. The three members with the most relevant scientific expertise on PM did not address the "health impacts of particulate matter air pollution in the South Coast Air Basin". UCLA Professor John R. Froines did not submit any written comments; USC Professor Rob S. McConnell did not submit any comments on PM health effects; and LLU Professor Samuel Soret failed to reveal the null PM findings from AHSMOG in the December 2011 LLU Dr. P.H. dissertation of Lie Hong Chen (http://books.google.com/books/about/Coronary_Heart_Disease_Mortality_and_Lon.html?id=pA8ltwAACAJ).

Dr. Soret served on the committee for Dr. Chen's highly relevant dissertation, CORONARY HEART DISEASE MORTALITY AND LONG-TERM EXPOSURE TO AMBIENT PARTICULATE AIR POLLUTANTS IN ELDERLY NONSMOKING CALIFORNIA RESIDENTS. The Abstract states "The purpose of this study is to assess the effect of long-term concentrations of ambient PM on risks of all causes The health effects of long-term ambient air pollution have been studied with up to 30 years of follow-up in the AHSMOG cohort, a cohort of 6,338 nonsmoking white California adults."

Before the Draft 2012 AQMP is finalized and approved, AQMD must hold a public hearing on the health impacts of air pollution in the SCAB, in accordance with CHSC Section 40471 (b). If the hearing confirms the overwhelmingly null evidence cited above, then the AQMP should not propose emission control measures necessary to comply with NAAQS that are not appropriate for California or the SCAB. Instead, AQMD should request a waiver from compliance with the NAAQS using the special waiver status granted to California in Section 209 of the Clean Air Act (<http://www.epa.gov/otaq/cafr.htm>).

From: "Folmer, James" <jfolmer@palmspri.gannett.com>
To: "James E. Enstrom" <jenstrom@ucla.edu>
Date: Tue, 3 Apr 2012 09:44:35 -0700
Subject: RE: Proposed Op-Ed on Particulate Matter Health Effects in CV

Dr. Engstrom, here's the edited version. I did minimal editing, just a few tweaks to match AP style. I replaced $\mu\text{g}/\text{m}^3$ with "micrograms per cubic meter." Please let me know if that's acceptable.

Also, I took your website references out of the body of the column and put them in a breakout (below) to make it more readable.

It will be in Wednesday's edition. Thanks for the contribution.

The Desert Sun has recently published a special report and an editorial on the Sentinel power plant that is under construction by Competitive Power Ventures. Substantial concern has been expressed about the impact of the particulate matter (PM) pollution that will be generated by the plant. I would like to provide my perspective on the PM levels associated with the plant and the health effects associated with PM. PM consists of "inhalable coarse particles" (PM10) and "fine particles" (PM2.5).

Based on the April 15, 2010, California Energy Commission air quality assessment for the Sentinel plant, Table 13 indicates that the maximum annual background PM10 level in the Coachella Valley will be increased from 54.9 microgram per cubic meter to 55.33 during plant operation. This represents a "worse case (maximum)" increase of only 0.8 percent. Based on the South Coast Air Quality Management District (AQMD) Final 2007 Air Quality Management Plan, the maximum annual average PM10 level in the Coachella Valley (Salton Sea Air Basin) is only 45.7 micrograms per cubic meter.

All these levels are quite similar to the U.S. EPA's 1987-2006 annual standard for PM10 of 50 micrograms per cubic meter. However, this standard was revoked in 2006 due to "inadequate" evidence of long-term health effects of PM10, as summarized in the 2004 and 2009 EPA Integrated Science Assessment for Particulate Matter.

The Desert Sun claim that "the Sentinel plant would increase the (PM10) level to 277 percent above the state standard" is highly misleading because it is based on the California Energy Commission's Table 13 comparison of 55.33 micrograms per cubic meter with the California annual standard for PM10 of 20. But this state standard was established by the California Air Resources Board in 2002 and does not reflect the extensive null evidence on PM10 health effects that has been published since 2002.

In January 2007, the Air Resources Board and AQMD approved \$1,034,358 in funding, half from each agency, for two major epidemiologic studies on the relationship between PM (PM10 and PM2.5) and death in California. The study based on the American Cancer Society cohort was conducted by UC Berkeley professor Michael Jerrett and 13 other investigators.

The study based on the California Teachers Study cohort was conducted by Michael Lipsett of the California Department of Public Health and nine other investigators. A primary purpose of these studies was to produce new California evidence "to assist with the review of ambient air quality standards."

The results of these two studies were published in 2011 and they both found no relationship between PM and total mortality in California. The Jerrett Study found that total mortality during 1982-2000

among about 75,000 California adults was not related to either PM10 or PM2.5 in eight of nine models tested. The Lipsett Study found that total mortality during 2000-2005 among about 75,000 female

California teachers was not related to either PM10 or PM2.5.

The studies found some unexplained evidence of increased cardiovascular disease risk and decreased cancer risk, but there was no overall increased risk of death. These null results agree with the overwhelmingly null results for California that have been published since 2000, which include my 2005 results.

Thus, based on all the evidence described above, there is no health risk associated with PM in the Coachella Valley or in California as a whole and there will be no health risk from PM after the Sentinal power plant is operational. However, since AQMD and others have a different perspective and since The Desert Sun stated that "Robust debate on this issue is needed," I propose that an open forum be organized so that AQMD Executive Officer Barry Wallerstein and I can debate our different views on the health effects of PM in the Coachella Valley. Hopefully, our debate will help resolve the PM health effects issue.

James E. Enstrom is on the research faculty at the UCLA School of Public Health and has been conducting epidemiologic research there since 1973. Email him at jenstrom@ucla.edu

LEARN MORE ABOUT PARTICULATE MATTER

Read the California Energy Commission air quality assessment for the Sentinel plant at mydesert.com/opinion

Websites cited by James E. Engstrom:

www.epa.gov/pm/

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wmbriggs.com/blog/?p=4587

ajrccm.atsjournals.org/content/184/7/828.short

www.scientificintegrityinstitute.org/Enstrom081111.pdf

From: "Folmer, James" <jfolmer@palmspri.gannett.com>

To: "James E. Enstrom" <jenstrom@ucla.edu>

Date: Wed, 28 Mar 2012 13:11:05 -0700

Subject: RE: April 5 DSun Op-Ed on PM Health Effects & Enstrom Photo

Photo is fine. I'll try to remember to send you the edited version. Feel free to pester me on Tuesday, but we can never promise exactly when a column will run depending on what's happening in the news.

Thanks.

2000 Krewski Jerrett HEI Report Figure 21 1982-1989 CPS II PM2.5 Mortality Risk <1.0 in CA

Fine Particles and Mortality Risk

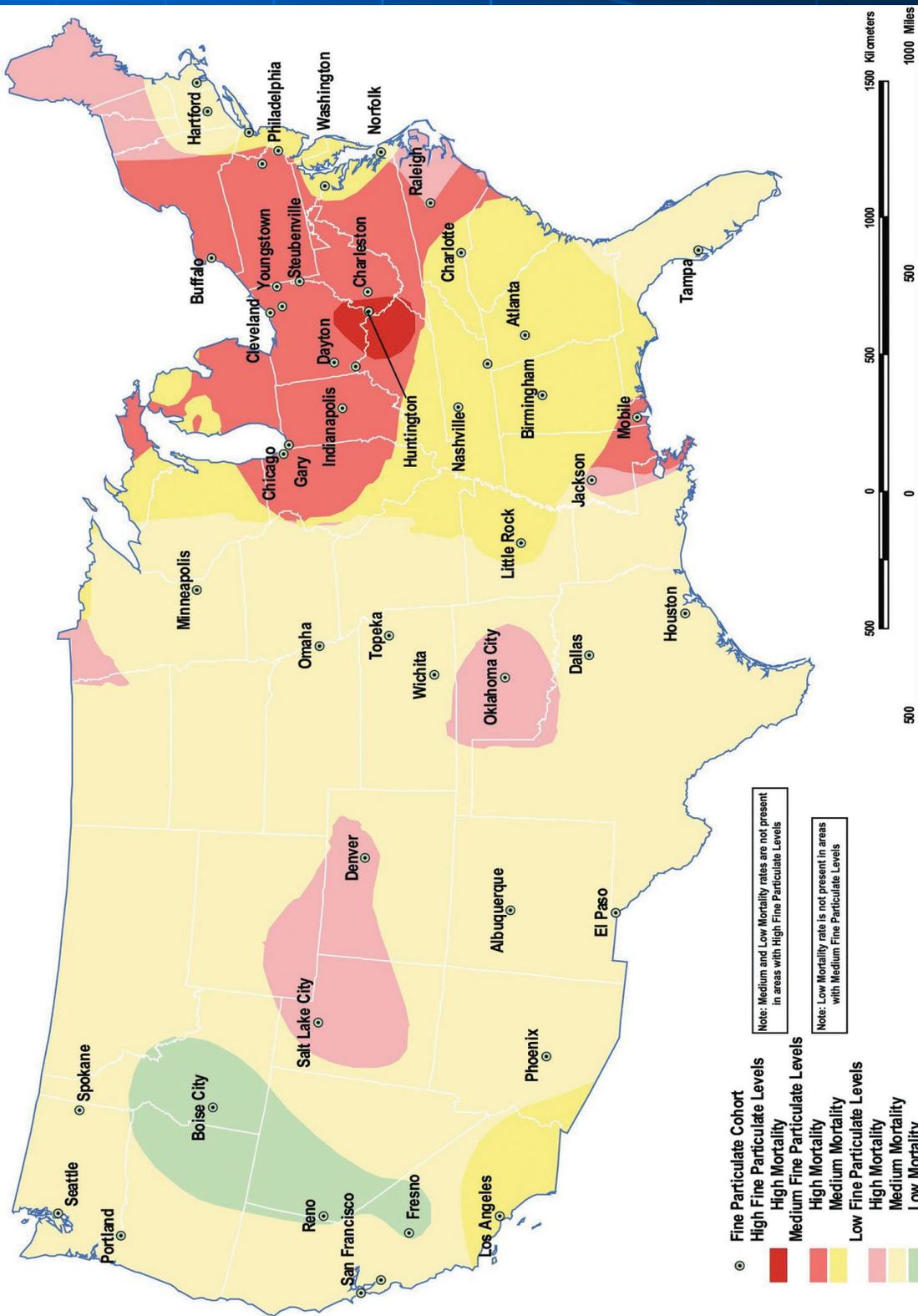


Table 1. Major Epidemiologic Studies of PM2.5 and Total Mortality in California

<http://scientificintegrityinstitute.org/Enstrom081512.pdf>

Relative risk of death from all causes (RR and 95% CI) for increase of 10 µg/m³ in PM2.5

McDonnell 2000 (N~3,800 [1,347 M + 2,422 F]; SC&SD&SF AB Adventists in 9 airsheds, used to estimate PM2.5)	CA AHSMOG Cohort	RR ~ 1.03 (0.95 – 1.12)	1977-1992
Krewski 2000 (2010) (N=40,408 [18,000 M + 22,408 F]; 4 MSAs; 1979-1983 PM2.5; 44 covariates)	CA CPS II Cohort	RR = 0.872 (0.805-0.944)	1982-1989
Jerrett 2005 (N=22,905; 267 zip code areas in LA basin only; 1999-2000 PM2.5; 44 cov + max confounders)	LA Basin CPS II Cohort	RR = 1.11 (0.99 - 1.25)	1982-2000
Enstrom 2005 (N=35,783 [15,573 M + 20,210 F]; 11 counties; 1979-1983 PM2.5; 25 county internal comparison)	CA CPS I Cohort	RR = 1.039 (1.010-1.069) RR = 0.997 (0.978-1.016)	1973-1982 1983-2002
Zeger 2008 (3.1 M [1.5 M M + 1.6 M F]; Medicare enrollees in CA+OR+WA [CA = 73%]; 2000-2005 PM2.5)	MCAPS Cohort “West”	RR = 0.989 (0.970-1.008)	2000-2005
Jerrett 2010 (N=77,767 [34,367 M + 43,400 F]; 54 counties; 2000 PM2.5; KRG ZIP; 20 ind cov+7 eco var; Slide 12)	CA CPS II Cohort	RR ~ 0.994 (0.965-1.025)	1982-2000
Krewski 2010 (N=40,408; 4 MSAs; 1979-1983 PM2.5; 44 cov) (N=50,930; 7 MSAs; 1999-2000 PM2.5; 44 cov)	CA CPS II Cohort	RR = 0.960 (0.920-1.002) RR = 0.968 (0.916-1.022)	1982-2000 1982-2000
Jerrett 2011 (N=73,609 [32,509 M + 41,100 F]; 54 counties; 2000 PM2.5; KRG ZIP Model; 20 ind cov+7 eco var; Table 28)	CA CPS II Cohort	RR = 0.994 (0.965-1.024)	1982-2000
Jerrett 2011 (N=73,609 [32,509 M + 41,100 F]; 54 counties; 2000 PM2.5; Nine Model Ave; 20 ic+7 ev; Fig 22 & Tab 27-32)	CA CPS II Cohort	RR = 1.002 (0.992-1.012)	1982-2000
Lipsett 2011 (N=73,489 [73,489 F]; 2000-2005 PM2.5)	CA Teachers Cohort	RR = 1.01 (0.95 – 1.09)	2000-2005
Ostro 2011 (N=43,220 [43,220 F]; 2002-2007 PM2.5)	CA Teachers Cohort	RR = 1.06 (0.96 – 1.16)	2002-2007

Table 2. Major Epidemiologic Studies of PM10 and Total Mortality in California

Relative risk of death from all causes (RR and 95% CI) for increase of 10 µg/m³ in PM10

McDonnell 2000 (N~3,800 [1,347 M + 2,422 F]; SC&SD&SF AB Adventists with PM10 from CARB monitors) [deaths from all natural causes ICD9=001-799]	CA AHSMOG Cohort	RR ~ 1.01 (0.96 – 1.07)	1977-1992
Chen 2010 (N=4,830 [1,750 M + 3,080 F]; SC&SD&SF AB Adventists with PM10 from CARB monitors) [deaths from all natural causes ICD9= 001-799]	CA AHSMOG Cohort	RR = 1.01 (0.98 – 1.04)	1977-2006
Jerrett 2011 (N=76,135 [33,625 M + 42,510 F]; 54 counties; 1988-2002 PM10; 20 ind cov+7 eco var; Table 37)	CA CPS II Cohort	RR = 1.001 (0.987-1.017)	1982-2000
Lipsett 2011 (N=61,181 [61,181 F]; 1996-2005 PM10)	CA Teachers Cohort	RR = 1.00 (0.97 – 1.04)	2000-2005

FOLLOWING THE SCIENCE: How National Ambient Air Quality Standards (NAAQS) for Particulate Matter (PM) Have Changed Over Time (<http://www.epa.gov/pm/agriculture.html>)

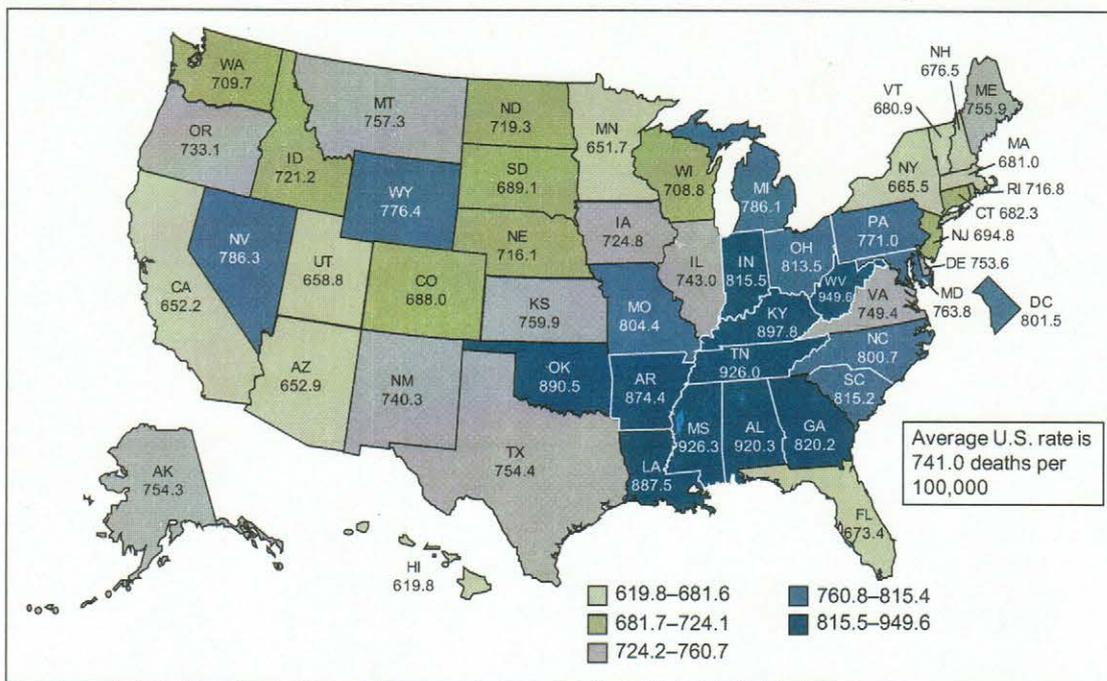
- EPA has regulated particle pollution since 1971. Our standards have evolved over time, as science has taught us more about how exposure to particles affects health and welfare.
- The 1971 standards, for example, set levels for all particles in the air, known as “total suspended particulate.” This covered all sizes of airborne particles, including dirt and other larger particles.
- In 1987, EPA changed the standards to focus on those particles 10 micrometers in diameter and smaller, because particles larger than that don’t generally get past the nose into the respiratory system. The Agency set both daily and annual PM10 standards at that time.
- In 1997, based on an expanding body of scientific evidence linking fine particles (PM2.5) to serious health effects, EPA added both daily and annual standards for fine particles.
- The Agency revised those standards in 2006, tightening the daily standard. That same year, **EPA revoked the annual standard for PM10, because there was insufficient evidence linking long-term exposure to inhalable coarse particle pollution to health problems.** EPA retained the daily PM10 standard – at 150 micrograms per cubic meter, the same level since 1987.

Do death rates vary by state?

States experience different risks of mortality. Hawaii has the lowest age-adjusted death rate (619.8 deaths per 100,000 population) of all the states, 16.4 percent lower than the average rate for the United States (741.0). West Virginia had the highest state age-adjusted death rate in 2009, 28.2 percent higher than the average U.S. rate.

In general, states in the Southeast region have higher rates than those in other regions of the country. Louisiana, for example, is typical of the region and has an age-adjusted death rate of 887.5 deaths per 100,000 population (3). States in other regions of the country, such as Illinois in the Midwest (743.0 deaths per 100,000 population) and Oregon in the West (733.1 deaths per 100,000 population), have rates that are more comparable with the average U.S. rate (3) (Figure 4).

Figure 4. Age-adjusted death rates, by state and the District of Columbia: United States, preliminary 2009



SOURCE: CDC/NCHS, National Vital Statistics System, Mortality.

Ratio of 2009 Age-Adjusted Total Death Rates (deaths/100,000)

California / U.S.	$652.2 / 741.1 = 0.88 = 88\%$
'South Coast Air Basin' (4 Counties) / U.S.	$650.8 / 741.1 = 0.88 = 88\%$
Los Angeles County / U.S.	$637.3 / 741.1 = 0.86 = 86\%$
Orange County / U.S.	$570.9 / 741.1 = 0.77 = 77\%$

**Misrepresentation and Exaggeration of Health Impacts
in South Coast Air Quality Management District
Revised Draft 2012 Air Quality Management Plan Appendix I Health Effects
and
Request for California Health and Safety Code Section 40471 (b) Hearing on
Health Impacts of Particulate Matter Air Pollution in South Coast Air Basin**

James E. Enstrom, Ph.D., M.P.H.
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September 20, 2012

- 1) In spite of my repeated submissions to AQMD since 2008 of overwhelming evidence of no mortality impacts, including the evidence in my August 30, 2012 Criticism of the Draft 2012 AQMP (<http://scientificintegrityinstitute.org/AQMP083012.pdf>), the September 7, 2012 Revised Draft AQMP Appendix I Health Effects continues to seriously misrepresent and exaggerate the mortality impacts of criteria pollutants, like particulate matter, in the South Coast Air Basin (<http://www.aqmd.gov/aqmp/2012aqmp/RevisedDraft/AppI.pdf>).
- 2) Since 2000, overwhelming epidemiologic evidence that fine particulate matter is not killing Californians has been published by 26 accomplished doctoral level scientists (Ph.D. or M.D.), including myself. Since 2008, extensive written and/or verbal comments by 16 doctoral level critics, including myself, have been submitted to US EPA, CARB, and/or AQMD and these comments strongly criticize the way the California-specific evidence has been characterized by the three regulatory agencies. The names of the scientists and critics are listed on the next page.
- 3) The 2012 AQMP (<http://www.aqmd.gov/aqmp/2012aqmp/index.htm>) does not comply with California Health and Safety Code (CHSC) Section 40471 (b): “On or before December 31, 2001, and every three years thereafter, as part of the preparation of the air quality management plan revisions, the south coast district board, in conjunction with a public health organization or agency, shall prepare a report on the health impacts of particulate matter air pollution in the South Coast Air Basin. The south coast district board shall submit its report to the advisory council appointed pursuant to Section 40428 for review and comment. The advisory council shall undertake peer review concerning the report prior to its finalization and public release. The south coast district board shall hold public hearings concerning the report and the peer review, and shall append to the report any additional material or information that results from the peer review and public hearings.” (<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=40001-41000&file=40460-40471>).
- 4) Before the 2012 AQMP is finalized and approved, the AQMD Governing Board must hold a public hearing on “the report and the peer review” regarding “the health impacts of particulate matter air pollution in the South Coast Air Basin,” as required by CHSC Section 40471 (b).

Twenty-Six Doctoral Level Scientists Who Have Published Epidemiologic Findings Since 2000 That Show NO Relationship Between PM2.5 and Total Mortality in California

David E. Abbey, Ph.D., Loma Linda University (2000)
Michal Abrahamowicz, Ph.D., McGill University (2000)
Leslie Bernstein, Ph.D., City of Hope National Medical Center (2011)
Richard T. Burnett, Ph.D., Health Canada, Canada (2000, 2011)
Ellen T. Chang, Sc.D., Cancer Prevention Institute of California (2011)
George Christakos, Ph.D., San Diego State University (2011)
Francesca Dominici, Ph.D., Harvard University (2008)
James E. Enstrom, Ph.D., University of California, Los Angeles (2005, 2006, 2010)
Mark S. Goldberg, Ph.D., University of Quebec (2000)
Katherine D. Henderson, Ph.D., Cancer Prevention Institute of California (2011)
Edward Hughes, Ph.D., Edward Hughes Consulting, Canada (2011)
Michael Jerrett, Ph.D., University of California Berkeley (2010, 2011)
Daniel Krewski, Ph.D., University of Ottawa, Canada (2000, 2010, 2011)
Michael J. Lipsett, M.D., California Department of Public Health (2011)
Aidan McDermott, Ph.D., Johns Hopkins University (2008)
William F. McDonnell, Ph.D., US Environmental Protection Agency (2000)
Bart D. Ostro, Ph.D., California Office of Environmental Health Hazard Assessment (2011)
C. Arden Pope III, Ph.D., Brigham Young University (2011)
Peggy J. Reynolds, Ph.D., Cancer Prevention Institute of California (2011)
Jonathan M. Samet, M.D., University of Southern California (2008)
Yuanli Shi, M.D., University of Ottawa, Canada (2011)
Jack Siemiatyck, Ph.D., University of Quebec (2000)
Michael J. Thun, M.D., American Cancer Society (2011)
George D. Thurston, Ph.D., New York University (2011)
Warren H. White, Ph.D., Washington University (2000)
Scott L. Zeger, Ph.D., Johns Hopkins University (2008)

Sixteen Doctoral Level Critics Who Have Criticized Since 2008 the Relationship Between PM2.5 and Total Mortality in California as Characterized by US EPA, CARB, and AQMD

William M. Briggs, Ph.D., Statistician, New York City & Cornell University
John D. Dunn, M.D., J.D., Physician & Attorney, Darnall Army Medical Center, Texas
James E. Enstrom, Ph.D., Epidemiologist, University of California, Los Angeles
Anthony Fucaloro, Ph.D., Chemist, Claremont McKenna College, California
Gordon J. Fulks, Ph.D., Astrophysicist, Oregon
Michael E. Ginevan, Ph.D., Statistician, M.E. Ginevan & Associates, Maryland
Thomas W. Hesterberg, Ph.D., Toxicologist, Navistar, Illinois
Frederick W. Lipfert, Ph.D., Environmental Scientist, New York
Geoffrey C. Kabat, Ph.D., Epidemiologist, Einstein College of Medicine, New York
Matthew A. Malkan, Ph.D., Astrophysicist, University of California, Los Angeles
Roger O. McClellan, D.V.M., Toxicologist, New Mexico
Henry I. Miller, M.D., Physician, Hoover Institution, Stanford University
Suresh H. Moolgavkar, M.D., Ph.D., Epidemiologist, University of Washington
D. Warner North, Ph.D., Risk Analyst, NorthWorks & Stanford University
Robert F. Phalen, Ph.D., Toxicologist, University of California, Irvine
S. Stanley Young, Ph.D., Statistician, National Institute of Statistical Sciences

Request for a Comprehensive hearing on the Health Impacts of Particulate Matter in the South Coast Basin area in compliance with Section 40471 (b) of the CA Health and Safety Code.

John Dale Dunn MD JD
Emergency Physician Brownwood TX
Policy advisor Heartland Institute, Chicago
Policy advisor, American Council on Science and Health, New York City.
Civilian Contract Faculty, Emergency Medicine, Carl R Darnall Army Medical Center,
Fort Hood, TX

Members of the South Coast Air Quality Management District Board of Directors:

The recently released draft for Air Quality Management by the Southern California Air Quality Management District (AQMD) proposes very significant regulatory changes for more than 15 million residents of the area, however the South Coast AQMD proposes these changes without benefit of the prescribed triennial Air quality management plan revisions announcements. In conjunction with an effort to elicit public comments. Draft 2012 is, like so many drafts before, the product of a black box project at the South Coast AQMD, the precautionary principle and acceptance of science that has been effectively challenged in public in the past 4 years.

That is not according to Federal or State Clean Air Act law or the intent of environmental compliance provisions.

The Air Quality Management Plan (AQMP) (<http://www.aqmd.gov/aqmp/2012aqmp/index.htm>) proposes aggressive and draconian provisions that would have major impacts on the residents of the South Coast Basin Area.

I have included previous submissions to CARB on air regulations that were the product of the 2008-2010 activities and proposals and public comments made by prominent experts opposed to the new CARB air pollution measures. The South Coast Air Management Plan process should include close review and evaluations of those public comments that criticize and conflict with the studies relied on by the District planners.

The economic impact of the Management plan will kill or harm business, industry, transportation, and agricultural activity for now good reason, since air pollution is not killing anyone in South Coast. The proposed AQM Plan will cause hardship and shorten lives for the residents of the area in addition to depressing the economy with the well-known effect that can be expected, higher unemployment, stress and hardship, resulting in shortened life expectancies and misery—all for AQMD chasing a phantom menace—small particle pollution, that by evidence of the studies, causes no harm or deaths.

AQMP also should follow the law, that specifically states at Section 40471 of the Health and Safety Code “On or before December 31, 2001, and every three years thereafter, as part of the

preparation of the air quality management plan revisions, the south coast district board, in conjunction with a public health organization or agency, shall prepare a report on the health impacts of particulate matter air pollution in the South Coast Air Basin. The south coast district board shall submit its report to the advisory council appointed pursuant to Section 40428 for review and comment. The advisory council shall undertake peer review concerning the report prior to its finalization and public release. The south coast district board shall hold public hearings concerning the report and the peer review, and shall append to the report any additional material or information that results from the peer review and public hearings.”
(<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=40001-41000&file=40460-40471>).

The district has failed to comply. Therefore they should correct their failure and stand down from pursuing the Plan proposed until the review and hearing process is complete.

For 4 years 2008-2012, the California Air Resources Board (CARB) has attempted to push through air pollution/small particle control regulations that the CARB claimed were based on evidence of human health effects that included deaths from small particles.

Here are the links, which include my previous submissions protesting the inadequacy of the human health effects science relied on by CARB.

Public Comments by experts on the 2008 CARB "Tran" Report

October 24, 2008 CARB Public Comments on Fine PM and Premature Deaths in CA submitted by July 11, 2008

(http://www.arb.ca.gov/research/health/pm-mort/pm-mort_supp.pdf)
(<http://www.scientificintegrityinstitute.org/CARBPMComments102408.pdf>)

July 11, 2008 CARB PM2.5 Premature Mortality Teleconference Transcript 071108

(<http://www.scientificintegrityinstitute.org/CARB071108.pdf>)

February 26, 2010 CARB Symposium on PM2.5 & Deaths in CA

February 26, 2010 CARB Symposium on PM2.5 & Deaths Home Page Link

(http://www.arb.ca.gov/research/health/pm-mort/pm-mort-ws_02-26-10.htm)

February 26, 2010 CARB Symposium on PM2.5 & Deaths Agenda & Panel

(http://www.arb.ca.gov/research/health/pm-mort/pm_symposium_agenda.pdf)

February 26, 2010 CARB Symposium on PM2.5 & Deaths Webcast

(<http://www.cal-span.org/cgi-bin/archive.php?owner=CARB&date=2010-02-26>)

February 26, 2010 CARB Symposium on PM2.5 & Deaths Transcript

(http://www.arb.ca.gov/research/health/pm-mort/symposium_transcript_2-26-10.pdf)

Criticism of June 9, 2011 Draft and October 28, 2011 Final Jarrett Report on PM2.5 Deaths in CA

October 28, 2011 Compilation of All Criticism since June 9, 2011 of Jarrett Report on CA PM2.5 Deaths

(<http://www.scientificintegrityinstitute.org/JarrettCriticism102811.pdf>)

Careful review of the submissions above by previous commenters would justify a stand down from the proposed AQMP outlined by the South Coast MD. Research shows that current ambient air pollution in California is not harmful and doesn't justify aggressive new AQMP plans.

Reputable scientists repeatedly raised important issues and Michael Jarrett's joke of a research project based on his selection of the "conurbation" model data, confirms that the CARB claims of thousands of lives saved by air regs is a house of cards built by CARB on small particle research data dredges to find poorly defined "premature deaths" supposed associated with poorly defined small particle pollution. Such uncertainties certainly cannot justify the extreme elements of the South Coast AMP.

The CARB never was able to properly dispel the objections raised in 2008-2010, and in February of 2010 lost the major face to face debate in a knockout when Dr. Michael Jarrett's project came a cropper and Dr. Jarrett admitted he couldn't find any current air pollution health effects.

Then Dr. Jarrett went back to his computer tricks and decided to redo his research with modeling that is risible, then 9 models showed no effect but one of his ten models finally gave him the results that allowed him to do what CARB asked—support their position that small particles are killers.

Dr. Jarrett's co-authors, an impressive array of fellow travelers in the small particle hunting research community, never excused or explained the decision to rely on the "conurbation" model as more reliable than the 9 models that showed no effect. Although conurbation sounds exotic, it is the game played by researchers called torturing the data, and in this case Dr. Jarrett found a way to dice and chop the geography of California to find populations that had the "associations" of air pollution and deaths he was looking for.

That is called the outcome based research fallacy and is fueled by the fact that Jarrett and his coauthors knew who funded their research, an agency that had a stake in promoting the public perception that small particles are killers.

South Coast Air Management District should comply with California Health and Safety Code Section 40471 (b) and schedule a Hearing for a full vetting of the small particle research issues before implementing the proposed AQMP and then act reasonably and discard the Plan.

There are no impact studies for the past decade, and the AQMD has no reports on health impacts

on record for 2001 through 2010 when there should have been at least 3 reports filed, and at one point an AQMD report said, ignoring its responsibility in reporting, “The purpose of this appendix is to provide an overview of air pollution health effects, rather than to provide estimates of health risk from current ambient levels of pollutants in specific areas of the SCAB.” (http://www.aqmd.gov/aqmp/docs/2003AQMP_AppI.pdf).

The health effects studies are the foundation for any management plan and have been discarded in favor of aggressive regulatory proposals based on the precautionary principle or good intentions, but not on the science demanded in the Clean Air Act and its corresponding California Statutes. The research presented to the CARB and the public comments provided make a strong case for no effect from current ambient air pollution. No death effect, no measurable health effect from the criteria air pollutants.

Please consider the comments from 2008 on the proposed CARB Tran report, the submissions made for the debate in February of 2010, and the comments by experts on the final version of the Jerrett study that asserted the “conurbation” model justified the CARB pursuit of new and aggressive small particle regulations.

Many studies have found no PM 2.5 health effect and yet the CARB and the South Coast Management district continue to press forward to the detriment of the California economy. California cohorts have found no relationship between PM2.5 and total mortality. Indeed, detailed analyses of two of these cohorts funded by AQMD and completed in 2011, have found no relationship between any criteria pollutant and total mortality in California (www.scientificintegrityinstitute.org/Enstrom081512.pdf).

The CARB and US EPA human health effects research on small particles and other criteria pollutants have been depended on the questionable methodology of data dredging for “premature deaths. The problem is defining premature deaths, and the studies in fact do not count premature deaths as in a medical investigation, but the noise of variation in death rates. That is an opportunity for irresponsible data torturing to find air pollution and daily variation in death rates to call “premature deaths” that are not. The premature deaths projected by researchers, the USEPA and CARB to thousands in the state or nation are projections of deaths that area more than the daily average, not premature deaths of individuals who have been assessed for confounders and found to die short of life expectancy.

The research is unreliable, and misleading, and projections of hundreds of thousands of lives saved is deceitful nonsense. There are no deaths from small particles, the research is deceptive desk top death certificate data dredging that harvests the noise from day to day death rate variations and calls it signal, then projects the “correlations” the population to make impressive scare numbers of “premature deaths.”

These data dredged mortalities are the primary health impact used to justify the NAAQS. So the number is the product of data torturing and deception but even if the AQMD accepts the unreliable counting and methodology, the national standards are not based on health effects or mortality in California or the SCAB. In 2009 the SCAB had an age-adjusted total death rate lower than the death rate in every state in the continental US. (<http://www.scientificintegrityinstitute.org/NCHSRR070811.pdf>).

The AQMD is obligated to evaluate the reliability of the research and another consideration is the already mentioned Krewski map that shows no California air pollution effects. That alone should give California policy makers pause before initiating another aggressive regulatory regime.

A good faith effort to review the human health effects science should convince the SC AMD policy makers to reconsider the proposed aggressive Management Plan.

Cordially,

John Dale Dunn MD JD

**Misrepresentation and Exaggeration of Health Impacts
in South Coast Air Quality Management District
Revised Draft 2012 AQMP Appendix I Health Effects Version 2**

and

**Request for California Health and Safety Code Section 40471 (b) Hearing on
Health Impacts of Particulate Matter Air Pollution in South Coast Air Basin**

James E. Enstrom, Ph.D., M.P.H.
UCLA School of Public Health
Los Angeles, CA 90095-1772
jenstrom@ucla.edu
(310) 825-2048

October 11, 2012

- 1) In spite of my extensive and repeated criticism of the scientific and public health basis for the 2012 AQMD Air Quality Management Plan (AQMP), including my September 28, 2012 American Statistical Association JSM Proceedings Paper "Particulate Matter is Not Killing Californians" (<http://www.scientificintegrityinstitute.org/ASA092812.pdf>), the October 9, 2012 Revised Draft AQMP Appendix I Health Effects Version 2 continues to seriously misrepresent and exaggerate the health impacts of particulate matter in the South Coast Air Basin (SCAB) (<http://www.aqmd.gov/aqmp/2012aqmp/RevisedDraft/AppI-v2.pdf>).
- 2) Since 2000, overwhelming epidemiologic evidence that fine particulate matter is not killing Californians has been published by 26 accomplished doctoral level scientists (Ph.D. or M.D.), including myself. Since 2008, extensive written and/or verbal comments by 16 doctoral level critics, including myself, have been submitted to US EPA, CARB, and/or AQMD and these comments strongly criticize the way the California-specific evidence has been characterized by the three regulatory agencies. This evidence has not been properly recognized or used by AQMD in its assessment of the health impacts of particulate matter in the SCAB since 2000.
- 3) Since 2001 the Appendix I Health Effects for the AQMP has never complied with various clearly written provisions of California Health and Safety Code (CHSC) Section 40471 (b) (<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=40001-41000&file=40460-40471>). In particular, Appendix I does not focus on "the health impacts of particulate matter air pollution in the South Coast Air Basin;" Appendix I has not been prepared "in conjunction with a public health organization or agency;" the AQMD Advisory Council did not "undertake peer review concerning the report," using a standard definition of peer review; the AQMD Governing Board has not complied with the requirement to "hold public hearings concerning the report and the peer review."
- 4) Before the 2012 AQMP is finalized and approved, the AQMD must be required to comply with all provisions of CHSC Section 40471 (b). In particular, the AQMD Governing Board must hold at least one public hearing that focuses on "the report and the peer review" regarding "the health impacts of particulate matter air pollution in the South Coast Air Basin."

Wed, 8/1/2012, 2:00 PM - 3:50 PM

<http://www.amstat.org/meetings/jsm/2012/onlineprogram/ActivityDetails.cfm?SessionID=207510>

Are Fine Particulates Killing Californians? — Invited Papers

Section on Risk Analysis, Section on Survey Research Methods, Section on Statistics and the Environment, Section for Statistical Programmers and Analysts, Section on Statistics in Epidemiology

Organizer(s): Michael E Ginevan, M.E. Ginevan & Associates

Chair(s): Michael E Ginevan, M.E. Ginevan & Associates

2:05 PM Particulate Matter is Not Killing Californians — **James E. Enstrom, University of California at Los Angeles**

2:25 PM A Closer Look at Air Pollution-Mortality Relationships for California Members of the American Cancer Society Cohort — **Frederick W. Lipfert, Environmental Consultant**; S. Stanley Young, National Institute of Statistical Sciences

2:45 PM Assessing Variable Importance in an Environmental Observational Study — **S. Stanley Young, National Institute of Statistical Sciences**; Jesse Q. Xia, National Institute of Statistical Sciences

3:05 PM Improving the Scientific Advice Provided by the Clean Air Scientific Advisory PM Subcommittee — **Robert F. Phalen, University of California at Irvine**

3:25 PM **Discussant:** Michael E Ginevan, M.E. Ginevan & Associates

3:45 PM **Floor Discussion**

01 Particulate Matter is Not Killing Californians

Author(s): James E. Enstrom*+

Companies: University of California at Los Angeles

Address: BOX 951772, A1-295 CHS, Los Angeles, CA, 90095-1772,

Keywords: epidemiology; particulate matter; mortality; causality; statistics; California

Abstract: There is now overwhelming epidemiologic evidence that particulate matter (PM), both fine particulate matter (PM_{2.5}) and coarse particulate matter (PM₁₀), is not related to total mortality in California. I will examine all the long-term PM epidemiologic cohort studies in California, and discuss the ways the findings from these studies have been used and/or ignored. I will discuss the limitations of these studies: lack of access to key databases; the ecological fallacy; failure to consider other pollutants; failure to satisfy causality criteria; and failure to consider other competing health risks. Also, ethical issues underlying much of PM_{2.5} epidemiology will be discussed. I will make a strong case that PM_{2.5} is not killing Californians and that there is not a scientific or public health basis for the many of the existing and proposed regulations designed to reduce PM levels in California. Finally, I will make the case that PM health effects and regulations must be put into perspective with other factors that influence health in California, given the low age-adjusted total death rate in this state.

Particulate Matter is Not Killing Californians

James E. Enstrom, Ph.D., M.P.H.
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September 28, 2012

Abstract

There is now overwhelming epidemiologic evidence that particulate matter (PM), both fine particulate matter (PM_{2.5}) and course particulate matter (PM₁₀), is not related to total mortality in California. I will examine all the long-term PM epidemiologic cohort studies in California, and discuss the ways the findings from these studies have been used and/or ignored. I will discuss the limitations of these studies: lack of access to key databases; the ecological fallacy; failure to consider other pollutants; failure to satisfy causality criteria; and failure to consider other competing health risks. Also, ethical issues underlying much of PM_{2.5} epidemiology will be discussed. I will make a strong case that PM_{2.5} is not killing Californians and that there is not a scientific or public health basis for the many of the existing and proposed regulations designed to reduce PM levels in California. Finally, I will make the case that PM health effects and regulations must be put into perspective with other factors that influence health in California, given the low age-adjusted total death rate in this state.

Key Words: epidemiology, particulate matter, mortality, causality, statistics, California

1. Background

1.1 Relationship of PM_{2.5} Epidemiology to EPA, CARB, and AQMD

This paper focuses on particulate matter (PM) epidemiology in California. PM consists of fine particulates (PM_{2.5}), defined to have particle size <2.5 µm in diameter, and course particulates (PM₁₀), defined to have a particle size <10 µm in diameter. PM_{2.5} is generated mainly by combustion processes, such as, forest fires, agricultural dust, industrial combustion, and diesel engines. PM_{2.5} epidemiology played a major role in the US Environmental Protection Agency (EPA) establishment of the 1997 National Ambient Air Quality Standard (NAAQS) for PM_{2.5} (<http://www.epa.gov/air/criteria.html>). EPA has recently proposed to lower the annual NAAQS for PM_{2.5} from the current level of 15 µg/m³ to 12-13 µg/m³

(<http://www.epa.gov/pm/actions.html>). The PM2.5 regulations established since 1997 have had multi-billion dollar economic impacts in the United States and California and have been highly contested (<http://science.house.gov/press-release/harris-and-brown-question-administration%E2%80%99s-environmental-cost-benefit-analyses>).

PM2.5 epidemiology has also been used by the California Air Resources Board (CARB) to establish the draconian Truck and Bus Regulation to reduce PM emissions from diesel vehicles in California (<http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm>). During the past five years, I have challenged the scientific and public health justifications for these regulations ([http://www.arb.ca.gov/lists/gmbond2011/2-enstrom letter to coal cornez re suspend carb diesel regs 121311.pdf](http://www.arb.ca.gov/lists/gmbond2011/2-enstrom%20letter%20to%20coal%20cornez%20re%20suspend%20carb%20diesel%20regs%20121311.pdf)).

PM2.5 epidemiology is also being used by the Southern California Air Quality Management District (AQMD) in the development of the 2012 Air Quality Management Plan (AQMP) (<http://www.aqmd.gov/aqmp/2012aqmp/index.htm>). The AQMP proposes aggressive and costly emission control measures in order to reduce existing PM and ozone levels in the South Coast Air Basin (SCAB). This air basin includes about 17 million residents in Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino Counties. The primary goal of the AQMP is to bring the SCAB into compliance with the NAAQS for criteria pollutants, primarily, PM2.5 and ozone.

An elevated relative risk ($RR > 1.00$) in an epidemiologic cohort study, i.e., increase in total (all cause) mortality risk for a $10 \mu\text{g}/\text{m}^3$ increase in PM2.5 level, is interpreted by EPA, CARB, and AQMD as evidence that PM2.5 “causes” “premature deaths.” Because EPA assigns a lifetime monetary value of about \$7-9 million to each “premature death,” the health benefits of preventing these deaths exceed the compliance costs of the regulations that are designed to reduce PM2.5 levels and PM2.5-related “premature deaths.” Without PM2.5-related “premature deaths” the PM2.5 regulations are not justified on a cost-benefit basis.

During the past two decades there has been extensive criticism of PM2.5 epidemiology and its use for regulation of PM by EPA, CARB, and AQMD. Five major reasons for doubting a “causal” relationship between PM2.5 and “premature deaths” are: 1) the relative risk of death due to PM2.5 is small ($RR \sim 1.10$), varies by time and place, and shows no consistent dose-response relationship; 2) confounding variables, including other pollutants, often reduce the PM2.5 effect to zero ($RR \sim 1.00$); 3) the ecological fallacy applies to all PM2.5 epidemiology because PM2.5 measurements made at selected monitoring stations are imputed to individuals living near these stations; 4) the chemical composition of PM2.5 varies greatly across the US; and 5) the major PM2.5 epidemiologic findings that have been used to establish regulations are based on secret data maintained by the American Cancer Society and Harvard University (Krewski 2000), that is not accessible for independent reanalysis.

1.2 Major Lectures on PM2.5 and Mortality in California by Enstrom

The above epidemiologic issues are too complex to fully address in this paper. Additional relevant information can be found in the following major lectures that I have given since 2010, often in conjunction with other experts on this subject:

February 26, 2010 CARB Symposium "Estimating Premature Deaths from Long-term Exposure to PM2.5, with Enstrom talk "Critique of CARB Diesel Science, 1998-2010" (http://www.arb.ca.gov/research/health/pm-mort/pm-mort-ws_02-26-10.htm) (<http://www.arb.ca.gov/research/health/pm-mort/enstrom.pdf>)

November 28, 2011 UCLA Institute of the Environment Enstrom Seminar "Does Fine Particulate Matter Kill Californians? An Epidemiologic and Regulatory Controversy" (<http://www.environment.ucla.edu/calendar/showevent.asp?eventid=667>) and ([http://www.arb.ca.gov/lists/gmbond2011/3-
ioes_seminar_does_particulate_matter_kill_californians_enstrom_112811.pdf](http://www.arb.ca.gov/lists/gmbond2011/3-ioes_seminar_does_particulate_matter_kill_californians_enstrom_112811.pdf))

April 24, 2012 Dose-Response 2012 Conference Enstrom Lecture "Pseudoscientific Aspects of Fine Particulate Matter Epidemiology, 1993-2012" (http://dose-response.org/conference/2012/pdf/Enstrom_Dose_Response_Fine_Part particulate.pdf)

August 1, 2012 American Statistical Association Joint Statistical Meeting Session "Are Fine Particulates Killing Californians?" with title talk by Enstrom (<http://www.amstat.org/meetings/jsm/2012/onlineprogram/ActivityDetails.cfm?SessionID=207510>) and (<http://www.scientificintegrityinstitute.org/ASA080112.pdf>)

2. PM2.5 and Total Mortality in California

2.1 California-specific Epidemiologic Results Summarized

Table 1 summarizes ten separate analyses of five major California cohorts that have found no relationship between PM2.5 and total mortality. References to these analyses are cited in the table and listed at the end of this paper and additional details are provided at this link (<http://www.scientificintegrityinstitute.org/Enstrom081512.pdf>). Included in Table 1 is an analysis limited to the Los Angeles area (Jerrett 2005). Table 2 summarizes five separate analyses of three of the major California cohorts. These analyses have found no relationship between PM10 and total mortality. There are no statewide cohort analyses that show a positive relationship between PM (PM2.5 and PM10) and total mortality in California. Indeed, three of these analyses (Jerrett 2011, Lipsett 2011, Ostro 2011), funded by CARB and AQMD, found no relationship between any criteria pollutant and total mortality in California.

The first published evidence of no PM2.5 mortality risk in California is contained in the July 2000 Health Effects Institute (HEI) Reanalysis Report (Krewski 2000). Figure 21, a U.S. map of "Fine Particulates and Mortality Risk," indicates no excess mortality risk in California. Figure 5 provides further evidence of the geographic variation in PM2.5 mortality risk, with Fresno (city #3) ranking second lowest in risk among 49 cities and Los Angeles (city #39) ranking fifth lowest in risk (<http://www.scientificintegrityinstitute.org/HEIFigure5093010.pdf>). Figure 1 below reproduces Figure 21 and Figure 5 with a city number assigned to each data point. The null California PM2.5 mortality risk findings in Figure 21 were confirmed in the August 31, 2010 letter from Krewski to HEI (Krewski 2010).

2.2 Misrepresentation of PM2.5 and Mortality in California by CARB

My December 15, 2005 *Inhalation Toxicology* paper, "Fine Particulate Air Pollution and Total Mortality Among Elderly Californians, 1973–2002" (Enstrom 2005), found no relationship between PM2.5 and mortality in California during 1983-2002. This is the first, largest, and most detailed peer reviewed journal publication that focuses on the relationship between PM2.5 and total mortality in California. Enstrom 2005 appeared just after the November 2005 *Epidemiology* paper "Spatial Analysis of Air Pollution and Mortality in Los Angeles" (Jerrett 2005), which found an unusually large relative risk between PM2.5 and mortality in the Los Angeles basin during 1982-2000. The finding is in direct contrast to the low absolute PM2.5 mortality risk for Los Angeles found in Figure 21. These conflicting findings need to be resolved with further analysis.

Enstrom 2005 was submitted to CARB health effects scientist Linda Smith on January 9, 2006 (http://www.arb.ca.gov/planning/gmerp/declplan/gmerp_comments/enstrom.pdf). The March 23, 2006 CARB meeting PPT presentation "Stronger Relationship Between Particulate Matter (PM) and Premature Death" gave extensive details on Jerrett 2005 and cited several other positive national studies, including Krewski 2000, Pope 2002, and Laden 2006 (<http://www.arb.ca.gov/research/health/healthup/march06.pdf>). However, it made no mention of Enstrom 2005, which was published one month after Jerrett 2005 and one month before a major Harvard Six Cities Study analysis (Laden 2006) appeared online. On August 21, 2006 CARB scientists Richard Bode, Linda Smith, and Hien T. Tran conducted a "Public Workshop on Updating the Methodology for Estimating Premature Death Associated with PM2.5 Exposures" and gave a PPT presentation (<http://www.arb.ca.gov/research/health/pm-mort/ws-slides.pdf>). The PPT presentation for this Workshop specifically shows Jerrett 2005 and Laden 2006, but not Enstrom 2005, as "New studies emerged since 2002." These PPT presentations show a pattern of omission of null findings like Enstrom 2005.

Additional misrepresentation of PM2.5 mortality risk in California was contained in the Draft and Final versions of the 2008 CARB Staff Report by Hien T. Tran "Methodology for Estimating Premature Deaths Associated with Long-term Exposure to Fine Airborne Particulate Matter in California." The October 24, 2008 Final Report states that PM2.5 contributes to 18,000 annual premature deaths in California, with 3,500 of these deaths due to diesel PM. These estimates of premature deaths provided the primary public health justification for new on-road diesel vehicle regulations approved and implemented by CARB. However, the premature death claims in this report are now entirely contradicted by the null findings presented in Table 1. My December 10, 2008 CARB comments exposed major flaws in this report (http://www.arb.ca.gov/lists/truckbus08/897-carb_enstrom_comments_on_statewide_truck_regulations_121008.pdf). The CARB misrepresentations of PM2.5 mortality risk in California continue up to the present, as explained in my talks and submissions cited above.

2.3 Failure to Properly Review Particulate Matter Health Impacts by AQMD

As an essential part of its currently ongoing preparation of the 2012 AQMP, the AQMD is required to address the health effects of air pollution in the SCAB. Indeed, California Health and Safety Code (CHSC) Section 40471 (b) specifically states "On or before December 31, 2001, and every three years thereafter, as part of the preparation of the air quality management plan revisions, the south coast district board, in conjunction with a public health organization or agency, shall prepare a report on the health impacts of

particulate matter air pollution in the South Coast Air Basin. The south coast district board shall submit its report to the advisory council appointed pursuant to Section 40428 for review and comment. The advisory council shall undertake peer review concerning the report prior to its finalization and public release. The south coast district board shall hold public hearings concerning the report and the peer review, and shall append to the report any additional material or information that results from the peer review and public hearings.” (<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=40001-41000&file=40460-40471>).

However, based on available information, AQMD has never prepared a “report on the health impacts of particulate matter air pollution in the South Coast Air Basin” at the end of 2001, 2004, 2007, or 2010. The only “health impacts” reports are Appendix I “Health Effects” of the 2003 AQMP, 2007 AQMP, and Draft 2012 AQMP. However these reports do not specifically address PM health impacts in the SCAB. Indeed, the 2003 AQMP Appendix I states “The purpose of this appendix is to provide an overview of air pollution health effects, rather than to provide estimates of health risk from current ambient levels of pollutants in specific areas of the SCAB.” (http://www.aqmd.gov/aqmp/docs/2003AQMP_AppI.pdf).

Failure to comply with CHSC Section 40471 (b) is a serious matter because the local health effects of PM provide the primary public health justification for the entire AQMP. As shown in Tables 1 and 2, there is now overwhelming epidemiologic evidence that there is NO relationship in California between PM and total mortality (also known as “premature deaths”). However, the 2003 AQMP Appendix I (https://aqmd.gov/aqmp/docs/2003AQMP_AppI.pdf, page I-14), 2007 AQMP Appendix I (https://aqmd.gov/aqmp/07aqmp/aqmp/Appendix_I.pdf, page I-14), 2012 Draft AQMP Appendix I (<http://www.aqmd.gov/aqmp/2012aqmp/draft/Appendices/AppxI.pdf>, page I-18), and 2012 Revised Draft AQMP Appendix I (<http://www.aqmd.gov/aqmp/2012aqmp/RevisedDraft/AppI.pdf>, page I-19) all make incorrect statements regarding the evidence in California and the SCAB.

All four Health Effects appendices have been authored by AQMD Health Effects Officer Jean Ospital (http://www.aqmd.gov/bios/ms_ospital_jean.html). These documents come to exactly the same conclusion regarding PM mortality risk: “Despite data gaps, the extensive body of epidemiological studies has both qualitative and quantitative consistency suggestive of causality. A considerable body of evidence from these studies suggests that ambient particulate matter, alone or in combination with other coexisting pollutants, is associated with significant increases in mortality and morbidity in a community. In summary, the scientific literature indicates that an increased risk of mortality and morbidity is associated with particulate matter at ambient levels. The evidence for particulate matter effects is mostly derived from population studies with supportive evidence from clinical and animal studies.”

The null PM_{2.5} - mortality relationship in California has been known since 2000, but the specific null evidence is only partially presented in the Draft 2012 AQMP and was entirely omitted from the earlier AQMPs. For instance, each AQMP Appendix I cites Krewski 2000. However, only the nationwide PM_{2.5} mortality risk results in this report are cited, not the California-specific results in Figure 21. The 2007 AQMP Appendix review cites Jerrett 2005, Laden 2006, and the Pope 2006 review, which contains two references to Enstrom 2005, but Enstrom 2005 itself is not mentioned. Enstrom 2005 is mentioned briefly in the Draft 2012 Appendix I, but not assigned any major significance.

The overwhelmingly null evidence in Figures 1 and 2 is not fully or properly described in either the Draft or Revised Draft 2012 Appendix I. I pointed out major deficiencies in my April 21, 2011 CARB comments (http://www.arb.ca.gov/lists/sip2011/3-carb_enstrom_comments_on_sip_for_pm2.5_042711.pdf). Since August 2008 I have also had repeated direct communications with Ospital, including an April 4, 2012 email message requesting that null evidence be included in the 2012 AQMP Appendix I (<http://www.scientificintegrityinstitute.org/Ospital040412.pdf>).

The health impacts of PM in the SCAB are still not addressed in the September 7, 2012 Revised 2012 Draft AQMP Appendix I (<http://www.aqmd.gov/aqmp/2012aqmp/RevisedDraft/AppI.pdf>). Furthermore, this version makes an incorrect assessment of the California-specific evidence by uncritically relying on the June 2012 US EPA Regulatory Impact Analysis (RIA) (US EPA 2012). The RIA looked at California-specific studies regarding PM_{2.5} and mortality published in the scientific literature. Appendix I states "The EPA analysis concluded 'most of the cohort studies conducted in California report central effect estimates similar to the (nation-wide) all-cause mortality risk estimate we applied from Krewski et al. (2009) and Laden et al. (2006) albeit with wider confidence intervals. A couple cohort studies conducted in California indicate higher risks than the risk estimates we applied.' Thus in EPA's judgment the California related studies provided estimates of mortality consistent with or higher than those from the national studies."

However, there are clear errors in virtually every California-specific RR in EPA RIA Table 5.B-10. The McDonnell 2000 ratio, RR (males) = 1.09 (0.98–1.24), should be RR (both sexes) ~ 1.00 (0.95–1.05), based on inclusion of an approximated RR for females. The partially adjusted Jerrett 2005 ratio, RR = 1.15 (1.03–1.29), should be the fully adjusted value, RR = 1.11 (0.99–1.25). The Enstrom 2005 ratio for 1973-1982, RR = 1.04 (1.01–1.07), should be the ratio for the entire follow-up period (1973-2002), RR = 1.01 (0.99–1.03). The Krewski 2009 ratio, RR = 1.42 (1.26–1.27), is obviously invalid and should be replaced by the Krewski 2010 ratio, RR = 0.968 (0.916–1.022), which is the ratio for all California subjects in Krewski 2009. The implausibly high Ostro 2010 ratio, RR = 1.84 (1.66–2.05), is invalid and has been replaced by the new Ostro 2011 ratio, RR = 1.06 (0.96–1.16). The corrected ratios are all consistent with RR = 1.00 and DO NOT support the EPA RIA claim that California-specific results are consistent with national results. Ospital uncritically accepted the EPA RIA and did not mention a single one of the EPA errors cited above.

The July 11, 2012 AQMP Advisory Council meeting did not result in proper peer review of Draft 2012 Appendix I. The three Advisory Council members with the most expertise on PM mortality studies and PM health effects epidemiology are John R. Froines, Ph.D., Samuel Soret, Ph.D., and Rob S. McConnell, M.D. They have not done peer review of Appendix I regarding "the health impacts of particulate matter air pollution in the South Coast Air Basin," as specified in CHSC Section 40471 (b). Also, there is evidence that they are not objective peer reviewers regarding PM health effects.

UCLA Professor John R. Froines has engaged in inappropriate activism regarding PM science based on the information contained in the following documents:

- 1) June 30, 2009 letter and attachments from Norman R. Brown to UCLA officials (http://www.calcontrk.org/CARBdocs/Delta_UCLA_Letter_063009.pdf);
- 2) February 20, 2011 Bakersfield Californian column by Lois Henry

(<http://www.bakersfieldcalifornian.com/columnists/lois-henry/x1902890284/Politics-air-rules-make-for-a-smelly-situation>), and 3) April 15, 2012 Bakersfield Californian column by Lois Henry (<http://www.bakersfieldcalifornian.com/health/x1322083219/The-ex-radical-who-heads-air-boards-key-panel>).

Loma Linda University (LLU) Professor Samuel Soret has not responded to my August 23, 2012 and September 14, 2012 email messages regarding his peer review of the AQMP Appendix I (<http://www.scientificintegrityinstitute.org/Soret091412.pdf>). His July 11, 2012 email message to AQMD did not mention the highly relevant December 2010 paper that he co-authored and apparently submitted to *Epidemiology* "The Mortality & Long-Term Exposure to AP in Elderly CA Adventists" (Chen 2010). Also, he has not properly described the overwhelmingly null relationship between PM and total mortality in the 35-year LLU Adventist Health Study of Air Pollution (AHSMOG) project (<http://www.llu.edu/public-health/health/ahsmog.page>).

USC Professor Rob S. McConnell has not responded to my August 25, 2012 and September 17, 2012 email messages regarding his incomplete July 9, 2012 peer review of AQMP Appendix I, which did not discuss PM in the SCAB (<http://www.scientificintegrityinstitute.org/McConnell091712.pdf>).

I submitted comments to AQMD regarding AQMP Appendix I on August 30, 2012 (<http://www.scientificintegrityinstitute.org/AQMP083012.pdf>) and on September 20, 2012 (<http://www.scientificintegrityinstitute.org/AQMP092012.pdf>).

These comments emphasize the need for AQMD to comply with all provisions of CHSC Section 40471 (b) before finalizing the 2012 AQMP. It is particularly important that the AQMD Governing Board conduct a hearing on the health impacts of PM in the SCAB. This hearing will allow scientists with diverse views to directly present evidence to the Board Members. This hearing could have a profound impact on the emission control measures that are approved in the 2012 AQMP.

Conclusions

There is now overwhelming epidemiologic evidence that PM (PM_{2.5} and PM₁₀) is not killing Californians. This evidence must be fully examined and recognized by EPA, CARB, and AQMD before there are any further regulations to reduce PM levels in California, particularly in the SCAB. In addition, there needs to be a full reassessment of the current PM regulations to be sure that they are based on the actual health effects evidence in California. AQMD should not be required to comply with NAAQS that are not appropriate for California or the SCAB. Instead, AQMD should request a waiver from compliance with the NAAQS using the special waiver status granted to California in Section 209 of the Clean Air Act (<http://www.epa.gov/otag/cafr.htm>). Finally, PM health effects and regulations must be put into perspective with other factors that influence health in California. Keep in mind the findings in Figure 2, which show that, based on the 2009 age-adjusted total death rate by state, California had the third lowest rate. Furthermore, the SCAB had a total death rate that was lower than the rate for every state except Hawaii (<http://www.scientificintegrityinstitute.org/NCHSRR070811.pdf>).

Table 1. Epidemiologic Cohort Studies of PM_{2.5} and Total Mortality in California
<http://www.scientificintegrityinstitute.org/Enstrom081512.pdf>
Relative risk of death from all causes (RR and 95% CI) associated with increase of 10 µg/m³ in PM_{2.5}

Krewski 2000 & 2010	CA CPS II Cohort (N=40,408 [18,000 M + 22,408 F]; 4 MSAs; 1979-1983 PM _{2.5} ; 44 covariates)	RR = 0.872 (0.805-0.944)	1982-1989
McDonnell 2000	CA AHSMOG Cohort (N=3,800 [1,347 M + 2,422 F]; SC&SD&SF AB; M RR=1.09(0.98-1.21) & F RR~0.98(0.92-1.03))	RR ~ 1.00 (0.95 – 1.05)	1977-1992
Jerrett 2005	CPS II Cohort in Los Angeles Basin (N=22,905; 267 zip code areas; 1999-2000 PM _{2.5} ; 44 cov + max confounders)	RR = 1.11 (0.99 - 1.25)	1982-2000
Enstrom 2005	CA CPS I Cohort (N=35,783 [15,573 M + 20,210 F]; 11 counties; 1979-1983 PM _{2.5} ; 25 county internal comparison)	RR = 1.039 (1.010-1.069) RR = 0.997 (0.978-1.016)	1973-1982 1983-2002
Enstrom 2006	CA CPS I Cohort (N=35,783 [15,573 M + 20,210 F]; 11 counties; 1979-1983 & 1999-2001 PM _{2.5})	RR = 1.061 (1.017-1.106) RR = 0.995 (0.968-1.024)	1973-1982 1983-2002
Zeger 2008	MCAPS Cohort “West” (3.1 M [1.5 M M + 1.6 M F]; Medicare enrollees in CA+OR+WA (CA=73%); 2000-2005 PM _{2.5})	RR = 0.989 (0.970-1.008)	2000-2005
Jerrett 2010	CA CPS II Cohort (N=77,767 [34,367 M + 43,400 F]; 54 counties; 2000 PM _{2.5} ; KRG ZIP; 20 ind cov+7 eco var; Slide 12)	RR ~ 0.994 (0.965-1.025)	1982-2000
Krewski 2010	CA CPS II Cohort (N=40,408; 4 MSAs; 1979-1983 PM _{2.5} ; 44 cov) (N=50,930; 7 MSAs; 1999-2000 PM _{2.5} ; 44 cov)	RR = 0.960 (0.920-1.002) RR = 0.968 (0.916-1.022)	1982-2000 1982-2000
Jerrett 2011	CA CPS II Cohort (N=73,609 [32,509 M + 41,100 F]; 54 counties; 2000 PM _{2.5} ; KRG ZIP Model; 20 ind cov+7 eco var; Table 28)	RR = 0.994 (0.965-1.024)	1982-2000
Jerrett 2011	CA CPS II Cohort (N=73,609 [32,509 M + 41,100 F]; 54 counties; 2000 PM _{2.5} ; Nine Model Ave; 20 ic+7 ev; Fig 22 & Tab 27-32)	RR = 1.002 (0.992-1.012)	1982-2000
Lipsett 2011	CA Teachers Cohort (N=73,489 [73,489 F]; 2000-2005 PM _{2.5})	RR = 1.01 (0.95 – 1.09)	2000-2005
Ostro 2011	CA Teachers Cohort (N=43,220 [43,220 F]; 2002-2007 PM _{2.5}) replaced Ostro 2010	RR = 1.06 (0.96 – 1.16) Incorrect 2010 Result: RR = 1.84 (1.66 – 2.05)	2002-2007 2002-2007

Krewski D (2010). August 31, 2010 letter from Krewski to Health Effects Institute and CARB with California-specific PM2.5 mortality results from Table 33 in Krewski 2009 (http://www.arb.ca.gov/research/health/pm-mort/HEI_Correspondence.pdf)

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Pope CA III, Dockery DW. (2006). Health Effects of Fine Particulate Air Pollution: Lines that Connect. *JAWMA*, Critical Review. 56(6):709-742 (<http://www.scientificintegrityinstitute.org/PopeDockery2006.pdf>) and (<http://www.scientificintegrityinstitute.org/PopePPT2006.pdf>)

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<http://infotruck.blogspot.com/2009/10/driven-away-usa-ports-clean-air-program.html>

2009-10-11 Los Angeles CAL,USA

Driven Away * USA - Ports' clean air program shuts down some truckers.

Randy Thomas Trucking is preparing to close his business, he's unable to purchase new trucks to comply with port regulations taking effect in January

Reprinted from October 12, 2009 Los Angeles Business Journal article by FRANCISCO VARA-ORTA

<http://labusinessjournal.com/accounts/login/?next=/news/2009/oct/12/driven-away/>

<http://los-angeles-business-journal.vlex.com/vid/driven-ports-clean-air-shuts-truckers-69119761>



Randy Thomas has spent the last four decades proudly running his South Los Angeles trucking firm, which services the ports of Los Angeles and Long Beach... As the ports ballooned to become the largest trade complex in the country, Thomas' business grew from one truck he drove to a thriving little firm with 15 drivers. He put his three children through college – the first generation in his family to go. He was starting to look forward to retiring. He planned to leave his business to his family... Instead, the 60-year-old owner of Randy Thomas Trucking is preparing to close his business about Christmas. The reason: He's unable to purchase new trucks to comply with port regulations taking effect in January... In all, about 900 trucking companies shuttle cargo containers in and out of the two ports. Hundreds of them, like Thomas' company, are in danger of slipping out of existence in the next few months. Following them are thousands of truckers who own their own rigs and contract with small companies like Thomas'... The recession-driven downturn in trade has pushed them to the precipice, but many believe what's shoving them over the edge is the Clean Trucks Program, which falls hardest on small operators... The program seeks to eliminate old polluting trucks from the ports. The program in October 2008 banned trucks made before 1989. But on Jan. 1, a more stringent ban extends to all trucks made before 1994 and those that have an engine made before 2004... It's unclear how many trucks will be sidelined as a result, but the number is a big one. The ports earlier estimated that as many as 12,000 trucks would fall into that criteria, but last week the L.A. port estimated 4,000 to 6,000 trucks would be banned Jan. 1... A new diesel truck costs about \$100,000, while retrofitting a truck with a new engine costs about \$10,000 to \$15,000. Many small trucking firms, already scraping by on low margins, paying off existing trucks and whacked by the downturn in business at the ports, say it's not worth it to load up on debt to stay in the industry... (End of Road: Randy Thomas will cut the ignition on his trucking firm in December)

posted by truckbus @ 6:40 AM

**Comments on Peer Review of
South Coast Air Quality Management District
Revised Draft 2012 AQMP Appendix I Health Effects Version 2**

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October 11, 2012

Peer Review is an indispensable component of reliable science. Indeed the Rules governing the SCAQMD Air Quality Reports recognize that science without proper Peer Review is second-rate at best, and not a valid basis for important policy decisions.

However, in preparing its required 2012 Report on the Health Effects of particulate matter (PM) air pollution in the Southern Coast Air Basin, SCAQMD reveals a fundamental misunderstanding of the nature of a Peer Review. Every branch of science relies on *impartial* critiques of all its results, before they can be accepted. Scientific Peer Review is therefore the *opposite* of "Self-Review". It must be done by scientific peers who are clearly *independent* of the authors of all the work under consideration. In fact it is essential that some, or most, of the reviewers (or 'Referees' as they are typically called) be selected specifically for their rivalry, disagreements, or competition with the authors. This is necessary because in the marketplace of scientific ideas there is always more than one point of view, a fact which is very dangerous to forget. The essence of scientific Peer Review is a thorough search for all possible problems or limitations with the research being reviewed. It is precisely the job of a Peer Reviewer to attempt to pick apart every aspect of the work, which will result in its revision and improvement. Reliable science is completely dependent on this correction mechanism. A scientific research report can only be accepted after it has weathered all available criticisms.

Unfortunately, all of the "Reviews" that have been obtained for Appendix I, particularly on the long-term Health Effects of PM_{2.5}, are either "Self-Reviews"--by authors and co-authors of the studies used by Appendix I (more accurately called 'editing')--or "Friends Reviews" (ie, by close colleagues and collaborators, known to share the same views as those authors). Self-Reviews may be of some use to 'clean up' a report, so long as it is clearly understood that they are *in no way a substitute* for actual Peer Review. Fortunately there is no shortage of fully qualified Peer Reviewers who are unambiguously independent of the views advanced in Appendix I. Proper scientific Peer Review, and the rules in 40471(b) which mandate it, now require input from this large, hitherto excluded, group of health scientists.

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10-10-12

Supplemental submission on the AQMP

Members of the Board of South Coast Air Management District,

I write to supplement my previous submission showing that there is no reliable evidence that human health effects in California and specifically in the South Coast District justify the proposed Management Plan.

I must reemphasize that I also believe that the South Coast District is not in compliance with the CA statutes that require a review of human health effects science on a regular basis and particularly when a new Management Plan is promulgated.

It is my understanding that before the Draft 2012 AQMP is finalized and approved, AQMD must hold a public hearing on the health impacts of air pollution in the SCAB, in accordance with CHSC Section 40471 (b).

If the hearing is held, in compliance with statute, I am convinced that the policy makers and board will find overwhelming the lack of evidence to justify any proposed plan, particularly the aggressive plan as proposed by AQMD staff.

The AQMP should not propose emission control measures necessary to comply with NAAQS that are not appropriate for California or the SCAB. Instead, AQMD should request a waiver from compliance with the NAAQS using the special waiver status granted to California in Section 209 of the Clean Air Act (<http://www.epa.gov/otaq/cafr.htm>).

To reiterate, and reemphasize, in January of 2007, the Air Resources Board and AQMD approved funding for two studies on the human health effects relationship to particle air pollution and the studies by Lipsett, and by Jarrett and others showed no human health effect, no association or relationship between PM and total mortality in California. The Jarrett Study found that total mortality during 1982-2000 among about 75,000 California adults was not related to either PM10 or PM2.5 in eight of nine models tested. He tortured the data to get one model to show an association, the model he called the conurbation model, which was nothing more than slicing the geographical pieces to find a small increase in deaths associated with Air Pollution. I have made fun of such nonsense and data dredging in my first submission. The Lipsett Study found that total mortality during 2000-2005 among about 75,000 female

California teachers was not related to either PM10 or PM2.5. The studies found some unexplained evidence of increased cardiovascular disease risk and decreased cancer risk, but there was no overall increased risk of death but in these studies there is no effort made to avoid the problem of noise in the small ranges of association. However that is the problem with epidemiology funded by government—the researchers know there will be no funds in the

future for a study that fails to find what the government entity wants to justify a new regulatory regime.

These null results by Lipsett and Jarrett agree with the overwhelmingly null results for California that have been published since 2000, which include the study by Enstrom on 50,000 Californians. They also are coherent with the Krewski map mentioned before that shows a null California association of deaths and small particle pollution.

Thus, based on all the evidence described in my first submission and in this supplemental submission, I assert there is no health risk associated with PM in the South Coast regions, including the Coachella Valley. There is no evidence of death association in California as a whole and there will be no health risk from PM that would justify concern about the Sentinal power plant.

I urge that the AQMD Board and Staff review carefully review the evidence and consider the negative economic effects from draconian air management regulatory proposals. It is time to focus on the welfare of the public and the California economy is critical to people's well-being.

No human health effects research would justify more damage to the economy of the South Coast region or California as a whole.

Cordially,

From: Andrea Hricko [<mailto:ahricko@usc.edu>]
Sent: Sunday, October 28, 2012 4:16 PM
To: Jean Ospital
Cc: 'Balmes, John'; 'Ed Avol'; Rob McConnell; 'Froines, John'
Subject: HSPH News retrospective on Six Cities Study Controversy

Dear Jean: If the record for the AQMP is still open, pls consider this article as my comments. Thank you.... Andrea Hricko

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From: naags-bounces@lists101.his.com [<mailto:naags-bounces@lists101.his.com>] **On Behalf Of** Deborah Shprentz
Sent: Sunday, October 28, 2012 3:21 PM
To: NAAQS
Subject: [Naaqs] HSPH News retrospective on Six Cities Study Controversy

News at HSPH

Prevailing Winds

A decades-long fight to bring clean air standards in line with environmental health science offers lessons for today.



Doug Dockery

On a raw January day in Washington, DC, [Douglas Dockery](#) climbed Capitol Hill on his way to testify to Congress about the Harvard School of Public Health study he'd been running. He would have preferred to be anywhere else. It jarred Dockery—today, chair of the [Department of Environmental Health](#)—to confront people wearing white lab coats, holding signs that read, “Harvard, release the data!” Employed by an industry-backed group called Citizens for a Sound Economy, the protesters pressed on passersby fliers claiming that Harvard was hiding “secret” data. Their message was aimed directly at Dockery.

The year was 1997, and Dockery had arrived in Washington to tell Congress that because it had promised study participants confidentiality, Harvard couldn't share the raw data from its federally funded Six Cities study. The landmark research—one of the single most influential public health studies ever conducted—examined over 14 to 16 years the health effects of air pollution on more than 8,000 adults and 14,000 children in six U.S. cities. During that time, HSPH scientists published more than 100 peer-reviewed papers detailing their findings.

The blockbuster paper came in 1993, when Dockery's team described what he now calls amazing results. Residents of Steubenville, Ohio—the city with the dirtiest air—were 26 percent more likely to die prematurely than were citizens of Portage, Wisconsin, the city with the cleanest air. The primary culprit: fine particulates, up to hundreds of times narrower than a human hair, which were associated with increased incidence of lung cancer and cardiopulmonary disease. “The effects of air pollution were about two years' reduction in life expectancy,” Dockery says. “It was much, much higher than we had expected.” To Dockery and his colleagues, the results were conclusive evidence that soot produced by fossil fuel combustion kills.

That evidence was also enough for the U.S. Environmental Protection Agency (EPA), which in 1997 used the science, along with many other studies, as the foundation for the first-ever Clean Air Act regulations on particulate matter smaller than 2.5 microns in diameter. The EPA claimed the new PM2.5 rules would prevent 15,000 premature deaths annually and produce other huge benefits, among them preventing 250,000 incidences of aggravated asthma, 60,000 cases of bronchitis, and 9,000 hospital admissions every year.

But meeting the new standards would be far from simple or cheap. Manufacturing, power, steel, auto and other industries spent untold millions trying to disprove the science, discredit the EPA, and defeat the new regulations. The New York Times dubbed the clash “the environmental fight of the decade.” It embroiled the Six Cities study in a years-long controversy—one that holds lessons for public health professionals

working on issues critical in this year's election cycle, from new Clean Air Act rules and oil drilling to natural gas fracking and the ubiquitous pesticides and chemicals in our food, homes, and bodies.

A Deadly Cloud

Why Six Cities Matters Today

The clash between industry, politics, and science over the Six Cities study remains relevant today. Consider just a small sampling of contemporary public health controversies:

Global Warming:

A U.S. federal appeals court in June agreed with the EPA that auto and power plant emissions endanger the public health. Opponents had filed more than 60 lawsuits to block the EPA from regulating greenhouse gas emissions. As Matthew Wald of *The New York Times* wrote, "The judges unanimously dismissed arguments from industry that the science of global warming was not well supported and that the agency had based its judgment on unreliable studies."

Natural Gas Fracking:

Public health studies show the hydrofracturing, or fracking, process of drilling fouls the air and water and may contribute to earthquakes. Industry advocates question the certainty of that science and say the country needs cheap, "clean" fuel.

Mining and Cancer:

The Mining Awareness Resource Group, a mining-industry-funded organization, spent years going to the courts and to Congress for assistance in accessing data from, and delaying publication of, a study showing that miners exposed to diesel exhaust underground were at high risk of developing lung cancer. Twenty years after the study was launched, the Journal of the National Cancer Institute finally published the results.

Ever since a toxic black cloud dubbed the "Great Smog"—made up primarily of coal-burning emissions and diesel exhaust—hovered over London in 1952 and killed more than 4,000 people within days, environmental scientists had worried about the mysterious ingredients composing industrial haze. In the U.S., that concern intensified in 1973 following the Arab oil embargo, when power plants were expected to substitute cheap, high-sulfur coal for expensive oil. What could the nasty emissions from dirtier fuel do to people?

HSPH's Ben Ferris, a legendary public health professor who died in 1996, and Frank Speizer, professor of environmental science, proposed to find out: They would sample the air quality in six Eastern cities with varying degrees of pollution while simultaneously monitoring the health of thousands of those cities' residents. Among their team were the wiry, intense Jack Spengler, now the Akira Yamaguchi Professor of Environmental Health and Human Habitation, who built personal air quality monitoring equipment that participants wore; and the tall, reserved Dockery, who traveled from city to city, setting up air pollution monitors in residents' homes. Jim Ware, professor of biostatistics, joined the team in 1979. Later, Joel Schwartz, professor of environmental epidemiology, would join the team and become one of its most prolific authors.

Their goal was simple: to identify links between illness and death rates and air pollution levels. They sampled the air for toxic emissions, including sulfur dioxide and particulate matter, a brew of acids, metals, petroleum byproducts, diesel soot, and other potentially harmful substances that readily deposit deep in the lungs.

In the mid-1970s, no one had yet conducted a comprehensive study of particulates' effects on human health. Dockery and his colleagues expected to learn that the true threat of industrial haze would stem from sulfur dioxide. But it was the fine particles that were the biggest dangers (although the study did not show how these particles created illness, a missing link critics would highlight). Another surprise: indoor air pollution was more harmful than outdoor toxins, setting the stage for years of important research.

Today, because of Six Cities, it is conventional wisdom that particulate matter contributes significantly to a wide variety of illnesses across the spectrum of life, from asthma and bronchitis to sudden infant death syndrome and lung cancer.

Industry Responds

Public health considerations aside, the new standards forced dramatic changes on industry. The *New York Times* reported that old Midwestern power plants would have to install expensive pollution control equipment; states would need to invest in mass transit and other initiatives designed to reduce auto pollution; and factories that burned mountains of coal would have to switch to cleaner-burning fuels. How much those changes would cost depended upon who was doing the estimating: industry spokesmen said the bill would reach into the hundreds of billions of dollars. The EPA put the final tab at \$6 to \$8 billion. As the debate grew more contentious, many experts—including Philip H. Abelson, former editor of *Science* magazine—pushed the EPA to delay regulations until the science was more certain. Abelson maintained that the makeup of particulate matter differed greatly from place to place. In an editorial, he queried, “How can the EPA minimize the effects of particulates if it does not know what they are or which, if any, have deleterious physiological effects?”

Others, like fellow HSPH faculty member John D. Graham, professor of policy and decision sciences at HSPH, were also critical of the EPA, arguing that the Clean Air Act's legal framework for rule making does not allow the agency to consider costs, just health outcomes. Graham had pioneered the study of risk analysis at HSPH, having founded and, from 1990 to 2001, directed the [Harvard Center for Risk Analysis](#). From 2001 to 2006, he led the White House's Office of Information and Regulatory Affairs, making him what the Natural Resources Defense Council called “the second most powerful environmental official in the nation after George W. Bush.” Today, he serves as Dean of Indiana University's School of Public and Environmental Affairs.

Over the years, Graham testified at many congressional hearings that there should be an opportunity for cost/benefit analysis during EPA rule making. “One of my key arguments is that practical people are going to do it anyway,” he says. “We shouldn't make them do it behind closed doors. That's not good, because their arguments are then not open to public scrutiny.”

The Battle Lines Harden



James Ware

Citizens for a Sound Economy blanketed the country with ads designed to influence public opinion. The group, which the Washington Post called the “pro-industry alliance at the center of an extraordinary, multimillion-dollar campaign to turn back EPA regulations for smog and soot,” attracted grassroots supporters by contending the new rules would force bans on such American icons as backyard barbecues, farm tractors, and wood stoves.

In addition, critics from industry, members of Congress, and some governors demanded that Harvard release the raw data. “We declined,” says [James H. Ware](#), then HSPH acting dean and now Frederick Mosteller Professor of Biostatistics. The team had promised participants that their personal data would never be released. When Harvard refused, critics accused the researchers of conspiracy and pressured Congress to hold hearings. “The issue is the quality of the science,” said National Association of Manufacturers spokesman Richard Siebert. “In order for people to ascertain the science they need to understand the background data ... What are they hiding?”

“It was a painful time,” says Dockery. “You’d get up in the morning and look in the paper and there you’d be again.”

Still, the scientists held their ground. “We knew that if we released the data, it would be endless aggravation and defending against attacks,” says Ware. “To have a hostile group combing through your data looking for anything to attack you about was not something any of us relished.” Furthermore, [Frank Speizer](#) told Dockery, to release the raw data would be to allow “biased groups” to manipulate it and to set a precedent that “will undermine future research by academic institutions.”

EPA under siege

"Uncertain Science" Claim

When public health and industry collide, foes of regulation often claim that epidemiology is an uncertain science, says Sheila Jasanoff, Pforzheimer Professor of Science and Technology Studies at Harvard Kennedy School of Government. “The most favored method is to ‘deconstruct’ agency scientific claims, on grounds of methodological inadequacy,” she says. “The problem is that public health research often operates in zones of ignorance and uncertainty; it is relatively easy to find, or at least claim to find, ‘problems in the science.’”

The inherent uncertainty of emerging science leads to fiery rhetoric on both sides—which is unfortunate, Jasanoff adds. “The constant debates about ‘good science’ and repeated charges of overregulation undermine trust in government and hinder a mature understanding of how to live prudently in complex industrial societies that will never be risk-free and where full scientific certainty on many issues will likely take very long to achieve.”

Even today, the Six Cities debates linger. John Graham applauded HSPH’s decision to give its data to the nonpartisan organization Health Effects Institute for analysis. But 15 years later, he remains frustrated that Harvard didn’t share the original data earlier. “These findings are still utilized around the world,” Graham says. “They sit as a foundation for multibillion-dollar decisions in China, Brazil, and elsewhere. I would still like to see the data be made publicly available. It’s the basic principle of transparency in science.”

But the EPA, too, was under siege—from lobbyists and from Congress, which demanded the agency produce so-called “secret data” on which the new rules rested. In February 1997, EPA bowed to the pressure and urged Harvard to do so. As a compromise, the team came up with the idea of asking an independent scientific panel to audit the researchers’ findings. They gave a warehouse full of data to the Cambridge, Massachusetts-based Health Effects Institute (HEI), which was funded by both the automotive industry and the EPA.

It took HEI three years to reanalyze the data—an agonizing period of limbo for the scientists. But it was worth the wait. In 2000, HEI scientists confirmed the original Six Cities findings. It was a huge win for the School.

In 1997, while HEI was auditing the data, President Bill Clinton approved the new Clean Air Act’s PM2.5 regulations and tightened ozone standards. In 1999, Alabama Republican Senator Richard Shelby, still simmering about Harvard’s “hidden” data, inserted a single sentence into a 4,000-page budget bill that would change everything for future researchers. The still-controversial Shelby Amendment calls for those university scientists working on federally funded projects to share their data with anyone who requests it via the Freedom of Information Act.

When the issue of sharing primary data first arose, critics like HSPH’s Frank Speizer feared such a rule would dampen future research by dissuading potential participants whose confidentiality could no longer be protected. Today, the issue is so fraught that, even within HSPH, scientists find themselves on opposing sides. Doug Dockery calls the Shelby Amendment “a direct assault on research conducted by universities,” because privately funded studies aren’t subject to the same rules. In contrast, Jim Ware says, “As a matter of principle, the Shelby Amendment is right: When the federal government pays for research ... that research ought to be made available for scrutiny by others and for debate and examination.”

The Long View

Today, Dockery looks out his 13th-floor window across the Charles River at the Cambridge skyline, a view that, decades earlier, had often been obscured by urban haze. “I can see a long way,” he says. “That’s gratifying.”

Over the last 30 years, air quality nationwide has improved dramatically, due to Clean Air Act rules based in part on Six Cities research. In 2009, Dockery and colleagues Arden Pope (now at Brigham Young University) and Majid Ezzati (now at Imperial College London) demonstrated that from 1980 to 2000, reductions in exposure to fine particulate matter had increased average American life spans by 1.6 years. “That’s huge,” Dockery says. “If you got rid of all cancers, the net effect on average life expectancy would be two years.”

The Clean Air Act and the policies triggered by HSPH’s Six Cities study are classic examples of how public health should work: good science shapes public policy, and policy, in turn, saves people’s lives.

A Steel Backbone



Jack Spengler

On a crowded shelf in his office, Dockery keeps two six-inch-thick binders of correspondence and media clippings from the Six Cities fight. Buried in them are memories—many painful—but also lessons for today’s public health professionals.

For Dockery, two stand out. First, “Solid, quality science does stand up over time.” Second: “How you present the information—how you translate the data—is extremely important.”

He believes the PM2.5 standards survived because, for the first time, the science made it possible to calculate the costs and finger the sources of air-pollution-related disease.

“We provided the basis for quantifying how many hospital visits, how many asthma attacks, how many COPD [chronic obstructive pulmonary disease] cases, how many heart attacks, and how many deaths were associated with these air pollutants,” he says. “It completely changed the discussion. When you actually

used those numbers, suddenly the cost/benefit analysis became very clear—and suddenly, the benefits were found to far outweigh the cost of controls.”

Years later, Office of Management and Budget (OMB) analysis confirmed Dockery’s claims: in a 2011 report, the OMB stated, “Of [EPA’s] 20 air rules, the rule with the highest estimated benefits is the Clean Air Fine Particle Implementation Rule, with benefits estimated at a minimum of \$19 billion per year. While the benefits of this rule far exceed the costs, the cost estimate for the Clean Air Fine Particle Implementation Rule is also the highest at \$7.3 billion per year.”

Although not everyone agrees with OMB’s assessment or even with the legitimacy of assigning a price tag to health outcomes (what is the monetary value of a human life saved?), many believe such data are more important than ever. The industry lobby has gained strength in the 15 years since the Six Cities brouhaha. In 2011, a hearing before the Republican-led House of Representatives subcommittee on new Clean Air Act rules was entitled, “Lights Out: How EPA Regulations Threaten Affordable Power and Job Creation.”

Challenges in Today’s Politics

The Debate Goes On

The controversy over standards for fine particulate matter air pollution continues today. In June 2012, a federal court order forced the EPA to propose new, tighter standards; the agency settled on reducing the allowed annual level from 15 micrograms per cubic meter to a range between 13 and 12.

But a 2011 report by the American Lung Association, Clean Air Task Force, and Earthjustice claims that this reduction doesn’t go far enough. Their analysis, which cites Six Cities findings, argues that at those levels, a maximum of 15,000 premature deaths would be averted annually. The coalition argues that the EPA should adopt a more stringent annual limit of 11 micrograms per cubic meter, which its analysis shows would prevent nearly 36,000 premature deaths yearly.

The EPA is expected to issue final standards in December 2012.

Seen through a 2012 lens, it may be surprising that the Six Cities imbroglio wasn’t a strictly partisan fight. Unlike today, earlier environmental battles didn’t erupt along party lines. It was President Richard Nixon who established the EPA in 1970, setting the stage for a string of Republican environmental accomplishments, including the first major reauthorization of the Clean Air Act in 1990 under George H. W. Bush. “When you look at the record,” says Dockery, “the Republican administrations have been better for environmental controls than the Democratic administrations.”

Dockery believes today’s political environment is actually far more difficult for science than it was in 1997. “Before, there was the cry that we wanted the best science for defining the regulation,” he says. Now, he adds, referring to debates like those over global warming and certain childhood vaccinations, “What we’re seeing is a total rejection of science as the basis for making regulatory decisions.”

HSPH’s [John Spengler](#) has become convinced that scientists studying today’s environmental problems need both new communication skills and a steel backbone. “You really have to know you’ve got the personality to do this,” he says. “If you choose a public health career and you believe in it, and if you have an urgent public health message that needs to be delivered, this is part of the territory.”

To Spengler, that means public health educators have a new job to do: teaching scientists how to lead and how to deliver their messages to policymakers. “We teach people to be statisticians, epidemiologists, lab analysts, exposure scientists,” he says. “But we must also equip them for the big fights.”

Elaine Appleton Grant is assistant director of development communications and marketing at HSPH and a former public radio reporter.

Learn more

[Harvard Six Cities Study Follow Up: Reducing Soot Particles Is Associated with Longer Lives](#) (HSPH release, 2006)

[Environmental Threats](#)

HSPH researchers study environmental threats to health, such as hazardous substances found in the air, water, and wherever people live and work. The interplay of genes and environment on health and the importance of occupational safety are also key.

[Department of Environmental Health](#)

[Harvard NIEHS Center for Environmental Health](#)

[EPA/Harvard Center for Ambient Particle Health Effects](#)

[Center for Children's Environmental Health & Disease Prevention Research](#)

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Science at the heart of medicine

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October 30, 2012

Dr. William A. Burke, Chairman and
Other Members of the Governing Board
South Coast Air Quality Management District
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2012aqmpcomments@aqmd.gov

Dear Board Members:

I am writing to convey my emphatic support a 2012 Air Quality Management Plan (AQMP) Appendix I Health Effects that focuses on "the health impacts of particulate matter air pollution in the South Coast Air Basin," in accord with California Health and Safety Code Section 40471(b). In addition, I urge you to hold a Board hearing on the health impacts report and its peer review, in accord with this Code Section.

In particular, please address the September 25 public comments of Jonathan M. Samet, M.D., and the August 30 and September 20 public comments of James E. Enstrom, Ph.D. I have been a cancer epidemiologist for over 30 years, and I have been aware of the important research of these outstanding epidemiologists during this entire period. In addition, I have personally worked with Dr. Enstrom on environmental epidemiology issues. You need to take their criticism of Appendix I very seriously.

My own examination of the PM_{2.5} epidemiologic findings of Dr. Samet, Dr. Enstrom, and two dozen other highly qualified scientists, convincingly shows that there is no relationship between PM_{2.5} and total mortality in California and that the current US EPA National Ambient Air Quality Standard (NAAQS) for PM_{2.5} is not applicable to California or the South Coast Air Basin (SCAB). Therefore, the AQMP should request a waiver from this NAAQS, rather than proposing stricter emission controls.

In conclusion, the final 2012 AQMP must be based on the actual health impacts of particulate matter in the SCAB. Otherwise, I believe that it can be vigorously challenged on scientific, economic, and legal grounds. I am following this issue from New York because the PM_{2.5} NAAQS has national epidemiologic and regulatory significance and because the exaggeration of PM_{2.5} risks fits the pattern of examples described in my 2008 book "Hyping Health Risks."

Thank you for your attention to my comments.

Sincerely yours,

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**DRAFT FINAL
2012 AQMP
APPENDIX II**

CURRENT AIR QUALITY

NOVEMBER 2012

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD**

CHAIRMAN: WILLIAM A. BURKE, Ed.D.
Speaker of the Assembly Appointee

VICE CHAIR: DENNIS YATES
Mayor, Chino
Cities of San Bernardino

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Cities of Los Angeles County/Eastern Region

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South Coast Air Quality Management District

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Arlene Martinez, Administrative Secretary

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SUMMARY

SUMMARY

This appendix contains a detailed summary of the air quality in 2011 and the prior year trends for the South Coast Air Basin (Basin) and the Coachella Valley portion of Salton Sea Air Basin (SSAB), under the jurisdiction of the South Coast Air Quality Management District (District). The Basin includes Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties. In 2011, the District measured concentrations of air pollutants at 35 routine air monitoring stations in Southern California's Los Angeles, Orange, Riverside and San Bernardino counties, including two stations in the Coachella Valley. In addition, six source-specific lead (Pb) monitors were operated in 2011, near potential Pb emission sources.

Chapter 1 of this appendix presents descriptions of the air quality setting for the District's jurisdiction, including the relevant boundaries, weather factors and emissions for both the Basin and the Coachella Valley. It also briefly describes the properties and health effects of each criteria pollutant and the state and federal ambient air quality standards, along with revisions to the standards, both adopted and currently proposed. Criteria pollutants are those which have associated health-based National Ambient Air Quality Standards (NAAQS). Chapters 2 and 3 present summaries of current air quality for each of the criteria pollutants in the Basin and the Coachella Valley, respectively. These chapters include comparisons of the current concentrations compared to the state and federal standards, along with spatial, seasonal, and diurnal variations. Air quality statistics and trends presented in this Appendix provide information on the recent history and current status and progress toward attainment of the NAAQS and state standards, providing a baseline for planning toward future attainment.

Ozone (O₃) and fine particulate matter (PM_{2.5}) are the main pollutants for which the U.S. EPA has designated the Basin as nonattainment. The Coachella Valley is also a nonattainment area for ozone and PM₁₀, but PM_{2.5} concentrations remain below the federal standards. PM_{2.5} concentrations in the Basin have improved considerably, with 2010 and 2011 the cleanest years on record for the area. However, the Basin had the highest number of days exceeding the federal ozone standard of any urban area nationwide in 2011.

The Los Angeles County portion of the Basin is also currently nonattainment for the recently lowered federal lead standard, due to source-specific monitoring near a stationary Pb source, as required under the new U.S. EPA regulation. The remaining ambient Pb monitoring measurements throughout the Basin are below the current Pb

NAAQS. Pb air quality and attainment has been addressed separately in the 2012 Lead SIP for Los Angeles County submitted to U.S. EPA in June 2012.

While the new federal 1-hour standard concentration level was exceeded on one day for nitrogen dioxide (NO₂) in 2011, it should be noted that this does not include nonattainment. The Basin has not been designated as nonattainment of the NAAQS, since the Basin has not exceeded the design value¹ form of the revised NO₂ standard (98th percentile concentration, averaged over 3 years).

Both the Basin and the Coachella Valley are currently listed as PM10 nonattainment areas by U.S. EPA, based on the current 24-hour PM10 NAAQS. However, all exceedances of the federal 24-hour PM10 NAAQS in recent years have been flagged in the U.S. EPA Air Quality System (AQS) database for exclusion based on the U.S. EPA Exceptional Events Regulation (due to high wind events and Independence Day fireworks displays). The District has requested that U.S. EPA consider redesignate both areas to attainment status. State and federal standards for carbon monoxide (CO), sulfur dioxide (SO₂), and sulfate (SO₄²⁻) were not exceeded in the District.

¹ A design value is a statistic that describes the air quality status of a given area relative to the level and form of the National Ambient Air Quality Standards (NAAQS). For most criteria pollutants, the design value is a 3-year average and takes into account the form of the short-term standard (e.g., 98th percentile, fourth high value, etc.)

CHAPTER 1

INTRODUCTION

Air Quality Setting

District Jurisdiction and Boundaries

Weather Factors

Emissions

Ambient Air Quality Standards

Design Values

Summary of Criteria Pollutants and Air Quality Standards

AIR QUALITY SETTING

District Jurisdiction and Boundaries

California's first local air pollution control agency, the Los Angeles County Air Pollution Control District (LAAPCD), was formed in 1947, and APCDs were formed in Orange, Riverside, and San Bernardino Counties soon afterward. These four agencies combined in 1976 to form the Southern California APCD, which was later replaced by the South Coast Air Quality Management District, the Mojave Desert AQMD, (which covers the Mojave Desert Air Basin except for the portion within the South Coast Air District in the eastern portion of Riverside County), and the Antelope Valley APCD (which covers portions of Los Angeles County not within the South Coast Air Basin).

The South Coast Air Quality Management District (District) was established by state legislation effective February 1, 1977, and was assigned jurisdiction over air quality in the South Coast Air Basin (Basin). The Basin includes all of Orange County and the non-desert areas of Los Angeles, Riverside, and San Bernardino Counties. The District is also responsible for air quality in the Riverside County portion of the Salton Sea Air Basin (SSAB), which is primarily the Coachella Valley. The region encompassed by the District is shown in Figure 1-1.

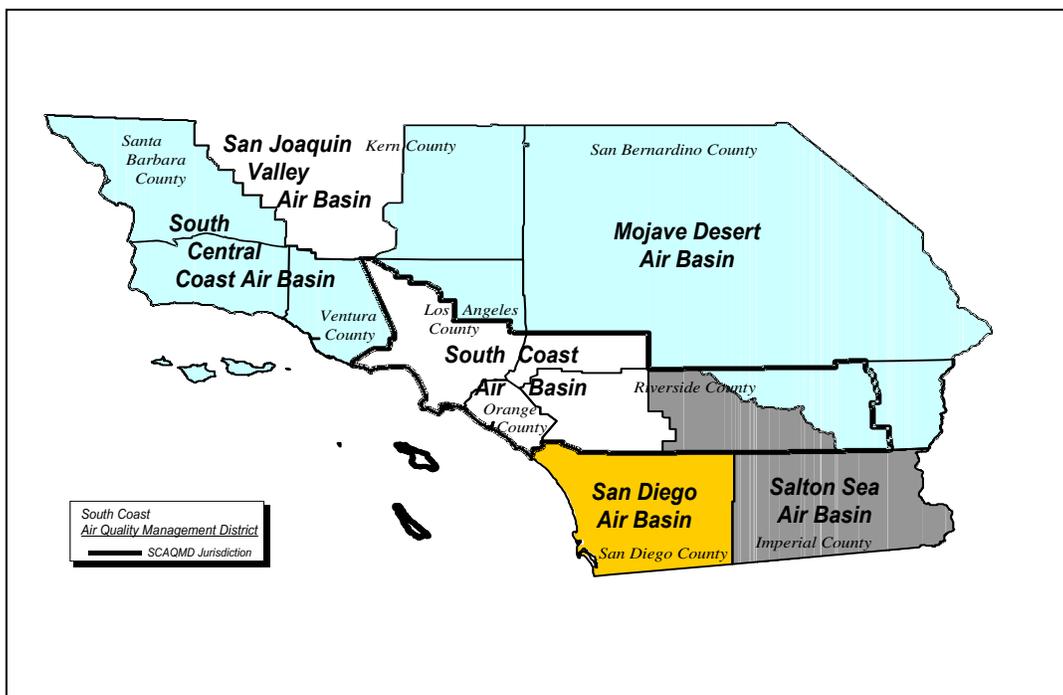


FIGURE 1-1

South Coast Air Quality Management District and Surrounding Jurisdictions

The Basin has an area of 6,800 square miles with a population of approximately 16 million people in 2011. The Los Angeles urban area (the nation's second largest), the Anaheim-Fullerton urban area, and the Riverside-San Bernardino urban area lie within the Basin's boundaries. About two-thirds of the Basin's population lives within Los Angeles County. The 2011 population in the Riverside county portion of the SSAB portion under the jurisdiction of the District was approximately 450,000. The District also has the jurisdiction over a small portion of the MDAB in Eastern Riverside County (see Figure 1-1). The area is sparsely populated desert and contains a portion of Joshua Tree National Park. Table 1-1 summarizes the historic, current and future projections of the population of the Basin and the Coachella Valley.

TABLE 1-1
Historic Population and Projections for South Coast Air Basin and Coachella Valley

Area	1980	1990	2000	2010	2020	2030
South Coast Air Basin	10,500,000	13,022,000	14,681,000	15,759,412	16,901,492	18,129,690
Coachella Valley	139,000	267,000	320,892	439,357	558,321	710,430

The SSAB and the Mojave Desert Air Basin (MDAB) have a combined area of approximately 32,200 square miles. The two Basins include the desert portions of Los Angeles, Riverside, and San Bernardino Counties, as well as Imperial County and part of Kern County.

In 2011, the District maintained a network of 33 regular air monitoring stations² in the Basin and two in the Coachella Valley area. In addition, six monitors measure source-specific lead near emissions sources. Figure 1-2 shows the locations of the ambient air monitoring stations along with the District boundaries. PM_{2.5} monitoring has been significantly increased throughout the District in recent years, using both Federal Reference Method (FRM) filter measurements and continuous measurements for real-time data. Table A-1 and Figure A-1 in the Attachment to Appendix II also show the District's current ambient air monitoring network.

² Not all criteria pollutants are measured at every station.

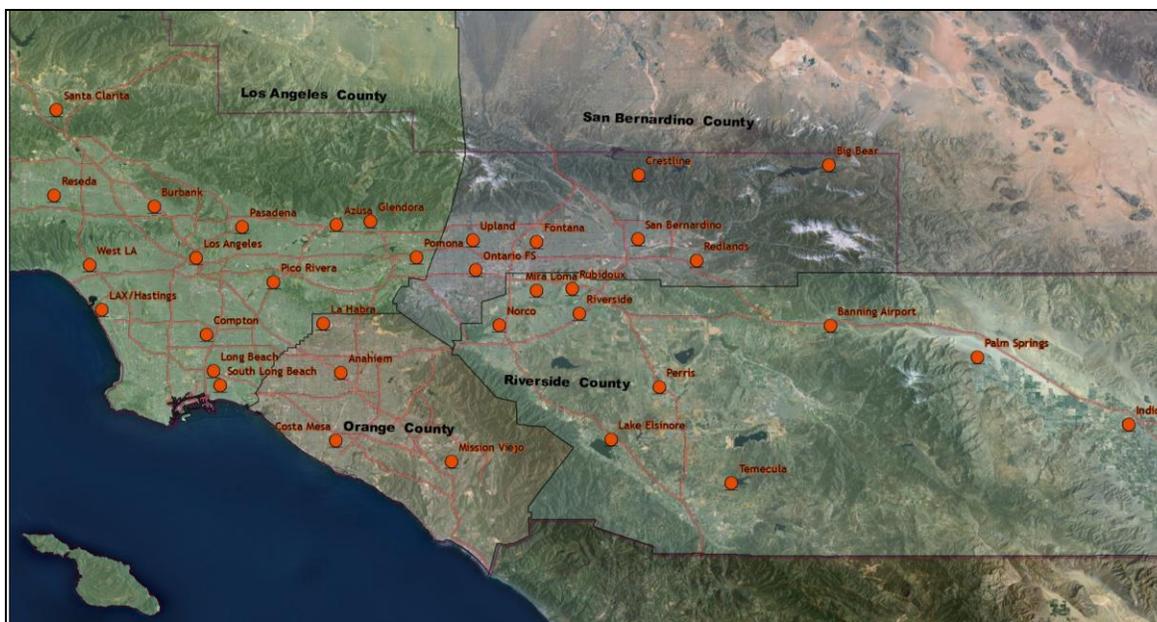


FIGURE 1-2

South Coast Air Quality Management District Ambient Air Monitoring Stations in 2011

Weather Factors

The climate of the District varies considerably between the coastal zone, inland valleys, mountain areas and deserts. Most of the Basin is relatively arid, with very little rainfall and abundant sunshine during the summer months. It has light winds and poor vertical mixing compared to other large urban areas in the U.S. The combination of poor air dispersion and abundant sunshine provides conditions especially favorable to the formation of photochemical smog and the trapping of particulates and other pollutants. The Basin is bounded to the north and east by mountains with maximum elevations exceeding 10,000 feet. The unfavorable combination of meteorology, topography, and emissions from the nation's second largest urban area results in the Basin having some of the worst air quality in the U.S.

The prevailing daytime sea breeze tends to transport pollutants and precursor emissions from coastal areas into the Basin's inland valleys, and from there, still further inland into neighboring areas of the SSAB, as well as the MDAB. Concentrations of primary pollutants (those emitted directly into the air) are typically highest close to the sources which emit them. However, secondary pollutants (those formed in the air by chemical reactions, such as ozone and the majority of PM_{2.5}) reach maximum concentrations some distance downwind of the sources that emit the precursors, due to the fact that the

polluted air mass is moved inland by the prevailing winds many miles to areas where maximum concentrations are reached.

Emissions

The quantity of each of the major pollutants emitted into the atmosphere of the Basin in 2008 is shown in Figure 1-3 (in thousands of Tons per Day). The year 2008 emissions are the base year emissions used for the Draft Final 2012 AQMP. In that year, the Basin's annual average daily emissions were approximately 2880 tons of CO, 593 tons of volatile organic compounds (VOC), 754 tons of oxides of nitrogen (NO_x), 54 tons of oxides of sulfur oxides (SO_x), 170 tons of PM10, and 80 tons of PM2.5. Figure 1-4 shows the amount of each of the major pollutants emitted into the atmosphere in the Coachella Valley (in Tons per Day). These are much lower than those emitted in the Basin, by a factor of 10 to over 350, depending on the pollutant. The difference in local emissions between these two areas and the prevailing wind flows illustrate the importance of pollutant transport to the Coachella Valley's air quality.

Additional PM10 and PM2.5 material forms through chemical reactions of gaseous precursor emissions. Most emissions vary relatively little by season, but there are large seasonal differences in the atmospheric concentrations of pollutants due to seasonal variations in the weather. VOCs and NO_x are precursors of ozone, and they also react to form nitrates and solid organic compounds, which are a significant fraction of the ambient particulate matter. SO₂ reacts to form sulfates which are also significant contributors to the Basin's PM10 and PM2.5 levels. In addition to the particulates formed by the reaction of gaseous precursors, there is directly emitted PM10 and PM2.5, most of which is attributed to fugitive dust sources such as re-entrained road dust, construction activities, farming operations and wind-blown dust but also includes other directly-emitted substances such as diesel particulate. Details of the 2008 base year and future-year projected emissions inventories are contained in Chapter 3 and Appendix III.

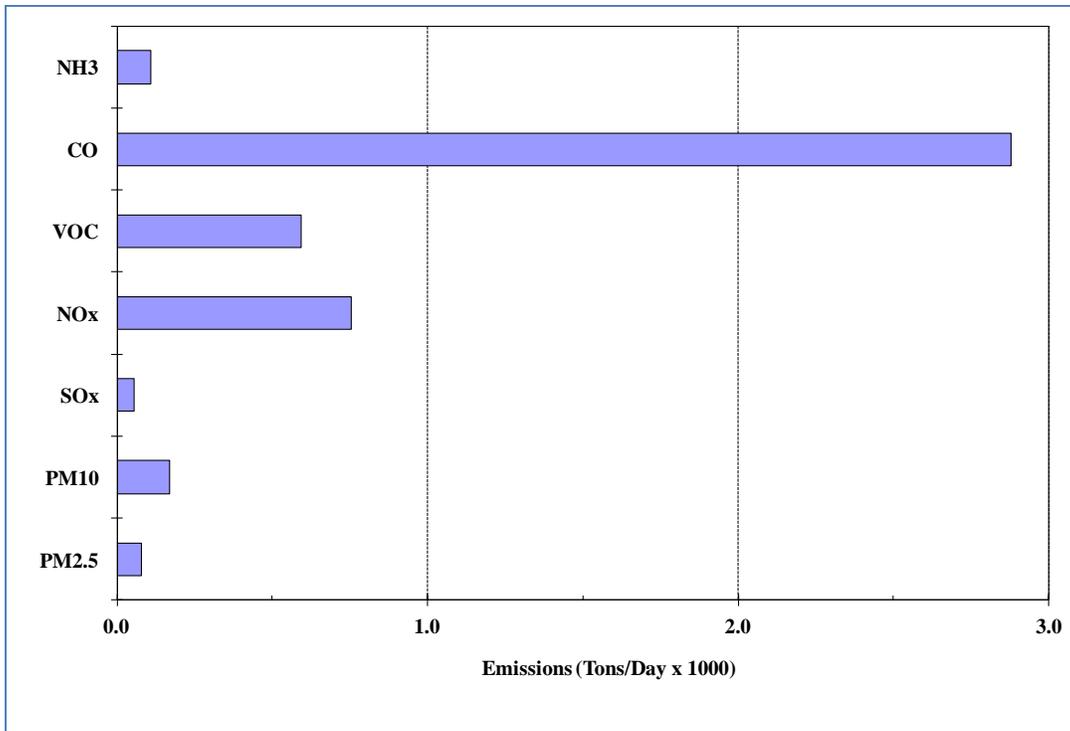


FIGURE 1-3
2008 South Coast Air Basin Average Daily Emissions (Thousand Tons per Day)

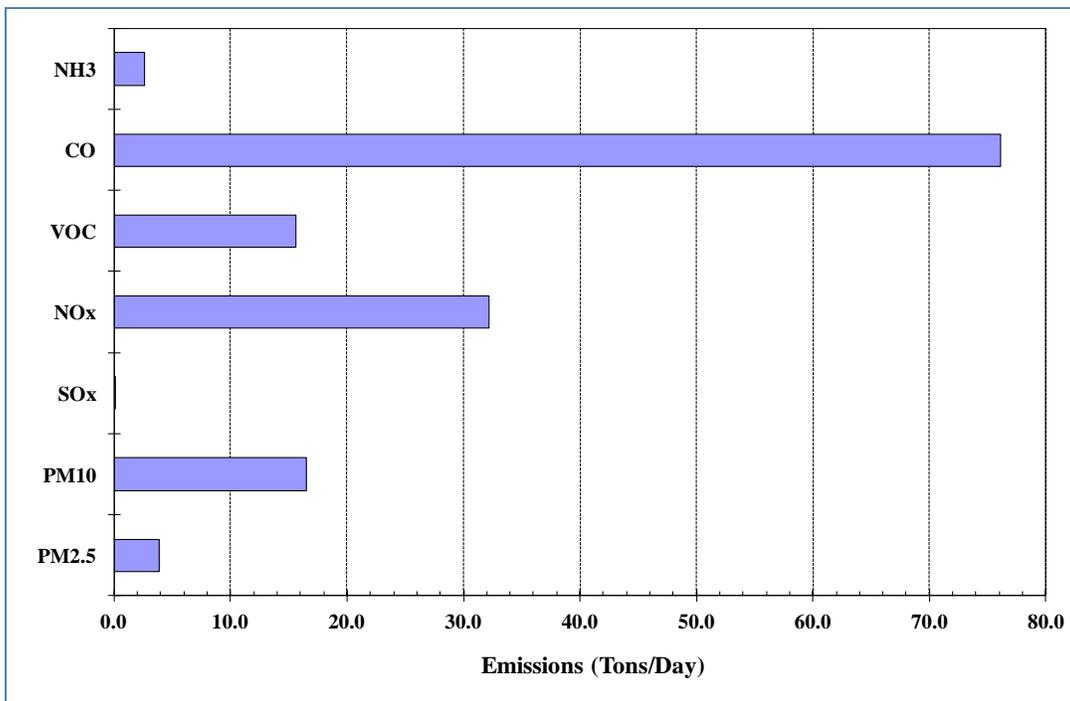


FIGURE 1-4
2008 Coachella Valley Average Daily Emissions (Tons per Day)

AMBIENT AIR QUALITY STANDARDS

Both the federal government and the State of California have adopted ambient air quality standards, which define the concentration below which long-term or short-term exposure to a pollutant is not expected to cause adverse effects to public health and welfare. The criteria pollutants, those that have health-based standards, are: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), coarse and fine particulate matter (PM₁₀ and PM_{2.5}, respectively), lead (Pb), and sulfate (SO₄²⁻, California only). California also has a welfare-based standard for visibly-reducing particles. In 2011, the District monitored ambient air quality for criteria pollutants at 35 routine monitoring sites throughout the Basin and in the neighboring Coachella Valley in the Riverside county portion of the Salton Sea Air Basin (SSAB), plus six additional source-specific lead monitors.

For several National Ambient Air Quality Standards (NAAQS), there are both primary and secondary standards. Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. This document focuses on the primary federal standards. The federal and state primary standards are summarized in Table 1-2, along with a brief summary of health effects. Further discussion of the health effects of air pollutants is presented in Chapter 2 and more detailed health information is presented in Appendix I.

TABLE 1-2
Current Primary Ambient Air Quality Standards and Health Effects

Air Pollutant	State Standard	Federal Standard (NAAQS)	Relevant Health and Welfare Effects [#]
	Concentration, Averaging Time	Concentration, Averaging Time	
Ozone (O₃)	0.09 ppm, 1-Hour 0.070 ppm, 8-Hour	0.075 ppm, 8-Hour (2008) 0.08 ppm 8-Hour (1997)	(a) Pulmonary function decrements and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) <u>Vegetation damage</u> ; (f) <u>Property damage</u>
Carbon Monoxide (CO)	20 ppm, 1-Hour 9.0 ppm, 8-Hour	35 ppm, 1-Hour 9 ppm, 8-Hour	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide (NO₂)	0.18 ppm, 1-Hour 0.030 ppm, Annual	100 ppb, 1-Hour 0.053 ppm, Annual	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) <u>Contribution to atmospheric discoloration</u>
Sulfur Dioxide (SO₂)	0.25 ppm, 1-Hour 0.04 ppm, 24-Hour	75 ppb, 1-Hour	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM₁₀)	50 µg/m ³ , 24-Hour 20 µg/m ³ , Annual	150 µg/m ³ , 24-Hour	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; (c) Increased risk of premature death
Suspended Particulate Matter (PM_{2.5})	12.0 µg/m ³ , Annual	35 µg/m ³ , 24-Hour 15.0 µg/m ³ , Annual	
Sulfates-PM₁₀ (SO₄²⁻)	25 µg/m ³ , 24-Hour	N/A	(a) Decrease in lung function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) <u>Vegetation damage</u> ; (e) <u>Degradation of visibility</u> ; (f) <u>Property damage</u>
Lead (Pb)	1.5 µg/m ³ , 30-day	0.15 µg/m ³ , 3-month rolling	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount such that the extinction coefficient is greater than 0.23 inverse kilometers at relative humidity less than 70 percent, 8-hour average (10am - 6pm)	N/A	<u>Visibility impairment</u> on days when relative humidity is less than 70 percent

ppm – parts per million by volume

ppb – parts per billion by volume

State standards are “not-to-exceed” values; Federal standards follow the design value form of the NAAQS

[#] More detailed health effect information can be found in the 2012 AQMP Appendix I or the U.S. EPA NAAQS documentation at <http://www.epa.gov/ttn/naaqs/>

Design Values

Air quality statistics can be presented in terms of the maximum concentrations measured at monitoring stations or in air basins, as well as for the number of days exceeding state or federal standards. These are instructive in regard to trends and the effectiveness of control programs. However, it should be noted that an exceedance of the concentration *level* of a federal standard does not necessarily lead to a violation of the NAAQS or that lead to a nonattainment designation. The form of the standard as defined by the federal NAAQS regulations must also be considered. For 24-hour PM_{2.5}, the *form* of the standard is the 98th percentile measurement of all the 24-hour PM_{2.5} samples at each station. For 8-hour O₃, the 4th highest measured 8-hour average concentration is used for each station. For NAAQS attainment/nonattainment decisions, the most recent 3 years of data are considered, along with the form of the standard, and are typically averaged to calculate a *Design Value* for each station. The overall design value for an air basin is the highest design value of all the stations in that basin. U.S. EPA also allows certain data to be flagged and not considered for NAAQS attainment status, when that data is influenced by exceptional events, such as high winds, wildfires, volcanoes, or some cultural events (Independence Day fireworks) that meet strict criteria. Table 1-3 shows the design value requirements utilizing the form of the federal standards for the federal criteria pollutants.

TABLE 1-3
Primary National Ambient Air Quality Standards (NAAQS) and Design Value Requirements

Pollutant	Averaging Time	Standard Level	Design Values and Form of Standards*
Ozone (O₃)	1-Hour** (1979)	0.12 ppm	Not to be exceeded more than once per year averaged over 3 years
	8-Hour (1997)	0.08 ppm	Annual fourth highest 8-hour average concentration, averaged over 3 years
	8-Hour (2008)	0.075 ppm	Annual fourth highest 8-hour average concentration, averaged over 3 years
Carbon Monoxide (CO)	1-Hour	35 ppm	Not to be exceeded more than once a year
	8-Hour	9 ppm	
Nitrogen Dioxide (NO₂)	1-Hour	100 ppb	Three-year average of the annual 98 th percentile of the daily maximum 1-hour average concentrations (rounded)
	Annual	0.053 ppm	Annual average concentration, averaged over 3 years
Sulfur Dioxide (SO₂)	1-Hour	75 ppb	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	24-Hour [#]	0.14 ppm	Not to be exceeded more than once per year
	Annual [#]	0.03 ppm	Annual arithmetic average
Particulate Matter (PM₁₀)	24-Hour	150 µg/m ³	Not to be exceeded more than once per year averaged over 3 years
	Annual**	50 µg/m ³	Annual average concentration, averaged over 3 years
Particulate Matter (PM_{2.5})	24-Hour	35 µg/m ³	Three-year average of the annual 98 th percentile of daily 24-hour concentration
	Annual	15.0 µg/m ³	Annual average concentration, averaged over 3 years
Lead (Pb)	3-Month Rolling ^{###}	0.15 µg/m ³	Highest rolling 3-month average of the three years

* Standard is attained when the design value (form of concentration listed) is equal to or less than the NAAQS; for pollutants with the design values based on “exceedances” (1-hour O₃, 24-hour PM₁₀, CO, and 24-hour SO₂), the NAAQS is attained when the concentration associated with the design value is less than or equal to the standard:

- For 1-hour O₃ and 24-hour PM₁₀, the standard is attained when the 4th highest daily concentrations of the 3-year period is less than or equal to the standard
- For CO and 24-hour SO₂, the standard is attained when the 2nd highest daily concentration of the most recent year is equal to or less than the standard

** Standard has been revoked. For 1979 1-hour O₃, nonattainment areas have some continuing obligations under the former 1979 standard. For 8-hour O₃, the standard has been lowered from (0.08 ppm to 0.075 ppm), but the 1997 O₃ standard and most related implementation requirements remain in place until further action by U.S. EPA

Annual and 24-hour SO₂ NAAQS will be revoked one year from attainment designations for the new (2010) 1-hour SO₂ standard

3-month rolling Pb averages of the first year (of the three year period) include November and December monthly averages of the prior year. The 3-month average is based on the average of “monthly” averages

Summary of Criteria Pollutants and Air Quality Standards

Ambient air quality standards are periodically reviewed by U.S. EPA and state agencies to incorporate the findings from the most current research available on the effects of pollutants. Alert and advisory levels for advising the public about unhealthful air quality are also recommended. The section below summarizes the pollutant properties and health information, along with the air quality standards, including the recently revised or newly established standards and recently proposed revisions of the particulate NAAQS. Further discussion of the health effects of air pollutants is presented in Chapter 2 and more detailed health effects information is presented in Appendix I.

Particulate Matter Properties

Particulate matter (PM) air pollution is a complex mixture of small particles and liquid droplets, made up of a number of components, including acids and salts (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. Particles originate from a variety of anthropogenic mobile and stationary sources and from natural sources. These particles can be emitted directly or formed in the atmosphere by transformations of gaseous emissions, such as sulfur oxides (SO_x), nitrogen oxides (NO_x), ammonia (NH₃) and volatile organic compounds (VOC). Examples of secondary particle formation include: 1) conversion of SO_x and NO_x to acid droplets or vapor that further react with ammonia to form ammonium sulfate and ammonium nitrate; and 2) reactions involving gaseous VOC, yielding organic compounds that condense on existing particles to form secondary organic aerosol (SOA) particles.

The size of particles is directly linked to their potential for causing health problems. Particles that are 10 micrometers (µm) in diameter or smaller (PM₁₀) are of more concern than larger particles because those are the particles that generally pass through the throat and nose and enter the lungs. (A µm is 1/1000th of a millimeter; there are 25,400 micrometers in an inch.) Once inhaled, these particles can affect the heart and lungs and cause serious health effects. PM air pollution is typically grouped into two overlapping categories:

- *Inhalable coarse particles* (PM₁₀), such as those found near roadways and dusty industries, are smaller than 10 µm in diameter. PM₁₀ includes all PM_{2.5} particles;

- *Fine particles* (PM2.5), such as those found in smoke and haze, are 2.5 μm in diameter and smaller. These particles can be directly emitted from combustion sources, such as from diesel exhaust (soot) or forest fire smoke, or they can form when gases emitted from power plants, industries and motor vehicles react in the air. PM2.5 is a subset of PM10 particles.

PM10 Properties

Respirable particles (particulate matter less than about 10 micrometers in diameter) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis, and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to PM10.

PM10 particles are both directly emitted and formed chemically in the atmosphere from diverse emission sources. Major sources of PM10 include re-suspended road dust or soil entrained into the atmosphere by wind or activities such as construction and agriculture. These are mainly the coarser particles, in the PM10-PM2.5 coarse fraction range (often referred to as PM-Coarse, i.e., particles in the size range between 2.5 μm and 10 μm). Other components of PM10 form in the atmosphere (secondary PM10) from gaseous precursor emissions. These are mostly the smaller particles, mainly in the PM2.5 size range.

PM2.5 Properties

PM2.5, also known as fine particles, are the finer sized particles less than 2.5 μm in diameter, small enough to penetrate the defenses of the human respiratory system and lodge in the deepest recesses of the lung, causing potential adverse health impacts. The health effects include increased risks of heart attacks and strokes, aggravated asthma, acute bronchitis and chronic respiratory problems such as shortness of breath and painful breathing (in children, the elderly and sensitive people), and premature deaths (mainly in the elderly due to weaker immune systems). Sources of PM2.5 include diesel-powered vehicles such as buses and trucks, fuel combustion from automobiles, power plants, industrial processes, and wood burning.

In the Basin, much of the PM10 fraction is actually PM2.5 and smaller in size than 2.5 μm , a situation which has major implications for both health and atmospheric visibility. Reducing PM2.5 concentrations will therefore not only reduce the threat to the health of the Basin's population, but will also improve visibility in this region.

Total Suspended Particulate (TSP) Properties

Total suspended particulate (TSP) is the name applied to the complex mixture of particles suspended in the atmosphere, with no strict differentiation for particle size. TSP is collected on a glass fiber filter by means of a high volume sampler. Samples are collected for a 24-hour period every sixth day, and then returned to the District laboratory to be weighed for mass and chemically analyzed to determine the concentrations of sulfate, nitrate, and lead. The federal and state standards for lead are based on the analysis of TSP samples. In 2011, TSP samples were collected by the District at 14 sites. In addition, the District measured TSP lead at several source-specific sites in the vicinity of facilities known to emit lead, in order to comply with recent federal requirements to monitor those sources. The lead measurements throughout the Basin are detailed further at the end of this Chapter. Other than the specific health effects of lead, the fine fraction of TSP has greater effects on health and visibility than the coarse fraction. Of greatest concern to public health are the particles small enough to be inhaled into the lungs (PM₁₀) and especially the smaller fine particles that are inhaled more deeply into the lungs (PM_{2.5}). As a result the federal standard for TSP mass has been replaced with the PM₁₀ and PM_{2.5} standards.

Particulate Matter (PM) Air Quality Standards

PM₁₀ Air Quality Standards

In 1987, U.S. EPA adopted PM₁₀ standards, replacing the earlier TSP standard. The District began PM₁₀ monitoring in late 1984. U.S. EPA promulgated both a short-term 24-hour average standard (150 µg/m³)³ and an annual standard (50 µg/m³). Over the years, the forms and levels of the federal PM₁₀ standards were reviewed by U.S. EPA. Changes to the federal standards for PM₁₀ became effective on December 17, 2006. U.S. EPA first proposed to revise the 24-hour PM₁₀ standard by establishing a new indicator for coarse particles (particles generally between 2.5 and 10 µm in diameter, PM_{10-2.5}), to include PM_{10-2.5} that is mainly generated by resuspended dust from high-density traffic on paved roads, industrial sources, and construction sources; but specifically excluding PM_{10-2.5} that is generated by rural windblown dust and soils and by agricultural and mining sources. U.S. EPA proposed to set the PM_{10-2.5} standard at a level of 70 µg/m³. However, the coarse particle standard was not included as part of the final regulation which retained the 24-hour PM₁₀ standard (150 µg/m³). U.S. EPA also revoked the annual PM₁₀ standard due to a cited lack of evidence of adverse health

³ µg/m³ = micrograms per cubic meter

effects linked to long-term exposure to coarse particles, beyond that already protected against by the PM_{2.5} annual standard. As part of the revision to the ambient air monitoring regulations in 2006, PM_{10-2.5} monitoring was required at National Core (NCore) multi-pollutant monitoring stations by January 1, 2011. Currently, the District measures PM_{10-2.5} at two NCore PM monitoring sites in the Basin (Central Los Angeles and Riverside-Rubidoux). In the most recent review of the PM standards completed in June of 2012, U.S. EPA did not propose changes to the PM₁₀ standard.

PM_{2.5} Air Quality Standards

In 1997, U.S. EPA adopted new federal air quality standards for the subset of fine particulate matter, PM_{2.5}, to complement existing PM₁₀ standards that target the full range of inhalable particulate matter. The District began monitoring PM_{2.5} concentrations in 1999. Federal annual and 24-hour standards and a state annual standard for PM_{2.5} were established. In 2006, U.S. EPA significantly lowered the level of the 24-hour PM_{2.5} standard, from 65 $\mu\text{g}/\text{m}^3$ to 35 $\mu\text{g}/\text{m}^3$, while retaining the level of the annual PM_{2.5} standard at 15 $\mu\text{g}/\text{m}^3$.

In the 2006 PM NAAQS review, U.S. EPA determined that individuals with pre-existing heart and lung diseases, older adults, and children are at greater risk from the effects associated with fine PM exposures. Based on the results of the previous studies and an extensive new body of scientific evidence that links the negative health impacts of PM_{2.5} exposure on these and possibly additional sensitive subpopulations (e.g., fetuses (unborn babies), newborns, and genetically susceptible populations) at lower levels than previously understood, U.S. EPA has proposed to strengthen the annual PM_{2.5} standard. On June 14, 2012 U.S. EPA proposed a lower annual standard with a concentration range between 12 and 13 $\mu\text{g}/\text{m}^3$. The current 24-hour standard of 35 $\mu\text{g}/\text{m}^3$ is proposed to remain unchanged. In addition, U.S. EPA proposed a requirement for near-roadway PM_{2.5} monitoring in urban areas. They also proposed adjustments to the Air Quality Index (AQI), which is used to report current and forecasted pollutant levels, to be consistent with the current 24-hour and new proposed annual PM_{2.5} standards. Final action on the proposed PM_{2.5} standard is anticipated by December 14, 2012.

For the 3-year (2009-2011) PM_{2.5} annual design value (the 3-year average of the annual PM_{2.5} averages), the Basin exceeded the current federal annual PM_{2.5} standard at only one location, (in Northwestern Riverside County at Mira Loma). Lowering the annual standard concentration to 13 or 12 $\mu\text{g}/\text{m}^3$ would have resulted in 6 to 10 additional stations exceeding the annual standard level in 2011. Figure 1-5 shows the effect of the

proposed annual PM2.5 standard on the Basin’s attainment status, based on the 2009-2011 annual PM2.5 design values.

Recently, ultrafine particles (UFP; diameter less than 0.1 µm) have received particular attention due to their ability to penetrate deep into the human respiratory tract, cross into the blood stream and other organs, and to cause adverse health effects in humans. However, UFPs are not currently regulated by the U.S. EPA (see Chapter 9 of the 2012 AQMP for additional details). Table 1-4 summarizes the history of the PM NAAQS to date.

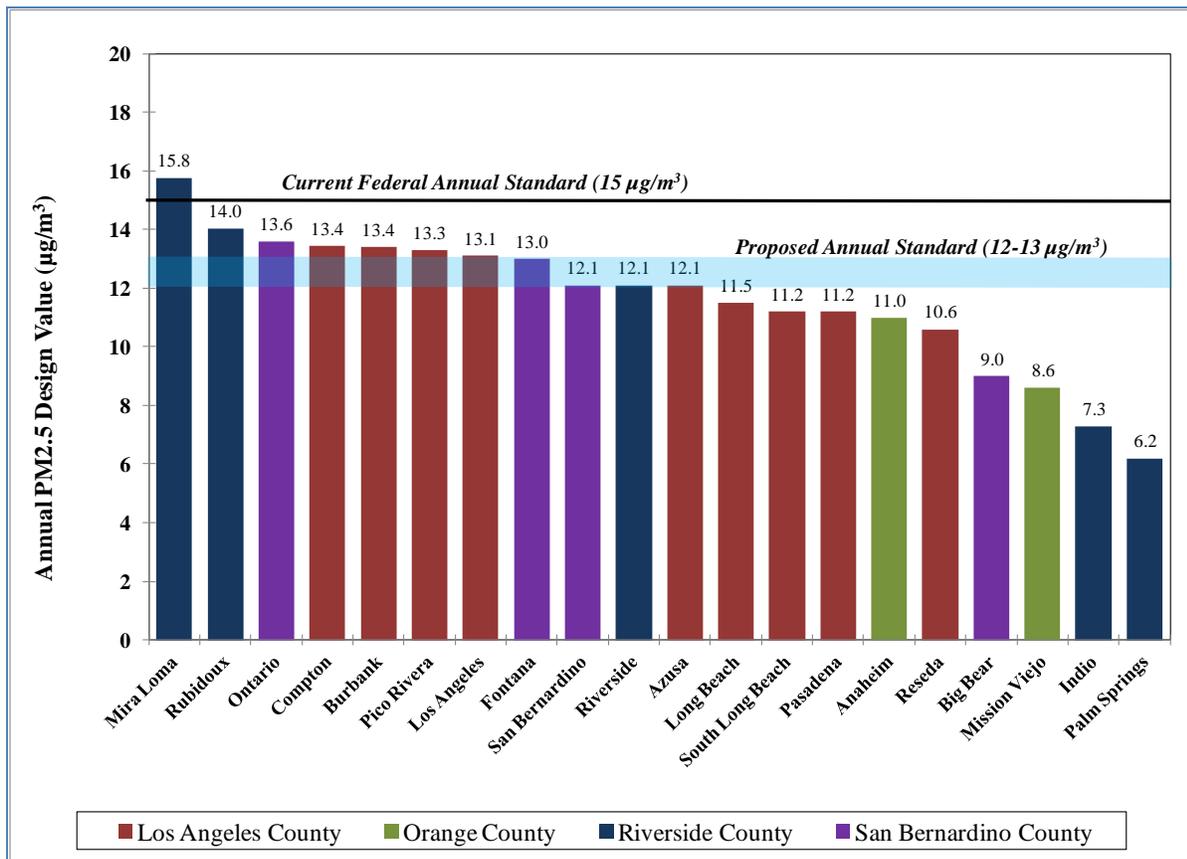


FIGURE 1-5

Annual PM2.5 3-Year (2009-2011) Design Values by Station Compared to Current and Proposed Federal Standards

TABLE 1-4
Summary of National Ambient Air Quality Standards (NAAQS) for Particulate Matter, 1971-
Present (with Proposed)

Year of Final Rule	Indicator	Averaging Time	Level ($\mu\text{g}/\text{m}^3$)
1971	TSP - Total Suspended Particles ($\leq 25\text{-}45 \mu\text{m}$)	24-hour	260
		Annual	75
1987	PM10	24-hour	150
		Annual	50
1997	PM2.5	24-hour	65
		Annual	15
	PM10	24-hour	150
		Annual	50
2006	PM2.5	24-hour	35
		Annual	15
	PM10	24-hour*	150
		Annual	(revoked)
2012 (proposed)	PM2.5	24-hour	35
		Annual	12-13**
	PM10	24-hour	150

* In the 1997 revision of the 24-hour PM10 standard, the form of the standard was revised to 99th percentile, averaged over 3 years. When the 1997 standards were vacated, the form of 1987 standards remained in place (not to be exceeded more than once per year averaged over 3 years).

** A lower PM2.5 annual standard was proposed by U.S. EPA on June 14, 2012, with comments solicited on a concentration range from 12 to 13 $\mu\text{g}/\text{m}^3$

Ozone Properties

The Basin's unique air pollution problem was first recognized in the 1940's. The Los Angeles urban area smog was worse than other areas. Early research showed that ozone was being formed in the Basin's atmosphere from VOCs and NO_x being emitted into the air in the presence of steady sunshine and trapped laterally by the mountainous terrain and vertically by strong low-altitude temperature inversions that act as a lid to vertical

mixing of air. Regular monitoring of total oxidants was begun by the Los Angeles Air Pollution Control District (LAAPCD) in the 1950's, and annual maximum 1-hour ozone concentrations in excess of 0.60 ppm (600 ppb) were recorded at that time.

Ozone (O₃), a colorless gas with a sharp odor at very high concentrations, is a highly reactive form of oxygen. High ozone concentrations exist naturally high above the earth in the stratosphere. Some mixing of stratospheric ozone downward to the earth's surface does occur; however, the extent of ozone transport from aloft is limited. At the earth's surface in sites remote from urban areas, ozone concentrations are normally very low (0.03-0.05 ppm).

In urban areas, ozone is formed by a complicated series of chemical and photochemical reactions between VOCs, NO_x, and the oxygen in the air. A decrease in ozone precursors may or may not result in a linear decrease in ozone. Ozone concentrations are dependent not only on overall precursor levels, but also on the ratio of the concentrations of VOCs to NO_x, the reactivity of the specific VOCs present, the spatial and temporal distribution of emissions, the level of solar radiation, and other weather factors.

While ozone is beneficial in the stratosphere because it blocks skin-cancer-causing ultraviolet radiation, it is a highly reactive oxidant. It is this reactivity which accounts for its damaging effects on materials, plants, and human health at the earth's surface.

The propensity of ozone to react with organic materials causes it to be damaging to living cells, and ambient ozone concentrations in the Basin are frequently sufficient to cause adverse health effects. Ozone enters the human body primarily through the respiratory tract and causes respiratory irritation and discomfort, makes breathing more difficult during exercise, and reduces the respiratory system's ability to remove inhaled particles and fight infection. People with respiratory diseases, children, the elderly, and people who exercise heavily are more susceptible to the effects of ozone.

Plants are sensitive to ozone at concentrations well below the health-based standards and ozone is responsible for significant crop damage and damage to forests and other ecosystems.

Ozone Air Quality Standards

Studies have shown that even relatively low concentrations of ozone, if lasting for several hours, can significantly reduce lung function in normal healthy people. Effective September 16, 1997, the U.S. Environmental Protection Agency (U.S. EPA) adopted an

8-hour average federal ozone standard with a level of 0.08 ppm (not to exceed), intending to replace the 1-hour standard that was adopted in 1979 (0.12 ppm, not to exceed). This 8-hour ozone standard was more stringent than the 1-hour standard (0.12 ppm) and provided greater protection to public health. The 8-hour standard is intended to help protect people who spend a significant amount of time working or playing outdoors, a group that is particularly vulnerable to the effects of ozone. (Due to the monitoring and reporting requirements of the older ozone standards, a level of 0.085 ppm or 85 ppb is required to exceed the 1997 8-hour standard and 0.125 ppm or 125 ppb is required to exceed the 1979 1-hour standard.)

The U.S. EPA eventually revoked the 1979 federal 1-hour ozone standard, effective June 15, 2005. However, the South Coast Air Basin and the former Southeast Desert Modified Air Quality Management Area (which included the Coachella Valley) had not attained the 1-hour federal ozone standard by the attainment date and have some continuing obligations under the former standard.

The 8-hour standard was subsequently lowered from 0.08 to 0.075 ppm (75 ppb, not to exceed, i.e., 76 ppb exceeds), effective May 27, 2008. However, nonattainment areas of the 1997 8-hour ozone standard still have some continuing obligations to demonstrate attainment of that standard by the applicable attainment date. In 2010, U.S. EPA proposed to lower the 8-hour ozone standard again and solicited comments on a proposed standard between 0.060 and 0.070 ppm. U.S. EPA did not take final action on a lower ozone standard and the NAAQS currently remains at the 0.075 ppm, as established in 2008. Potential new ozone standards are under review with proposed regulations expected by 2014. Statistics presented in this Appendix refer to both the current (2008) 8-hour standard and the former 1997 8-hour and 1979 1-hour standards for purposes of historical comparison and assessment of progress towards attainment of those standards.

The State of California Air Resources Board (CARB), established a new 8-hour average state ozone standard (0.070 ppm), effective May 17, 2006. The earlier state 1-hour ozone standard (0.09 ppm) also continues to remain in effect. Comparisons of the current (2008) and 1997 8-hour ozone standards, along with the former 1-hour ozone standard, for the Basin and the Coachella Valley can be found in Chapters 2 and 7.

While the 1-hour ozone episode levels and the related health warnings still exist, they are essentially replaced by the more protective health warnings associated with the current NAAQS. The 1-hour O₃ episode warning levels include the state Health Advisory (0.15 ppm), Stage 1 (0.20 ppm), Stage 2 (0.35 ppm) and Stage 3 (0.50 ppm). Only the lowest

of these 1-hour episode thresholds, the state Health Advisory, was exceeded in 2011. The last 1-hour O₃ Stage 1 episode occurred in 2003. The last Stage 2 episode occurred in 1988, and the last Stage 3 episode occurred in 1974.

CO Properties

Carbon monoxide (CO) is a colorless, odorless, relatively inert gas. It is a trace constituent in the unpolluted troposphere, and is produced by both natural processes and human activities. In remote areas far from human habitation, carbon monoxide occurs in air at an average background concentration of 0.04 ppm, primarily as a result of natural processes such as forest fires and the oxidation of methane. Global atmospheric mixing of CO from urban and industrial sources creates higher background concentrations (up to 0.20 ppm) near urban areas. The major source of CO in urban areas is incomplete combustion of carbon-containing fuels, mainly gasoline. In 2000, 98 percent of the CO emitted into the Basin's atmosphere was from mobile sources. Consequently, CO concentrations are generally highest in the vicinity of major concentrations of vehicular traffic. CO concentrations have continued to decrease due to reformulated fuels and more efficient combustion in newer vehicles.

As a primary pollutant, carbon monoxide is directly emitted into the air, and not formed in the atmosphere by chemical reaction of precursors as is the case with ozone and other secondary pollutants. Ambient concentrations of CO in the Basin exhibit large spatial and temporal variations, due to variations in the rate and locations at which CO is emitted, and in the meteorological conditions that govern transport and dilution. Unlike ozone, CO tends to reach high concentrations in the fall and winter months. The highest concentrations frequently occur on weekdays at times consistent with rush hour traffic and late at night during the coolest, most atmospherically stable portion of the day.

When carbon monoxide is inhaled in sufficient concentration, it can displace oxygen and bind with the hemoglobin in the blood, reducing the capacity of the blood to carry oxygen. Individuals most at risk from the effects of CO include heart patients, fetuses (unborn babies), smokers, and people who exercise heavily. Normal healthy individuals are affected at higher concentrations, which may cause impairment of manual dexterity, vision, learning ability, and performance of work. The results of studies concerning the combined effects of CO and other pollutants in animals have shown a synergistic adverse effect after exposure to CO and ozone.

CO Air Quality Standards

The state and federal CO standards have been reviewed recently, with no changes recommended. The CO standards are based on both short-term (1-hour; 35 ppm federal and 20 ppm state) and longer-term (8-hour; 9 ppm federal and 9.0 ppm state) exposures.

NO₂ Properties

Nitrogen dioxide (NO₂) is a reddish-brown gas with a bleach-like odor. Nitric oxide (NO) is a colorless gas, formed from nitrogen (N₂) and oxygen (O₂) in air under conditions of high temperature and pressure which are generally present during combustion of fuels; NO reacts with the oxygen in air to give NO₂. NO₂ is largely responsible for the brownish tinge of polluted urban air. The two gases, NO and NO₂, are referred to collectively as oxides of nitrogen (NO_x). In the presence of sunlight, NO₂ reacts to produce nitric oxide and an oxygen atom. The oxygen atom can react further to produce ozone, via a complex series of chemical reactions involving hydrocarbons (VOCs). NO₂ may also react to produce nitric acid (HNO₃) which reacts further to produce nitrates, which are a component of PM.

NO₂ is a respiratory irritant and reduces resistance to respiratory infection. Children and people with respiratory disease are most susceptible to its effects.

Nitrogen Dioxide Standards

U.S. EPA has established a new primary NO₂ 1-hour standard to supplement the existing annual standard, at a level of 100 ppb (based on the 3-year average of the annual 98th percentile of 1-hour daily maximum concentrations for each station). U.S. EPA has also established new requirements for the NO₂ monitoring network in large metropolitan areas that will include monitors at locations within 50 meters of major roadways. This near-source monitoring requirement is in addition to the ambient monitoring requirements to measure the area-wide NO₂ concentrations that occur more broadly across communities. This rule became effective on April 12, 2010. The 1971 annual NO₂ federal standard (0.053 ppm) remains in effect. Effective March 20, 2008, the California Air Resources Board (CARB) revised the state NO₂ 1-hour state standard from 0.25 ppm to 0.18 ppm, and established a new annual state standard of 0.030 ppm.

SO₂ Properties

Sulfur dioxide (SO₂) is a colorless gas with a sharp odor. It reacts in the air to form sulfuric acid (H₂SO₄), which contributes to acid deposition, and sulfates, which is a

component of PM10 and PM2.5. Most of the SO₂ emitted into the atmosphere is produced by the burning of sulfur-containing fuels.

At sufficiently high concentrations, sulfur dioxide affects breathing and the defenses of the lungs, and it can aggravate respiratory and cardiovascular diseases. Asthmatics and people with chronic lung disease or cardiovascular disease are most sensitive to its effects. Sulfur dioxide also causes plant damage, damage to materials, and acidification of lakes and streams.

Sulfur Dioxide Standards

U.S. EPA established a new 1-hour SO₂ standard at a level of 75 ppb, based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations and has revoked both the 24-hour and annual primary SO₂ standards, effective June 2, 2010.

Sulfate Properties

Sulfates are chemical compounds which contain the sulfate ion (SO₄²⁻) and are part of the mixture of solid materials which make up PM2.5, PM10 and TSP. Most of the sulfates in the atmosphere are produced by oxidation of sulfur dioxide. Oxidation of sulfur dioxide yields sulfur trioxide (SO₃) which reacts with water to produce sulfuric acid (H₂SO₄), which contributes to acid deposition. The reaction of sulfuric acid with basic substances such as ammonia yields sulfates, a component of PM.

Lead (Pb) Properties

Lead in the atmosphere is present as a mixture of a number of lead compounds. Leaded gasoline and lead smelters had historically been the main Basin sources of lead emitted into the air. Due to the phasing out of leaded gasoline, there has been a dramatic reduction in atmospheric lead in the Basin over the past three decades.

Lead Standards

The national standard for Lead (Pb) was revised on October 15, 2008 from a quarterly average of 1.5 µg/m³ to a rolling 3-month average of 0.15 µg/m³, with a maximum (not-to-be-exceeded) form, evaluated over a 3-year period (36 months). The current indicator of Pb in total suspended particles (Pb-TSP) was retained. The revision became effective on January 12, 2009.

U.S. EPA has also enhanced the Pb monitoring requirements in its 2008 NAAQS revisions, requiring air monitoring near Pb sources with potential 3-month average Pb concentration exceeding the revised standard of $0.15 \mu\text{g}/\text{m}^3$. Pb monitoring is required in large urban areas with monitors located to measure Pb concentrations in areas impacted by resuspended dust from roadways, nearby industrial sources identified as significant Pb sources, hazardous waste sites, construction and demolition projects, or other fugitive dust sources of Pb. Following a petition in 2009, U.S. EPA revised the monitoring requirements, lowering the emission threshold at which monitoring is required for both source-oriented and large urban area-based non-source oriented monitoring. The monitoring revision became effective in January 2011. In 2011, the District's Pb monitoring network included 10 regular monitoring sites and an additional five source-specific sites, one of which exceeded the revised Pb standard (at a lead source in the City of Vernon, Los Angeles County). A separate Pb SIP addressing the 2008 Pb standard was submitted to U.S. EPA in June 2012.

Chapters 2 and 3 contain summaries of air quality in the South Coast Air Basin (Basin), and the Riverside County (Coachella Valley) portion of the Salton Sea Air Basin (SSAB), respectively. For ozone, PM10, and PM2.5, the pollutants for which the Basin is still designated as nonattainment of the federal standards, maps are presented which show the geographical air quality variability. Detailed air quality statistics for each of the District's monitoring locations in the Basin and SSAB are contained in the Attachment to this report, for the years 1995 through 2011. Please refer to Appendix II from the 2003 AQMP for the 1976-1989 prior-year statistics and to Appendix II from the 2007 AQMP for 1990-2005 data.

CHAPTER 2

AIR QUALITY IN THE SOUTH COAST AIR BASIN

Air Quality in the South Coast Air Basin

Violations of Standards

Design Values and NAAQS Attainment Status

Air Quality Compared to Other U.S. Metropolitan Areas

Air Quality Trends

Spatial and Temporal Variability

Pollutant-Specific Air Quality Discussion

Particulate Matter (PM)

Ozone (O₃)

Nitrogen Dioxide (NO₂)

Carbon Monoxide (CO)

Sulfur Dioxide (SO₂)

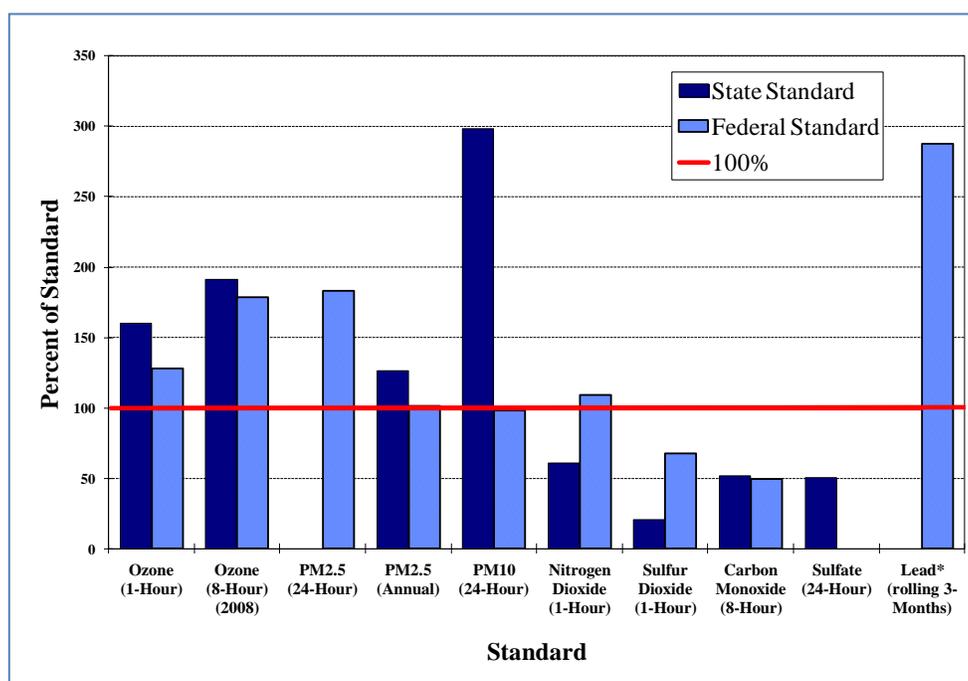
Sulfate (SO₄²⁻)

Lead (Pb)

AIR QUALITY IN THE SOUTH COAST AIR BASIN

Violations of Standards

In the South Coast Air Basin (Basin), the maximum pollutant concentrations measured at District monitoring stations in 2011 exceeded the levels of the federal and state standards for ozone (O₃), PM_{2.5}, nitrogen dioxide (NO₂), and lead (Pb). In the year 2011, a total of 125 days exceeded the levels of the current short-term (24-hour average or less) federal standards for 8-hour O₃, 1-hour NO₂, or 24-hour PM_{2.5} at one or more Basin locations. As discussed below, the NO₂ reading did not cause a “violation” of the standard. The more stringent state 8-hour O₃ or 24-hour PM₁₀ standards were exceeded on 137 days (based on the FRM filter data for PM₁₀, which is not sampled every day). While the Basin exceeded the state annual and 24-hour PM₁₀ standards, it did not exceed the 24-hour federal standard. The federal and state annual PM_{2.5} standards were exceeded in the Basin in 2011, with only one station exceeding the federal standard. While the state PM₁₀ annual standard was exceeded, the revoked federal annual PM₁₀ standard was not. The other criteria pollutants, sulfur dioxide (SO₂), carbon monoxide (CO), and sulfate (SO₄²⁻) did not exceed federal or state standards. Figure 2-1 shows the Basin maximum pollutant concentrations for 2011, as a percentage of the federal and state standards.



* High lead concentrations recorded at monitoring sites adjacent to sources known to emit lead

FIGURE 2-1

2011 South Coast Air Basin Maximum Pollutant Concentrations
(as Percent of State and Federal Standards)

Design Values and NAAQS Attainment Status

As shown above, the Basin exceeded the pollutant concentration levels defined by the National Ambient Air Quality Standards (NAAQS) for ozone, PM_{2.5}, NO₂, and Pb. However, attainment of the NAAQS is measured with the three-year design values that take into account the form of the federal standards and multi-year averages, as detailed previously in Table 1-3. The exceedances of the NO₂ standard level on one day in 2011 at two stations did not constitute a violation of the NAAQS or affect the Basin’s NO₂ designation. The Basin did not exceed the federal standard for PM₁₀ in 2011, or any year since 2008; the exceedances in 2007 and 2008 were flagged in the U.S. EPA AQ database to request exclusion from attainment consideration under the U.S. EPA Exceptional Events Rule. Figure 2-2 shows the federal ozone and PM design value status for the Basin, along with the Coachella Valley, for the 2009-2011 3-year period. The current U.S. EPA NAAQS attainment designations for the Basin are presented in Table 2-1.

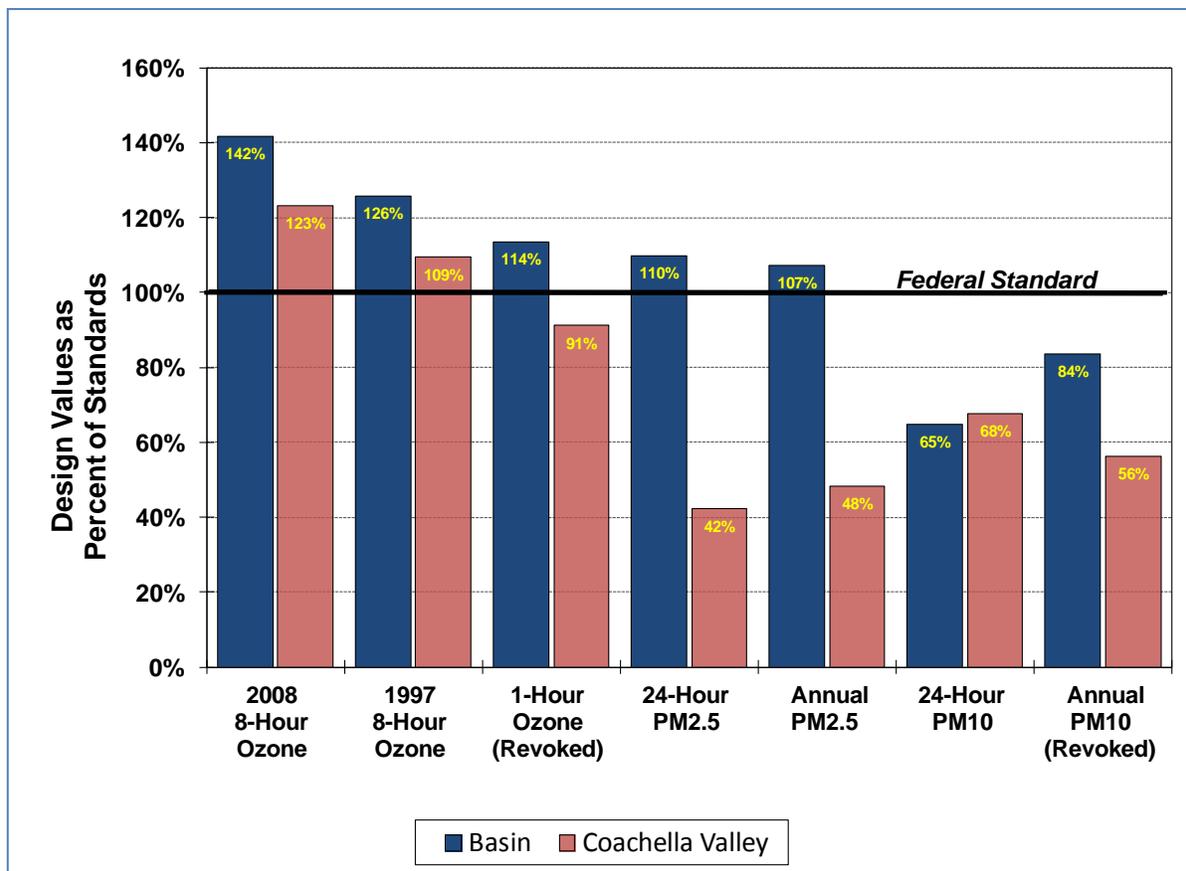


FIGURE 2-2
 South Coast Air Basin and Coachella Valley 3-Year (2009-2011) Design Values
 (Percentage of Federal Standards, by Criteria Pollutant)

TABLE 2-1
National Ambient Air Quality Standards (NAAQS) Attainment Status
South Coast Air Basin

Criteria Pollutant	Averaging Time	Designation ^{a)}	Attainment Date ^{b)}
1979 1-Hour Ozone^{c)}	1-Hour (0.12 ppm)	Nonattainment (Extreme)	11/15/2010 (not attained)
1997 8-Hour Ozone^{d)}	8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024
2008 8-Hour Ozone	8-Hour (0.075 ppm)	Nonattainment (Extreme)	12/31/2032
CO	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
NO₂^{e)}	1-Hour (100 ppb)	Unclassifiable/Attainment	N/A
	Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998
SO₂^{f)}	1-Hour (75 ppb)	Designations Pending	N/A
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	3/19/1979 (attained)
PM₁₀	24-hour (150 µg/m ³)	Nonattainment (Serious) ^{g)}	12/31/2006 (redesignation request submitted) ^{g)}
PM_{2.5}	24-Hour (35 µg/m ³)	Nonattainment	12/14/2014 ^{h)}
	Annual (15.0 µg/m ³)	Nonattainment	4/5/2015
Lead (Pb)	3-Months Rolling (0.15 µg/m ³)	Nonattainment (Partial) ⁱ⁾	12/31/2015

- a) U.S. EPA often only designates Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable
- b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration
- c) 1979 1-hour O₃ standard (0.12 ppm) was revoked, effective June 15, 2005 ; however, the Basin did not attain this standard based on 2008-2010 data and has continuing obligations under the former standard
- d) 1997 8-hour standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the 1997 O₃ standard and most related implementation rules remain in place until the 1997 standard is revoked by U.S. EPA
- e) New NO₂ 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO₂ standard retained
- f) The 1971 annual and 24-hour SO₂ standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO₂ 1-hour standard. Area designations are expected in 2013, with the Basin likely designated Unclassifiable /Attainment
- g) Annual PM₁₀ standard was revoked, effective December 18, 2006; redesignation request to attainment of the 24-hour PM₁₀ standard is pending with U.S. EPA
- h) Attainment deadline for the 2006 24-Hour PM_{2.5} NAAQS is December 14, 2014
- i) Pb partial nonattainment designation – Los Angeles County portion of the Basin only

Air Quality Compared to Other U.S. Metropolitan Areas

Despite significant improvement, the Basin still has some of the worst air quality in the nation in terms of the number of days per year exceeding the federal standards. In 2011, the U.S. location with the highest number of days over the federal 8-hour average ozone standard was located in the Basin (Central San Bernardino Mountains-Crestline, 84 days). The Basin exceeded the 24-hour average PM_{2.5} standard on multiple days, but the 98th percentile PM_{2.5} concentration (which is used to compare with the federal PM_{2.5} standard) exceeded the standard at one location only in Northwestern Riverside County (Mira Loma). The Basin did not exceed the federal 24-hour average and annual PM₁₀ standards in 2011.

Figures 2-3 and 2-4 show maximum pollutant concentrations in 2011 for the Basin compared to other urban areas in the U.S. and California, respectively. Maximum concentrations in all of these areas exceeded the 2008 federal 8-hour average O₃ standard. The annual PM_{2.5} standard was exceeded in the South Coast Air Basin and in one other California air basin (San Joaquin Valley). The 24-hour PM_{2.5} standard, however, was exceeded in a few of the other large U.S. urban areas and in many California air basins. The 24-hour PM₁₀ standard was exceeded in one of the U.S. urban areas shown (Phoenix), although potential flagging of exceptional events may affect the treatment of that data. It is important to note that maximum pollutant concentrations do not necessarily indicate potential NAAQS violations and subsequent nonattainment designations, as the design values that are used for attainment status are based on the form of the standard.

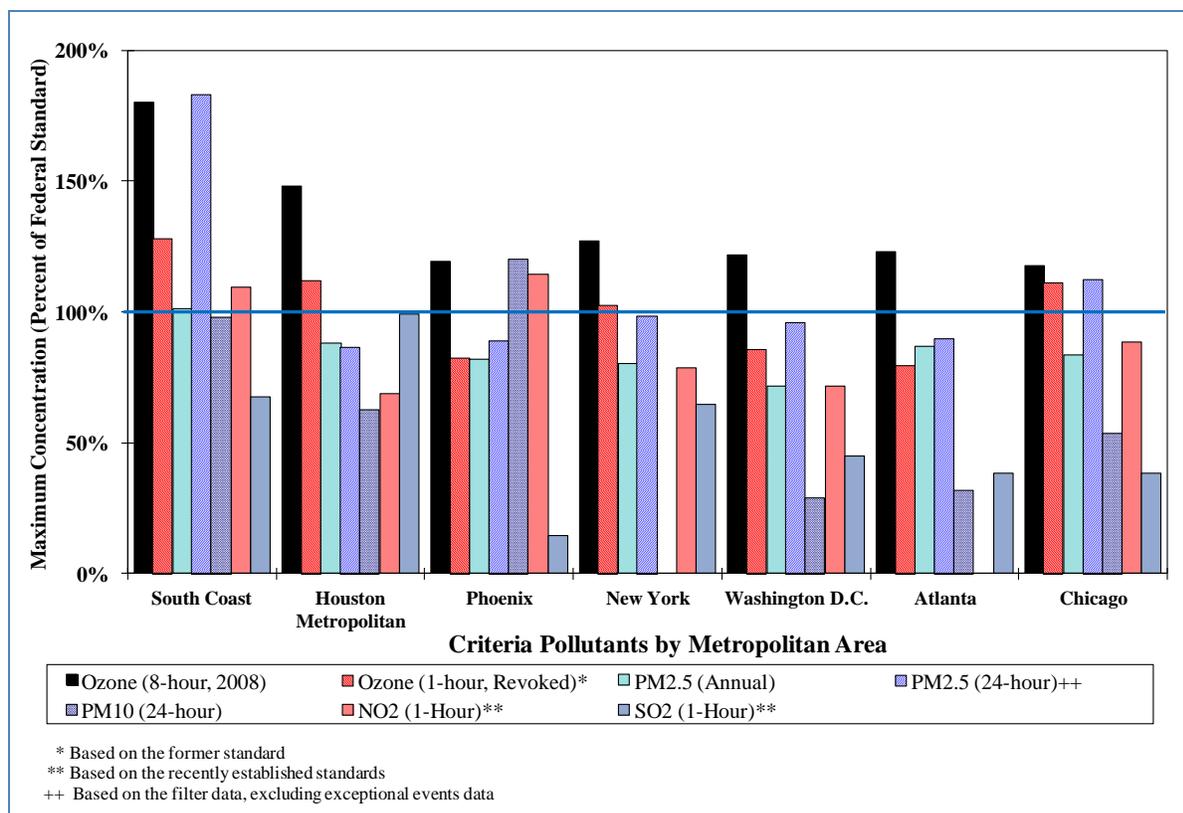


FIGURE 2-3
 2011 South Coast Air Basin Air Quality Compared to Other U.S. Urban Areas
 (Maximum Pollutant Concentrations as Percentages of the Corresponding Federal Standards)

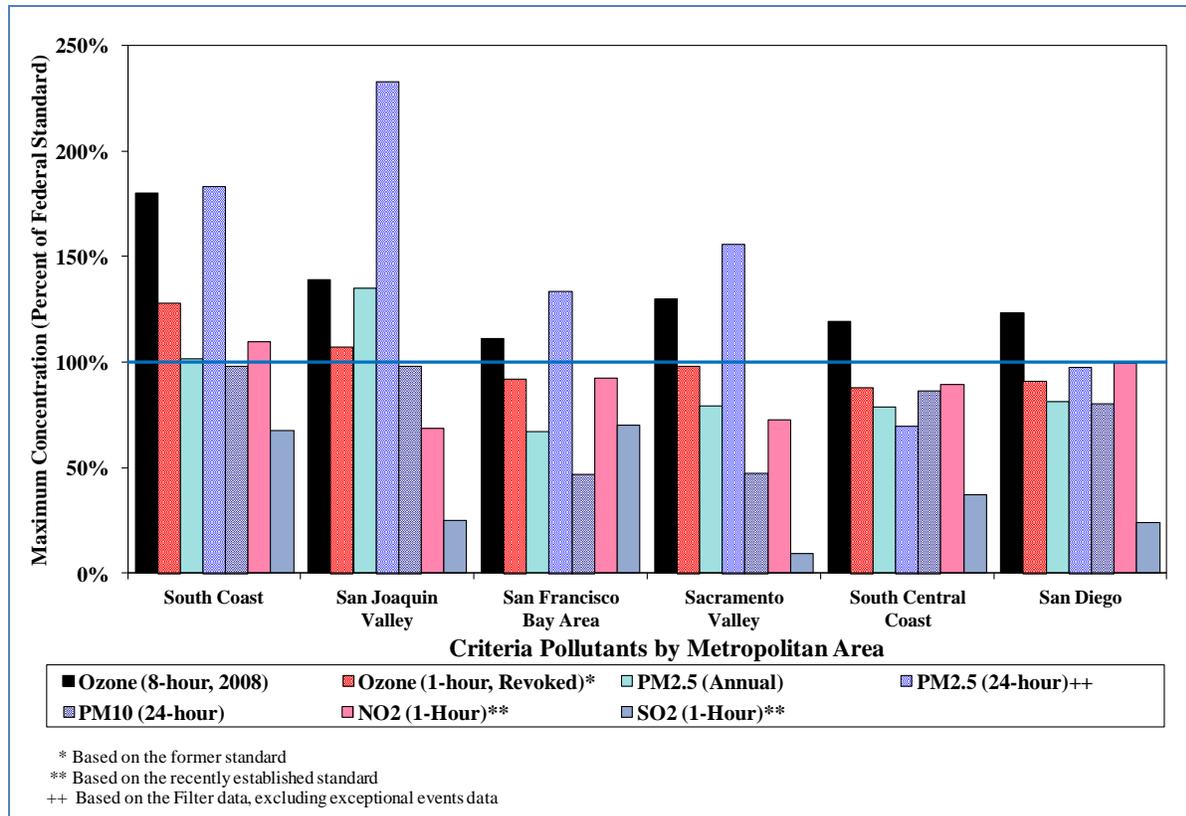


FIGURE 2-4

2011 South Coast Air Basin Air Quality Compared to Other California Air Basins (Maximum Pollutant Concentrations as Percentages of the Corresponding Federal Standards)

NO₂ concentrations exceeded the recently established 1-hour standard in the Basin and Phoenix (on one day each). Denver, Colorado (not shown in Figure 2-3), was the only other U.S. urban area exceeding the NO₂ standard in 2011. SO₂ concentrations were below the recently established 1-hour federal standard in the Basin and all of the urban areas shown in Figures 2-3 and 2-4. However, the SO₂ standard was exceeded in other U.S. areas, with the highest concentrations recorded in Hawaii, due to volcanic emissions. The CO standards were not exceeded in the U.S. in 2011.

In 2011, the Central San Bernardino Mountains area in the Basin recorded the highest maximum 1-hour and 8-hour average ozone concentrations in the nation (0.160 and 0.136 ppm, respectively). The highest 8-hour average concentration was more than one and a half times the federal standard level. In 2011, seven out of ten stations with the highest maximum 8-hour average ozone concentrations in the nation were located in the Basin⁴. The South Coast Air Basin also exceeded the 8-hour ozone standard on more

⁴ The 10 highest measured O₃ concentrations in 2011 included 7 Basin stations: Central San Bernardino Mountains (Crestline), East San Bernardino Valley (Redlands), Central San Bernardino Valley (Fontana and San Bernardino), Santa Clarita Valley (Santa Clarita), Northwest San Bernardino Valley (Upland), and Metropolitan Riverside (Rubidoux).

days (106) than most other urban areas in the country in 2011, with only California's San Joaquin Valley exceeding on more days (109).

Air Quality Trends

There have been significant improvements in the Basin's air quality over the years since measurements began, with PM_{2.5} showing the most dramatic improvement in recent years. Figure 2-5 shows the trend (1990-2011) of *basin-days*⁵ exceeding the federal standards for ozone and particulates, as a percentage of days with monitoring data. Figure 2-6 shows the trend of maximum pollutant concentrations in the Basin for the past two decades, as percentages of the corresponding federal standards. Note that this is based on maximum concentrations and that actual attainment of the standards is based on the design value. The pollutant-specific sections of this chapter contain additional trends by pollutant.

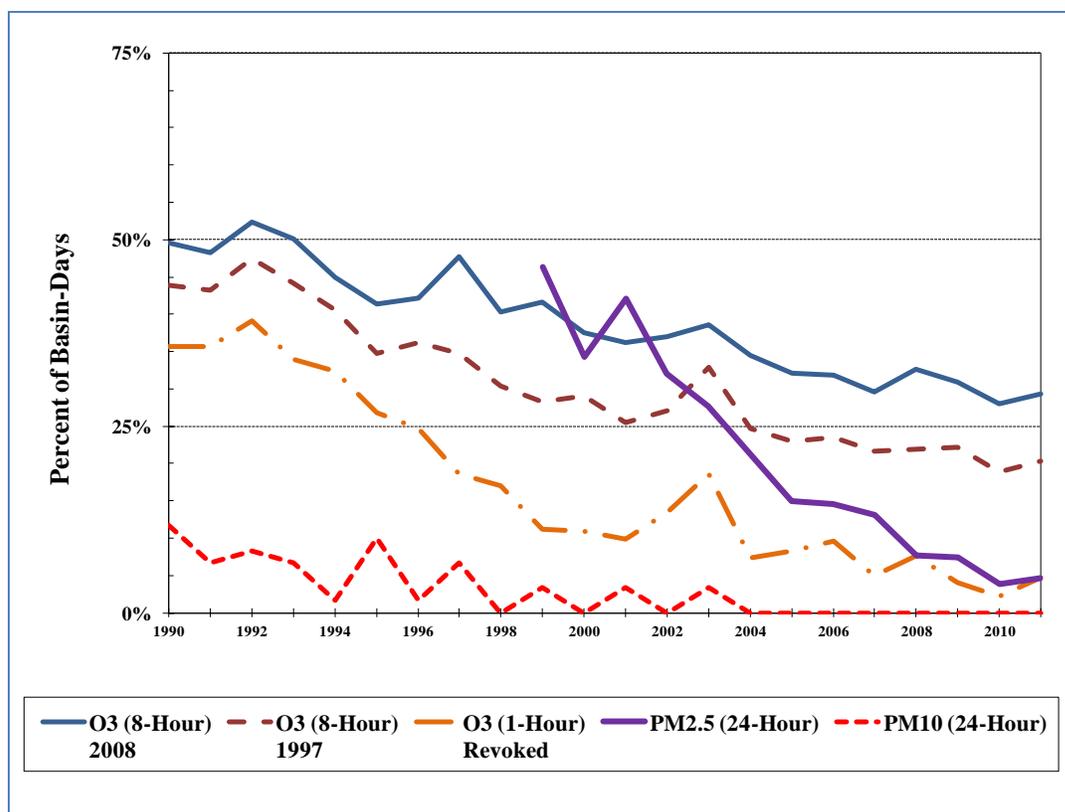


FIGURE 2-5

Trend of Basin-Days Exceeding Federal Standards, 1990-2011

⁵ A "basin-day" is recorded if one or more locations in the air basin exceeded the level of the standard. Multiple locations exceeding on the same day count as a single basin-day.

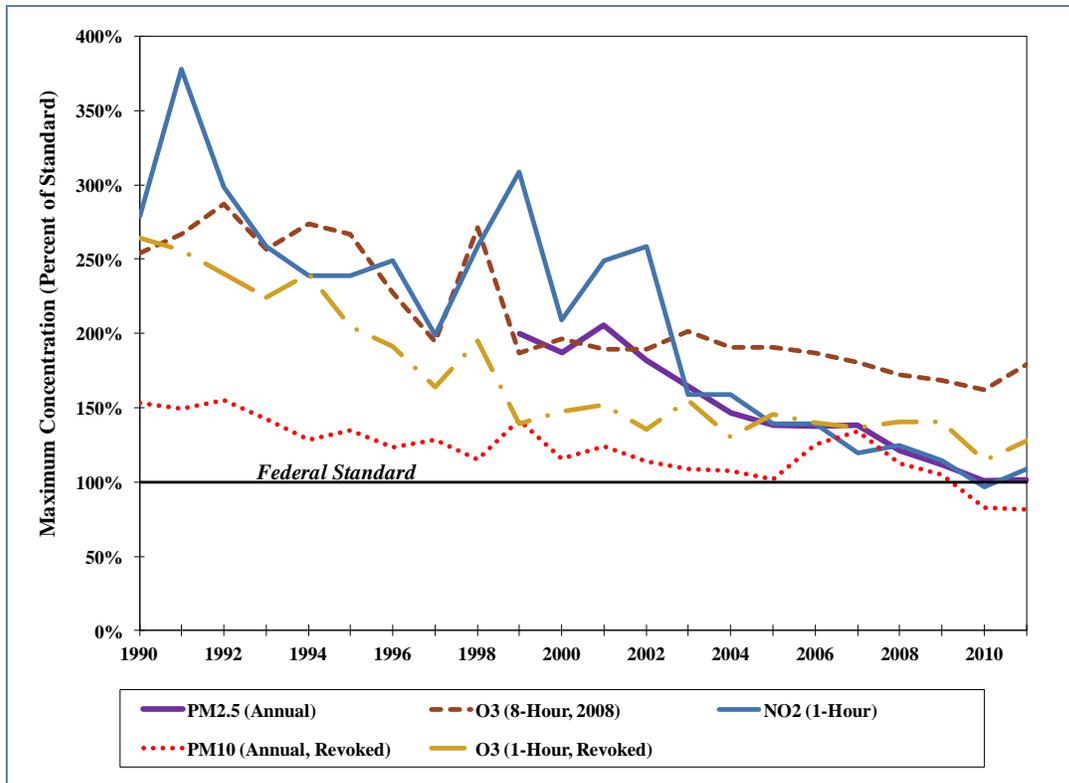


FIGURE 2-6
Trends of South Coast Air Basin Maximum Pollutant Concentrations
(Percentages of Federal Standards)

Spatial and Temporal Variability

Air quality in the Basin varies widely by season and by area. The highest pollutant concentrations were all recorded in, or downwind of, the densely populated areas of the Basin. The number of days exceeding the current (2008) 8-hour federal ozone standard (0.075 ppm⁶, or 75 ppb⁷, not to exceed) varied widely by location, from zero to 84 days. Exceedances were fewest along the coast, increasing in the inland valleys to a maximum in the Basin's Central San Bernardino Mountains. The District station in the Central San Bernardino Mountains area (Crestline-Lake Gregory) exceeded the 2008 federal 8-hour average ozone standard most frequently (84 days).

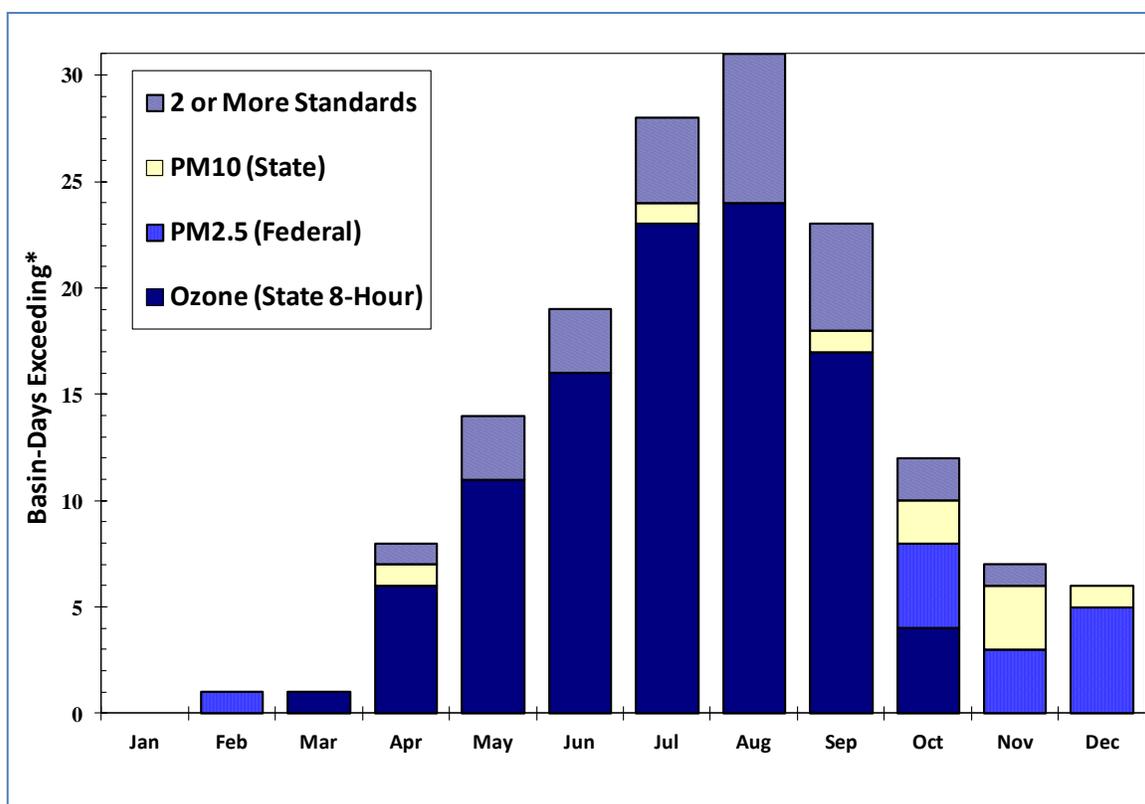
Ozone concentrations tend to be higher on weekends than on weekdays, although this difference is less distinct in recent years. The time of day with highest average ozone concentrations is in the early to middle afternoon, although the inland areas of the Basin will peak later in the afternoon on the higher days. Day-of-week and time-of-day PM2.5 concentrations vary considerably by location but, overall for 2009-2011, weekday

⁶ ppm = parts per million, by volume

⁷ ppb = parts per billion, by volume; 1 ppm = 1000 ppb

PM_{2.5} concentrations were slightly higher on Fridays and daily peaks occur in the morning, after the period of heaviest traffic.

The Basin’s air quality concentrations and the occurrence of exceedances vary with season due to seasonal differences in the weather, sunlight for photochemical reactions, and to a lesser extent, seasonal variations in emissions. High ozone concentrations are generally recorded during the May to October “smog season” and exceedances of the federal and state standards are most frequent in July and August. Particulate matter (PM₁₀ and PM_{2.5}) levels do not have as clear of a pattern as ozone, and high concentrations may be recorded throughout the year. However, high PM₁₀ and PM_{2.5} concentrations are typically recorded during late fall and winter months. Figure 2-7 shows the number of Basin-wide days per month when the most stringent of the state or federal standards were exceeded in the Basin in 2011. Additional spatial and temporal analyses are presented in the pollutant-specific sections that follow.



* The term Basin-days represents the number of days a standard was exceeded by at least one monitoring station in the Basin

FIGURE 2-7
 Number of Basin-Days per Month Exceeding the Most Stringent State
 or Federal Standards in 2011

POLLUTANT-SPECIFIC AIR QUALITY DISCUSSION

Particulate Matter (PM)

PM10 and PM2.5 concentrations are monitored throughout the District by samples collected on quartz or teflon filters in samplers with size selective inlets, known as Federal Reference Methods (FRM). Some stations also have continuous monitors, using either Beta Attenuation Monitor (BAM) or Tapered Element Oscillating Microbalance (TEOM) instrumentation. This data is available in real-time and is used for air quality forecasting and public reporting of current conditions. Where the continuous BAM or TEOM PM10 monitors have been certified by U.S. EPA to be Federal Equivalent Methods (FEM), the continuous PM10 data is averaged for the 24-hour period (midnight to midnight) and used for comparison to the standards on days when a valid FRM filter measurement was not collected. For PM2.5, there are significant differences between the FEM and FRM results that have been recognized by national assessments of the technologies. The District measures FRM PM2.5 on a daily basis at the critical stations in the Basin, and does not use the FEM PM2.5 data to compare to the NAAQS. This issue is being explicitly addressed in U.S. EPA's new proposed PM2.5 NAAQS, and future use of FEM data will be consistent with the final federal requirements. In 2011, the District measured PM10 and PM2.5 concentrations at 26 and 20 locations, respectively, including two locations in the Coachella Valley for both. Figures 2-8 and 2-9 show the PM2.5 and PM10 monitoring sites, respectively, in the District's jurisdiction.

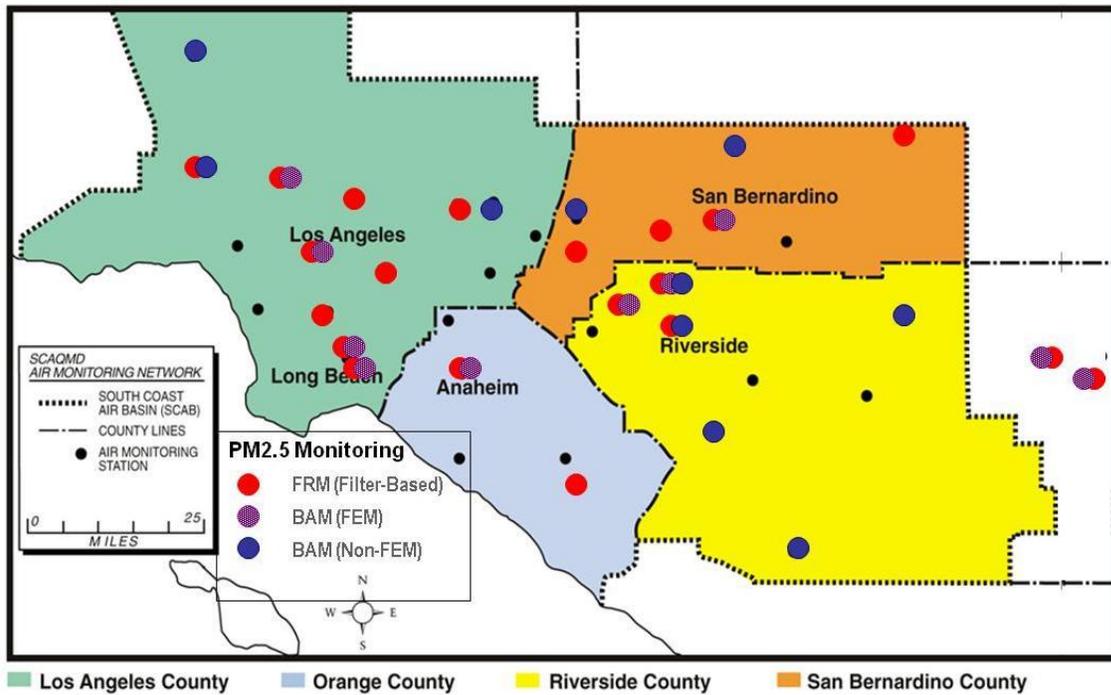


FIGURE 2-8
South Coast Air Quality Management District PM2.5 Air Monitoring

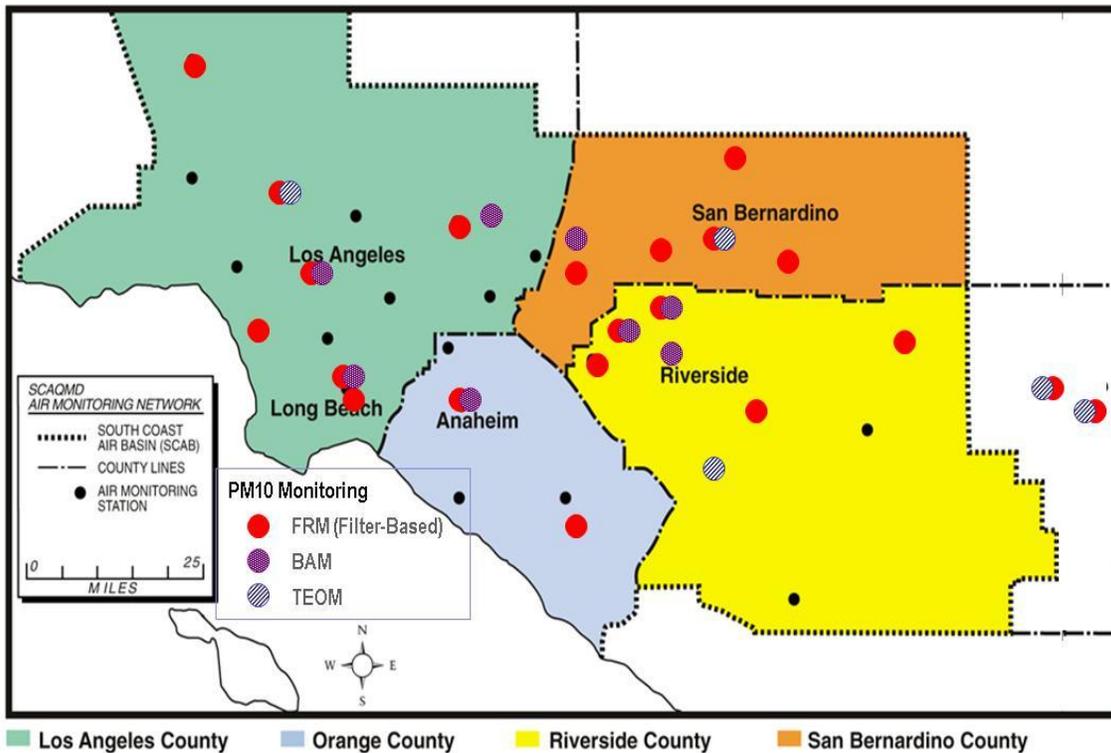


FIGURE 2-9
South Coast Air Quality Management District PM10 Monitoring

PM2.5 Air Quality

The District began routine monitoring of PM2.5 regularly in 1999 and the number of PM2.5 monitoring stations has increased in recent years. In 2011, the District monitored PM2.5 concentrations at 25 routine sampling locations (including 2 in the Coachella Valley), 22 with Federal Reference Method (FRM) filter samplers and 3 with Federal Equivalent Method (FEM) continuous monitors (shown in Figure 2-8). The FRM PM2.5 measurements, based on samplers with size-selective inlets using teflon filters, are collected for a 24-hour period every 3 days at most locations, except for seven stations that historically have higher concentrations where daily FRM samples are collected. One station in the Big Bear Lake area has a 24-hour sample collected every 6 days.

All PM2.5 data from sites in the District's network using FRM samplers are suitable for comparison to PM2.5 NAAQS for attainment purposes. The PM2.5 network also includes continuous FEM and non-FEM Beta Attenuation Monitors (BAM) throughout the District's jurisdiction. At the sites where both 24 hour FRM PM2.5 samplers and FEM PM2.5 continuous analyzers are deployed together, the 24 hour FRM PM2.5 sampler remains the primary analyzer used for attainment purposes. On many days, there is poor comparability of the FEM PM2.5 monitors and the FRM method. Therefore, the continuous hourly measurements that are available in real time are used primarily for forecasting and public notification of PM2.5 air pollution levels.

The highest 24-hour PM2.5 measurement recorded in 2011 in the Basin (94.6 $\mu\text{g}/\text{m}^3$ on July 5 at East San Gabriel Valley at Azusa) was flagged in the U.S. EPA Air Quality System (AQS) database for exclusion under the U.S. EPA Exceptional Event Rule, due to Independence Day fireworks displays. With this data included, the 2009-2011 24-hour design value for Azusa would exceed the federal standard level in 2011 and the 3-year design value. With that exceptional event flagged (pending further documentation and U.S. EPA concurrence), the only station with a 24-hour design value exceeding the 24-hour federal standard is in Metropolitan Riverside County (Mira Loma). The daily FRM sampler at Mira Loma exceeded the 24-hour federal standard on 8 days in 2011. The annual and 24-hour design values for the former Basin maximum station in Metropolitan Riverside County (Riverside-Rubidoux) are currently below the federal standards, based on the 2009-2011 data.

The federal 24-hour PM2.5 standard concentration level was exceeded at 75 percent of the locations monitored in the District in 2011. With the one exceptional event day flagged, the Basin's next-highest 24-hour average (65.0 $\mu\text{g}/\text{m}^3$) occurred in the Central San Bernardino Valley (City of San Bernardino) and was 183 percent of the federal 24-

hour PM_{2.5} standard. However, that location did not exceed the 98th percentile design value form of the standard in 2011, nor the 2009-2011 3-year design value.

In 2011, the federal annual average PM_{2.5} standard was exceeded at one location (Metropolitan Riverside at Mira Loma). The maximum annual average recorded there (15.3 µg/m³) was 101 percent of the federal standard and 126 percent of the state standard. The maximum 24-hour and annual average PM_{2.5} concentrations in 2011 are summarized by county in Tables 2-2 and 2-3, respectively, along with comparisons to the federal and state standards. Tables A-9 to A-12 in the Attachment to this appendix show the annual arithmetic mean, percentage of sampling days over the 24-hour federal standard, maximum 24-hour average concentrations, and 98th percentile 24-hour concentrations for the years 1999-2011 at all monitoring stations.

TABLE 2-2
2011 Maximum 24-hour Average PM_{2.5} Concentrations by Basin and County

Basin/County	Maximum 24-Hr Average [#] (µg/m ³)	Percent of Federal Standard* (35 µg/m ³)	Area
South Coast Air Basin			
Los Angeles**	49.5	139	East San Gabriel Valley
Orange	39.2	110	Central Orange County
Riverside	60.8	171	Metropolitan Riverside County
San Bernardino	65.0	183	Central San Bernardino Valley
Salton Sea Air Basin			
Riverside***	35.4	99.7	Coachella Valley

Based on FRM data

* Although maximum 24-hour concentrations exceed the standard, the 98th percentile form of the 2009-2011 design value only exceeded the standard at one station in Metropolitan Riverside County

** One higher concentration that was recorded due to “Independence Day” firework activities has been flagged for exclusion from NAAQS comparison in accordance with the U.S. EPA Exceptional Events Regulation; with this data included, the 2009-2011 design value for East San Gabriel Valley would also exceed the federal standard

*** While this concentration of 35.4 µg/m³ is near the level of the standard, it is technically not exceeding the standard (35.5 µg/m³ exceeds); this concentration was associated with a high wind exceptional event

TABLE 2-3
2011 Maximum Annual Average PM2.5 Concentrations by Basin and County

Basin/County	Annual Average* (µg/m ³)	Percent of Federal Standard (15 µg/m ³)	Percent of State Standard (12 µg/m ³)	Area
South Coast Air Basin				
Los Angeles	13.2	87	109	Central Los Angeles
Orange	11.0	73	90	Central Orange County
Riverside	15.3	101	126	Metropolitan Riverside County
San Bernardino	13.2	87	109	Southwest San Bernardino Valley
Salton Sea Air Basin				
Riverside	7.2	48	60	Coachella Valley

* Based on FRM data

PM2.5 Spatial Variation

Figure 2-10 shows the 2011 annual average arithmetic mean PM2.5 concentrations mapped throughout the Basin. Like PM10, PM2.5 annual concentrations were higher in the inland valley areas of Metropolitan Riverside County. Figure 2-11 shows the 2011 24-hour PM2.5 concentrations, using the 98th percentile form of the standard, mapped throughout the Basin. As is seen with the annual average, the 98th percentile concentration only exceeds the 24-hour federal standard in the Metropolitan Riverside County area (Mira Loma). A larger area is just below the NAAQS, with concentrations in the 30 to 35 µg/m³ range, from the eastern San Fernando Valley and Central Los Angeles in the western Basin through the urban areas of Riverside and San Bernardino.

The higher PM2.5 concentrations in the Basin are mainly due to the secondary formation of smaller particulates resulting from mobile, stationary and area source emissions of gases (NO_x, SO_x, NH₄, VOC) that are converted to particulate matter in the atmosphere. In contrast to PM10, PM2.5 concentrations were low in the Coachella Valley area of SSAB. While PM10 concentrations are normally higher in the desert areas due to windblown and fugitive dust emissions, PM2.5 is relatively low in the desert due to fewer combustion-related emissions sources.

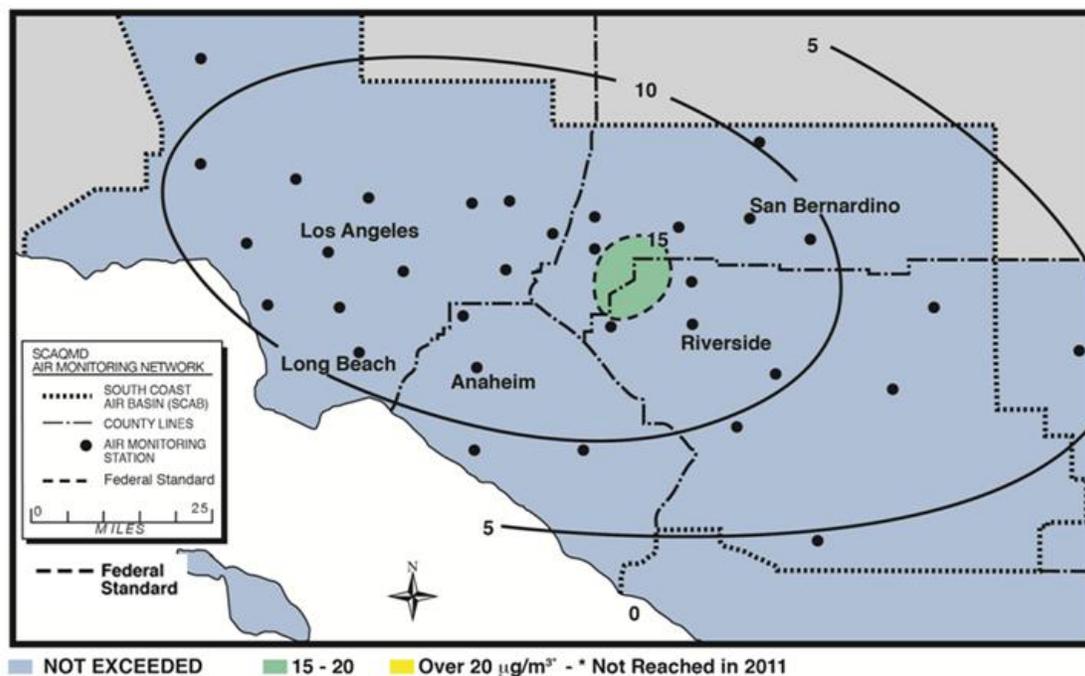


FIGURE 2-10
 Annual Average PM_{2.5} ($\mu\text{g}/\text{m}^3$) in 2011
 (Annual PM_{2.5} NAAQS = $15 \mu\text{g}/\text{m}^3$, annual arithmetic mean)

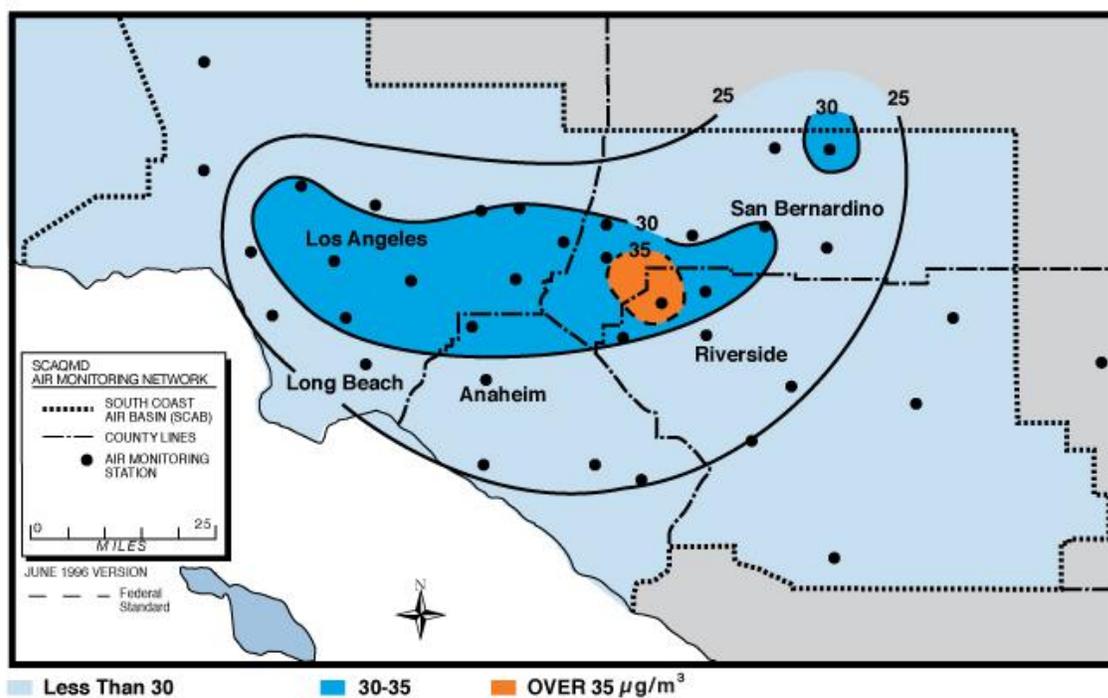


FIGURE 2-11
 98th Percentile 24-Hour Average PM_{2.5} ($\mu\text{g}/\text{m}^3$) in 2011
 (24-hour PM_{2.5} NAAQS = $35 \mu\text{g}/\text{m}^3$)

PM2.5 Trends

Figure 2-12 shows the Basin 3-year design values (plotted by end year) for the current 24-hour and annual PM2.5 standards, for the period from 2001 through 2011. This illustrates the significant progress toward attainment of the standards in the last ten years.

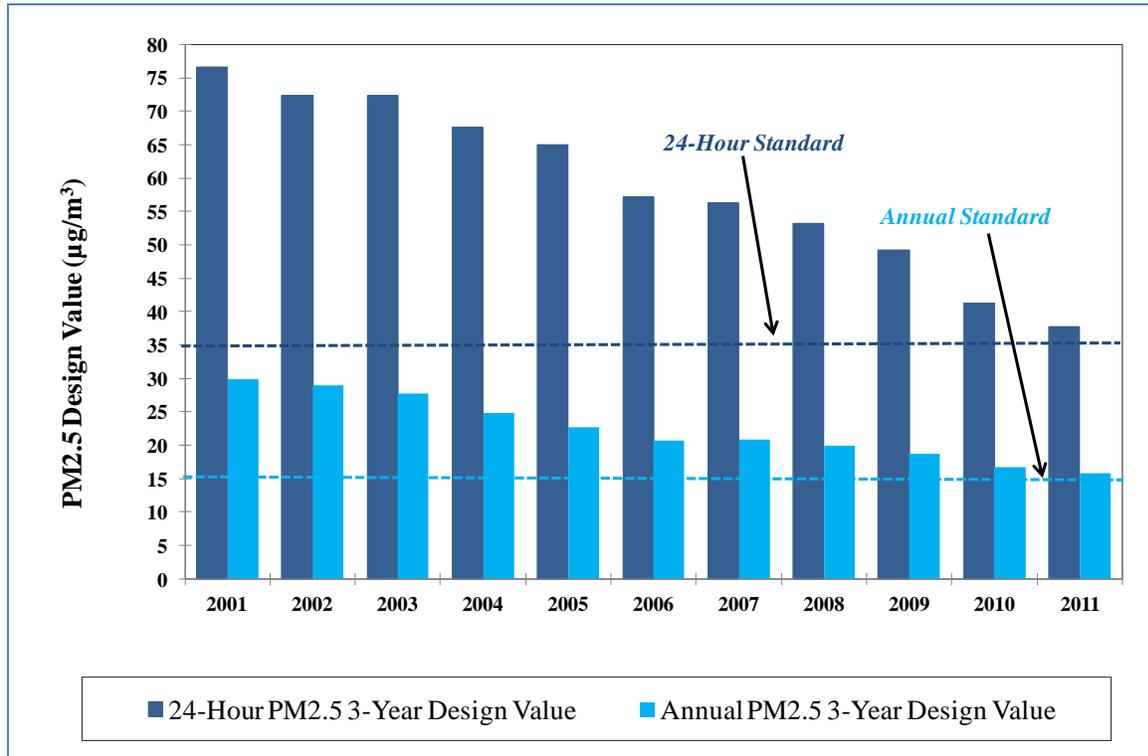


FIGURE 2-12
South Coast Air Basin PM2.5 Design Value Trends, 2001-2011

PM2.5 Temporal Variation

Seasonal and day-of-week variations in PM2.5 concentrations are complex and location dependant, and may vary from year to year depending on meteorological conditions, the presence of large wildfires, and other factors. Previous analyses showed that the highest PM2.5 concentrations tend to occur in the fall, of most years. That held true in 2011. Figure 2-13 shows the Basin-wide monthly averaged PM2.5 concentrations, by month for the year 2011. In that year, the monthly PM2.5 averages were highest in October, followed closely by December. The somewhat lower multi-station averages in November 2011 likely resulted from an above-normal number of offshore wind days in that month that generally provided good dispersion and brought cleaner air from the deserts into the Basin.

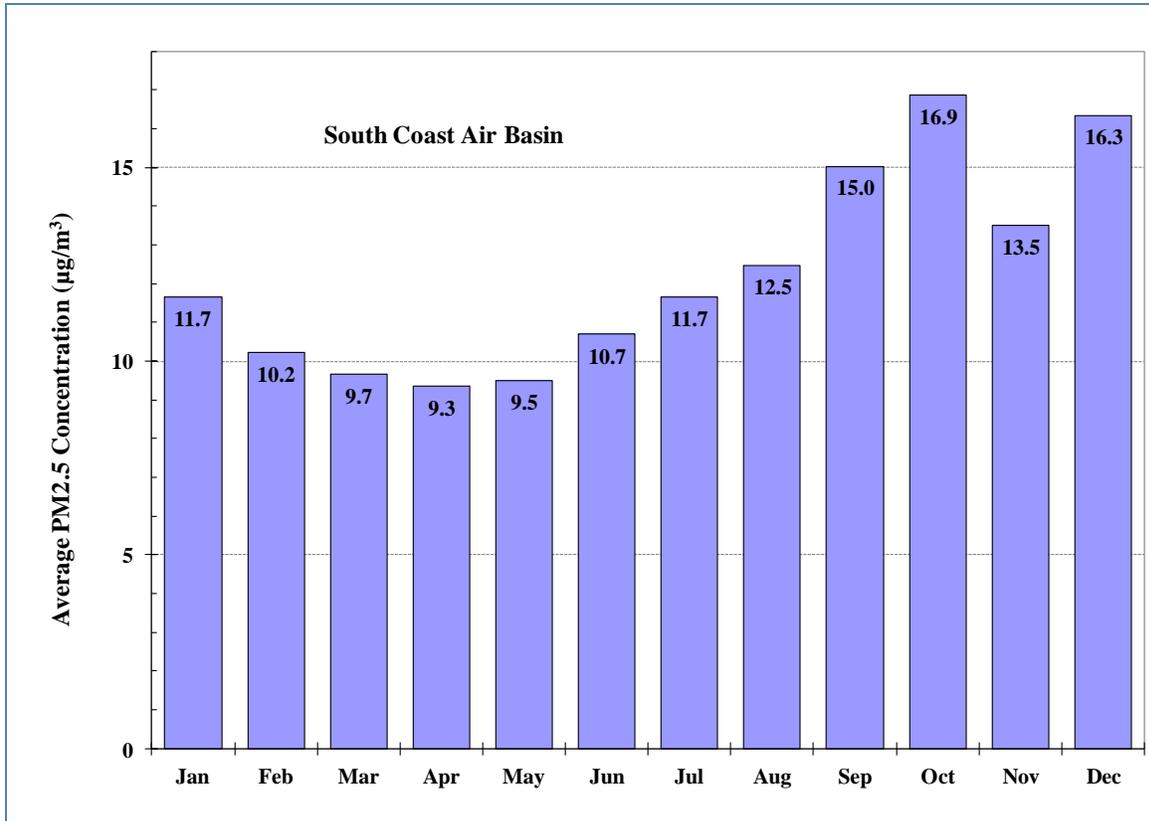


FIGURE 2-13

2011 PM2.5 Variation of Basin-wide FRM Monthly Average Concentration

Figure 2-14 shows an analysis of day-of-week variation in Basin-wide PM2.5 daily concentrations averaged for the three most recent years (2009-2011). This shows that Fridays have slightly higher average PM2.5, possibly due to increased traffic and/or build up of pollution over multiple week-days. Saturdays and Thursdays follow, but the average difference from the lowest day (Monday) to the highest (Friday) is only 3.2 µg/m³.

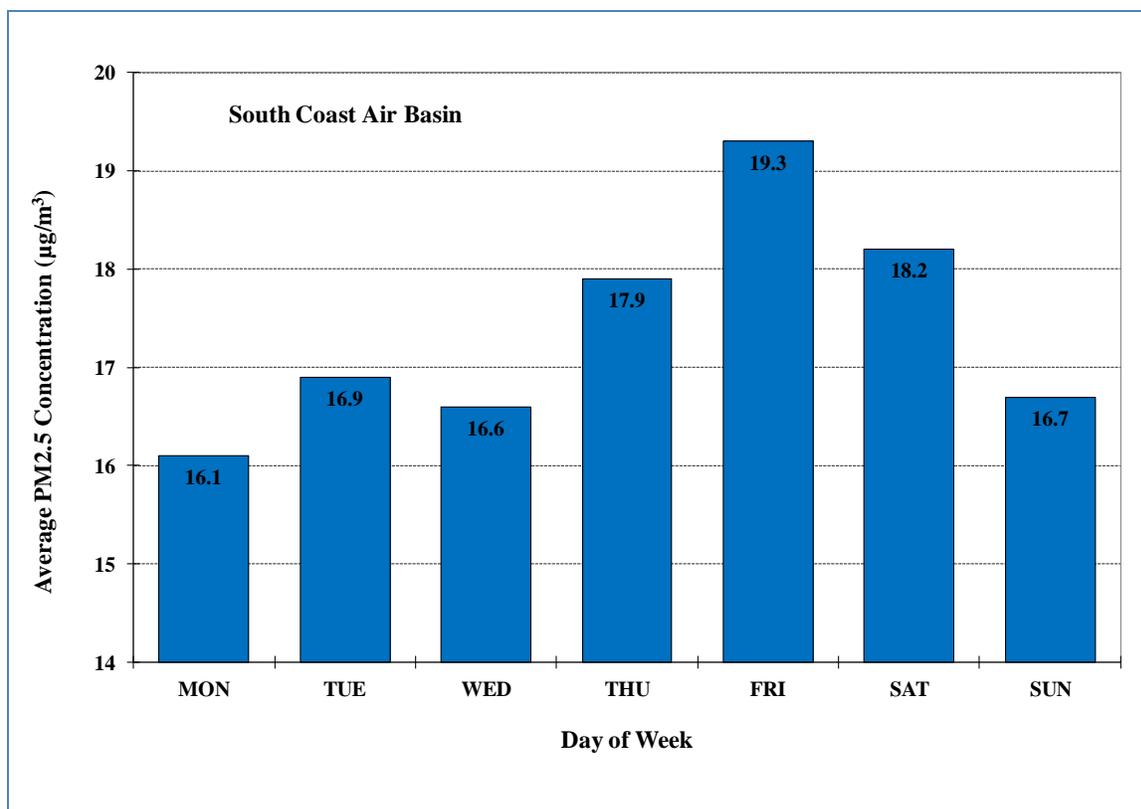
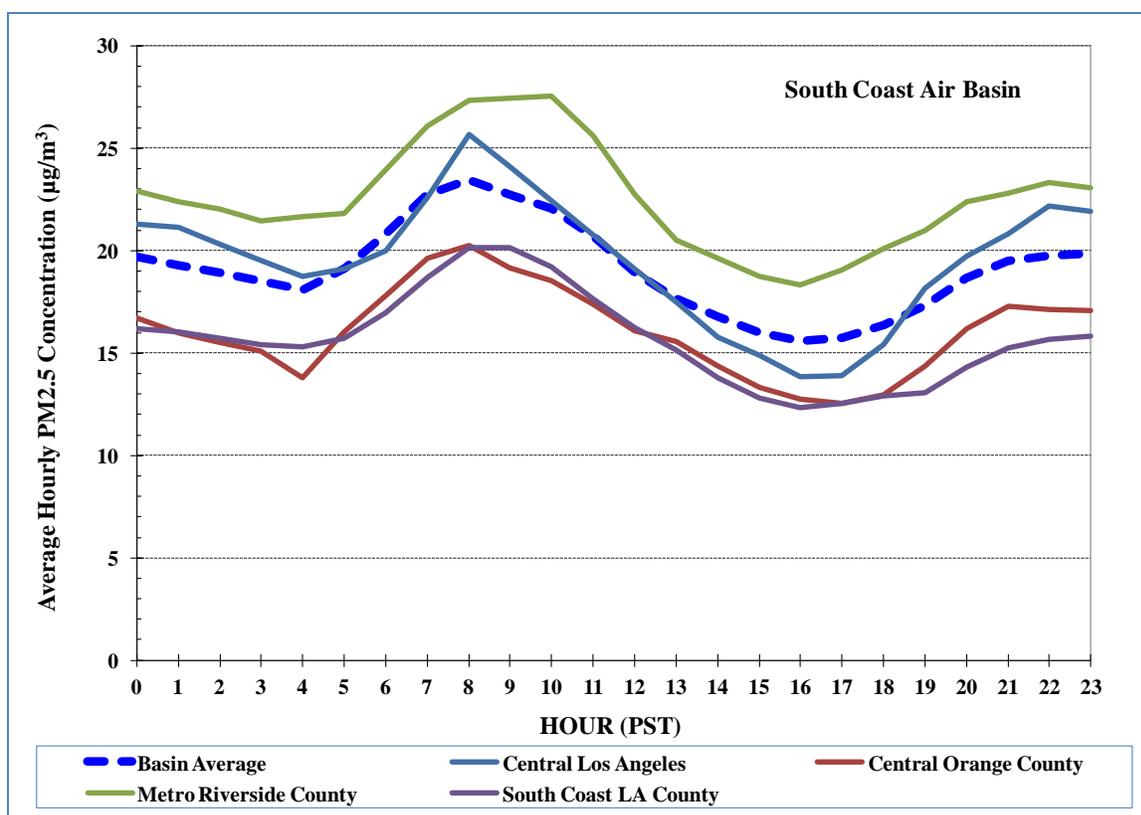


FIGURE 2-14

PM2.5 Basin-wide Day-of-Week Variation of 24-hour Average FRM PM2.5 Concentrations, 2009-2011

Figure 2-15 shows average PM2.5 concentration by hour of the day for the period 2009-2011, based on the hourly BAM sampler data. The diurnal plots are for the Basin maximum PM2.5 monitor (Metropolitan Riverside at Mira Loma), Central Los Angeles (Downtown), Central Orange County (Anaheim), and the average of several sites throughout the Basin. In general, PM2.5 concentrations peak around 8 a.m. (Pacific Standard Time), with the morning traffic. They decrease in the early afternoon, then peak in the evening due to secondary aerosol formation following evening traffic, and late at night when the lower nighttime temperature inversion traps the pollutants in a shallower layer near the surface.

**FIGURE 2-15**

Diurnal Variation of Hourly FEM PM_{2.5}, Averaged by Time of Day (2009-2011)

PM_{2.5} Speciation

PM_{2.5} speciation sampling to determine the chemical components of PM_{2.5} is also a part of the District's PM_{2.5} measurement program. Currently, PM_{2.5} speciation samplers are deployed at four representative locations in each of the Basin's counties (Anaheim, Fontana, Los Angeles and Rubidoux). Analysis of the filters from the ambient network Speciation Air Sampling System (SASS) samplers are conducted at the District's laboratory. Figure 2-16 shows the trends of the annual concentration of six PM_{2.5} component species: Elemental Carbon (EC), Organic Carbon (Organics), Sulfate (SO₄), Nitrate (NO₃), Ammonium (NH₄), and Crustal Elements (soils). Most of the components show a downward trend in recent years. Figure 2-17 shows the composition from the speciation sampler at the Riverside-Rubidoux station, comparing the 2010 annual average to the 2010 peak 24-hour average sampled at this location. This is the closest PM_{2.5} speciation station to the Basin maximum PM_{2.5} station (Riverside-Mira Loma) and it was the Basin maximum location before monitoring began at Mira Loma. On the high day, the nitrate becomes a larger fraction of the mass compared to the annual average, indicating the importance of secondary atmospheric processes to the PM_{2.5} composition in Riverside County.

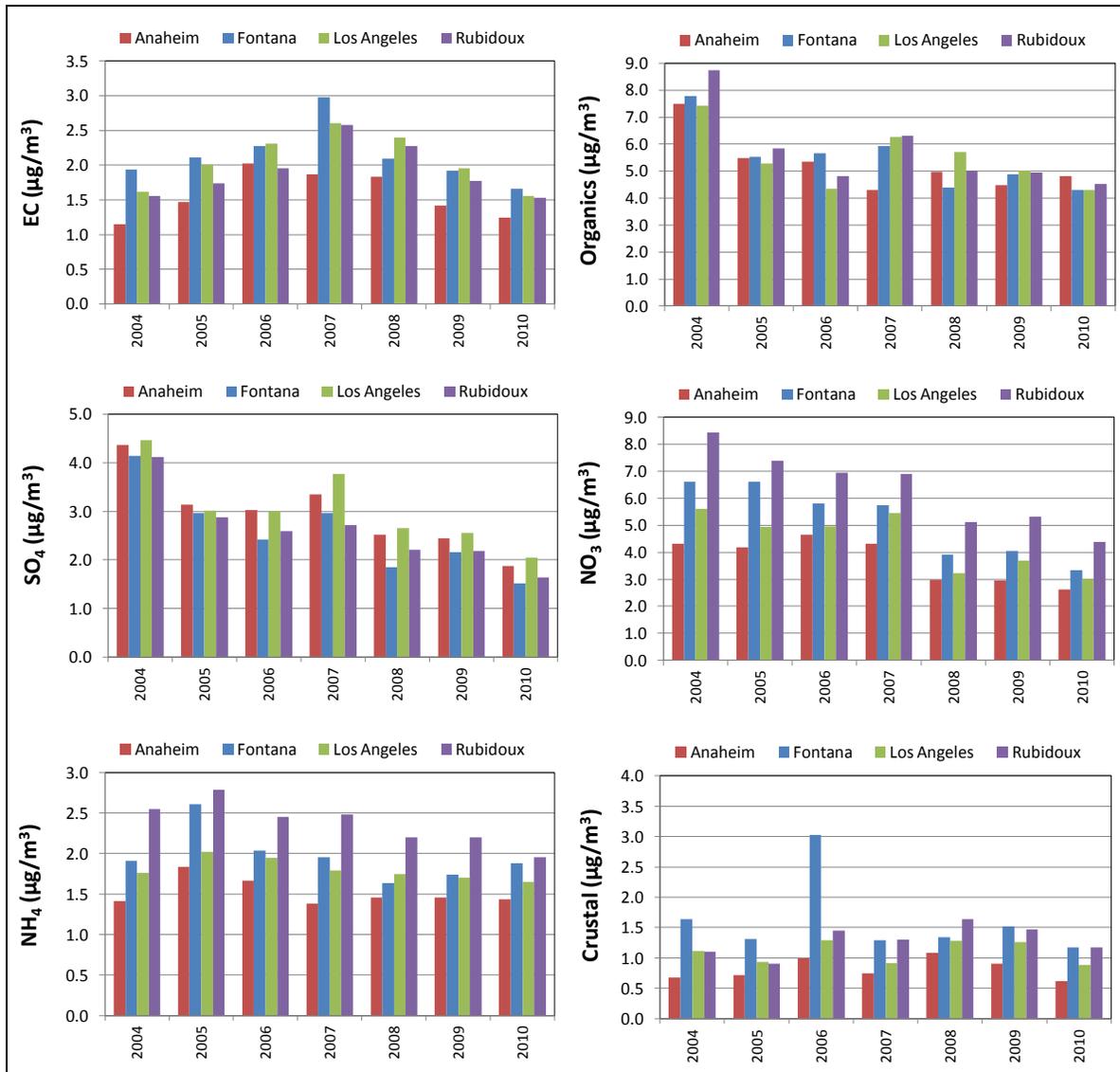
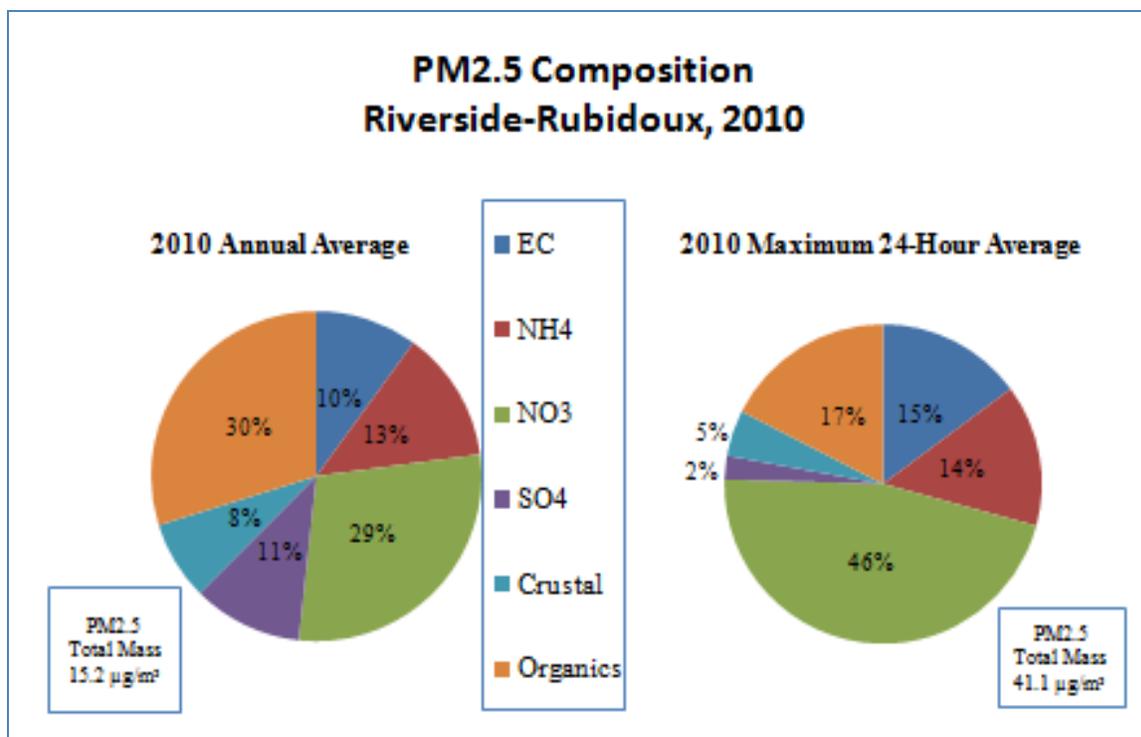


FIGURE 2-16

South Coast Air Basin PM_{2.5} SASS Speciation Network Annual Trends 2004-2010
 Annual Averaged PM_{2.5} Elemental Carbon (EC), Organics, Sulfate (SO₄), Nitrate (NO₃), Ammonia (NH₄), and Crustal Component Concentrations, for Anaheim, Fontana, Los Angeles, and Rubidoux Stations

**FIGURE 2-17**

2010 PM2.5 Speciation for Annual Average and Highest Day
(Riverside-Rubidoux SASS Speciation Sampler)

PM10 Air Quality

In 2011, the District measured PM10 concentrations at 23 locations throughout the Basin and two locations in the Salton Sea Air Basin (Coachella Valley), as shown in Figure 2-9. Size-selective inlet (SSI) manual high volume FRM samplers are operated at 19 sites in the Basin and two sites in the Coachella Valley to meet the requirements for PM10 Federal Reference Method (FRM) sampling. All of these FRM monitors operate on a one-in-six-day schedule, with the exception of two that operate on a one-in-three-day schedule (Riverside-Rubidoux in the Basin and Indio in the Coachella Valley).

PM10 continuous analyzers, including Beta Attenuation Monitor (BAM) and Tapered Element Oscillating Microbalance (TEOM), are operated at 13 sampling sites, including four that are not collocated with FRM samplers. Real-time monitors, for the most part, are clustered in the higher concentration areas. At locations where both FRM samplers and PM10 continuous analyzers are deployed together, the data is generally combined for attainment purposes, with the FRM data considered the primary data source.

The highest annual PM10 concentrations were recorded in and around the metropolitan Riverside County area and further inland in the San Bernardino Valley areas. The

federal 24-hour standard ($150 \mu\text{g}/\text{m}^3$) was not exceeded at any of the locations monitored in 2011, although Riverside County came close with a 24-hour concentration of $152 \mu\text{g}/\text{m}^3$ (98 percent of the federal 24-hour standard; the concentration must reach $155 \mu\text{g}/\text{m}^3$ to exceed the NAAQS). The revoked annual average PM10 federal standard ($50 \mu\text{g}/\text{m}^3$) was also not exceeded in the Basin in 2011.

The more stringent state annual ($20 \mu\text{g}/\text{m}^3$) and 24-hour ($50 \mu\text{g}/\text{m}^3$) PM10 standards were exceeded in more than two-thirds of the areas monitored. The state 24-hour standard was also exceeded most frequently in the Basin's inland valleys, centered on Metropolitan Riverside County. Maximum 24-hour and annual average PM10 concentrations in 2011 are shown in Tables 2-4 and 2-5. For each routine District ambient air monitoring station, the annual arithmetic mean, percent of sampling days exceeding state and federal standards, and maximum 24-hour average concentrations are shown in Tables A-6 to A-8 in the Attachment for the years 1995-2011. Please refer to Appendix II from the 2003 AQMP for the 1976-1989 prior-year statistics and to Appendix II from the 2007 AQMP for 1990-2005 data.

TABLE 2-4
2011 Maximum 24-hour Average PM10 Concentrations by Basin and County

Basin/County	Maximum 24-Hr Average* ($\mu\text{g}/\text{m}^3$)	Percent of Federal Standard ($150 \mu\text{g}/\text{m}^3$)#	Percent of State Standard ($50 \mu\text{g}/\text{m}^3$)	Area
South Coast Air Basin				
Los Angeles	119	77	233	Central Los Angeles
Orange	79	51	155	Central Orange County
Riverside	152	98	298	Metropolitan Riverside County
San Bernardino	127	82	249	Central San Bernardino Valley
Salton Sea Air Basin**				
Riverside	120	77	235	Coachella Valley

* Based on the FRM and FEM data

** Higher concentrations were recorded for high wind events in the Coachella Valley which have been flagged for exclusion from NAAQS comparison in accordance with the U.S. EPA Exceptional Events Rule

A level of $155 \mu\text{g}/\text{m}^3$ is needed to exceed the federal standard, thus percentages are based on $155 \mu\text{g}/\text{m}^3$

TABLE 2-5
2011 Maximum Annual Average PM₁₀ Concentrations by Basin and County

Basin/County	Annual Average* ($\mu\text{g}/\text{m}^3$)	Percent of Federal Standard** ($50 \mu\text{g}/\text{m}^3$)	Percent of State Standard ($20 \mu\text{g}/\text{m}^3$)	Area
South Coast Air Basin				
Los Angeles	32.7	64	163	East San Gabriel Valley
Orange	24.9	49	124	Central Orange County
Riverside	41.4	81	206	Metropolitan Riverside County
San Bernardino	31.8	62	158	Central San Bernardino Valley
Salton Sea Air Basin				
Riverside	32.6	64	162	Coachella Valley

* Based on the FRM and FEM data

** The federal annual PM₁₀ standard was revoked in 2006

PM₁₀ Spatial Variation

Figure 2-18 shows the contour map of the annual average (arithmetic mean) PM₁₀ concentrations distribution in the Basin in 2011. The areas with the highest annual average PM₁₀ concentrations were located in the Metropolitan Riverside County area. The maximum annual average recorded ($41.4 \mu\text{g}/\text{m}^3$) was 81 percent of the former federal annual PM₁₀ standard.

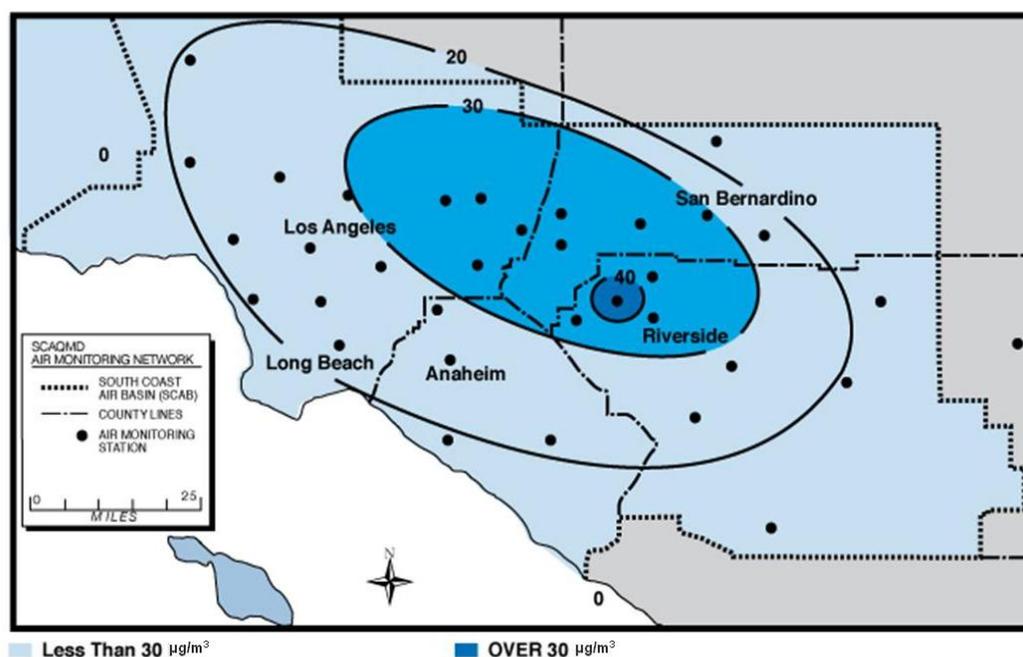


FIGURE 2-18
Annual Arithmetic Mean PM₁₀ Particulate Matter ($\mu\text{g}/\text{m}^3$) in 2011

PM10 Trends

Figure 2-19 shows the trend for the period between 2000 and 2011 of the design value form of the 24-hour federal PM10 standards for the Basin (i.e., the fourth highest 24-hour average PM10 concentration in three years). It also shows the trend for the design value form of the revoked annual federal PM10 standard, that is, the 3-year average of the annual arithmetic mean concentrations. Since 2005, the Basin has remained below the design value form of the federal PM10 standard ($150 \mu\text{g}/\text{m}^3$). The District has petitioned U.S. EPA to consider redesignation of the Basin to attainment for the PM10 standard. The most recent year, 2011, was also remained below the revoked federal annual PM10 standard ($50 \mu\text{g}/\text{m}^3$).

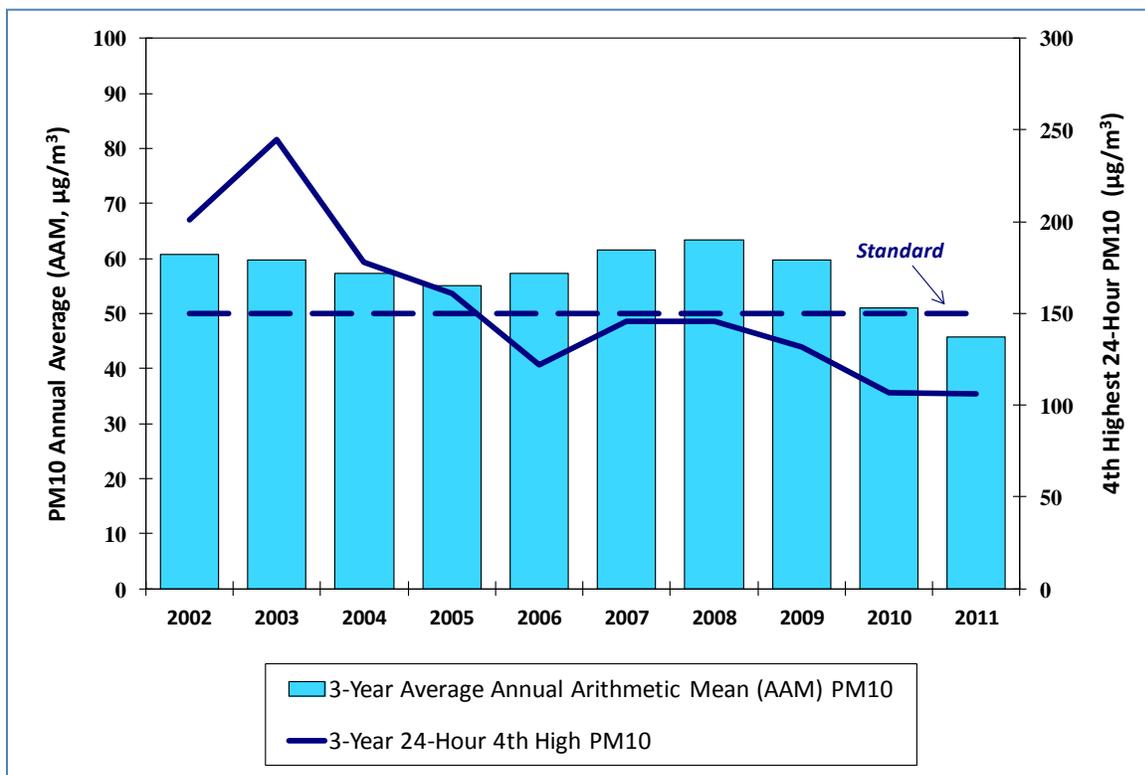


FIGURE 2-19

PM10 Particulate Matter Design Value Trend
 (2000 through 2011 data, 3-Year Average of Annual Arithmetic Mean and 4th Highest 24-Hour
 PM10 Concentration in 3 Years, $\mu\text{g}/\text{m}^3$)

PM10 Temporal Variation

Exceedances of the 24-hour PM10 federal standard in the Basin have become rare in recent years. In fact, the only exceedances in the Basin for several years have been associated with exceptional events, such as high wind natural events or cultural events (Independence Day fireworks). As a consequence, variations in exceedances of the state

standard are considered here for the seasonal and day-of-week patterns in the Basin, using the FRM and FEM PM10 measurements combined.

Previous analyses of seasonal variations in PM10 show that the monthly average PM10 concentrations and the monthly average number of days exceeding the state standard tend to peak in summer and fall in the inland valley area of the Basin where PM10 concentrations are highest. However, in the South Coastal Los Angeles County area (Long Beach), monthly average PM10 concentrations and the average number of days exceeding the state standard were highest in the late fall and winter months.

Figure 2-20 shows the number of days in each month exceeding the state standard at one or more Basin locations over the period 2009-2011. Overall, the greatest number of exceedances of the state standard occurred in the summer months. Due to the higher number of exceedances in the inland valleys, the pattern for the Basin is more similar to those for individual sites in the inland valley areas. Figure 2-21 shows the monthly exceedances for stations in two areas, Metropolitan Riverside County (Riverside-Rubidoux) and South Coastal Los Angeles County (Long Beach). As was found in the previous analyses, the number of days exceeding state standards are more frequent in the summer and fall months in the inland valley areas, but higher in the late fall and winter months in the coastal areas. Most of the coastal high values occur at that time due to windblown dust from the strong, offshore Santa Ana winds that occur in the fall and winter.

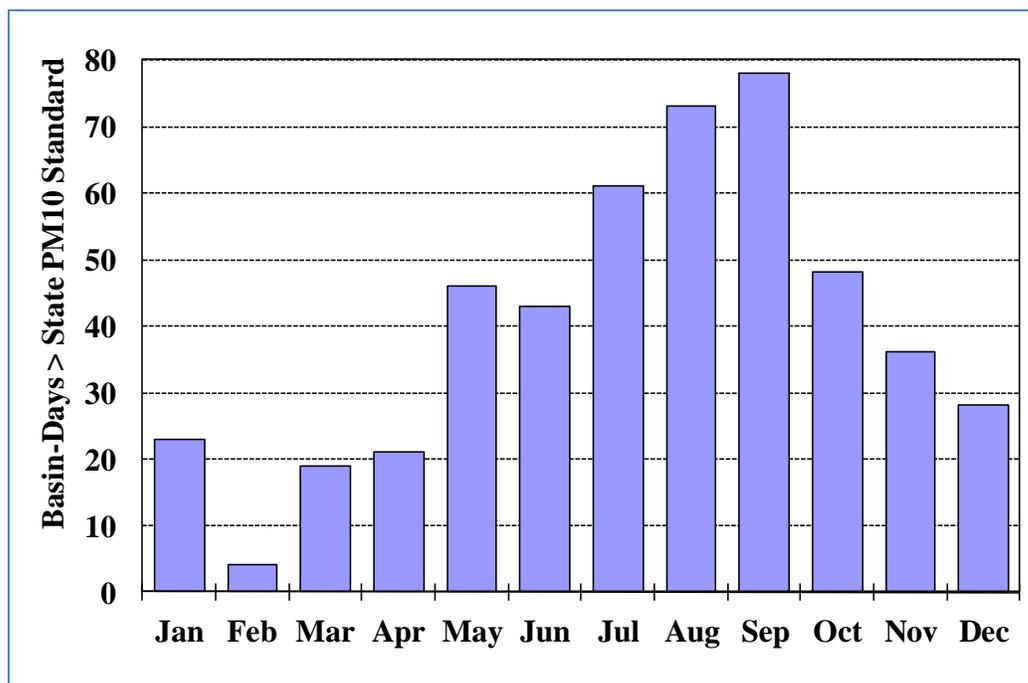


FIGURE 2-20

Basin-Days Exceeding the State PM10 Standard ($50 \mu\text{g}/\text{m}^3$) by Month, 2009-2011

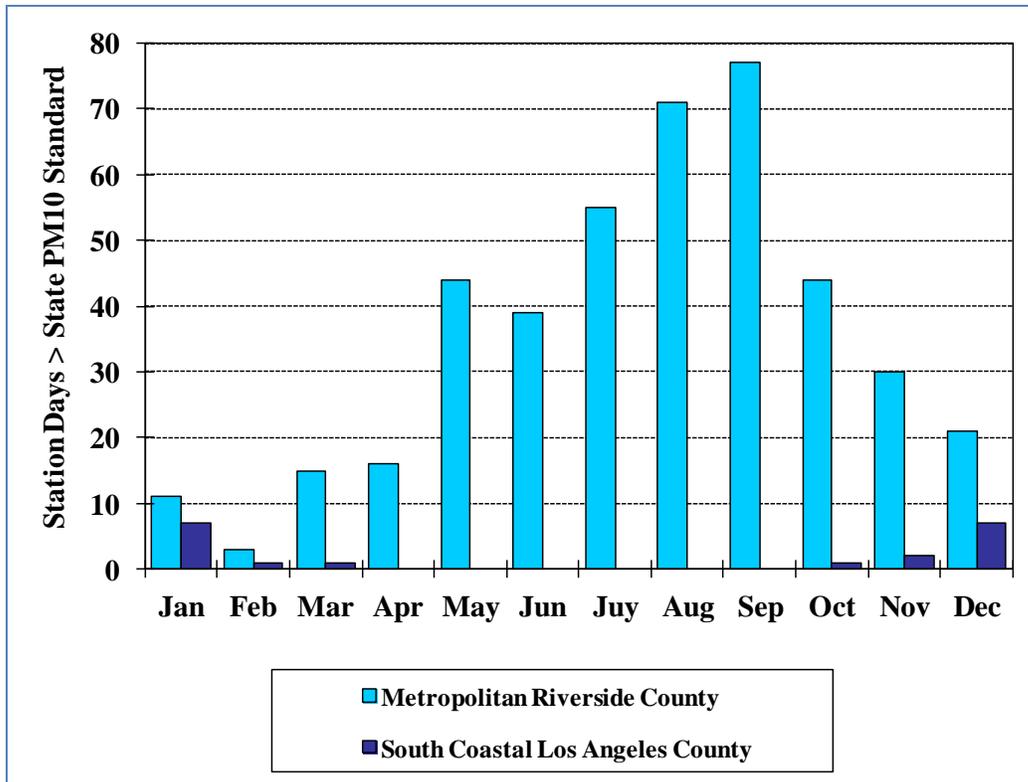


FIGURE 2-21

Number of Station Days Exceeding State PM10 Standard ($50 \mu\text{g}/\text{m}^3$) by Month, 2009-2011

Figure 2-22 shows the total number of days exceeding the state standard by day of week in the Basin and at selected sites in each county, for the period 2009-2011. The highest numbers of PM10 state standard exceedances occur on Thursday and Friday, possibly due to vehicle traffic, especially truck traffic, on those days and more construction activities than the weekend. Stations in the western Basin showed significant improvement on the weekends. On Sundays, the number of exceedances was lowest across the Basin, on average.

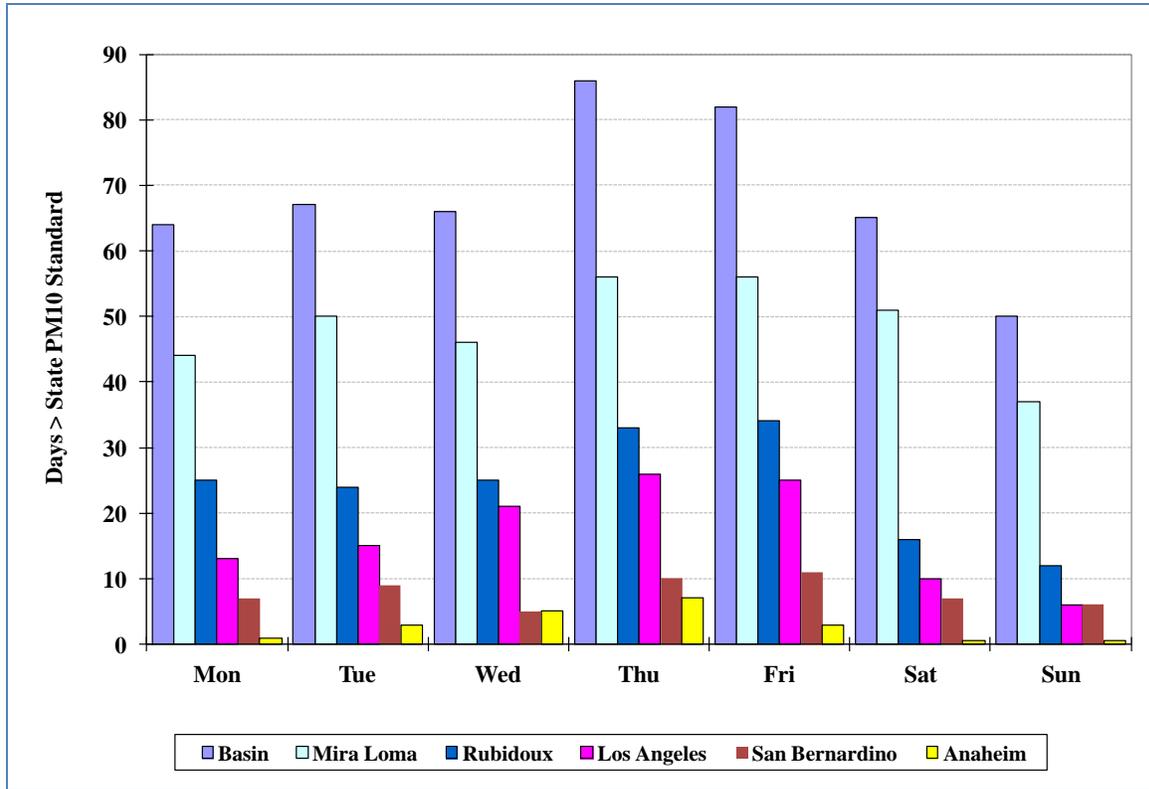


FIGURE 2-22

PM10 Day-of-Week Variation, 2009-2011

(Number of Days Exceeding State the Standard ($50 \mu\text{g}/\text{m}^3$) by Day of Week, for Basin and Individual Stations)

Figure 2-23 shows average PM10 concentrations for each hour of the day for the period 2009-2011 for the entire Basin and for select monitoring stations in the Basin, based on the hourly BAM and TEOM data. On average, PM10 concentrations show a peak around near 0900 to 1100 PST in the morning, just after the heaviest morning traffic rush-hour traffic.

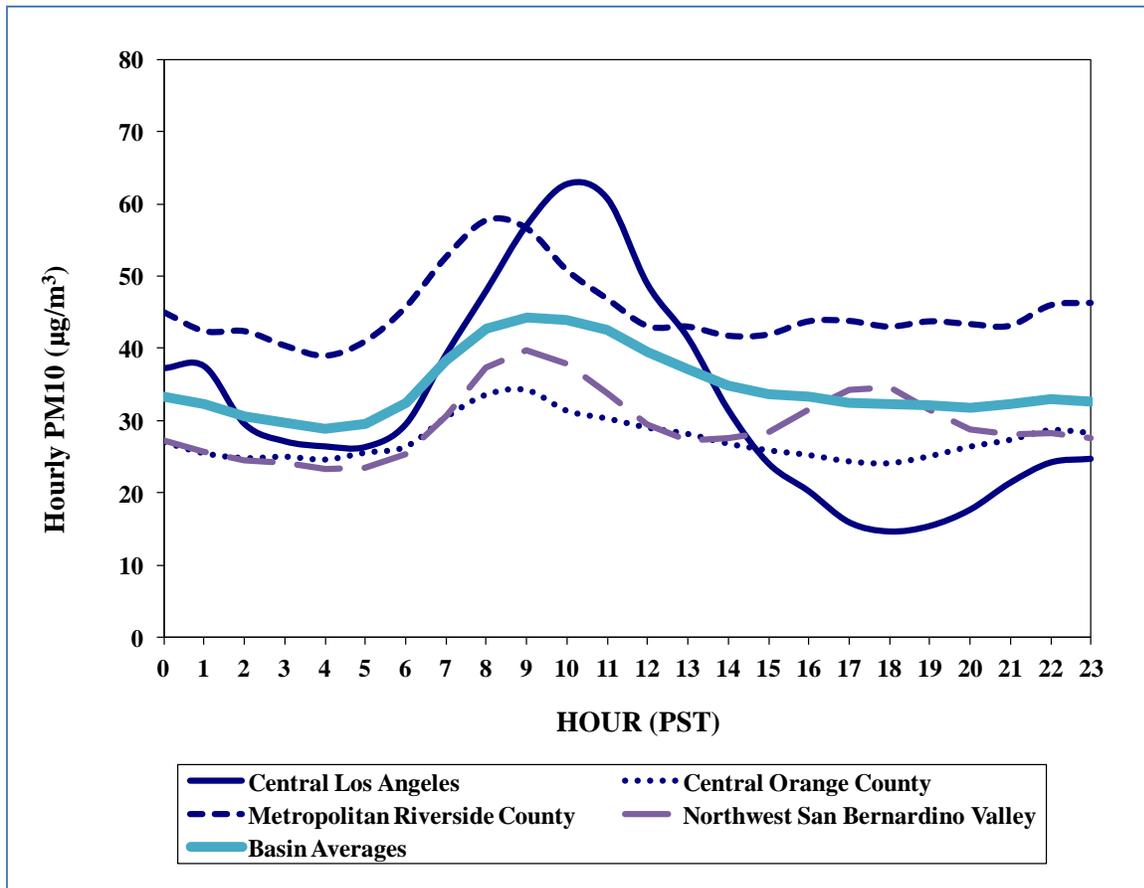


FIGURE 2-23
 PM10 Diurnal Variation, 2011
 (Annual Averaged FEM Hourly PM10 Concentrations, by Hour of the Day)

Ozone

Current Ozone Air Quality

In 2011, the District monitored ozone concentrations at 27 locations in the Basin and two in the Coachella Valley portion of the SSAB. All counties of the Basin and the Coachella Valley exceeded the current (2008) 8-hour ozone standard (0.075 ppm) in 2011. That standard was exceeded on 106 days, Basin-wide. All counties in the Basin, except Orange County, exceeded the 1997 8-hour ozone standard (0.08 ppm). The highest 8-hour average (0.136 ppm) in 2011 occurred in the Central San Bernardino

Mountains (Crestline) and was 180 percent of the 2008 8-hour ozone standard and 160 percent of the 1997 standard.

The revoked 1979 federal 1-hour ozone standard was exceeded on 16 days in the Basin, with all counties exceeding, except Orange County. The maximum 1-hour concentration (0.160 ppm) also occurred in the Central San Bernardino Mountains (Crestline) and was 128 percent of the 1979 1-hour standard.

The more stringent California state standards were exceeded almost everywhere in the Basin, except for a few coastal stations, with the greatest number of exceedances occurring in the Central San Bernardino Mountains (Crestline) and adjacent valleys. The California state 1-hour (0.09 ppm) and 8-hour (0.070 ppm) standards were exceeded on 90 days and 125 days, respectively. The highest 1-hour average and 8-hour average ozone concentrations recorded in 2011 (0.160 ppm and 0.136 ppm) were 176 percent and 192 percent of the state standards, respectively.

In 2011, all stations measured 1-hour ozone well below the Stage 1 episode level (0.20 ppm, 1-hour). Except for one day in 2003, the stage 1 episode level has not been exceeded in the Basin since 1998. There have been no exceedances of the Stage 2 episode level (1-hour average ozone \geq 0.35 ppm) since 1988 and the Stage 3 episode level (1-hour average ozone \geq to 0.50 ppm) has not been exceeded since 1974. The maximum concentrations measured in the Basin in 2011 exceeded the California 1-hour ozone Health Advisory level (0.15 ppm) at two stations on one day (July 2), with 1-hour concentrations of 0.160 ppm (Central San Bernardino Mountains – Crestline) and 0.151 ppm (East San Bernardino Valley - Redlands).

Tables 2-6 and 2-7 show the maximum 1-hour and 8-hour O₃ concentrations by air basin and county, along with the percentages over the federal and state standards. Tables A-2 through A-5 in the Attachment show the number of days exceeding the federal 8-hour and 1-hour ozone standards, as well as the 4th high 8-hour average and maximum 1-hour concentrations, at all routine District air quality monitoring stations, for the period 1995-2011. Please refer to Appendix II from the 2003 AQMP for the 1976-1989 prior-year statistics and to Appendix II from the 2007 AQMP for 1990-2005 data.

TABLE 2-6

2011 Maximum 1-Hour Average Ozone Concentrations by Basin and County

Basin/County	Maximum 1-Hr Average (ppm)	Percent of Federal Standard (0.12 ppm)	Percent of State Standard (0.09 ppm)	Area
South Coast Air Basin				
Los Angeles	0.144	115	158	Santa Clarita Valley
Orange	0.095	76	104	North Orange County
Riverside	0.133	106	146	Lake Elsinore
San Bernardino	0.160	128	176	Central San Bernardino Mountains
Salton Sea Air Basin				
Riverside	0.124	99	136	Coachella Valley

TABLE 2-7

2011 Maximum 8-Hour Average Ozone Concentrations by Basin and County

Basin/County	Maximum 8-Hr Average (ppm)	Percent of Federal Standard (0.075 ppm)	Percent of State Standard (0.07 ppm)	Area
South Coast Air Basin				
Los Angeles	0.122	162	172	Santa Clarita Valley
Orange	0.083	110	117	Saddleback Valley
Riverside	0.115	152	162	Metropolitan Riverside County
San Bernardino	0.136	180	192	Central San Bernardino Mountains
Salton Sea Air Basin				
Riverside	0.098	130	138	Coachella Valley

Ozone Spatial Variation

The number of days exceeding federal standards for ozone in the Basin varies widely by area. Figures 2-24 and 2-25 map the number of days in 2011 exceeding the current 8-hour and former 1-hour ozone federal standards in different areas of the Basin in 2011. The former 1-hour federal standard was not exceeded in areas along or near the coast in the Counties of Los Angeles and Orange, due in large part to the prevailing sea breeze which transports emissions inland before high ozone concentrations can be reached. The standard was exceeded most frequently in the Central San Bernardino Mountains. Ozone exceedances also extended through San Bernardino and Riverside County valleys in the eastern Basin, as well as the northeast and northwest portions of Los Angeles

County in the foothill and valley areas. The number of exceedances of the 8-hour federal ozone standard was also lowest at the coastal areas, increasing towards the Riverside and San Bernardino valleys and the adjacent mountain areas. The Central San Bernardino Mountains area recorded the greatest number of exceedances of the 1-hour and 8-hour federal standards (8 days and 84 days, respectively) and 8-hour state standard (103 days). While the Coachella Valley did not exceed the former 1-hour ozone standard in 2011, the current 8-hour federal standard was exceeded on 54 days.

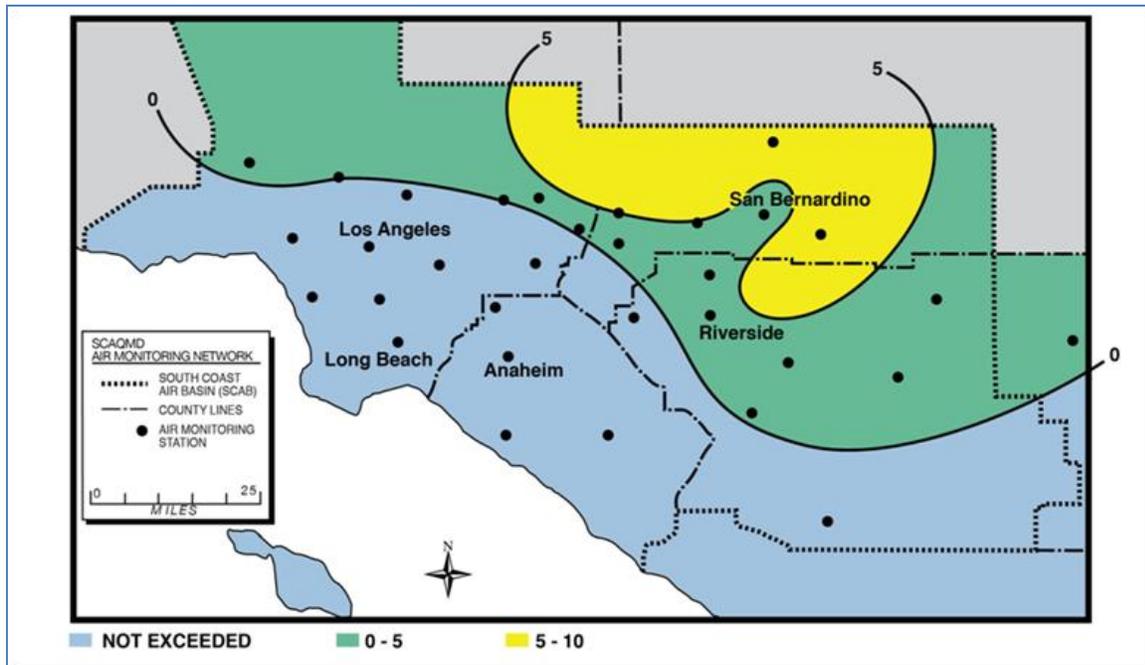


FIGURE 2-24

Number of Days in 2011 Exceeding the 1979 1-Hour Ozone Federal Standard
(1-hour average Ozone standard > 0.12 ppm)

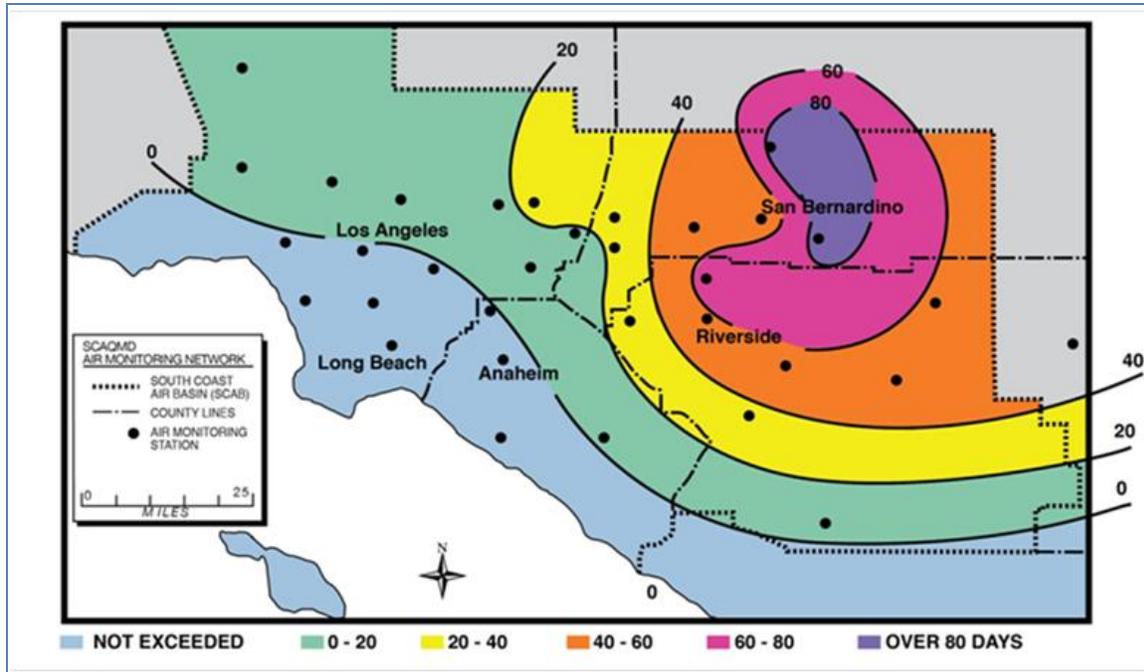


FIGURE 2-25

Number of Days in 2011 Exceeding the Current (2008) Federal 8-Hour Ozone Standard (8-hour average Ozone standard > 0.075 ppm)

Ozone Trends

The rate of ozone air quality improvement has been dramatic since the concerted effort to manage air quality in the Basin began in the 1970s. Significant improvements were seen throughout the 1990s. While the rate of improvement in ozone has slowed somewhat in the past decade, the overall trend, as well as the expectation for the future, is continuing gradual improvement. Figure 2-26 shows the Basin-wide trend (1990-2011) of number of days exceeding the 2008 and 1997 8-hour ozone standards and the former (1979) 1-hour ozone standard, along with the trend of Basin maximum 8-hour averaged ozone concentrations. Figure 2-27 shows the trend (1990-2011) of the 8-hour and 1-hour ozone 3-year design values for the Basin.

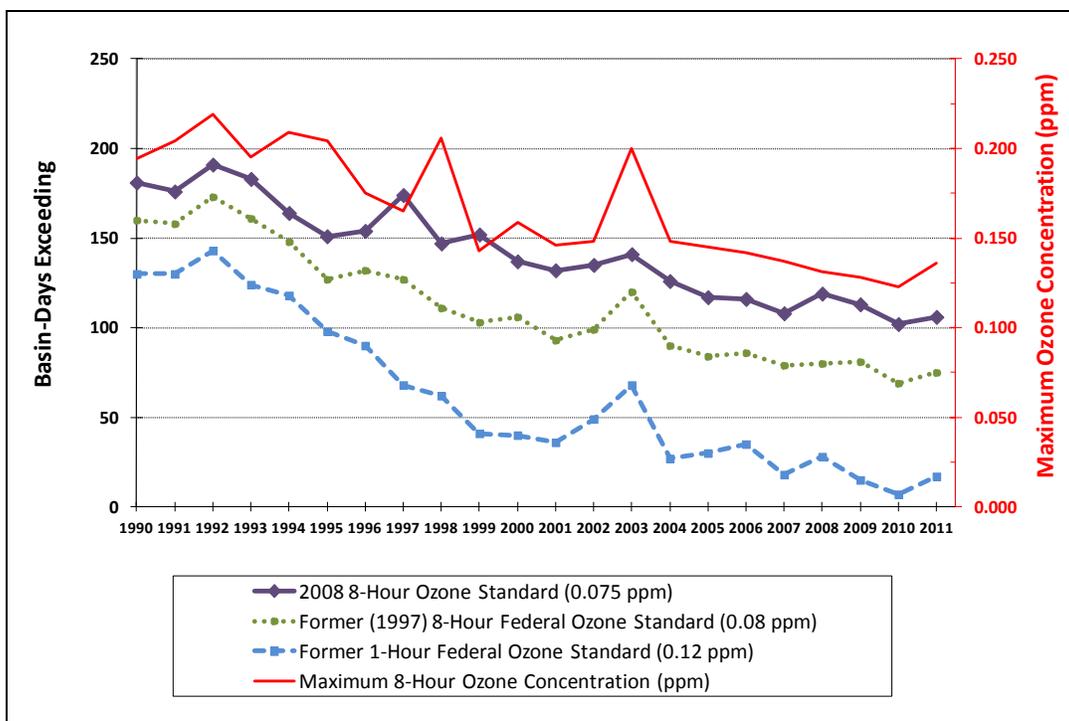


FIGURE 2-26

Trend of Annual Basin Days Exceeding Federal 8-Hour and 1-hour Ozone Standards (left axis) and Peak Concentrations (red line, right axis) (South Coast Air Basin; by year, 1990-2011)

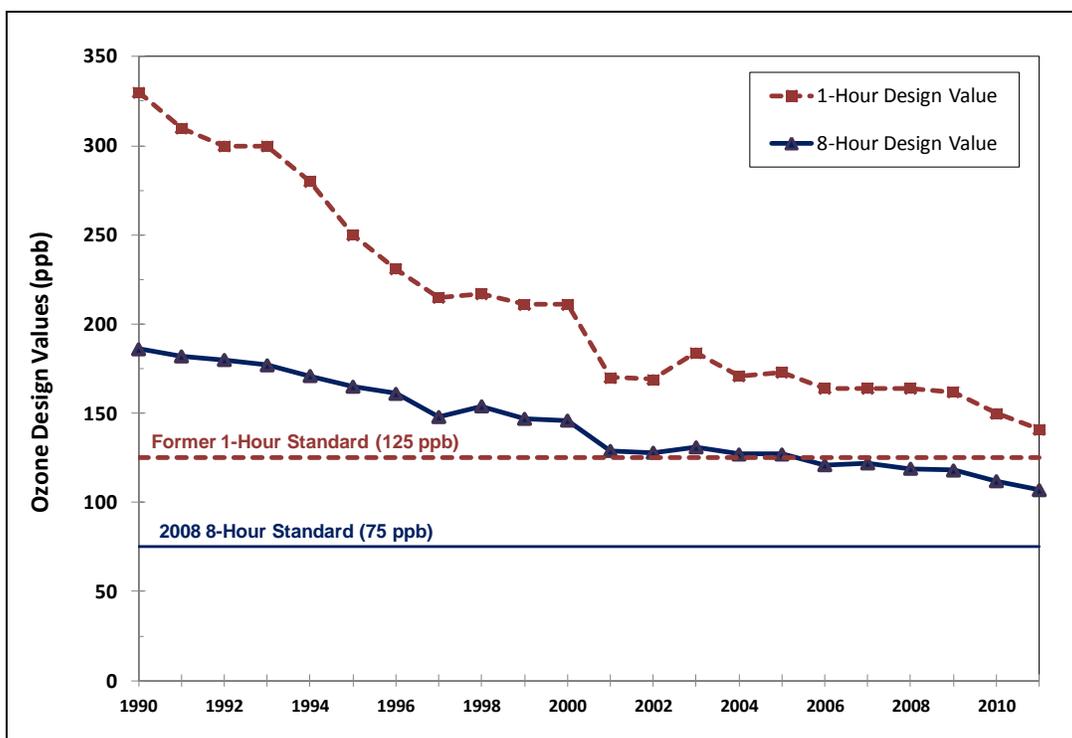


FIGURE 2-27

South Coast Air Basin Ozone Design Value Trends, 1990-2011 (1 ppb = 0.001 ppm)

Ozone Temporal Variation

Because photochemical reactions require sunlight to proceed, ozone formation is favored by strong solar radiation. Solar radiation is more intense and of longer duration in summer than in winter and summertime temperature inversions are stronger and more persistent. This causes ozone concentrations to be higher in summer than in winter. Peak ozone concentrations generally occur near the middle of the day during the period May through September.

Figure 2-28 shows the number of days per month that one or more monitoring stations exceeded the most recent (2008) federal 8-hour ozone standard level for the years 2000, 2005 and 2011. Most exceedances occur in July and August, with most days exceeding the federal standard in those months. Up until the late 1980's it was common to have days exceeding the federal ozone standard as early as February and as late as November. By the late 1990's there were no exceedances in the months of November through February. There have been relatively few exceedances in March or October in more recent years. The frequency of exceedances in the spring (April-June) has continued to decline in recent years.

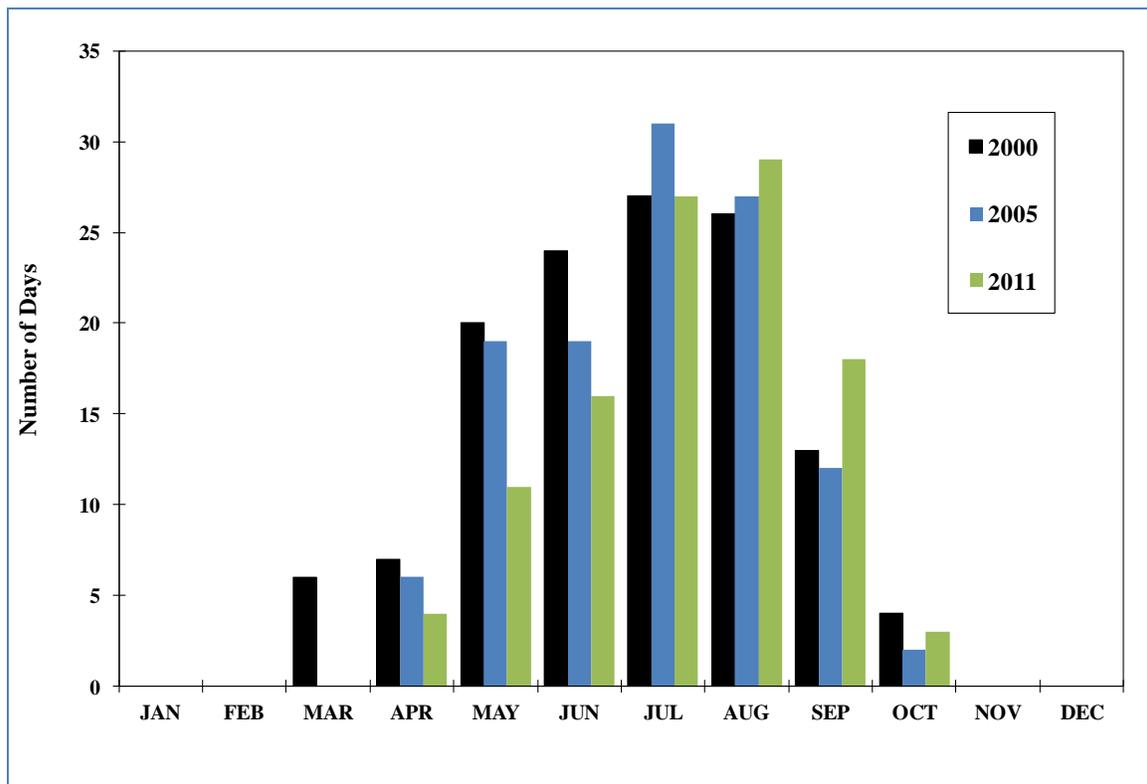


FIGURE 2-28

Monthly Distribution of Basin Days Exceeding the (2008) Federal 8-hour Ozone Standard (South Coast Air Basin, for Years 2000, 2005 and 2011)

Since the mid-1970s, it has been documented that ozone concentrations in the Basin are higher on weekends than on weekdays, in spite of the fact that ozone precursors are lower on weekends than on weekdays. Similar effects have been observed in some other metropolitan areas in the nation such as San Francisco, Washington D.C., Philadelphia, and New York. This “weekend effect” was quite pronounced in previous years in the Basin. CARB has sponsored several research projects to study the causes of elevated ozone levels on weekends in the Basin. Changes in daily patterns that impact the quantity and temporal loading of emissions have been suggested as strongly contributing to these observations. Carryover of matured precursors from weekdays to weekends is also suggested as a contributing factor. It is generally expected that this difference will decrease as ozone precursor emissions continue to decline.

In 2005, more exceeding station-days⁸ in the Basin occurred on either Saturdays or Sundays than any one weekday by more than a factor of two. The number of exceedances was slightly higher on Sundays than Saturdays. Figure 2-29 shows the number of station-days exceeding the federal 8-hour ozone standard for each day of the week in the Basin for the year 2011. In 2011, the weekends were still higher than the weekdays, with Sundays having the most exceedances, but by a much smaller margin than in earlier analyses. Averaged ozone concentrations by day-of-week also show a pattern similar to the average number of exceedances, with weekends somewhat higher than weekdays.

⁸ The term *station-days* represents the total number of days the standard was exceeded at individual monitoring stations summed for all stations in the Basin.

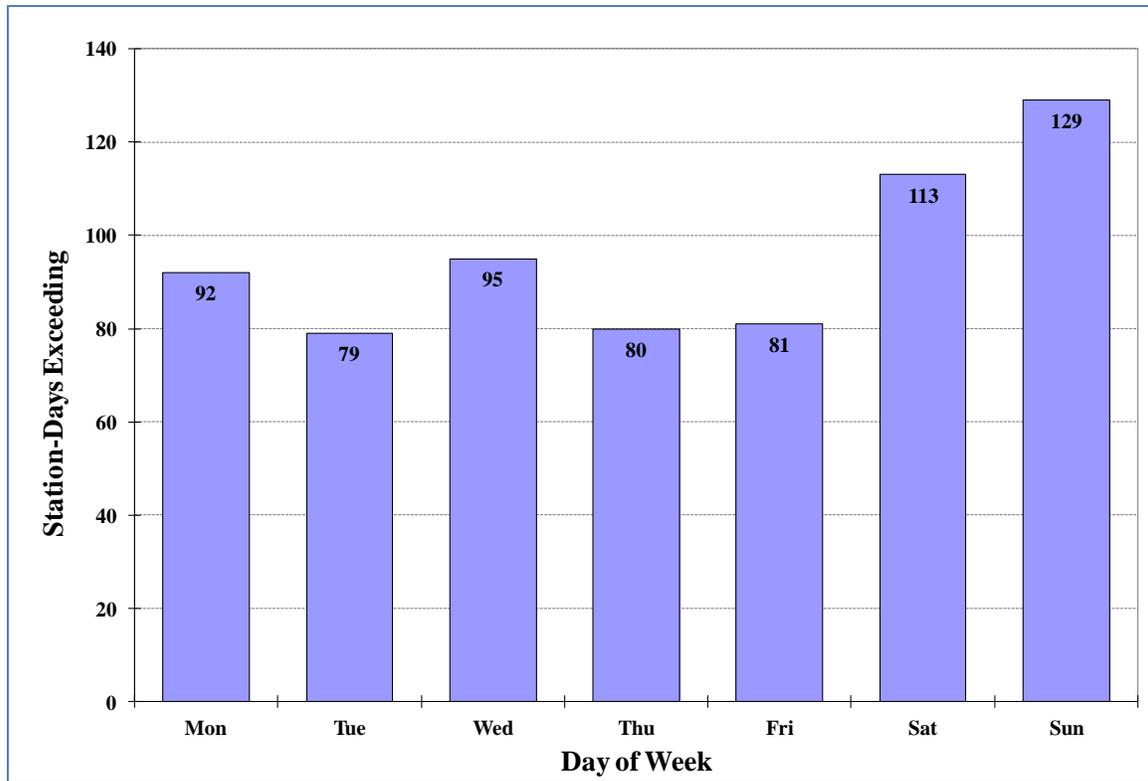


FIGURE 2-29
8-Hour Ozone Day-of-Week Variation, 2011
(Basin Station-Days Exceeding the 2008 Federal Ozone Standard)

Because time and sunlight are required for precursor organic gases and nitrogen oxides to react to form ozone, peak ozone concentrations usually occur from afternoon to early evening. By this time, the prevailing sea breeze has moved the polluted air mass miles inland from the major sources of precursor emissions. Ozone concentrations in the Basin are typically low during early morning hours, increasing rapidly after sunrise and peaking in the afternoon. However, peak concentrations occur earlier in the day for coastal areas and later in the day for locations further downwind.

Figure 2-30 illustrates the average of the smog season (May-October) 1-hour ozone concentrations for each hour of the day (shown in Pacific Standard Time), by station, for the year 2011. The average peak occurs near noon at the coastal stations (LAX) and most stations in the Basin reach their peak by the 2 p.m. The far inland stations at Central San Bernardino Valley (San Bernardino) and Central San Bernardino Mountains (Crestline, where the highest concentrations have been measured in recent years) peak near 3 or 4 p.m., but the ozone at Crestline decreases at a slower rate in the evening, leading to higher 8-hour ozone values. On the worst smog days, this station can remain relatively high through the night.

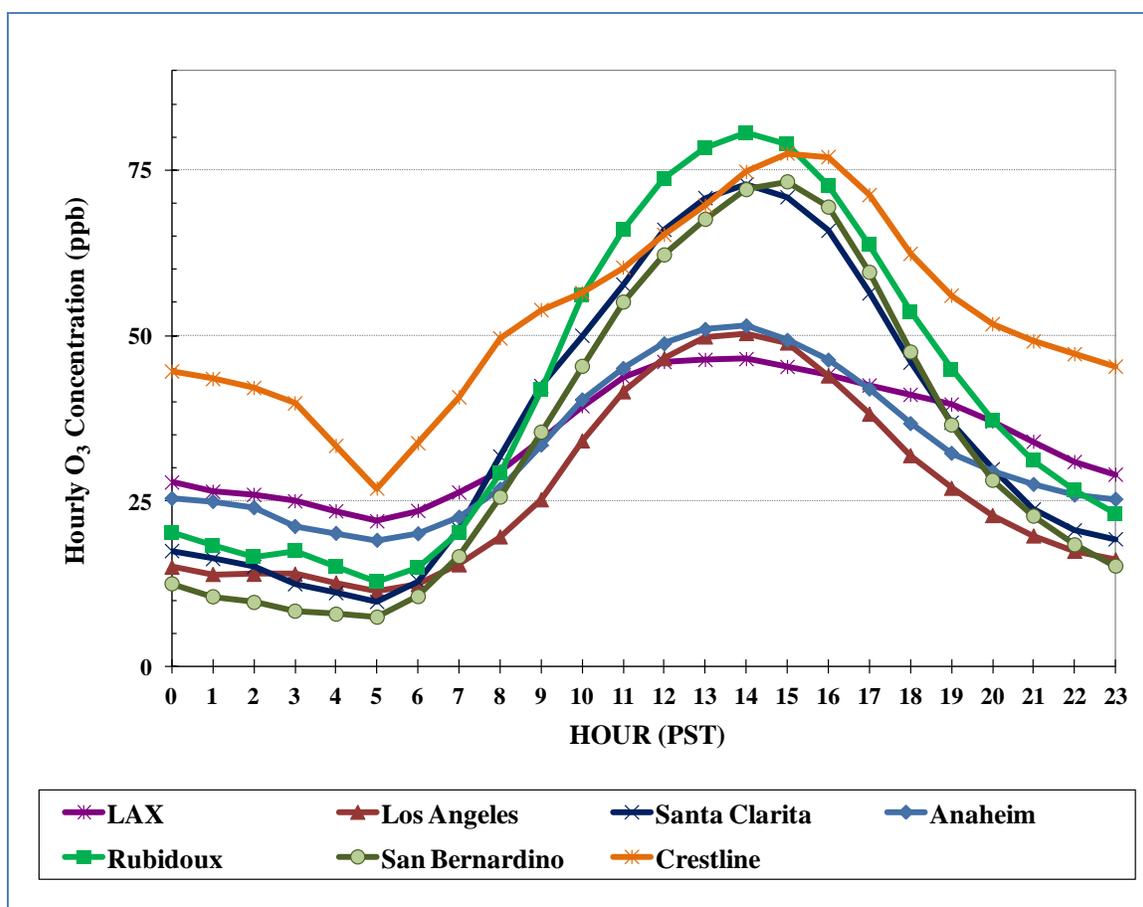


FIGURE 2-30

Diurnal Variation of Basin May-October 2011 Averaged Hourly Ozone Concentrations

Carbon Monoxide (CO)

CO Air Quality

The District currently monitors carbon monoxide air quality at 25 of its 34 air monitoring stations, including one station in the Coachella Valley. The highest CO concentrations are found in coastal and central Los Angeles County. The highest 8-hour average CO concentration in 2011 (4.7 ppm) was recorded in South Central Los Angeles county and was 49 percent of the federal 8-hour standard (9 ppm) and 52 percent of the state 8-hour standard (9.0 ppm). In recent years, the Basin has measured the lowest concentrations since carbon monoxide monitoring began in this region, several decades ago. The highest 1-hour average concentration in 2011 (6 ppm) was 17 percent of the federal 1-hour standard (35 ppm) and 29 percent of the state 1-hour standard (20 ppm). Concentrations in the less urbanized areas of the Basin and in the SSAB were well below the standards.

Carbon monoxide has continued to remain below the federal standards at all locations monitored since 2003. U.S. EPA redesignated the Basin to attainment of the federal CO

standards, effective June 11, 2007. The highest concentrations are typically recorded in Los Angeles County, in the area of South Central Los Angeles. There have also been no exceedances of the Stage 1 episode (federal alert) level (8-hour average CO greater than or equal to 15 ppm) since 1997. Table 2-8 shows the 2011 maximum 8-hour and 1-hour average carbon monoxide concentrations by Basin and county. The annual maximum 8-hour CO concentrations at all District air monitoring stations are shown in Table A-13 in the Attachment, for the period 1995-2011.

TABLE 2-8

2011 Maximum 8-Hour and 1-Hour CO Concentrations by Basin and County

Basin/County	Maximum 8-Hr Average (ppm)	Percent of Federal Standard (9 ppm)	Maximum 1-Hr Average (ppm)	Percent of Federal Standard (35 ppm)	Area
South Coast Air Basin					
Los Angeles	4.7	49	6.0	17	South Central L.A. County
Orange	2.2	23	3.4	10	North Coastal Orange County
Riverside	1.9	20	2.7	8	Metropolitan Riverside County
San Bernardino	1.7	18	1.8	5	Central San Bernardino Valley
Salton Sea Air Basin					
Riverside	0.6	6	3.0	8	Coachella Valley

Nitrogen Dioxide (NO₂)

NO₂ Air Quality

In 2011, the District monitored NO₂ concentrations at 25 locations, including one in the Coachella Valley. For the newly-promulgated 1-hour NO₂ standard, the Basin had not exceeded the federal annual standard for NO₂ (0.053 ppm or 53 ppb) since 1991, when the Los Angeles County portion of the Basin recorded the last exceedance of the standard in any U.S. county. The level of the recently established 1-hour average NO₂ federal standard (100 ppb), however, was exceeded on one day in 2011. The state NO₂ standards were not exceeded in the Basin.

The maximum 1-hour and annual average NO₂ concentrations for 2011 are shown in Table 2-9, by basin and county. The Basin maximum annual average NO₂ concentration (24.6 ppb, recorded in the Pomona/Walnut Valley area) was 46 percent of the federal annual NO₂ standard and 82 percent of the state annual standard (0.030 ppm or 30 ppb). The maximum 1-hour average NO₂ concentration in the Basin (109.6 ppb, in Central Los Angeles County) was 109 percent of the new federal standard (100 ppb) and 61 percent

of the state standard (180 ppb). Concentrations in the downwind Coachella Valley areas were much lower than in the Basin.

The exceedances of the federal 1-hour NO₂ standard in 2011 occurred on the same day at two stations in Los Angeles County (Central Los Angeles and Long Beach). When considering the 98th percentile form of the federal standard or the 3-year design value, the Basin did not exceed the NAAQS and attainment status is not affected. Although the Basin is in attainment of the state and federal standards, NO₂ is still a concern since it is a precursor to both ozone and particulate matter. Further control of oxides of nitrogen will be required to attain the ozone and particulate standards.

The annual averages and annual maximum 1-hour average concentrations for each monitoring station in the District for the years 1995-2011 are shown in Tables A-14 and A-15, respectively, in the Attachment.

TABLE 2-9
2011 Maximum 1-Hour and Annual Average NO₂ Concentrations by Basin and County

Basin/County	Maximum 1-Hour Average (ppb)	Percent of Federal Standard (100 ppb)	Maximum Annual Average (ppb)	Percent of Federal Standard (53 ppb)	Area
South Coast Air Basin					
Los Angeles	109.6*	109	24.6	46	Central Los Angeles County; Pomona/Walnut Valley
Orange	73.8	73	16.8	31	North Orange County
Riverside	63.3	63	16.9	32	Metropolitan Riverside County
San Bernardino	76.4	76	21.1	39	Central San Bernardino Valley
Salton Sea Air Basin					
Riverside	44.7	44	8.0	15	Coachella Valley

* Although the maximum 1-hour concentrations exceeded the standard, the 98th percentile form of the design value did not exceed the NAAQS

Sulfur Dioxide (SO₂)

SO₂ Air Quality

In 2011, sulfur dioxide was measured at seven Basin locations. Based on the review of the SO₂ standards, U.S. EPA has established the 1-hour SO₂ standard to protect the public health against short-term exposure. The level of the standard is now set at 75 ppb 1-hour average, revoking the existing annual (0.03 ppm) and 24-hour (0.14 ppm) federal standards, effective August 2, 2010. No violations have occurred of the current federal

1-hour standards, the former federal annual or 24-hour standards, or the state standards (0.25 ppm, 1-hour or 0.04 ppm, 24-hour). The annual and 24-hour federal standards were last exceeded in the 1960's and the state standards were last exceeded in 1990.

The maximum 1-hour average SO₂ concentrations recorded in the District in 2011 are shown in Table 2-10. The highest 1-hour average SO₂ concentration (51.2 ppb in Metropolitan Riverside County) was 68 percent of the federal 24-hour standard. While SO₂ concentrations in the Basin no longer exceed standards, SO₂ is a precursor of sulfate, which is a component of PM₁₀ and PM_{2.5}. The highest 24-hour average SO₂, measured in the South Coastal Los Angeles County area, near the Ports of Los Angeles and Long Beach was 0.013 ppm, 32 percent of the state standard. Annual maximum 1-hour average SO₂ concentrations for each air monitoring station for the years 1995-2011 are shown in Table A-16 in the Attachment.

TABLE 2-10

2011 Maximum 1-Hour Average SO₂ Concentrations by Basin and County

Basin/County	Maximum 1-hr Average (ppb)	Percent of Federal Standard (75 ppb)	Area
South Coast Air Basin			
Los Angeles	19.8	26	Central Los Angeles
Orange	7.7	10	North Coastal Orange County
Riverside	51.2	68	Metropolitan Riverside County
San Bernardino	12.3	16	Central San Bernardino Valley
Salton Sea Air Basin			
Riverside	N.D.		Coachella Valley

N.D. = No Data. Historical measurements and lack of emissions sources indicate concentrations are well below standards.

Sulfate (SO₄²⁻)

Sulfate Air Quality

In 2011, sulfate concentrations were measured at 21 Basin locations and one in the Coachella Valley. The current form of the state standard (25 µg/m³) is based on sulfate from PM₁₀ (24-hour average); there is no federal sulfate standard. In 2011, the state PM₁₀-sulfate standard was not exceeded anywhere in the Basin and this standard has not been exceeded in the Basin or the Coachella Valley in many years. Maximum concentrations by air basin and county are shown in Table 2-11. The maximum sulfate concentration (12.6 µg/m³) recorded in the District was 50 percent of the state standard.

The maximum 24-hour average concentrations at each District air monitoring station for the years 1995-2011 are shown in Table A-17 in the Attachment.

TABLE 2-11

2011 Maximum 24-Hour Average Sulfate (PM10) Concentrations by Basin and County

Basin/County	Maximum 24-hr Average ($\mu\text{g}/\text{m}^3$)	Percent of State Standard ($25 \mu\text{g}/\text{m}^3$)	Area
South Coast Air Basin			
Los Angeles	8.0	32	Central Los Angeles County
Orange	6.5	26	Central Orange County
Riverside	5.3	21	Metropolitan Riverside County
San Bernardino	6.0	24	Central San Bernardino Valley
Salton Sea Air Basin			
Riverside	5.7	23	Coachella Valley

Lead (Pb)

Current Lead Air Quality

In 2011 lead concentrations were measured at ten Basin urban ambient air monitoring stations and five source-specific stations near major Pb emissions sources. Except for the source-specific monitoring that is now required under the new NAAQS, there have been no violations of the lead standards at the District's regular ambient air monitoring stations since 1982, primarily as a direct result of the removal of Pb from gasoline. However, monitoring at two stations immediately adjacent to stationary sources of Pb have recorded exceedances of the standards in localized areas of the Basin in more recent years.

U.S. EPA designated the Los Angeles County portion of the Basin (excluding the high desert areas, and San Clemente and Santa Catalina Islands) as nonattainment for the recently revised (2008) federal Pb standard ($0.15 \mu\text{g}/\text{m}^3$, rolling 3-month average), due to the source-specific monitoring under the new federal regulation. This designation was based on two source-specific monitors in the Los Angeles County Cities of Vernon and Industry exceeding the new standard in the 2007-2009 period of data used by U.S. EPA. For the most recent 2009-2011 design value data period, only one of these stations (Vernon) still exceeded the Pb standard, with a maximum 3-month rolling average of $0.67 \mu\text{g}/\text{m}^3$ that was measured in 2009 (432 percent of the federal standard). In 2011, the maximum rolling 3-month average at the Vernon site was $0.46 \mu\text{g}/\text{m}^3$ (297 percent of

the federal standard). A separate PB SIP addressing the 2008 lead standard in the Basin was submitted to U.S. EPA in June 2012.

The remainder of the Basin, other than the one source specific monitor in the Los Angeles County nonattainment area, is currently attaining the new Pb standard, including both ambient and source-specific monitoring. The old (1978) Pb standard ($1.5 \mu\text{g}/\text{m}^3$, as a quarterly average) remained in effect until one year after the area was designated for the 2008 standard, for areas in attainment of the 1978 standard. While the entire Basin has remained in attainment of the 1978 lead standard, U.S. EPA's current Pb designations for the new standard became effective on December 31, 2010 so the old standard is now fully superseded by the 2008 revised NAAQS. Nonetheless, the revoked (1978) federal lead standard ($1.5 \mu\text{g}/\text{m}^3$, as a quarterly average) and the state Pb standard ($1.5 \mu\text{g}/\text{m}^3$, as a 30-day average) were not exceeded in the District's ambient network in 2011. The highest 30-day average in 2011 at the source-specific monitor at Vernon was $0.45 \mu\text{g}/\text{m}^3$ (30 percent of the state standard). The highest 30-day average for an ambient Pb monitor was $0.02 \mu\text{g}/\text{m}^3$ (less than 2 percent of the state standard).

Table 2-12 shows the maximum 3-month rolling average Pb concentrations recorded in 2011, for each county in the Basin. The state standard maximum monthly average and federal standards maximum quarterly and 3-month rolling average lead concentrations at each District air monitoring site for the years 1995-2011 are given in Tables A-18 to A-20 in the Attachment.

TABLE 2-12
2011 Maximum 3-Month Rolling Pb Concentrations by Basin and County

Basin/County	Maximum 3-Month Rolling Average ($\mu\text{g}/\text{m}^3$)	Percent of Federal Standard ($0.15 \mu\text{g}/\text{m}^3$)	Area
South Coast Air Basin			
Los Angeles*	0.46	297	Central Los Angeles
Orange	N.D.		
Riverside	0.01	6	Metropolitan Riverside County
San Bernardino	0.01	6	Northwest San Bernardino Valley, Central San Bernardino Valley
Salton Sea Air Basin			
Riverside	N.D.		Coachella Valley

* This high lead concentration was measured at a site immediately downwind of a lead source.
N.D. = No Data. Historical measurements indicate concentrations are well below standards.

CHAPTER 3

AIR QUALITY IN THE RIVERSIDE COUNTY PORTION OF THE SALTON SEA AIR BASIN (COACHELLA VALLEY)

Air Quality in the SSAB, Riverside County (Coachella Valley)

Fine Particulate Matter (PM_{2.5})

Particulate Matter (PM₁₀)

Ozone (O₃)

Carbon Monoxide (CO)

Nitrogen Dioxide (NO₂)

Sulfur Dioxide (SO₂)

Sulfate (SO₄²⁻)

Lead (Pb)

AIR QUALITY IN THE SSAB, RIVERSIDE COUNTY (COACHELLA VALLEY)

In 2011, the District monitored air quality at two routine locations in the Riverside county portion of the Salton Sea Desert Air Basin (SSAB), both in the Coachella Valley. Figure 3-1 shows a map of the area and topography. One monitoring station (Palm Springs) is located immediately downwind of the densely populated South Coast Air Basin (Basin). The second station (Indio) is located further downwind in the Coachella Valley.

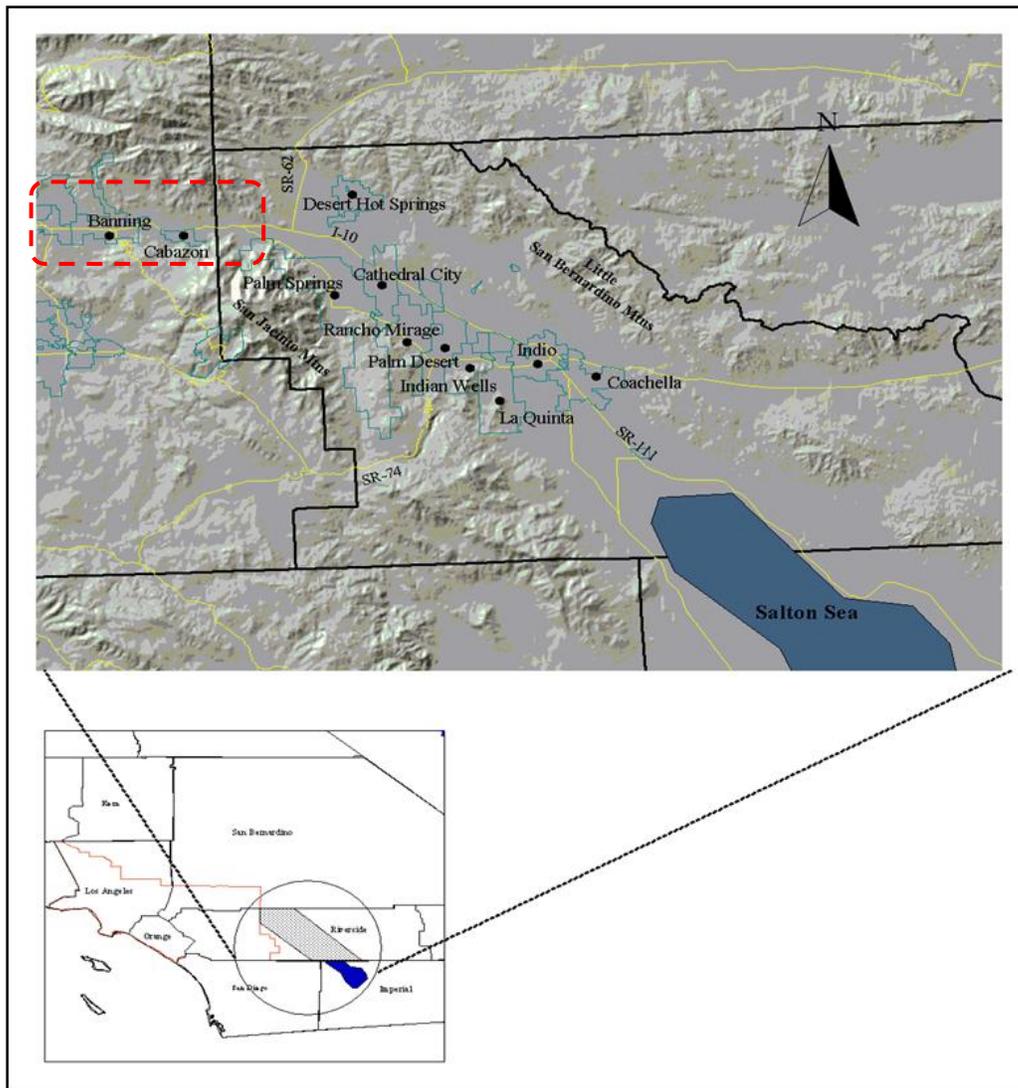


FIGURE 3-1

Location and Topography of the Coachella Valley
(Dashed red box indicates the San Gorgonio Pass; District Coachella Valley air monitoring stations are located at Palm Springs and Indio)

Federal and state standards for PM_{2.5}, carbon monoxide (CO), and nitrogen dioxide (NO₂) were not exceeded in the Coachella Valley in 2011, nor was the state standard for Sulfate (SO₄²⁻, from PM₁₀). However, the Coachella Valley exceeded state and federal standards for ozone (O₃) and PM₁₀. The most current (2008) federal 8-hour O₃ standard was exceeded on 54 days in this area in 2011.

The two days in 2011 that exceeded the 24-hour PM₁₀ National Ambient Air Quality Standards (NAAQS) were flagged by the District for consideration under the U.S. EPA Exceptional Events Rule⁹, due to high-wind natural events (windblown dust from thunderstorm outflows). With those days flagged, the Coachella Valley did not violate the 24-hour PM₁₀ NAAQS.

The maximum concentrations measured at the District’s Coachella Valley air monitoring stations in 2011 are shown in Figure 3-2, as percentages of the state and federal standards. Figure 3-3 shows the Coachella Valley 3-year (2009-2011) design values, as percentages of the current and revoked federal standards.

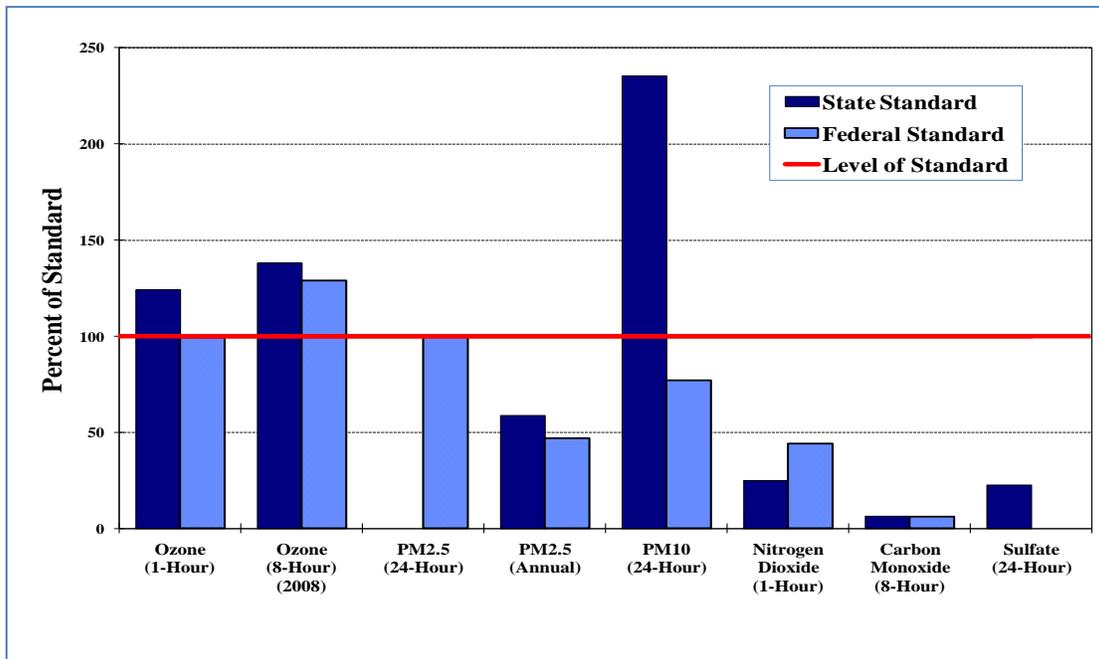


FIGURE 3-2
Coachella Valley 2011 Maximum Pollutant Concentrations
as Percent of State and Federal Standards

⁹The U.S. EPA Exceptional Events Rule, *Treatment of Data Influence by Exceptional Events*, became effective May 21, 2007. The previous U.S. EPA *Natural Events Policy* for Particulate Matter was issued on May 30, 1996. Under the Exceptional Events Rule, U.S. EPA allows certain data to be flagged in the U.S. EPA Air Quality System (AQS) database and not considered for NAAQS attainment status when that data is influenced by exceptional events, such as high winds, wildfires, volcanoes, or some cultural events (Independence Day fireworks) that meet strict requirements.

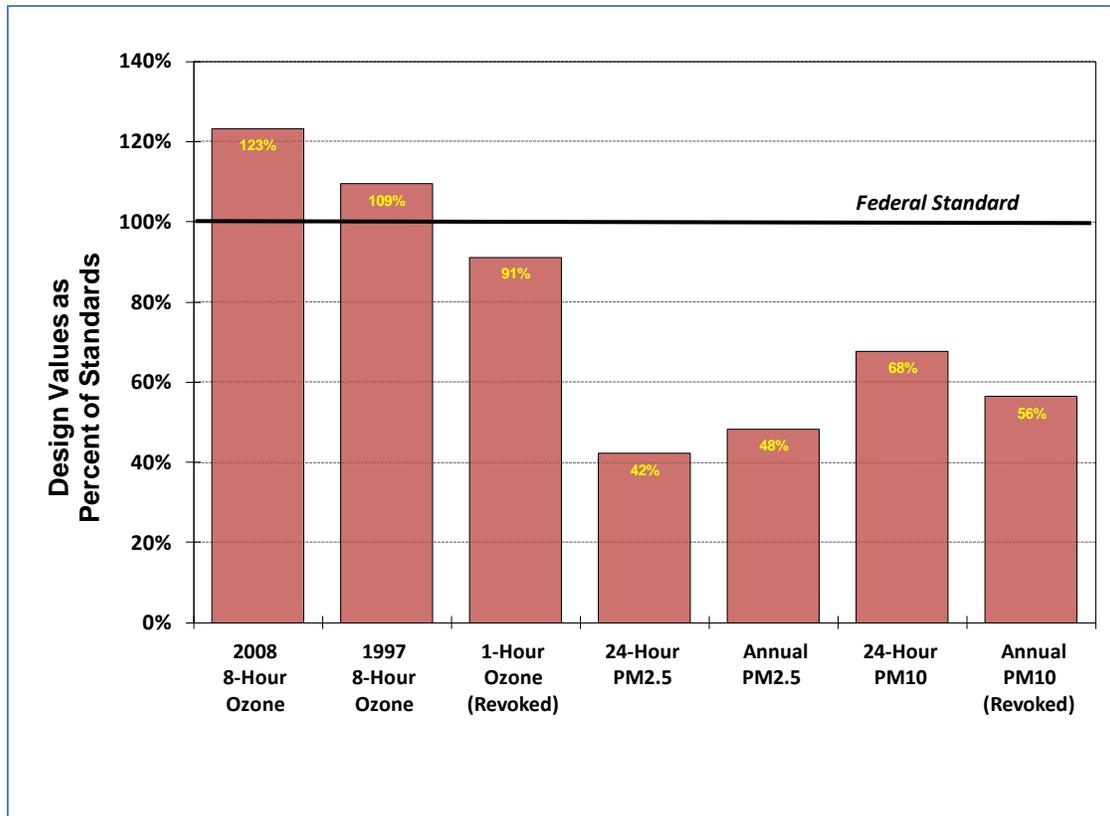


FIGURE 3-3

Coachella Valley 3-Year (2009-2011) Design Values as Percent of Federal Standards

The current NAAQS, as attainment designations for the Coachella Valley are presented in Table 3-1. Coachella Valley station data is also included, along with the Basin stations, in the tables by pollutant for the years 1995-2011, in the Attachment to this Appendix.

TABLE 3-1
National Ambient Air Quality Standards (NAAQS) Attainment Status
Coachella Valley Portion of the Salton Sea Air Basin

Criteria Pollutant	Averaging Time	Designation ^{a)}	Attainment Date ^{b)}
1979 1-Hour Ozone^{c)}	1-Hour (0.12 ppm)	Nonattainment (Severe-17)	11/15/2007 (not timely attained ^{c)})
1997 8-Hour Ozone^{d)}	8-Hour (0.08 ppm)	Nonattainment (Severe-15)	6/15/2019
2008 8-Hour Ozone	8-Hour (0.075 ppm)	Nonattainment (Severe-15)	12/31/2027
CO	1-Hour (35 ppm) 8-Hour (9 ppm)	Unclassifiable/Attainment	N/A
NO₂^{e)}	1-Hour (100 ppb)	Unclassifiable/Attainment	N/A
	Annual (0.053 ppm)	Unclassifiable/Attainment	N/A
SO₂^{f)}	1-Hour (75 ppb)	Designations Pending	N/A
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	N/A
PM10	24-hour (150 µg/m ³)	Nonattainment (Serious) ^{g)}	12/31/2006 (redesignation request submitted)
PM2.5	24-Hour (35 µg/m ³) Annual (15.0 µg/m ³)	Unclassifiable/Attainment	N/A
Lead (Pb)	3-Months Rolling (0.15 µg/m ³)	Unclassifiable/Attainment	N/A

- a) U.S. EPA often only designates Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable
- b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration
- c) 1-hour O₃ standard (0.13 ppm) was revoked, effective June 15, 2005; the Southeast Desert Modified Air Quality Management Area, including the Coachella Valley, did not attain this standard based on 2005-2007 data and has some continuing obligations under the former standard (latest 2009-2011 data shows attainment)
- d) 1997 8-hour O₃ standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the 1997 O₃ standard and most related implementation rules remain in place until the 1997 standard is revoked by U.S. EPA
- e) New NO₂ 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO₂ standard retained
- f) The 1971 annual and 24-hour SO₂ standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO₂ 1-hour standard. Area designations expected in 2012, with SSAB likely designated Unclassifiable /Attainment
- g) Annual PM10 standard was revoked, effective December 18, 2006; redesignation request to Attainment of the 24-hour PM10 standard is pending with U.S. EPA

Fine Particulate Matter (PM2.5)

PM2.5 has been measured in Coachella Valley since 1999 when the District began PM2.5 monitoring, using filter-based Federal Reference Method (FRM) samplers on a 1-in-3-day schedule. PM2.5 has remained relatively low compared to the South Coast Air Basin due to fewer combustion-related emissions sources and also the increased vertical mixing and horizontal dispersion in the desert area. In 2011, federal PM2.5 standards (35 $\mu\text{g}/\text{m}^3$, 24-hour average; 15.0 $\mu\text{g}/\text{m}^3$, annual average) were not exceeded at either of the two Riverside County SSAB air monitoring sites. The Coachella Valley maximum 24-hour average and annual average concentrations recorded in 2011 (35.4 $\mu\text{g}/\text{m}^3$ and 7.2 $\mu\text{g}/\text{m}^3$) were, respectively, 99.7 percent and 48 percent of the federal 24-hour and annual standards.

While not exceeding the 24-hour federal standard, the relatively high 24-hour concentration of 35.4 $\mu\text{g}/\text{m}^3$ was unusual for the Coachella Valley and occurred at Indio on one of the exceptional event days that had extremely high PM10 due to windblown dust from thunderstorm activity. The second high 24-hour PM2.5 average for the Coachella Valley was 26.3 $\mu\text{g}/\text{m}^3$ (74 percent of the federal standard), at Palm Springs. When looking at the 3-year design values (2009-2011) that considers the form of the federal standard, the Coachella Valley PM2.5 24-hour design value is 15.0 $\mu\text{g}/\text{m}^3$ (42 percent of the short-term standard) and the PM2.5 annual design value is 7.3 $\mu\text{g}/\text{m}^3$ (48 percent of the annual standard).

The annual PM2.5 state standard (12.0 $\mu\text{g}/\text{m}^3$) was not exceeded in the Coachella Valley, with the maximum annual average of 7.2 $\mu\text{g}/\text{m}^3$ (at Palm Springs) at 60 percent of the standard. This suggests that the Coachella Valley will also be in attainment of the upcoming revision to the federal annual PM2.5 standard, which has been proposed within a range from 12.0 to 13.0 $\mu\text{g}/\text{m}^3$. The Coachella Valley was between 55 and 60 percent of the proposed new PM2.5 annual standard for the year 2011. Figure 3-4 shows the trend of the annual average PM2.5 and PM10 concentrations in the Coachella Valley for the station showing the highest PM10 measurements from 1990 through 2011. Tables A-9 to A-12 in the Attachment to this appendix show the annual arithmetic mean, percentage of sampling days over the 24-hour federal standard, maximum 24-hour average concentrations, and 98th percentile 24-hour concentrations for the years 1999-2011 for all monitoring stations, including the two in the Coachella Valley.

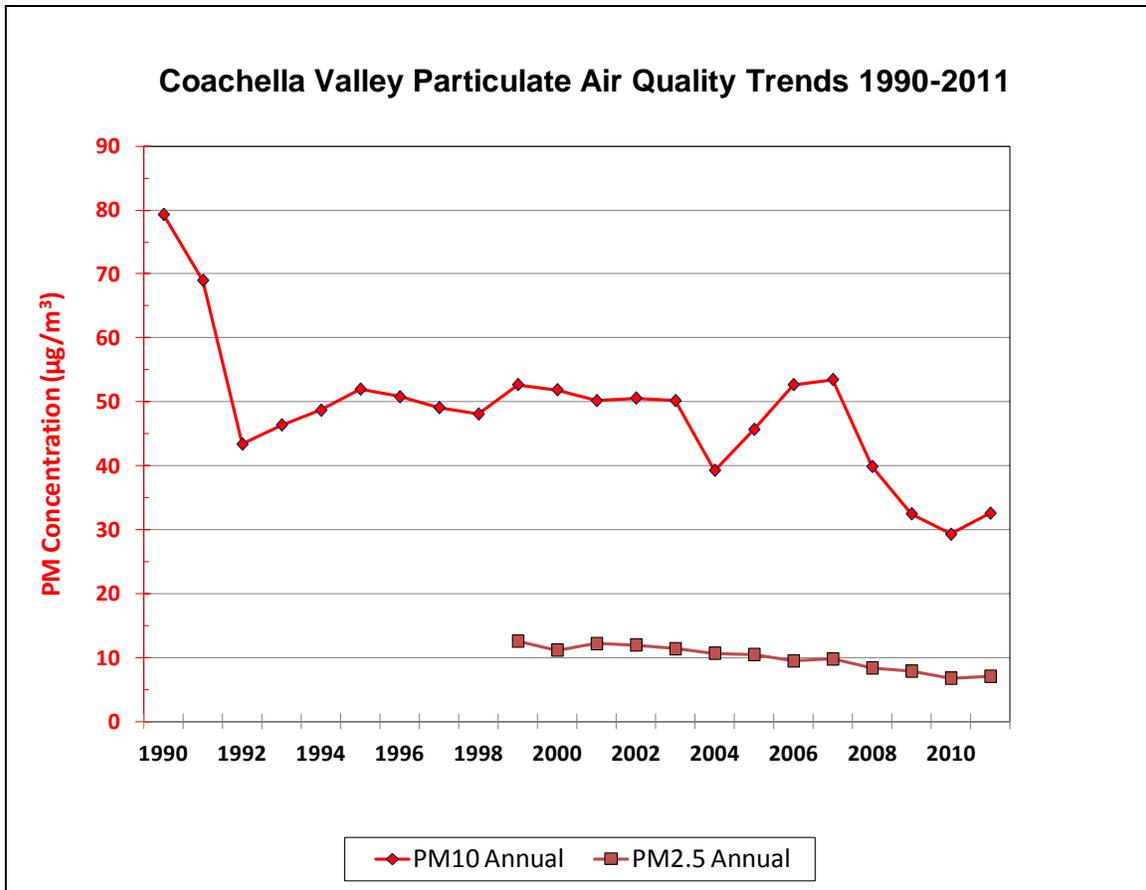


FIGURE 3-4

Coachella Valley Trend of Annual Average PM2.5 and PM10, 1990-2011

Particulate Matter (PM10)

Although exceedances of the ozone standard in the Coachella Valley area are due primarily to the transport of ozone from the densely populated areas of the Basin upwind, the same cannot be said for PM10 exceedances. PM10 exceedances in the Coachella Valley are primarily due to locally generated sources of fugitive dust (e.g., natural wind-blown sources, construction and agricultural activities, and re-entrained dust from paved road travel) and not as a result of secondary particulates generated from precursor gaseous emissions. PM10 is the only pollutant which has sometimes reached higher concentrations in the SSAB than in the Basin.

The Coachella Valley is subject to frequent high winds which generate wind-blown sand and dust, especially from disturbed soil and natural desert blowsand¹⁰. Air forced

¹⁰ The blowsand process is a natural sand migration caused by the action of winds on the vast areas of sand in the Coachella Valley. The sand is supplied by weather erosion of the surrounding mountains and foothills. Although the sand migration is somewhat disrupted by urban growth in the Valley, the overall region of blowsand activity encompasses approximately 130 square miles, extending from near Cabazon in the San Gorgonio Pass to near Indio.

through the San Geronio Pass (also referred to as Banning Pass) creates strong northwesterly winds along the centerline of the Coachella Valley. This forcing is often related to the marine air mass and westerly onshore (sea-breeze) flows in the South Coast Air Basin pushing through the Pass. At other times, storm systems with frontal passages create strong winds through the Pass and along the Valley. Hourly averaged winds measured near Cathedral City, in the Whitewater River Wash near the centerline of the Valley, exceeded 25 mph for at least one hour on approximately one third of the days between 2005 and 2009.

High PM₁₀ concentrations in the Coachella Valley can also be caused by desert dust and sand entrained by downdraft outflows from the thunderstorms activity that is common in the southwestern U.S. deserts in the summer. On some of the high days, transport of wind-generated dust and sand occurs with relatively light winds in the Coachella Valley, when deeply entrained dust from desert thunderstorm outflows travels to the Coachella Valley from the desert areas of southeastern California, Arizona, Nevada, or northern Mexico. All days in recent years that exceeded the 24-hour federal PM₁₀ standard at Indio or Palm Springs would not have exceeded except for the contribution of windblown dust and sand due to strong winds in the upwind source area (high-wind natural events).

PM₁₀ is measured daily at both Indio and Palm Springs by supplementing the primary 1-in-3-day Federal Reference Method (FRM) filter sampling at Indio and the 1-in-6-day FRM at Palm Springs with secondary continuous hourly Federal Equivalent Method (FEM) measurements at both stations.

In 2011, two high-wind exceptional events occurred in the Coachella Valley that caused high 24-hour PM₁₀ concentrations (397 and 344 $\mu\text{g}/\text{m}^3$, at Palm Springs and Indio, respectively on July 3; 375; and 265 $\mu\text{g}/\text{m}^3$ at Indio and Palm Springs, respectively on August 28). The high PM₁₀ concentrations measured on these days were due to strong outflows from thunderstorms over Arizona and northern Mexico that deeply entrained dust and sand and transported it to the Coachella Valley. These natural events have been flagged in the U.S. EPA Air Quality System (AQS) database to be excluded for comparison to the NAAQS, as allowed by the U.S. EPA Exceptional Events Rule. Further documentation and U.S. EPA concurrence is pending.

After application of the U.S. EPA Exceptional Event Rule (and its predecessor, the Natural Events Policy) to high wind natural events in the Coachella Valley, no days since the mid-1990s have exceeded the federal 24-hour PM₁₀ standard at Indio or Palm Springs. As a result, AQMD requested that U.S. EPA redesignate the Coachella Valley

from nonattainment to attainment of the PM₁₀ NAAQS. Further action on this request by U.S. EPA is pending¹¹.

After flagging the high-wind natural events that exceeded the 24-hour PM₁₀ federal standard, the federal PM₁₀ standard was not exceeded in the Riverside County part of SSAB in 2011. The next highest PM₁₀ 24-hour concentration in the Coachella Valley was 120 µg/m³, 77 percent of the 24-hour NAAQS. The former annual average PM₁₀ federal standard (50 µg/m³) was not exceeded, even with the exceptional events included. The highest annual average PM₁₀ concentration in the Coachella Valley in 2011 was 32.6 µg/m³ (65 percent of the revoked annual federal standard), with the exceptional events excluded. When considering the form of the federal PM₁₀ standards, after consideration for the exceptional events, the 3-year (2009-2011) 24-hour PM₁₀ design value for the Coachella Valley was 105 µg/m³ (68 percent of the NAAQS) and the annual design value was 31 µg/m³ (56 percent of the revoked annual PM₁₀ NAAQS).

In 2011, the state 24-hour PM₁₀ standard (50 µg/m³) was exceeded on 19 days (21 days if the high-wind events are included) in the Coachella Valley, which is 5.2 percent of the sampling days (using FRM and FEM data combined). The peak value of 120 µg/m³, not including the exceptional events, was 238 percent of the state 24-hour standard. The state annual standard (20 µg/m³) was also exceeded. The annual average PM₁₀ concentration of 32.6 µg/m³ was 151 percent of the state standard.

For each routine District ambient air monitoring station, the annual arithmetic mean, percent of sampling days exceeding state and federal standards, and maximum 24-hour average concentrations are shown in Tables A-6 to A-8 in the Attachment for the years 1995-2011. Please refer to Appendix II from the 2003 AQMP for the 1976-1989 prior-year statistics and to Appendix II from the 2007 AQMP for 1990-2005 data.

Ozone (O₃)

Ozone in the atmosphere of the Riverside County portion of SSAB is both directly transported from the Basin and formed photochemically from precursors emitted upwind. These precursors are emitted in greatest quantity in the coastal and central Los Angeles County areas of the Basin. The Basin's prevailing sea breeze causes polluted air to be transported inland. As the air is being transported inland, ozone is formed, with peak concentrations occurring in the inland valleys of the Basin in an area extending from eastern San Fernando Valley through the San Gabriel Valley into the Riverside-San

¹¹ U.S. EPA has requested additional temporary PM₁₀ monitoring in the southeastern Coachella Valley to further assess windblown dust in that area; this project is currently ongoing.

Bernardino area and the adjacent mountains. As the air is transported still further inland into the desert areas, ozone concentrations typically decrease somewhat due to dilution, although ozone standards can still be exceeded. Ozone concentrations and the number of days exceeding the federal ozone standard are greatest in summer; there are typically no exceedances during the winter months.

In 2011, the 1979 1-hour federal ozone standard level was not exceeded in the Coachella Valley, with 2011 being the fourth consecutive year with no exceedances of the former short-term standard. The maximum 1-hour concentration measured was 0.124 ppm, just below (99 percent of) the former 1-hour federal standard (0.125 ppm exceeds). The former (1997) 8-hour federal ozone standard was exceeded on 18 days. The current, more stringent, 2008 8-hour federal standard (0.075 ppm) was exceeded on 54 days. The maximum 8-hour ozone concentration was 0.098 ppm (130 percent of the 2008 standard and 115 percent of the 1997 standard).

The state 1-hour and 8-hour ozone standards were exceeded on 25 days and 78 days, respectively, in the Coachella Valley in 2011. The maximum 1-hour average O₃ concentration (0.124 ppm) was 136 percent of the state 1-hour standard (0.09 ppm). The maximum 8-hour average O₃ concentration (0.098 ppm) was 138 percent of the state 8-hour standard (0.070 ppm). The 1-hour ozone health advisory level (0.15 ppm) has not been exceeded in the Coachella Valley area since 1999. No stage 1 ozone episode levels (0.20 ppm) have been recorded in the Coachella Valley area since 1989.

Tables A-2 through A-5 in the Attachment show the number of days exceeding the federal 8-hour and 1-hour ozone standards, as well as the 4th highest 8-hour average and maximum 1-hour concentrations, at all routine District air quality monitoring stations including the two Coachella Valley sites, for the period 1995-2011. Please refer to Appendix II from the 2003 AQMP for the 1976-1989 prior-year statistics and to Appendix II from the 2007 AQMP for 1990-2005 data. Figure 3-5 shows the trend of the total number of days exceeding federal (2008 8-hour and former 1979 1-hour) and state (8-hour and 1-hour) ozone standards at Coachella Valley monitoring sites for the years 1990-2011. Figure 3-6 shows the trend of the maximum 1-hour and 8-hour ozone concentrations in the Coachella Valley from 1990 through 2011.

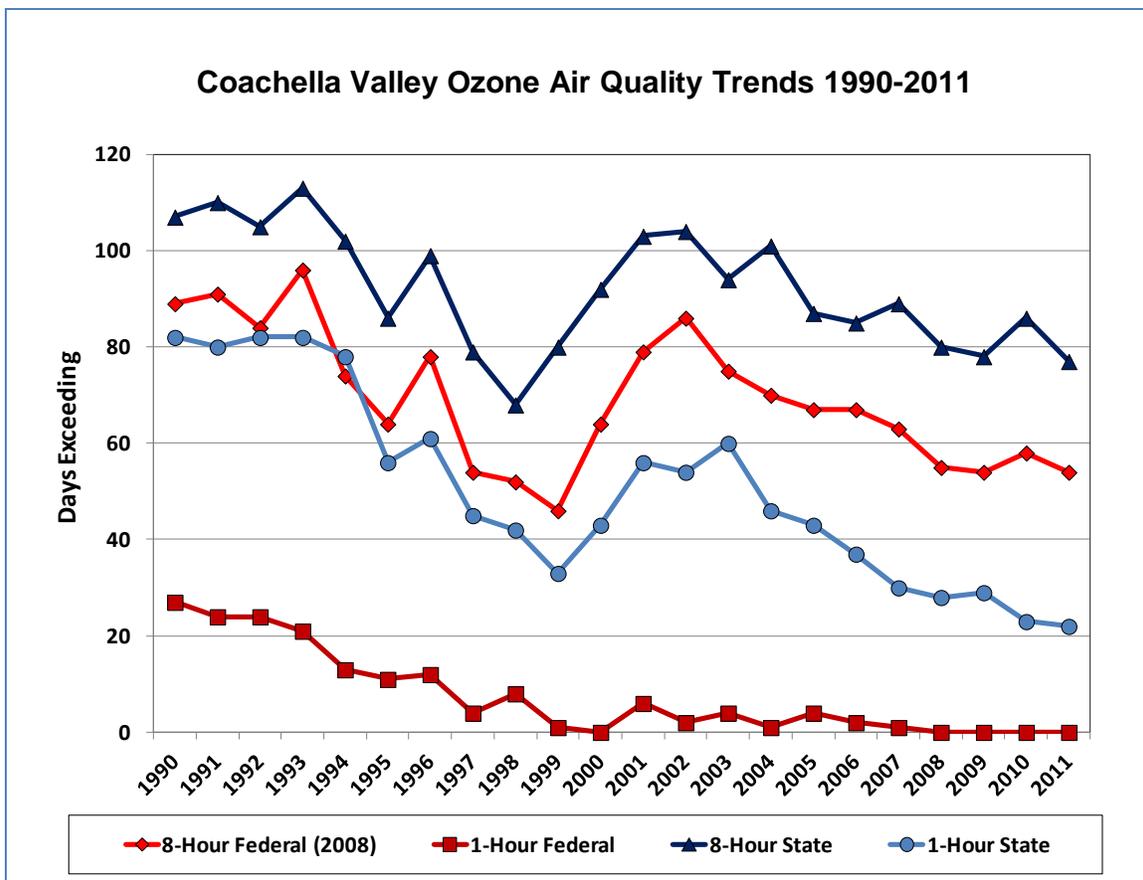


FIGURE 3-5
Coachella Valley Federal and State Ozone Trends, 1990-2011
(Number of Days Exceeding Standards)

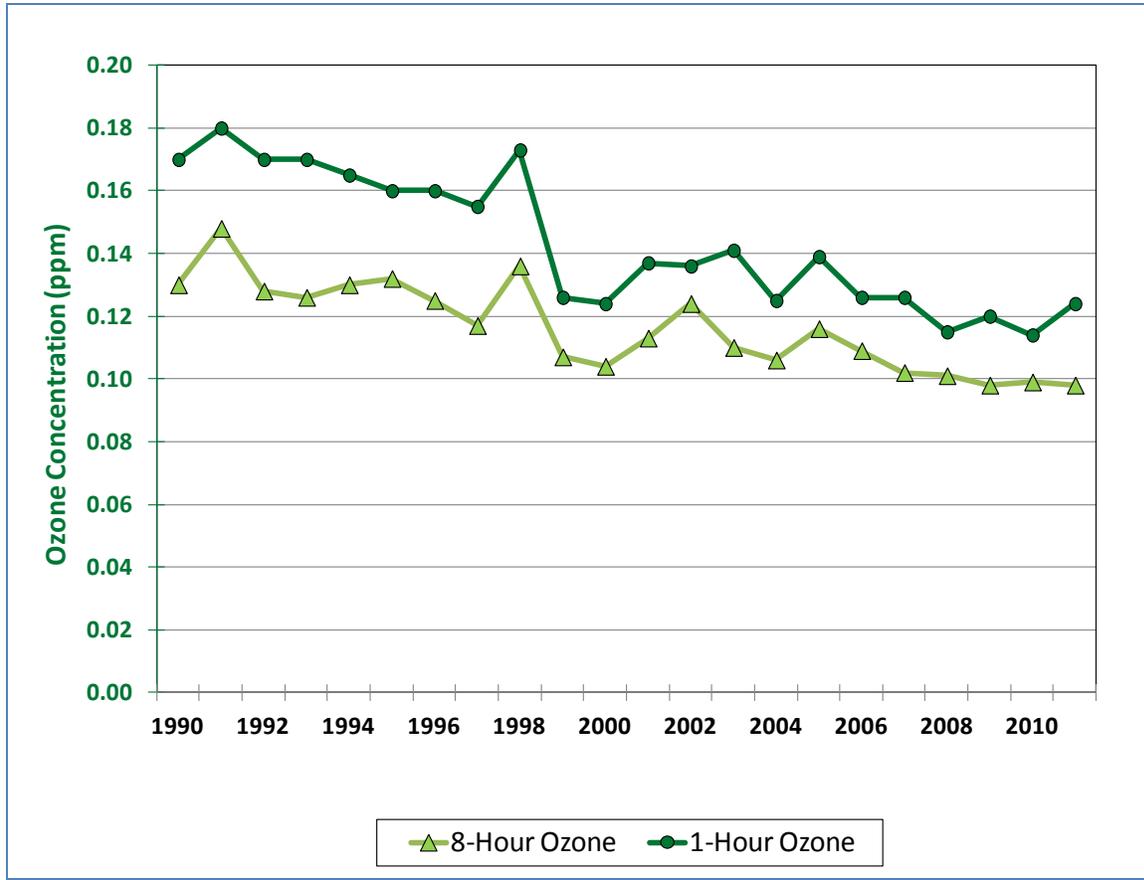


FIGURE 3-6

Trends of Coachella Valley Maximum 1-hour and 8-hour Ozone Concentrations, 1990-2011

Carbon Monoxide (CO)

Carbon monoxide was measured at one Coachella Valley air monitoring station in 2011. Neither the federal nor state standards were exceeded. The maximum 8-hour average CO concentration recorded in 2011 (0.6 ppm) was less than 7 percent of both the federal (9 ppm) and state (9.0 ppm) standards. The maximum 1-hour CO concentration (3.0 ppm) was 8 percent of the federal (35 ppm) and 15 percent of the state (20 ppm) 1-hour CO standards. Historical carbon monoxide air quality and trends in the Riverside county SSAB area shows that the area has not exceeded the federal CO standards in nearly three decades.

The annual maximum 8-hour CO concentrations at all District air monitoring stations, including the Coachella Valley, are shown in Table A-13 in the Attachment, for the period 1995-2011.

Nitrogen Dioxide (NO₂)

Nitrogen dioxide was measured at one station in the Coachella Valley in 2011. The maximum 1-hour average NO₂ concentration (44.7 ppb) was 44 percent of the new (2010) federal 1-hour standard (100 ppb) and 25 percent of the state 1-hour standard (180 ppb). The maximum annual average NO₂ concentration (8.0 ppb) was 15 percent of the federal annual standard (53 ppb) and 27 percent of the state annual standard (30 ppb).

The annual averages and annual maximum 1-hour average concentrations for each monitoring station in the District (including the Coachella Valley) for the years 1995-2011 are shown in Tables A-14 and A-15, in the Attachment.

Sulfur Dioxide (SO₂)

Sulfur dioxide concentrations were not measured in the Riverside County SSAB in 2011. Historical measurements have shown SO₂ concentrations to be well below the state and federal standards and there are no significant emissions sources of SO₂ in the Coachella Valley.

Sulfate (SO₄²⁻)

Sulfate from PM₁₀ was measured at one station in the Coachella Valley in 2011. The maximum 24-hour average sulfate concentration was 5.7 µg/m³ (23 percent of the 25 µg/m³ state sulfate standard). There is no federal sulfate standard. The maximum 24-hour average concentrations at each District air monitoring station, including the Coachella Valley, for the years 1995-2011 are shown in Table A-17 in the Attachment.

Lead (Pb)

Lead concentrations were not measured at either of the two Coachella Valley air monitoring stations in 2011. Measurements in past years have shown concentrations to be less than the state and federal standards and no major sources of lead emissions are located in the Coachella Valley.

ATTACHMENT TO APPENDIX II

TABLE A-1
Air Monitoring Stations and Source/Receptor Areas

AREA #	SOURCE/RECEPTOR AREA*	LOCATION	STN #
LOS ANGELES COUNTY			
1	Central LA	Los Angeles	087
2	Northwest Coastal LA County	West Los Angeles	091
3	Southwest Coastal LA County 1	Hawthorne (moved)	094
3	Southwest Coastal LA County 2	LAX-Hastings	820
4	South Coastal LA County 1	North Long Beach	072
4	South Coastal LA County 2	South Long Beach	077
6	West San Fernando Valley	Reseda	074
7	East San Fernando Valley	Burbank	069
8	West San Gabriel Valley	Pasadena	088
9	East San Gabriel Valley 1	Azusa	060
9	East San Gabriel Valley 2	Glendora	591
10	Pomona/Walnut Valley	Pomona	075
11	South San Gabriel Valley	Pico Rivera	085
12	South Central LA County 1	Lynwood (moved)	084
12	South Central LA County 2	Compton	112
13	Santa Clarita Valley	Santa Clarita	090
ORANGE COUNTY			
16	North Orange County	La Habra	3177
17	Central Orange County	Anaheim	3176
18	North Coastal Orange County	Costa Mesa	3195
19	Saddleback Valley 1	El Toro (moved)	3186
19	Saddleback Valley 2	Mission Viejo	3812
RIVERSIDE COUNTY			
22	Norco/Corona	Norco	4155
23	Metropolitan Riverside County 1	Riverside – Rubidoux	4144
23	Metropolitan Riverside County 2	Riverside – Downtown	4146
23	Mira Loma	Mira Loma	4165
24	Perris Valley	Perris	4149
25	Lake Elsinore Area	Lake Elsinore	4158
26	Temecula Valley	Temecula – Lake Skinner	4163
29	Banning Airport	Banning Airport	4164
30	Coachella Valley 1**	Palm Springs	4137
30	Coachella Valley 2**	Indio	4157
SAN BERNARDINO COUNTY			
32	Northwest San Bernardino Valley	Upland	5175
33	Southwest San Bernardino Valley	Ontario	5817
34	Central San Bernardino Valley 1	Fontana	5197
34	Central San Bernardino Valley 2	San Bernardino	5203
35	East San Bernardino Valley	Redlands	5204
37	Central San Bernardino Mountains	Crestline – Lake Gregory	5181
38	East San Bernardino Mountains	Big Bear Lake	5818

* Source/receptor areas and area numbers are mapped in Figure A-1

** Salton Sea Air Basin

TABLE A-2
Ozone – Number of Days Exceeding the 2008 Federal Standard
 (0.075 ppm, 8-Hour Average)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
LOS ANGELES COUNTY:																			
060	East San Gabriel Valley 1	88	53	26	33	19	27	25	17	35	21	14	17	20	28	17	4	12	
069	East San Fernando Valley	49	25	15	24	15	23	7	14	38	36	10	23	13	17	14	5	6	
072	South Coastal Los Angeles County	2	2	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	
074	West San Fernando Valley	39	49	11	23	7	10	21	44	73	62	26	33	28	26	19	22	26	
075	Pomona/Walnut Valley 1	73	36	16	28	14	10	5	24	38	22	17	27	18	35	23	7	16	
084	South Central Los Angeles County 1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	--	--	--	
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0	0	
085	South San Gabriel Valley	46	24	15	22	4	9	5	3	14	6	0*	4	5	5	3	1	0	
087	Central Los Angeles	21	17	8	11	5	8	4	6	8	5	2	3	3	3	2	1	0	
088	West San Gabriel Valley	70	45	21	26	10	25	23	19	40	25	12	23	11	16	12	3	5	
090	Santa Clarita Valley	66	68	42	39	25	36	41	90	89	74	68	62	44	62	64	28	31	
091	Northwest Coastal Los Angeles County	10	10	6	2	1	1	1	1	12	5	4	0	2	2	3	1	0	
094	Southwest Coastal Los Angeles County 1	5	9	8	0	1	0	6	0	1	--	--	--	--	--	--	--	--	
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	12	1	0	0	0	0	0	0	
591	East San Gabriel Valley 2	105	69	45	49	19	30	49	33	58	33	26	29	26	45	42	24	30	
ORANGE COUNTY:																			
3176	Central Orange County 1	8	7	1	7	1	3	0*	1	11	29	2	3	1	4	1	1	0	
3177	North Orange County	18	13	8	6	4	7	2	2	7	3	0	7	8	5	3	1	0	
3186	Saddleback Valley 1	8	11	5	14	--	--	--	--	--	--	--	--	--	--	--	--	--	
3195	North Coastal Orange County	3	2	1	2	0	2	0	0	7	5	0	0	0	3	0	1	1	
3812	Saddleback Valley 2	--	--	--	--	--	4	8	6	15	16	6	13	5	15	10	2	2	
RIVERSIDE COUNTY:																			
4137	Coachella Valley 1**	52	73	54	47	38	61	77	82	70	55	61	61	58	51	53	55	49	
4144	Metropolitan Riverside County	104	99	79	69	46	50	50	64	86	70	55	57	46	64	35	50	68	
4149	Perris Valley	101	93	67	41	17	71	85	72	72	44	16	83	73	77	67	53	54	
4157	Coachella Valley 2**	44	46	3	22	30	18	40	45	40	50	34	28	29	27	24	22	19	
4158	Lake Elsinore	82	18	1	63	64	65	77	67	57	43	41	54	35	69	37	23	28	
4163	Temecula Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	
4164	Banning Airport	--	--	127	63	63	64	72	86	84	64	64	74	43	74	70	62	41	
4165	Mira Loma	--	--	--	--	--	--	--	--	--	--	--	44	23	47	22	40	36	
SAN BERNARDINO COUNTY:																			
5175	Northwest San Bernardino Valley	97	52	52	47	24	32	52	32	46	28	30	51	35	50	49	42	36	
5181	Central San Bernardino Mountains	113	120	89	111	104	94	103	112	107	92	98	96	93	97	92	75	84	
5197	Central San Bernardino Valley 1	88	75	47	56	30	26	43	34	69	48	45	46	43	58	48	38	39	
5203	Central San Bernardino Valley 2	109	105	89	60	54	50	62	42	62	55	56	56	51	63	62	47	39	
5204	East San Bernardino Valley	118	111	105	72	68	76	73	74	101	74	44	62	58	75	73	61	80	
	District Maximum	118	120	127	111	104	94	103	112	107	92	98	96	93	97	92	75	84	

* Less than 12 full months of data

** Salton Sea Air Basin

Refer to 2003 AQMP for 1976 to 1994 data

TABLE A-3
Ozone – Number of Days Exceeding the Former (1979) 1-Hour Federal Standard
(0.12 ppm, 1-Hour Average)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
LOS ANGELES COUNTY:																			
060	East San Gabriel Valley 1	63	26	11	19	2*	11	9	5	11	2	4	7	3	7	4	0	0	
069	East San Fernando Valley	20	6	2	7	0	3	2	1	4	2	2	6	0	1	1	0	0	
072	South Coastal Los Angeles County	0	0	0*	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
074	West San Fernando Valley	8	11	0	7	0	0	2	9	14	2	2	6	1	0	1	0	3	
075	Pomona/Walnut Valley 1	47	16	7	18	2	3	1	5	13	4	3	9	2	5	1	0	0	
084	South Central Los Angeles County 1	0	1	0	0	0	0	0	0	0	0	0	0	0	0*	--	--	--	
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	0	0	
085	South San Gabriel Valley	20	32	6	10	0	2	1	0	1	0	--	1*	2	0	1	0	0	
087	Central Los Angeles	5	24	0	5	1	1	0	0	1	0	0	0	0	0	1	0	0	
088	West San Gabriel Valley	44	54	5	14	0	7	1	3	7	1	2	5	3	0	3	0	0	
090	Santa Clarita Valley	26	68	13	16	0	1	9	32	35	13	11	20	2	8	5	1	3	
091	Northwest Coastal Los Angeles County	1	13	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	
094	Southwest Coastal Los Angeles County 1	0	1	0	0	1	0	0	0	0	0*	--	--	--	--	--	--	--	
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	0*	0	0	0	0	0	0	0	
591	East San Gabriel Valley 2	73	49	18	28	3	11	13	12	22	5	8	10	3	12	7	0	4	
ORANGE COUNTY:																			
3176	Central Orange County 1	2	1	0	2	0*	1	0*	0	2	0	0	0	1	0	0	0	0	
3177	North Orange County	4	5	1	5	0	1	0	0	1	0	0	3	1	0	0	0	0	
3186	Saddleback Valley 1	1	2	2	2	0	1*	--	--	--	--	--	--	--	--	--	--	--	
3195	North Coastal Orange County	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3812	Saddleback Valley 2	--	--	--	--	--	2*	1	2	4	0	1	0	0	0	0	0	0	
RIVERSIDE COUNTY:																			
4137	Coachella Valley 1**	9	12	4*	8	1	0	6	2	4	1	4	2	1	0	0	0	0	
4144	Metropolitan Riverside County	52	36	13*	32	3	3	7	12	18	8	3	8	2	8	0	1	4	
4149	Perris Valley	36	31	6	8	0	15	19	4	7	2	1	12	4	4	1	0	2	
4157	Coachella Valley 2**	3	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	
4158	Lake Elsinore	23	17	4	22	5	1	12	6	7	2	3	3	3	6	1	0	1	
4163	Temecula Valley	0	0*	0*	--	--	--	--	--	--	--	--	--	--	--	--	--	0	
4164	Banning Airport	--	--	--	25	5	4	16	13	27	7	10	8	1	10	1	0	3	
4165	Mira Loma	--	--	--	--	--	--	--	--	--	--	--	4	0	4	0	0	1	
SAN BERNARDINO COUNTY:																			
5175	Northwest San Bernardino Valley	67	35	12	30	4	10	14	5	15	3	8	14	7	9	3	1	5	
5181	Central San Bernardino Mountains	65	62	29	57	30	17	26	22	34	9	18	9	13	16	7	6	8	
5197	Central San Bernardino Valley 1	57	38	10	32	4	7	13	8	26	7	9	12	9	8	3	2	5	
5203	Central San Bernardino Valley 2	61	63	32	39	14	7	18	6	19	6	9	10	8	11	2	1	2	
5204	East San Bernardino Valley	69	65	35	43	12	11	21*	23	38	12	6	11	7	12	1	1	7	
	District Maximum	73	68	35	57	30	17	26	32	38	13	18	20	13	16	7	6	8	

* Less than 12 full months of data

** Salton Sea Air Basin

Refer to 2003 AQMP for 1976 to 1994 data

TABLE A-4
Ozone – Annual Maximum 4th Highest 8-Hour Average (ppb)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
LOS ANGELES COUNTY:																		
060	East San Gabriel Valley 1	138	127	113	126	95	108	102	97	104	92	87	90	96	101	91	76	82
069	East San Fernando Valley	106	98	95	101	84	97	87	91	96	89	81	97	88	92	86	77	81
072	South Coastal Los Angeles County	71	73	67	65	68	66	60	59	63	70	59	56	56	64	64	57	60
074	West San Fernando Valley	101	110	83	100	81	80	89	111	119	101	98	103	92	95	93	87	91
075	Pomona/Walnut Valley 1	136	113	95	120	89	88	82	99	109	95	96	108	102	100	95	81	86
084	South Central Los Angeles County 1	51	57	53	51	41	50	54	49	57	65	63	64	56	55+	--	--	--
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	64	50	61
085	South San Gabriel Valley	105	93	97	102	80	86	81	74	82	78	51	78	79	77	72	59	63
087	Central Los Angeles	91	93	81	96	79	85	76	77	82	77	70	75	72	73	73	64	60
088	West San Gabriel Valley	130	117	100	117	86	104	90	95	101	93	85	96	89	91	95	75	77
090	Santa Clarita Valley	130	123	116	127	95	97	112+	131	137	107	118	112	101	108	103	88	101
091	Northwest Coastal Los Angeles County	81	88	78	70	69	71	64	73	83	76	76	67	67	73	75	70	62
094	Southwest Coastal Los Angeles County 1	78	86	83	63	66	65	79	64	70	56*	--	--	--	--	--	--	--
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	86*	68	62	66	65	61	59	62
591	East San Gabriel Valley 2	148	140	121	142	96	112	110	110	123	95	97	106	104	112	108	91	95
ORANGE COUNTY:																		
3176	Central Orange County 1	82	81	68	87	61	74	66	69	80	88	75	70	73	76	68	64	67
3177	North Orange County	96	90	82	93	78	83	73	71	80	75	65	89	82	78	75	71	69
3186	Saddleback Valley 1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3195	North Coastal Orange County	75	70	70	76	70	67	69	66	79	75	66	60	65	75	66	60	67
3812	Saddleback Valley 2	--	--	--	--	--	87	72	81	95	84	78	90	80	92	84	69	74
RIVERSIDE COUNTY:																		
4137	Coachella Valley 1**	106	116	101	108	98	96	111	109	105	99	108	98	97	96	96	93	92
4144	Metropolitan Riverside County	142	130	118	136	104	106	109	109	120	111	105	111	99	111	89	94	107
4149	Perris Valley	132	122	105	115	91	111	124	107	116	95	82	113	103	106	101	100	94
4157	Coachella Valley 2**	96	98	82	97	89	87	93	97	100	94	92	85	87	88	85	84	85
4158	Lake Elsinore	126	108	111	128	106	98	111	104	112	102	97	101	97	108	96	88	92
4163	Temecula Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4164	Banning Airport	101	107	93	81	114+	102	116	113	127	112	119	104	95	108	100	99	100
4165	Mira Loma	--	--	--	--	--	--	--	--	--	--	105	103	100	109	86	92	96
SAN BERNARDINO COUNTY:																		
5175	Northwest San Bernardino Valley	145	138	112	137	103	117	120	105	114	102	101	112	112	108	102	91	98
5181	Central San Bernardino Mountains	167	155	125	183	133	122	133	131	130	122	130	111	126	120	108	109	106
5197	Central San Bernardino Valley 1	143	137	115	132	98	100	123	114	132	111	113	114	112	110	100	94	105
5203	Central San Bernardino Valley 2	152	145	127	145	115	111	128	105	123	112	113	118	117	112	101	96	101
5204	East San Bernardino Valley	162	138	126	148	115	112	131	117	137	119	113	124	112	112	100	97	113
	District Maximum	167	155	127	183	133	122	133	131	137	122	130	124	126	120	108	109	113

+ Site relocated

* Less than 12 full months of data

** Salton Sea Air Basin

TABLE A-5
Ozone – Annual Maximum 1-Hour Average (ppm)

LOCATION	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
087 Central Los Angeles	.34	.21	.30	.31/	.29	.32	.40	.26	.29	.30	.22	.22
060 East San Gabriel Valley 1	.38	.32	.40	.45	.41	.35	.36	.39	.31	.36	.31	.30
069 East San Fernando Valley	.35	.31	.30	.39	.35	.27	.25	.31	.26	.30	.28	.23
091 Northwest Coastal Los Angeles County	.28	.18/	.24/	.26	.21	.23	.28	.23	.27/	.27	.20	.28
072 South Coastal Los Angeles County	.16	.15	.19	.21	.20	.23	.22	.30	.27	.23	.18	.17
074 West San Fernando Valley	.27	.34	.27	.33	.38	.25	.22	.26	.26	.25	.22	.22
075 Pomona/Walnut Valley 1	.36	.32	.41	.35	.37	.33	.31	.34	.31	.33	.27	.29
094 Southwest Coastal Los Angeles County	--	--	--	--	--	--	--	--	--	--	.19	.20
820 Southwest Coastal Los Angeles County	--	--	--	--	--	--	--	--	--	--	--	--
088 West San Gabriel Valley	.34	.32	.42	.44	.41	.33	.37/	.34	.30	.37	.26	.28
090 Santa Clarita Valley	.33	.33	.32	.32	.36	.29	.26/	.29	.27	.24	.24	.21
084 South Central Los Angeles County 1	.24	.24	.18	.29	.18	.21	.26	.23	.27	.21	.20	.24
112 South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--
085 South San Gabriel Valley	.35	.32	.43	.39	.39	.35	.39	.33	.27	.31	.24	.28
591 East San Gabriel Valley 2	--	--	--	--	.49	.39	.36	.38	.34	.39	.35	.33
3176 Central Orange County 1	.30	.19	.29	.33	.28	.26	.26	.30	.25	.25	.20	.22
3177 North Orange County 1	.30	.25	.35	.38	.31	.27	.32	.27	.32	.34	.25	.24
3195 North Coastal Orange County	.16	.18	.22	.21/	.16	.20	.18	.25	.25	.21	.17	.16
3186 Saddleback Valley 1	.23	.20	.34	.32	.34	.33	.27	.29	.30	.28	.23	.20
3812 Saddleback Valley 2	--	--	--	--	--	--	--	--	--	--	--	--
4137 Coachella Valley 1**	.22	.21	.20	.24	.21	.19	.19	.19	.20	.24	.18	.17
4157 Coachella Valley 2**	.16	.19	.17	.21	.11	.18	.17	.18	.19	.20	--	.16
4155 Norco/Corona	.33	.36	.40	.33/	.34	.37	.35	.35	.30	.35	.27	.24
4141 Hemet/San Jacinto Valley	.19	.25	.27	--	--	--	--	--	.18*	.23	.18	.18
4144 Metropolitan Riverside County 1	.36	.35	.39	.34	.37	.30	.31	.36	.32	.35	.25	.29
4149 Perris Valley	.22	.28	.32	.25	.29	.24	.28	.26	.22	.29	.22	.20
4150 San Geronio Pass	.28	.27	.30	.27	.26	.23	.24	.26	.25	.29	.22	.21
4164 Banning Airport	--	--	--	--	--	--	--	--	--	--	--	--
4163 Temecula Valley	.21	.17	.23	--	--	--	--	--	--	--	--	--
4158 Lake Elsinore	.20	.23	.30	--	--	--	--	--	--	--	--	--
5203 Central San Bernardino Valley 2	.32	.37	.36	.34	.36	.36/	.30	.32	.30	.27/	.30	.25
5204 East San Bernardino Valley	.35	.33	.39	.34/	.32	.24	.29	.30	.29	.33/	.29	.24
5175 Northwest San Bernardino Valley	--	--	--	--	--	--	--	.36	.32	.33	.29	.28
5197 Central San Bernardino Valley 1	.38	.39	.42	.42	.42	.35/	.31	.32	.32	.34	.31	.29
5181 Central San Bernardino Mountains 1	.23	.32	.33	.40	.31	.35	.32	.28	.34	.30	.26	.29
District Maximum	.38	.39	.43	.45	.49	.39	.40	.39	.34	.39	.35	.33

* Less than 12 full months of data.

/ Station location change

** Salton Sea Air Basin

Refer to 2003 AQMP for 1955 to 1975 data

TABLE A-5 (continued)
Ozone – Annual Maximum 1-Hour Average (ppm)

LOCATION	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
087 Central Los Angeles	.21	.25	.20	.19	.20	.16	.19	.17	.14	.12	.15	.13
060 East San Gabriel Valley 1	.30	.33	.23	.28	.27	.24	.25	.21	.20	.16	.20	.14
069 East San Fernando Valley	.24	.20	.20	.22	.22	.18	.17	.17	.14	.13	.18	.12
091 Northwest Coastal Los Angeles County	.24	.25	.16	.18	.17	.18	.16	.14	.14	.11	.13	.12
072 South Coastal Los Angeles County	.16	.16	.12	.11	.15	.14	.16	.11	.11	.10	.12	.13
074 West San Fernando Valley	.25	.23	.19	.22	.17	.19	.14	.15	.21	.12	.16	.10
075 Pomona/Walnut Valley 1	.29	.25	.24	.24	.26	.21	.24	.22	.19	.16	.18	.14
094 Southwest Coastal Los Angeles County	.22	.19	.10	.11	.15	.13	.11	.12	.13	.11	.09	.15
820 Southwest Coastal Los Angeles County	--	--	--	--	--	--	--	--	--	--	--	--
088 West San Gabriel Valley	.29	.27	.26	.23	.27	.22	.26	.21	.17	.14	.17	.12
090 Santa Clarita Valley	.30	.25	.23	.24	.22	.22	.26	.21	.17	.16	.18	.12
084 South Central Los Angeles County 1	.21	.14	.15	.16	.17	.12	.12	.09	.10	.08	.09	.12
112 South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--
085 South San Gabriel Valley	.30	.26	.19	.26	.26	.19	.22	.18	.14	.13	.18	.12
591 East San Gabriel Valley 2	.34	.34	.29	.32	.30	.28	.30	.22	.21	.17	.22	.14
3176 Central Orange County 1	.27	.24	.18	.25	.22	.17	.21	.13	.13	.10	.11	.10*
3177 North Orange County 1	.29	.26	.21	.21	.21	.19	.25	.16	.15	.13	.18	.12
3195 North Coastal Orange County	.13	--	.15	.17	.15	.13	.12	.11	.10	.10	.12	.10
3186 Saddleback Valley 1	.21	.23	.19	.24	.16	.16	.18	.15	.14	.13	.16	.10
3812 Saddleback Valley 2	--	--	--	--	--	--	--	--	--	--	--	--
4137 Coachella Valley 1**	.20	.19	.17	.18	.15*	.17	.17	.16	.16	.16	.17	.13
4157 Coachella Valley 2**	--	.16	.16	.18	.14	.16	.12	.14	.12	.11	.13	.13
4155 Norco/Corona	.25	.23	.17	.22	.23	.16	.17	.19	.16	--	--	--
4141 Hemet/San Jacinto Valley	.18	.19	.22	.19	.15	.18	.16	.15	.12	--	--	--
4144 Metropolitan Riverside County	.28	.27	.29	.24	.26	.26	.25	.21	.20	.19	.20	.14
4149 Perris Valley	.23	.21	.19	.20	.21	.20	.18	.20	.18	.14	.15	.11
4150 San Geronio Pass	.26	.23	.22	.20	.16	.16	.20	.18	.19	.13	.12/	--
4164 Banning Airport	--	--	--	--	--	--	--	--	--	--	.17	.14
4163 Temecula Valley	--	--	--	.17*	.13	.13	.10*	.11	.10	.10*	--	--
4158 Lake Elsinore	--	.24	.19	.20	.17	.19	.19	.19	.15	.16	.17	.14
5203 Central San Bernardino Valley 2	.28	.30	.29	.25	.28	.21	.25	.20	.24	.20	.21	.16
5204 East San Bernardino Valley	.29	.27	.30	.25	.27	.27	.23	.24	.22	.20	.22	.15
5175 Northwest San Bernardino Valley	.35	.32	.29	.27	.28	.24	.25	.24	.22	.19	.21	.15
5197 Central San Bernardino Valley 1	.29	.32	.27	.29	.28	.24	.25	.22	.22	.17	.20	.14
5181 Central San Bernardino Mountains 1	.29	.27	.33	.27	.28	.24	.27	.26	.20	.21	.24	.17
District Maximum	.35	.34	.33	.32	.30	.28	.30	.26	.24	.21	.24	.17

* Less than 12 full months of data. / Station location change

** Salton Sea Air Basin

Refer to 2003 AQMP for 1955 to 1975 data

TABLE A-5 (concluded)
Ozone – Annual Maximum 1-Hour Average (ppm)

LOCATION	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
087 Central Los Angeles	.136	.116	0.122	0.152	0.110	0.121	0.108	0.115	0.109	0.139	0.098	0.087
060 East San Gabriel Valley 1	.174	.189	0.136	0.150	0.134	0.145	0.165	0.158	0.135	0.15	0.104	0.111
069 East San Fernando Valley	.152	.129	0.128	0.134	0.137	0.142	0.166	0.116	0.133	0.145	0.111	0.12
091 Northwest Coastal Los Angeles County	.104	.099	0.118	0.134	0.107	0.114	0.099	0.117	0.11	0.131	0.099	0.098
072 South Coastal Los Angeles County	.118	.091	0.084	0.099	0.090	0.091	0.081	0.099	0.093	0.089	0.101	0.073
074 West San Fernando Valley	.109	.140	0.152	0.179	0.131	0.138	0.158	0.129	0.123	0.135	0.122	0.13
075 Pomona/Walnut Valley 1	.152	.144	0.150	0.161	0.131	0.140	0.151	0.153	0.141	0.138	0.115	0.119
094 Southwest Coastal Los Angeles County	.095	.098	0.088	0.110	0.069*	--	--	--	--	--	--	--
820 Southwest Coastal Los Angeles County	--	--	--	--	0.120*	0.086	0.084	0.087	0.086	0.077	0.089	0.078
088 West San Gabriel Valley	.157	.160	0.137	0.152	0.130	0.145	0.151	0.149	0.122	0.176	0.101	0.107
090 Santa Clarita Valley	.131/	.184	0.169	0.194	0.158	0.173	0.156	0.135	0.16	0.14	0.126	0.144
084 South Central Los Angeles County 1	.089	.077	0.072	0.081	0.083	0.111	0.088	0.102	0.078*	--	--	--
112 South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	0.104	0.081	0.082
085 South San Gabriel Valley	.139	.132	0.111	0.128	0.104	0.077	--	0.135	0.107	0.131	0.112	0.096
591 East San Gabriel Valley 2	.172	.190	0.152	0.162	0.134	0.160	0.175	0.147	0.156	0.15	0.124	0.134
3176 Central Orange County 1	.132	.114	0.103	0.136	0.120	0.095	0.113	0.127	0.105	0.093	0.104	0.088
3177 North Orange County 1	.137	.107	0.121	0.165	0.099	0.094	0.146	0.152	0.104	0.115	0.118	0.095
3195 North Coastal Orange County	.102	.098	0.087	0.107	0.104	0.085	0.074	0.082	0.094	0.087	0.097	0.093
3186 Saddleback Valley 1	.129	--	--	--	--	--	--	--	--	--	--	--
3812 Saddleback Valley 2	.119	.125	0.136	0.153	0.116	0.125	0.123	0.108	0.118	0.121	0.117	0.094
4137 Coachella Valley 1**	.124	.137	0.136	0.141	0.125	0.139	0.126	0.126	0.11	0.12	0.114	0.124
4157 Coachella Valley 2**	.112	.114	0.114	0.123	0.111	0.114	0.103	0.106	0.12	0.097	0.1	0.099
4155 Norco/Corona	--	--	--	--	--	--	--	--	--	--	--	--
4141 Hemet/San Jacinto Valley	--	--	--	--	--	--	--	--	--	--	--	--
4144 Metropolitan Riverside County	.140	.143	0.155	0.169	0.141	0.144	0.151	0.131	0.146	0.116	0.128	0.128
4149 Perris Valley	.164	.152	0.147	0.155	0.128	0.088	0.169	0.139	0.142	0.125	0.122	0.125
4150 San Geronio Pass	--	--	--	--	--	--	--	--	--	--	--	--
4164 Banning Airport	.138	.149	0.160	0.166	0.156	0.144	0.139	0.129	0.149	0.133	0.124	0.127
4163 Temecula Valley	--	--	--	--	--	--	--	--	--	--	--	--
4158 Lake Elsinore	.128	.151	0.139	0.154	0.130	0.149	0.142	0.13	0.139	0.128	0.107	0.133
5203 Central San Bernardino Valley 2	.149	.184	0.147	0.160	0.157	0.163	0.154	0.153	0.157	0.15	0.129	0.135
5204 East San Bernardino Valley	.152	.167*	0.158	0.174	0.160	0.146	0.165	0.149	0.154	0.145	0.128	0.151
5175 Northwest San Bernardino Valley	.184	.171	0.139	0.155	0.138	0.149	0.166	0.145	0.155	0.146	0.131	0.145
5197 Central San Bernardino Valley 1	.169	.165	0.159	0.176	0.149	0.150	0.159	0.144	0.162	0.142	0.143	0.144
5181 Central San Bernardino Mountains 1	.176	.171	0.161	0.163	0.163	0.182	0.164	0.171	0.176	0.149	0.142	0.16
District Maximum	.176	.190	0.169	0.194	0.163	0.182	0.175	0.171	0.176	0.176	0.143	0.160

* Less than 12 full months of data.

/ Station location change

** Salton Sea Air Basin

Refer to 2003 AQMP for 1955 to 1975 data

TABLE A-6
Particulate Matter (PM10)[#] – Annual Arithmetic Mean (µg/m³)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
LOS ANGELES COUNTY:																			
060	East San Gabriel Valley 1	49	45	46	41	56	46	45	46	44	35	35	32	36+	35	32	30	33	
069	East San Fernando Valley	42	42	45	36	44	39	41	38	38*	38	34	36	40	36	39	30	29	
072	South Coast Los Angeles County 1	39	35	41	32	39	38	37	36	33	33	30	31	30+	29	31	22	24	
077	South Coast Los Angeles County 2	--	--	--	--	--	--	--	--	--	38	43	45	41+	36	33	27	29	
087	Central Los Angeles	43	41	43	37	45	40	44	39	35	33	30	30	33	31*	33	27	29	
090	Santa Clarita Valley	37	33	33	30	38	33	32	33	32	28	26		30+	26	23	21	21	
094	Southwest Coastal Los Angeles County 1	36	33	36	33	36	36	37	37	30	31*	--	--	--	--	--	--	--	
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	25	23	27	29	26	25	21	22	
ORANGE COUNTY:																			
3176	Central Orange County 1	44	35	39	36	49	40	36	34	33	34	28	33	31+	29+	31	22	25	
3186	Saddleback Valley 1	38	30	35	31	37	29	--	--	--	--	--	--	--	--	--	--	--	
3812	Saddleback Valley 2	--	--	--	--	29	28	26	31	27	24	19	23	23	23	24	18	19	
RIVERSIDE COUNTY:																			
4137	Coachella Valley 1**	27	29	26	26	29	24	27+	27	27	26	26	25+	31	23+*	23	19	19+	
4144	Metropolitan Riverside County 1	69	61	65	56	72	60	63	59	57	56	52	54	55+	47	43	33	34	
4149	Perris Valley	47	40	45	38	50	41	41	45	44	41	39	45	55+	38*	35	28	29	
4150	San Geronio Pass	30	34	38	28	--	--	--	--	--	--	--	--	--	--	--	--	--	
4155	Norco/Corona	54	44	50	47	55	49	--	45	41	38	32	37	40+	34	36	27	28	
4157	Coachella Valley 2**	52+	51+	49+	48+	53	52+	50+	51+	50+	39+	46	53+	54+	40+	33+	29	33+	
4163	Temecula Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
4164	Banning Airport	--	--	--	27	35	29	35	28	29	29	27	31	33	26	26	22	20	
4165	Mira Loma	--	--	--	--	--	--	--	--	--	--	--	64	69	57	53	42	41	
SAN BERNARDINO COUNTY:																			
5171	Southwest San Bernardino Valley 1	54	51	51	47	55	--	--	--	--	--	--	--	--	--	--	--	--	
5181	Central San Bernardino Mountains	20	24	24	25	27	24	--	37*	26*	26	26	26	26	24*	25	19	19	
5197	Central San Bernardino Valley 1	61	55	54	50	60	53	51	50	47*	48	50	54	55+	40	40	34	32	
5203	Central San Bernardino Valley 2	57	53	51	46	57	50	52	50	45	49	42	46	51+	43	42	32	32	
5204	East San Bernardino Valley	48	46	43	41	47	46	47	41	37	39	33	36	40	29	30	26	26	
5817	Southwest San Bernardino Valley 2	--	--	--	--	66	50	52	45	43	43	41	42	43+	39	36	32	31	
	District Maximum	69	61	65	56	72	60	63	59	57	56	52	64	69+	57	53	42	41	

* Less than 12 full months of data.

** Salton Sea Air Basin

+ Excludes data flagged for exceptional events

Refer to 2003 AQMP for 1985-1994 data

Federal Reference Method (FRM) filter data only

TABLE A-7
Particulate Matter (PM10)[#] – Percent of Sampling Days Exceeding State (50 µg/m³)
and Federal (150 µg/m³) 24-Hour Standards

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
LOS ANGELES COUNTY:																		
060	East San Gabriel Valley 1	40/2	41/0	40/0	28/0	58/0	42/0	38/0	40/0	35/0	15/0	22/0	12/0	20/0+	27/0	14/0	9/0	15/0
069	East San Fernando Valley	25/0	25/0	30/0	15/0	35/0	23/0	23/0	12/0	14/0*	12/0	8/0	19/0	19/0	13/0	18/0	2/0	4/0
072	South Coast Los Angeles County 1	19/0	15/0	18/0	10/0	22/0	21/0	17/0	9/0	7/0	7/0	9/0	10/0	9/0+	2/0	5/0	0/0	0/0
077	South Coast Los Angeles County 2	--	--	--	--	--	--	--	--	--	20/0	31/0	33/0	38/0+	16/0	9/0	3/0	0/0
087	Central Los Angeles	23/0	18/0	25/0	17/0	33/0	25/0	33/0	15/0	10/0	8/0	7/0	5/0	9/0	4/0	7/0	0/0	2/0
090	Santa Clarita Valley	14/0	9/0	9/0	6/0	21/0	7/0	7/0	12/0	16/0	3/0	2/0	2/0	9/0+	4/0	2/0	0/0	0/0
094	Southwest Coastal Los Angeles County 1	21/0	8/0	7/0	12/0	10/0	16/0	14/0	20/0	5/0	13/0*	--	--	--	--	--	--	--
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	0/0*	0/0	0/0	5/0	0/0	2/0	0/0	0/0
ORANGE COUNTY:																		
3176	Central Orange County 1	23/2	10/0	18/0	20/0	39/0	13/0	20/0	8/0	10/0	12/0	5/0	13/0	9/0+	5/0	2/0	0/0	3/0
3186	Saddleback Valley 1	18/0	7/0	7/0	10/0	10/0	3/0	--	--	--	--	--	--	--	--	--	--	--
3812	Saddleback Valley 2	--	--	--	--	3/0	3/0	5/0	8/0	4/0	0/0	0/0	2/0	5/0	0/0	2/0	0/0	0/0
RIVERSIDE COUNTY:																		
4137	Coachella Valley 1**	4/0	3/0	2/0	5/0	5/0	0/0	2/0+	5/0	7/0	3/0	3/0	4/0+	11/0	9/0+*	2/0	0/0	0/0+
4144	Metropolitan Riverside County 1	62/7	68/2	70/2	54/0	72/2	70/0	67/0	69/0	57/2	61/0	56/0	60/0	57/0+	41/0	29/0	6/0	13/0
4149	Perris Valley	38/0	33/0	32/0	26/0	50/0	22/0	27/0	39/0	33/0	25/0	32/0	35/0	56/0+	27/0*	16/0	2/0	5/0
4150	San Gorgonio Pass	12/0	19/0	25/0	9/0	--	--	--	--	--	--	--	--	--	--	--	--	--
4155	Norco/Corona	47/3	33/0	42/2	40/0	55/0	48/0	33/0	34/0	26/0	19/0	9/0	18/0	17/0+	15/0	12/0	0/0	3/0
4157	Coachella Valley 2**	44/2	50/0+	43/0+	40/0+	54/0	50/0+	45/0+	45/0+*	42/0+	20/0+*	34/0	50/0+	61/0+	22/0+	8/0+	5/0	2/0+
4163	Temecula Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4164	Banning Airport	--	--	--	4/0	12/0	8/0	13/2	11/0	15/0	12/0	3/0	15/0	15/0	2/0	2/0	2/0	2/0
4165	Mira Loma	--	--	--	--	--	--	--	--	--	--	--	70/0	75/0+	57/0	56/0	42/0	42/0
SAN BERNARDINO COUNTY:																		
5171	Southwest San Bernardino Valley 1	51/5	53/0	36/2	34/0	56/0	--	--	--	--	--	--	--	--	--	--	--	--
5181	Central San Bernardino Mountains	2/0	0/0	0/0	0/0	0/0	0/0	--	19/0	0/0*	2/0	0/0	2/0	4/0	0/0*	2/0	0/0	0/0
5197	Central San Bernardino Valley 1	57/3	57/0	48/0	47/0	61/0	52/0	57/0	53/0	54/0*	48/0	48/0	52/0	59/0+	23/0	22/0	17/0	7/0
5203	Central San Bernardino Valley 2	53/0	58/0	45/0	38/0	56/0	53/0	52/0	56/0	39/0	48/0	38/0	42/0	49/0+	32/0	21/0	5/0	5/0
5204	East San Bernardino Valley	41/2	42/0	38/0	32/0	40/0	44/0	45/0	32/0	26/0	33/0	21/0	20/0	32/0	7/0	3/0	2/0	3/0
5817	Southwest San Bernardino Valley 2	--	--	--	--	67/2	45/0	42/2	41/0	29/0	29/0	32/0	27/0	24/0+	24/0	15/0	5/0	5/0

* Less than 12 full months of data

** Salton Sea Air Basin

+ Excludes data flagged for exceptional events

Federal Reference Method (FRM) filter data only

Refer to 2003 AQMP for 1985-1994 data

TABLE A-8
Particulate Matter (PM10)[#] – Annual Maximum 24-Hour Average (µg/m³)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
LOS ANGELES COUNTY:																		
060	East San Gabriel Valley 1	157	100	116	87	103	94	106	91	119	83	76	81	83+	98	74	70	65
069	East San Fernando Valley	135	110	92	75	82	74	86	71	81*	74	92	71	109	66	80	51	61
072	South Coast Los Angeles County 1	146	113	87	69	79	105	91	74	63	72	66	78	75+	62	62	44	43
077	South Coast Los Angeles County 2	--	--	--	--	--	--	--	--	--	83	131	117	123+	81	83	76	50
087	Central Los Angeles	141	138	102	80	88	80	97	65	81	72	70	59	78	66*	72	42	53
090	Santa Clarita Valley	87	91	67	60	75	64	62	61	72	54	55	53	131+	91	56	40	45
094	Southwest Coastal Los Angeles County 1	136	107	79	66	69	74	75	121	58	52*	--	--	--	--	--	--	--
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	47*	44	45	128	50	52	37	41
ORANGE COUNTY:																		
3176	Central Orange County 1	172	101	91	81	122	126	93	69	96	74	65	104	75+	61+	63	43	53
3186	Saddleback Valley 1	122	79	86	70	111	60	--	--	--	--	--	--	--	--	--	--	--
3812	Saddleback Valley 2	--	--	--	--	56	98	60	80	64	47	41	57	74	42	56	34	48
RIVERSIDE COUNTY:																		
4137	Coachella Valley 1**	68	130	63	72	104	44	53+	75	108	79	66	73+	83	75+*	140	37	42+
4144	Metropolitan Riverside County 1	219	162	163	116	153	139	136	130	164	137	123	109	118+	115	77	75	82
4149	Perris Valley	145	87	139	98	112	87	86	100	142	83	80	125	120+	85*	80	51	65
4150	San Geronio Pass	138	122	227	76	--	--	--	--	--	--	--	--	--	--	--	--	--
4155	Norco/Corona	177	94	158	93	136	129	109+	78	116	76	79	74	93+	86	79	50	60
4157	Coachella Valley 2**	199	117+	144+	114+	119	114+	149+	139+	124+	83+	106	122+	146+	128+	132+	107	106+
4163	Temecula Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4164	Banning Airport	--	--	--	62	86	69	219	70	79	82	76	75	78	51	99	55	51
4165	Mira Loma	--	--	--	--	--	--	--	--	--	--	--	124	142	135	108	89	79
SAN BERNARDINO COUNTY:																		
5171	Southwest San Bernardino Valley 1	167	129	208	92	112	--	--	--	--	--	--	--	--	--	--	--	--
5181	Central San Bernardino Mountains	53	45	47	45	47	49	--	52*	47*	52	49	63	89	41*	57	39	43
5197	Central San Bernardino Valley 1	178	130	122	101	116	108	106	102	101*	106	108	142	111+	75	75	62	84
5203	Central San Bernardino Valley 2	148	136	108	114	134	108	106	94	98	118	72	92	136+	76	66	63	56
5204	East San Bernardino Valley	172	128	103	97	92	109	102	83	92	88	61	103	97	58	52	57	71
5817	Southwest San Bernardino Valley 2	--	--	--	--	--	124	166	91	149	93	74	78	115+	90	70	87	70
	District Maximum	219	162	227	116	153	139	219	139	164	137	131	142+	146+	135	140	107	106

* Less than 12 full months of data.

** Salton Sea Air Basin

+ Excludes data flagged for exceptional events

Federal Reference Method (FRM) filter data only

Refer to 2003 AQMP for 1985-1994 data

TABLE A-9
Fine Particulate Matter (PM_{2.5})[#] – Annual Arithmetic Mean (µg/m³)

STN#	LOCATION	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
LOS ANGELES COUNTY:														
060	East San Gabriel Valley	23.9	20.2	21.7	21.0	19.3	18.3	17.0	15.5	15.9	14.1	13.2	10.9	12.1
069	East San Fernando Valley	22.9	21.4	24.8	24.0	22.1	19.1	17.9	16.6	16.8	14.1	14.4	12.6	13.2
072	South Coastal Los Angeles County 1	20.7	19.6	21.2	19.5	18.0	17.9	16.0	14.2	14.6	14.2	13.0	10.6	11.0
074	West San Fernando Valley	17.3	18.0	18.4	18.9	16.5	15.6	13.9	12.9	13.1	11.9	11.4	10.3	10.2
077	South Coastal Los Angeles County 2	--	--	--	--	20.5	16.5	14.7	14.5	13.7	13.7	12.5	10.4	10.7
084	South Central Los Angeles County1	24.3	23.0	24.5	23.3	20.3	18.5	17.5	16.7	15.9	15.5	--	--	--
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	14.7	12.6	13.0
085	South San Gabriel Valley	25.7	24.0	25.4	24.0	20.6	20.0	17.0	16.7	16.7	15.1	14.8	12.6	12.5
087	Central Los Angeles	23.0	21.9	22.9	22.1	21.4	19.7	18.1	15.6	16.8	15.7	14.3	11.9	13.0
088	West San Gabriel Valley	19.9	19.4	20.9	20.3	18.6	16.6	15.1	13.4	14.3	12.9	12.3	10.4	10.9
ORANGE COUNTY:														
3176	Central Orange County	26.0	20.3	22.0	18.6	17.3	17.0	14.7	14.1	14.5	13.6	11.7	10.2	11.0
3812	Saddleback Valley	16.6	14.7	15.8	15.5	13.1	12.0	10.7	11.0	11.3	10.3	9.4	8.0	8.5
RIVERSIDE COUNTY:														
4137	Coachella Valley 1**	--	9.7	10.7	10.0	9.0	8.9	8.4	7.7	8.7	7.2	6.6	6.0	6.0
4144	Metropolitan Riverside County 1	30.2	28.3	31.0	27.4	24.8	22.1	21.0	19.0	19.1	16.5	15.3	13.2	13.6
4146	Metropolitan Riverside County 2	26.7	25.3	28.2	27.1	22.6	20.8	18.0	17.0	18.1	13.4	13.5	11.1	11.8
4157	Coachella Valley 2**	12.8	11.2	12.2	12.0	11.4	10.7	10.5	9.5	9.8	8.4	8.0	6.9	7.2
4165	Mira Loma	--	--	--	--	--	--	--	20.6	21	18.2	16.8	15.2	15.3
SAN BERNARDINO COUNTY:														
5197	Central San Bernardino Valley 1	25.7	24.5	24.9	24.3	22.1	19.9	18.9	17.6	19	15.4	14.2	12.1	12.6
5203	Central San Bernardino Valley 2	25.6	25.9	26.1	25.8	22.2	21.9	17.4	17.8	18.3	13.5	12.9	11.3	12.2
5817	Southwest San Bernardino Valley	25.4	24.1	26.5	25.4	23.8	20.9	18.8	18.5	17.9	15.6	14.8	12.9	13.2
5818	East San Bernardino Mountains	10.3	10.2	11.2	11.5	10.6	9.7	12.1	11.2	10.4	9.2	9.9	8.5	8.4
	District Maximum	30.2	28.3	31.0	27.4	24.8	22.1	21.0	20.6	21.0	18.2	16.8	15.2	15.3

* Less than 12 full months of data.

** Salton Sea Air Basin

Federal Reference Method (FRM) filter data only

TABLE A-10
Fine Particulate Matter (PM_{2.5})[#] – Percent of Sampling Days Exceeding the Federal Standard (35 µg/m³)^{##}

STN#	LOCATION	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
LOS ANGELES COUNTY:														
060	East San Gabriel Valley	17	9	14	12	9	8	6*	3*	7	2	4	1	2
069	East San Fernando Valley	18	14*	16	19	14	10	8	6	9	2	2	1	2
072	South Coastal Los Angeles County 1	9	11*	14	9	7	7	4	2*	4	2	2	0	0
074	West San Fernando Valley	8*	8	7	10	7	4	4	1	1	2	1	1	1
077	South Coastal Los Angeles County 2	--	--	--	--	10	5	2	2	2	2	1	0	1
084	South Central Los Angeles County 1	18	14	16	18	9	7	7	4	4	3	--	--	--
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	3	1	0
085	South San Gabriel Valley	20	13	22	19	9	9	9*	6	5	4	2	0	1
087	Central Los Angeles	15	13	15	13	14	7	7	3	6	3	2	1	1
088	West San Gabriel Valley	9*	6	8	11	10	6	4	1	3	2	3	0	1
ORANGE COUNTY:														
3176	Central Orange County	17	14*	16*	9	7	6	4	2	4	4	1	0	1
3812	Saddleback Valley	4*	4	5	3	3	3	0	1	2	0	1	0	0
RIVERSIDE COUNTY:														
4137	Coachella Valley 1**	--	0	1	1	0	0	0*	0	0	0	0	0	0
4144	Metropolitan Riverside County 1	30	26*	33	25	21	15	11	11	11	4	4	1	1
4146	Metropolitan Riverside County 2	25	22	23	24	19	13	5	9	8	3	2	2	2
4157	Coachella Valley 2**	0*	0	0	0	0	0	2	0	0	0	0	0	0
4165	Mira Loma	--	--	--	--	--	--	--	12	12	9	6	2	3
SAN BERNARDINO COUNTY:														
5197	Central San Bernardino Valley 1	17	19	15	19	14	14	6	6	9	5	2	2	2
5203	Central San Bernardino Valley 2	21	21*	23	24	15	15	3	8	11	3	2	2	2
5817	Southwest San Bernardino Valley	22	14	21	18	17	13	7	7	6	5	3	1	2
5818	East San Bernardino Mountains	--	0	0	0	0	0	4	2*	2	2	2	0	0
	District Maximum	30	22	33	25	21	15	11	12	12	9	6	2	3

* Less than 12 full months of data.

** Salton Sea Air Basin

Federal Reference Method (FRM) filter data only

Effective December 17, 2006, U.S. EPA has strengthened the standard level from 65 µg/m³ to 35 µg/m³

TABLE A-11
Fine Particulate Matter (PM_{2.5})[#] – Annual Maximum 24-Hour Average (µg/m³)

STN#	LOCATION	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
LOS ANGELES COUNTY:														
060	East San Gabriel Valley	81.3	92.5	79.7	72.4	121.2	75.6	132.7*	52.8*	63.8	53.1	72.1	44.4	49.5
069	East San Fernando Valley	79.5	84.4*	94.7	63.0	120.6	60.1	63.2	50.7	56.5	57.5	67.5	43.7	47.8
072	South Coastal Los Angeles County 1	66.9	81.5*	72.9	62.7	115.2	66.6	53.9	58.5*	82.9	57.2	63	35	39.7
074	West San Fernando Valley	79.0*	67.5	71.1	48.8	47.5	56.2	39.6	44.1	43.3	50.5	39.9	40.7	39.8
077	South Coastal Los Angeles County 2	--	--	--	--	--	59.7	50.8	53.6	68	60.9	55.8	33.7	42.0
084	South Central Los Angeles County 1	67.8	82.1	73.1	64.0	54.8	55.8	54.6	55	49	44.2	--	--	--
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	69.2	38.2	35.3
085	South San Gabriel Valley	85.6	89.5	77.3	61.0	90.3	60.7	58.2*	72.2	63.6	47.3	71.1	34.9	41.2
087	Central Los Angeles	69.3	87.8	73.4	66.3	83.7	75.0	73.7	56.2	64.2	78.3	61.7	39.2	49.3
088	West San Gabriel Valley	73.0*	66.3	78.1	57.8	89.0	59.4	62.9	45.9	68.9	66	52	35.2	43.8
ORANGE COUNTY:														
3176	Central Orange County	68.7	113.9*	70.8*	68.6	115.5	58.9	54.7	56.2	79.4	67.9	64.6	31.7	39.2
3812	Saddleback Valley	56.6*	94.7	53.4	58.5	50.6	49.4	35.4	47	46.9	32.6	39.2	19.9	33.4
RIVERSIDE COUNTY:														
4137	Coachella Valley 1**	--	28.5	44.7	42.3	21.2	27.1	26.2*	24.8	32.5	18.1	21.8	12.8	26.3
4144	Metropolitan Riverside County 1	111.2	119.6*	98.0	77.6	104.3	91.7	98.7	68.5	75.7	57.7	54.5	46.5	60.8
4146	Metropolitan Riverside County 2	90.0	79.3	74.9	75.5	73.3	93.8	95.0	55.3	68.6	43	42.2	43.7	51.6
4157	Coachella Valley 2**	29.6*	28.6	33.5	26.8	26.8	28.5	44.4	24.3	26.8	21.6	27.5	16.0	35.4
4165	Mira Loma	--	--	--	--	--	--	--	63.0	69.7	50.9	49.2	54.2	56.3
SAN BERNARDINO COUNTY:														
5197	Central San Bernardino Valley 1	98.0	72.9	74.8	66.6	98.1	71.4	96.8	52.6	77.5	49	46.4	42.6	60.1
5203	Central San Bernardino Valley 2	121.5	89.8*	78.5	82.1	73.9	93.4	106.3	55	72.1	43.5	37.8	39.3	65.0
5817	Southwest San Bernardino Valley	85.8	73.4	71.2	64.8	88.9	86.1	87.8	53.7	72.8	54.2	46.9	46.1	52.9
5818	East San Bernardino Mountains	32.1	29.0	34.6	34.1	35.0	28.6	38.8	40.1*	45.4	36.8	40.8	35.4	30.6
	District Maximum	121.5	119.6	98.0	82.1	121.2	93.8	132.7	72.2	82.9	78.3	72.1	54.2	60.8

* Less than 12 full months of data.

** Salton Sea Air Basin

Federal Reference Method (FRM) filter data only

TABLE A-12
Fine Particulate Matter (PM2.5)[#] – Annual 24-Hour Average 98th Percentile Concentration (µg/m³)

STN#	LOCATION	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
LOS ANGELES COUNTY:														
060	East San Gabriel Valley	64	62	61	51	56	54	53	39	49	35	43	35	31
069	East San Fernando Valley	50	83	69	55	60	49	51	43	48	35	34	33	34
072	South Coastal Los Angeles County 1	51	64	49	47	47	46	41	35	41	36	34	28	28
074	West San Fernando Valley	40	50	57	45	45	53	36	32	33	26	27	30	24
077	South Coastal Los Angeles County 2	--	--	--	--	53	42	38	35	34	35	30	27	27
084	South Central Los Angeles County1	53	63	66	53	52	53	48	45	46	37	--	--	--
112	South Cenral Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	38	32	32
085	South San Gabriel Valley	60	71	67	58	50	52	54	43	50	38	35	32	32
087	Central Los Angeles	52	73	58	55	61	50	53	39	51	40	34	27	32
088	West San Gabriel Valley	60	54	55	49	48	47	43	32	45	32	36	25	26
ORANGE COUNTY:														
3176	Central Orange County	66	66	59	48	52	48	42	41	47	39	32	25	28
3812	Saddleback Valley	45	37	46	46	38	39	31	26	35	27	24	17	29
RIVERSIDE COUNTY:														
4137	Coachella Valley 1**		23	33	23	20	23	25	16	21	17	15	13	13
4144	Metropolitan Riverside County 1	79	77	74	66	77	60	58	54	54	41	40	32	31
4146	Metropolitan Riverside County 2	62	67	66	64	56	54	41	48	57	39	34	27	28
4157	Coachella Valley 2**	30	26	30	22	25	27	25	19	27	19	17	12	16
4165	Mira Loma	--	--	--	--	--	--	--	53	60	47	41	36	37
SAN BERNARDINO COUNTY:														
5197	Central San Bernardino Valley 1	66	65	70	57	54	63	48	44	65	47	33	31	28
5203	Central San Bernardino Valley 2	72	70	68	66	58	72	43	48	68	41	35	30	33
5817	Southwest San Bernardino Valley	86	65	65	57	67	60	50	42	53	45	36	31	35
5818	East San Bernardino Mountains	31	27	30	32	29	23	37	40	34	33	29	28	31
	District Maximum	86	83	74	66	77	72	58	54	68	47	43	36	37

* Less than 12 full months of data.

** Salton Sea Air Basin

Federal Reference Method (FRM) filter data only

TABLE A-13
Carbon Monoxide – Annual Maximum 8-Hour Average (ppm)
 (To Be Compared to Federal Standard (9 ppm) and State Standard (9.0 ppm), 8-Hour Average)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
LOS ANGELES COUNTY:																			
060	East San Gabriel Valley 1	6.3	4.0	4.3	3.9	3.9	4.9	2.9	2.4	2.6	2	1.7	1.7	1.8	1.6	1.7	1.3	1.4	
069	East San Fernando Valley	12.0	9.3	7.4	7.5	9.0	6.1	4.9	4.6	4.7*	3.7	3.4	3.5	2.8	2.6	2.9	2.4	2.4	
072	South Coastal Los Angeles County	6.6	6.9	6.7	6.6	5.4	5.8	4.7	4.6	4.7	3.4	3.5	3.4	2.6	2.6	2.2	2.1	2.6	
074	West San Fernando Valley	10.3	8.5	9.8	9.3	7.6	9.8	6.0	4.8	4.1	3.5	3.5	3.4	2.8	2.9	2.8	2.6	2.8	
075	Pomona/Walnut Valley	6.1	5.0	5.0	7.3	6.7	4.9	3.4	3.3	4.4	3.1	2.5	2.1	2	2	1.8	1.8	1.6	
084	South Central Los Angeles County 1	13.86	17.3	17.0	13.4	11.0	10.0	7.7	10.1	7.3	6.7	5.9	6.4	5.1	4.3*	--	--	--	
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.6	3.6	4.7	
085	South San Gabriel Valley	7.86	8.1	6.2	6.1	5.6	5.3	4.0	4	4	3.6	2.4*	2.7*	2.9	2.1	2.1	1.9	2.4	
087	Central Los Angeles	8.37	8.4	7.9	6.1	6.3	6.0	4.6	4	4.6	3.2	3.1	2.6	2.2	2.1	2.2	2.3	2.4	
088	West San Gabriel Valley	9.12	7.1	6.0	6.3	6.6	7.4	5.0	4	3.8	3.4	2.8	2.8	2.3	2.1	2.1	2	2.2	
090	Santa Clarita Valley	4.12	3.9	6.8	3.4	3.6	4.9	3.1	1.9	1.7	3.7	1.3	1.3	1.2	1.1	1.4	1.1	0.8	
091	Northwest Coastal Los Angeles County	5.62	4.5	4.4	4.5	3.8	4.3	3.0	2.7	2.7	2.3	2.1	2	2	2	1.5	1.4	1.6	
094	Southwest Coastal Los Angeles County 1	8.86	11.6	10.3	9.4	8.4	7.0	5.1	6.1	5	4.4*	--	--	--	--	--	--	--	
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	3.0*	2.1	2.3	2.4	2.5	1.9	2.2	1.8	
591	East San Gabriel Valley 2	--	--	--	--	--	3.1	2.5--	2.3	2.1	2	1.9	2	2	3	2.1	1.3	1.1	
ORANGE COUNTY:																			
3176	Central Orange County	8.00	7.5	5.8	5.3	5.3	6.8	4.7	5.4	3.9	4.1	3.3	3	2.9	3.6	2.7	2	2.1	
3177	North Orange County	6.62	6.9	6.0	6.1	5.3	6.1	4.7	4.4	4.1	4	3.1	3	2.9	2.9	2.3	1.8	2.1	
3186	Saddleback Valley 1	4.00	4.0	3.6	3.1	2.5	2.3	--	--	--	--	--	--	--	--	--	--	--	
3195	North Coastal Orange County	6.57	7.3	5.8	7.0	6.4	6.3	4.6	4.3	5.8	4.1	3.2	3	3.1	2	2.2	2.1	2.2	
3812	Saddleback Valley 2	--	--	--	--	--	3.3	2.4	3.6	1.8	1.6	1.6	1.8	2.2	1.1	1	0.9	1	
RIVERSIDE COUNTY:																			
4137	Coachella Valley 1**	1.50	1.6	1.4	1.6	1.8	1.6	1.5	1.2	1.3*	1	0.8	1	0.8	0.6	0.7	0.5	0.6	
4144	Metropolitan Riverside County 1	5.71	5.0	5.8	4.6	4.4	4.3	3.4	3	3.7	3	2.5	2.1	2.9	2	1.9	1.8	1.4	
4146	Metropolitan Riverside County 2	6.50	5.4	5.0	4.6	4.1	4.3	4.5	3.9	3.4	2.1	2.4	2.3	2.1	2	1.8	1.7	1.5	
4157	Coachella Valley 2**	--	--	--	--	--	2.1	--	--	--	--	--	--	--	--	--	--	--	
4158	Lake Elsinore	--	--	--	--	--	2.0	2.0	2	1.3*	0.9	1	1	1.4	1	0.7	0.6	0.7	
4165	Mira Loma	--	--	--	--	--	--	--	--	--	--	--	2.7	2.1	1.9	2.4	1.9	1.9	
SAN BERNARDINO COUNTY:																			
5175	Northwest San Bernardino Valley	--	--	--	--	--	2.6	1.8	1.6	2.9	2.1	1.8	1.8	1.7	1.6	1.5	1.8	1.3	
5197	Central San Bernardino Valley 1	--	--	--	--	--	--	--	--	--	2.1*	2.1	2	1.8	1.9	1.5	1.4	1.1	
5203	Central San Bernardino Valley 2	6.3	4.6	6.0	4.6	4.0	4.3	3.3	3.3	4.6	3.3	2.4	2.3	2.3	1.8	1.9	1.7	1.7	
District Maximum		13.9	17.3	17.0	13.5	11.7	10.0	7.7	10.1	7.3	6.7	5.9	6.4	5.1	4.3	4.6	3.6	4.7	

* Less than 12 full months of data.

** Salton Sea Air Basin

Refer to 2003 AQMP for 1976-1994 data

TABLE A-14
Nitrogen Dioxide – Annual Average (pphm)

(To Be Compared to Federal Standard (5.34 pphm) and State Standard (3.0 pphm), Annual Average of All Hours)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
LOS ANGELES COUNTY:																			
060	East San Gabriel Valley 1	4.64	4.15	3.38	3.64	3.90	3.66	3.31	3.36	2.96	2.04	2.51	2.58	2.53	2.3	1.94	1.85	1.9	
069	East San Fernando Valley	4.54	4.61	4.24	4.16	4.56	4.15	4.19	4.02	3.56*	3.32	2.94	2.74	2.89	2.85	2.74	2.41	2.21	
072	South Coastal Los Angeles County	3.67	3.42	3.33	3.39	3.42	3.13	3.08	2.98	2.88*	2.80	2.41	2.15	2.07	2.08	2.12	1.98	1.77	
074	West San Fernando Valley	3.17	3.07	2.60	2.66	2.87	2.85	2.66	2.48	2.6*	2.14	2.02	1.74	1.86	1.8	1.71	1.67	1.49	
075	Pomona/Walnut Valley 1	4.56	4.26	4.33	4.33	5.03	4.35	3.71	3.65	3.52	3.14	3.12	3.07	3.18	3.02	2.74	2.62	2.46	
084	South Central Los Angeles County 1	4.63	4.12	4.28	3.93	4.28	3.86	3.69	3.57	3.12	3.01	--	3.06	2.91	3.01*	--	--	--	
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.14	1.79	1.86	
085	South San Gabriel Valley	4.56	3.93	3.63	3.69	3.91	3.66	3.52	3.44	3.53	3.05	3.12	2.83*	2.49	2.63	2.59	2.29	2.37	
087	Central Los Angeles	4.50	4.36	4.30	3.98	3.91	4.04	3.78	3.27	3.38	3.28	3.08*	2.88	2.99	2.75	2.81	2.5	2.31	
088	West San Gabriel Valley	3.75	3.78	3.41	3.51	3.79	2.96	3.45	3.35	3.22	2.70	2.78	2.45	2.46	2.35	2.21	1.96	2.03	
090	Santa Clarita Valley	3.05	--	--	--	2.84	2.46	2.39	2.00	2.21	2.04	2.41	1.84	1.96	1.65	1.51	1.43	1.33	
091	Northwest Coastal Los Angeles County	2.78	2.89	2.85	2.71	2.91	2.73	2.51	2.49	2.31	1.98	1.90	1.73	2	1.84	1.7	1.56	1.39	
094	Southwest Coastal Los Angeles County 1	3.05	2.85	2.80	2.95	2.95	2.75	2.50	2.44*	2.38	3.10*	1.78	--	--	--	--	--	--	
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	1.36*	1.34	1.55	1.4	1.43	1.59	1.21	1.34	
591	East San Gabriel Valley 2	3.80	3.28	3.00	2.76	3.28	2.90	2.74	2.72	2.71	2.40	2.24	2.06	2.27	1.82	1.7	1.54	1.29	
ORANGE COUNTY:																			
3176	Central Orange County	3.71	3.19	3.32	3.36	3.27	3.00	2.93*	2.44	2.40	1.99	2.11	1.97	2.08	2.03	1.79	1.75	1.68	
3177	North Orange County	3.91	3.54	3.29	3.44	3.51	3.04	2.75	2.56	2.84	2.52	2.49	2.24	2.19	2.06	2.06	2.01	1.68	
3195	North Coastal Orange County	2.39	2.06	1.99	2.00	2.09	2.05	1.82	1.87	1.99	1.51	1.31	1.45	1.32	1.32	1.3	1.13	1.00	
RIVERSIDE COUNTY:																			
4137	Coachella Valley 1**	2.23	2.10	1.58	1.70	1.95	1.78	1.75	1.72	1.73*	1.30	1.20	1.03	1.03	0.93	0.81	0.85	0.8	
4144	Metropolitan Riverside County 1	3.06	2.94	2.62	2.25	2.25	2.36	2.47	2.37	2.17	1.72	2.22	1.99	2.06	1.92	1.71	1.68	1.66	
4146	Metropolitan Riverside County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	2.58*	2	1.72	1.69	
4157	Coachella Valley 2**	--	--	--	--	--	0.99	--	--	--	--	--	--	--	--	--	--	--	
4158	Lake Elsinore	2.08	1.82	1.65	1.74	2.00	1.75	1.85	1.73	1.82*	1.51	1.42	1.51	1.74	1.29	1.29	1.01	0.96	
4164	Banning Airport	--	--	--	2.15	2.43	2.37	2.11	1.99	1.93*	1.65	1.48	1.61	1.47	1.28	1.09	1.16	0.95	
4165	Mira LOMA	--	--	--	--	--	--	--	--	--	--	--	1.94	1.81	1.74	1.58	1.51	1.53	
SAN BERNARDINO COUNTY:																			
5175	Northwest San Bernardino Valley	4.64	3.87	3.41	3.59	3.98	3.80	3.84	3.69	3.49	3.05	3.13	3.1	2.76	2.35	2.39	2.04	1.96	
5197	Central San Bernardino Valley 1	4.24	3.86	3.65	3.62	3.88	3.64	3.58	3.34*	3.07	2.73	3.10	2.7	2.39	2.07	2.35	2.31	2.11	
5203	Central San Bernardino Valley 2	4.04	3.84	3.53	3.39	3.58	3.25	3.03	2.96	2.70	2.61	2.59	2.52	2.45	2.17	1.96	1.88	1.69	
	District Maximum	4.64	4.61	4.33	4.33	5.03	4.35	4.19	4.02	3.56	3.32	3.13	3.10	3.18	3.02	2.81	2.62	2.46	

* Less than 12 full months of data.

** Salton Sea Air Basin

Refer to 2003 AQMP for 1976-1994 data

TABLE A-15
Nitrogen Dioxide – Annual Maximum 1-Hour Average (ppm)
 (To Be Compared to Federal Standard (0.100 ppm) and State Standard (0.18 ppm), 1-Hour Average)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
LOS ANGELES COUNTY:																			
060	East San Gabriel Valley 1	0.22	0.15	0.16	0.14	0.16	0.15	0.12	0.12	0.12	0.10	0.09	0.11	0.12	0.10	0.10	0.077	0.080	
069	East San Fernando Valley	0.18	0.20	0.20	0.14	0.18	0.17	0.25	0.26	0.14	0.12	0.09	0.10	0.09	0.11	0.09	0.082	0.068	
072	South Coastal Los Angeles County	0.21	0.17	0.20	0.16	0.15	0.14	0.13	0.13	0.14	0.12	0.14	0.10	0.11	0.13	0.11	0.093	0.106	
074	West San Fernando Valley	0.14	0.16	0.20	0.14	0.12	0.11	0.09	0.09	0.13	0.08	0.09	0.07	0.08	0.09	0.07	0.075	0.056	
075	Pomona/Walnut Valley 1	0.18	0.18	0.15	0.15	0.16	0.14	0.13	0.11	0.12	0.11	0.08	0.10	0.10	0.11	0.10	0.097	0.087	
084	South Central Los Angeles County 1	0.21	0.25	0.20	0.16	0.18	0.14	0.15	0.14	0.13	0.10	0.11	0.14	0.10	0.12*	--	--	--	
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.09	0.077	0.075	
085	South San Gabriel Valley	0.23	0.17	0.15	0.14	0.16	0.14	0.14	0.12	0.14	0.12	0.09	0.10*	0.11	0.10	0.10	0.079	0.091	
087	Central Los Angeles	0.24	0.25	0.20	0.17	0.21	0.16	0.14	0.14	0.16	0.16	0.13	0.11	0.10	0.12	0.12	0.089	0.110	
088	West San Gabriel Valley	0.22	0.19	0.17	0.16	0.16	0.17	0.15	0.15	0.14	0.12	0.10	0.12	0.09	0.11	0.08	0.071	0.087	
090	Santa Clarita Valley	0.16	--	--	--	0.10	0.10	0.10	0.10	0.12	0.09	0.09	0.08	0.08	0.07	0.06	0.059	0.060	
091	Northwest Coastal Los Angeles County	0.20	0.18	0.14	0.13	0.13	0.16	0.11	0.11	0.12	0.09	0.08	0.08	0.08	0.09	0.08	0.071	0.081	
094	Southwest Coastal Los Angeles County 1	0.18	0.15	0.17	0.15	0.13	0.13	0.11	0.10	0.12	0.08	--	--	--	--	--	--	--	
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	0.09*	0.09	0.10	0.08	0.09	0.08	0.076	0.098	
591	East San Gabriel Valley 2	0.20	0.14	0.13	0.13	0.14	0.13	0.12	0.10	0.12	0.12	0.09	0.10	0.11	0.10	0.09	0.079	0.078	
ORANGE COUNTY:																			
3176	Central Orange County	0.18	0.15	0.10	0.13	0.12	0.13	0.12	0.10	0.13	0.12	0.09	0.11	0.10	0.09	0.07	0.073	0.074	
3177	North Orange County	0.20	0.16	0.15	0.13	0.16	0.12	0.13	0.12	0.16	0.12	0.09	0.09	0.08	0.08	0.10	0.083	0.070	
3195	North Coastal Orange County	0.18	0.14	0.12	0.12	0.12	0.11	0.08	0.11	0.11	0.10	0.09	0.10	0.07	0.08	0.07	0.070	0.061	
RIVERSIDE COUNTY:																			
4137	Coachella Valley 1**	0.09	0.08	0.07	0.07	0.07	0.07	0.08	0.10	0.06	0.07	0.10	0.09	0.06	0.05	0.05	0.046	0.045	
4144	Metropolitan Riverside County 1	0.15	0.11	0.12	0.10	0.13	0.10	0.15	0.10	0.09	0.09	0.08	0.08	0.07	0.09	0.08	0.065	0.063	
4146	Metropolitan Riverside County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	0.09*	0.08	0.061	0.057	
4157	Coachella Valley 2**	--	--	--	--	--	0.06	--	--	--	--	--	--	--	--	--	--	--	
4158	Lake Elsinore	0.21	0.10	0.11	0.09	0.11	0.08	0.09	0.07	0.08	0.06	0.07	0.07	0.06	0.06	0.06	0.051	0.050	
4164	Banning Airport	--	--	--	0.26	0.31	0.21	0.24	0.15	0.09	0.08	0.07	0.11	0.08	0.08	0.06	0.066	0.061	
4165	Mira Loma	--	--	--	--	--	--	--	--	--	--	--	0.08	0.07	0.10	0.08	0.062	0.059	
SAN BERNARDINO COUNTY:																			
5175	Northwest San Bernardino Valley	0.20	0.15	0.15	0.14	0.13	0.15	0.13	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.11	0.079	0.069	
5197	Central San Bernardino Valley 1	0.17	0.17	0.14	0.15	0.15	0.12	0.13	0.12*	0.12	0.06	0.10	0.09	0.09	0.10	0.11	0.072	0.076	
5203	Central San Bernardino Valley 2	0.16	0.15	0.14	0.11	0.14	0.10	0.11	0.11	0.10	0.12	0.0.08	0.09	0.08	0.09	0.08	0.069	0.062	
	District Maximum	0.24	0.25	0.2	0.26	0.31	0.21	0.25	0.26	0.16	0.16	0.14	0.14	0.12	0.13	0.12	0.097	0.110	

* Less than 12 full months of data.

** Salton Sea Air Basin

Refer to 2003 AQMP for 1976-1994 data

TABLE A-16
Sulfur Dioxide – Annual Maximum 1-Hour Average (ppm)
 (To Be Compared to Federal Standard (0.075 ppm) and State Standard (0.25 ppm), 1-Hour Average)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
LOS ANGELES COUNTY:																			
60	East San Gabriel Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
69	East San Fernando Valley	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01*	0.02	0.01	0.01	0.01	0.01	0.01	0.015	0.009	
72	South Coastal Los Angeles County	0.14	0.04	0.04	0.08	0.05	0.05	0.05	0.03	0.03	0.04	0.04	0.03	0.11	0.09	0.02	0.040	0.015	
74	West San Fernando Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
84	South Central Los Angeles County	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
85	South San Gabriel Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
87	Central Los Angeles	0.01	0.01	0.02	0.14	0.05	0.08	0.03	0.02	0.05*	0.08	0.07	0.03	0.01	0.01	0.01	0.010	0.020	
88	West San Gabriel Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
90	Santa Clarita Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
91	Northwest Coastal Los Angeles County	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
94	Southwest Coastal Los Angeles County 1	0.06	0.06	0.1	0.03	0.09	0.17	0.04	0.07	0.03	0.03*	--	--	--	--	--	--	--	--
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	0.02*	0.04	0.02	0.02	0.02	0.02	0.026	0.012	
ORANGE COUNTY:																			
3176	Central Orange County 1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3177	North Orange County	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3190	Central Orange County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3195	North Coastal Orange County	0.02	0.01	0.03	0.02	0.02	0.02	0.01	0.03	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.010	0.008	
RIVERSIDE COUNTY:																			
4144	Metropolitan Riverside County	0.01	0.01	0.04	0.03	0.03	0.11	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.018	0.051	
SAN BERNARDINO COUNTY:																			
5175	Northwest San Bernardino Valley	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5197	Central San Bernardino Valley 1	0.02	0.01	0.01	0.02	0.01	0.02	0.01	0.03*	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.007	0.012	
5203	Central San Bernardino Valley 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	District Maximum	0.14	0.06	0.1	0.14	0.09	0.17	0.05	0.07	0.05	0.08	0.07	0.03	0.11	0.09	0.02	0.04	0.051	

* Less than 12 full months of data.

** Salton Sea Air Basin

Refer to 2003 AQMP for 1976-1994 data

TABLE A-17
Sulfate (PM10) – Annual Maximum 24-Hour Average ($\mu\text{g}/\text{m}^3$)
 (To Be Compared to State Standard of $25 \mu\text{g}/\text{m}^3$, 24-Hour Average)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
LOS ANGELES COUNTY:																		
60	East San Gabriel Valley	12.7	11.9	12.9	10.5	16.9	14.3	12.7	12.3	13.1	10.8	10.8	17.0	34.2	17.3	7.3	7.3	6.6
69	East San Fernando Valley	14.9	12.0	14.7	9.8	11.4	15.7	14.6	12.2	15.3	11.0	11.8	13.3	10.2	10.8	8.8	8.0	7.4
72	South Coastal Los Angeles County 1	18.2	14.9	11.3	12.8	13.1	11.9	15.0	14.4	15.6	14.7	10.8	16.5	10.3	9.7	9.5	10.0	6.1
77	South Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	15.0	15.9	13.5	17.9	8.4	11.0	7.3	12.6	5.9
87	Central Los Angeles	16.2	14.7	16.2	10.3	16.7	14.6	16.2	13.5	14.5	10.5	11.7	13.1	9.4	12.7	9.5	7.5	8.0
89	Santa Clarita Valley 1	11.2	8.4	10.4	7.2	17.3	--	--	--	--	--	--	--	--	--	--	--	--
90	Santa Clarita Valley 2	--	--	--	--	--	--	9.2	9.2	11.2	8.9	9.3	8.8	9.2	6.7	6.0	6.9	6.1
94	Southwest Coastal Los Angeles County1	18.1	16.1	15.3	11.6	17.6	--	--	--	--	--	--	--	--	--	--	--	--
820	Southwest Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	12.6	11.0	12.4	10.7	13.4	8.4	8.5	5.9
ORANGE COUNTY:																		
3176	Central Orange County 1	14.5	17.3	14.7	12.9	9.6	--	9.9	11.8	11.3	12.2	9.0	12.8	12.1	8.7	7.6	6.6	6.5
3186	Saddleback Valley 1	12.3	15.1	14.2	9.1	8.8	--	--	--	--	--	--	--	--	--	--	--	--
3812	Saddleback Valley 2	--	--	--	--	8.6	12.3	10.1	10.9	10.5	9.2	9.2	9.4	8.8	6.8	6.1	7.4	4.8
RIVERSIDE COUNTY:																		
4137	Coachella Valley 1**	6.8	5.7	5.9	5.5	5.4	6.2	6.0	5.3	6.5	5.2	5.5	4.9	5.8	5.2	4.8	5.1	4.4
4144	Metropolitan Riverside County 1	22.3	14.9	14.8	10.0	11.1	10.7	11.3	10.5	12.4	24.8	10.5	10.9	13.7	7.3	8.3	7.2	5.3
4149	Perris Valley	13.5	8.0	9.1	7.9	8.7	7.4	8.3	7.9	6.9	7.8	7.7	9.0	10.1	6.5	6.3	5.8	4.4
4150	San Gorgonio Pass	7.3	8.5	8.7	6.5	2.7	--	--	--	--	--	--	--	--	--	--	--	--
4155	Norco/Corona	13.6	11.3	13.1	9.8	10.1	11.0	10.2	10.5	9.9	10.1	7.1	10.7	18.9	13.4	10.7	7.0	5.1
4157	Coachella Valley 2**	10.4	6.7	5.8	5.4	4.9	6.9	7.5	7.2	6.2	6.7	6.1	5.4	5.2	5.6	5.1	4.8	5.7
4164	Banning Airport	--	--	--	6.1	4.6	6.9	6.4	8.0	5.8	6.7	7.1	7.5	6.2	6.3	5.4	5.5	4.4
4165	Mira Loma Van Buren	--	--	--	--	--	--	--	--	--	--	--	10.1	19.6	8.6	5.9	5.3	5.4
SAN BERNARDINO COUNTY:																		
5181	Central San Bernardino Mountains	4.8	5.2	4.7	4.5	3.0	5.1	5.2	4.0	3.7	4.7	5.9	4.2	3.9	4.4	3.9	4.7	4.0
5197	Central San Bernardino Valley 1	14.2	11.0	11.2	9.8	11.6	11.6	11.3	11.6	12.4	10.2	9.0	11.7	22.2	8.9	6.1	6.2	6.0
5203	Central San Bernardino Valley 2	11.9	11.6	9.2	13.1	10.8	10.6	10.3	10.8	11.4	10.4	9.3	10.0	9.7	8.3	5.6	6.6	5.5
5204	East San Bernardino Valley	11.3	9.9	8.8	9.6	9.8	10.2	9.0	9.7	9.0	10.5	8.6	11.7	11.3	7.4	5.4	6.6	4.9
5817	Southwest San Bernardino Valley	--	--	--	4.6	10.1	10.2	11.4	10.7	11.0	11.1	9.3	11.2	22.8	12.4	7.0	7.3	5.5
	District Maximum	22.3	17.3	16.2	13.1	17.6	15.7	16.2	14.4	15.6	24.8	13.5	17.9	34.2	17.3	10.7	12.6	8.0

* Less than 12 full months of data.

** Salton Sea Air Basin

Refer to 2003 AQMP for 1976-1994 data

TABLE A-18
Lead (TSP) – Annual Maximum Calendar Quarter Mean ($\mu\text{g}/\text{m}^3$)
 (To Be Compared to Former Federal Standard of $1.5 \mu\text{g}/\text{m}^3$, Calendar Quarter Average)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
LOS ANGELES COUNTY:																			
69	East San Fernando Valley	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
72	South Coastal Los Angeles County 1	0.04	0.08	0.03	0.04	0.05	0.04	0.04	0.02	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
77	South Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01	0.01	0.01	0.01	0.01	0.01
84	South Central Los Angeles County 1	0.06	0.05	0.07	0.04	0.09	0.06	0.10	0.04	0.04	0.03	0.02	0.02	0.03	0.02*	--	--	--	--
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01*	0.02	0.01	0.01	0.01
85	South San Gabriel Valley	0.06	0.06	0.06	0.05	0.09	0.06	0.05	0.05	0.04	0.02	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01
87	Central Los Angeles	0.06	0.06	0.07	0.04	0.07	0.05	0.05	0.03	0.03	0.03	0.02	0.01	0.03	0.02	0.01	0.01	0.01	0.01
94	Southwest Coastal Los Angeles County	0.04	0.03	0.05	0.04	0.04	0.05	0.04	0.02	0.03	0.01	--	--	--	--	--	--	--	--
820	Southwest Coastal Los Angeles County	--	--	--	--	--	--	--	--	--	--	--	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LOS ANGELES COUNTY (Source-Specific):																			
	Van Nuys Airport, Van Nuys	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	0.04	0.04
	Trojan Battery, Santa Fe Springs	--	--	--	--	--	--	--	--	--	--	--	--	--	0.08	0.10	0.07	0.08	0.08
	Quemetco, City of Industry	--	--	--	--	--	--	--	--	--	--	--	--	--	0.06*	0.10	0.10	0.06	0.06
	Exide (Rehrig), Vernon	--	--	--	--	--	--	--	--	--	--	--	--	--	2.41	0.48	0.39	0.45	0.45
	Exide (ATSF), Vernon	--	--	--	--	--	--	--	--	--	--	--	0.21	0.52	0.22	0.08	0.05	0.06	0.06
	Exide (Ayers St.), Vernon	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	0.02	0.02	0.02	0.02
ORANGE COUNTY:																			
3176	Central Orange County	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RIVERSIDE COUNTY:																			
4144	Metropolitan Riverside County 1	0.04	0.04	0.04	0.04	0.05	0.05	0.03	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
4146	Metropolitan Riverside County 2	0.03	0.03	0.04	0.05	0.04	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SAN BERNARDINO COUNTY:																			
5175	Northwest San Bernardino Valley	0.04	0.04	0.04	0.04	0.05	0.05	0.04	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
5203	Central San Bernardino Valley	0.04	0.04	0.04	0.03	0.05	0.05	0.04	0.02	0.08	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01
	District Maximum	0.06	0.08	0.07	0.05	0.09	0.06	0.10	0.05	0.08	0.03	0.03	0.21	0.52	2.41	0.48	0.39	0.45	0.45

* Less than 12 full months of data.
 Refer to 2003 AQMP for 1976-1994 data

TABLE A-19
Lead (TSP) – Annual Maximum Monthly Average ($\mu\text{g}/\text{m}^3$)
 (To Be Compared to State Standard of $1.5 \mu\text{g}/\text{m}^3$, Monthly Average)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
LOS ANGELES COUNTY:																			
69	East San Fernando Valley	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
72	South Coastal Los Angeles County 1	0.05	0.09	0.05	0.07	0.06	0.05	0.05	0.03	0.10	0.02	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01
77	South Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.01
84	South Central Los Angeles County 1	0.06	0.09	0.07	0.04	0.17	0.09	0.23	0.04	0.04	0.03	0.03	0.02	0.03	0.03	--	--	--	--
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	0.01	0.01	0.01
85	South San Gabriel Valley	0.07	0.09	0.08	0.07	0.21	0.09	0.07	0.06	0.05	0.03	0.03*	0.03	0.04	0.02	0.04	0.02	0.01	0.01
87	Central Los Angeles	0.07	0.08	0.07	0.06	0.13	0.06	0.06	0.05	0.15	0.03	0.03	0.02	0.04	0.02	0.02	0.01	0.01	0.01
94	Southwest Coastal Los Angeles County	0.04	0.04	0.06	0.06	0.05	0.08	0.04	0.02	0.17	0.01	--	--	--	--	--	--	--	--
820	Southwest Coastal Los Angeles County	--	--	--	--	--	--	--	--	--	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LOS ANGELES COUNTY (Source-Specific):																			
	Van Nuys Airport, Van Nuys	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.04	0.06	0.06
	Trojan Battery, Santa Fe Springs	--	--	--	--	--	--	--	--	--	--	--	--	--	0.10	0.15	0.08	0.12	0.12
	Quemetco, City of Industry	--	--	--	--	0.28	0.44	0.46	0.15	0.18	0.13	0.38	0.10	--	0.06*	0.11	0.12	0.07	0.07
	Exide (Rehrig), Vernon	--	--	--	--	--	--	--	--	--	--	--	--	1.97*	2.88	0.80	0.48	0.54	0.54
	Exide (ATSF), Vernon	--	--	--	--	--	--	--	--	--	--	--	0.23	1.01	0.25	0.09	0.08	0.07	0.07
	Exide (Ayers St.), Vernon	--	--	--	--	--	--	--	--	--	--	--	--	--	0.04*	0.03	0.02	0.02	0.02
ORANGE COUNTY:																			
3176	Central Orange County	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RIVERSIDE COUNTY:																			
4144	Metropolitan Riverside County 1	0.04	0.08	0.07	0.08	0.06	0.06	0.04	0.03	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01
4146	Metropolitan Riverside County 2	0.05	0.05	0.07	0.10	0.05	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01
SAN BERNARDINO COUNTY:																			
5175	Northwest San Bernardino Valley	0.05	0.06	0.04	0.05	0.07	0.06	0.05	0.03	0.14	0.02	0.02	0.03	0.04	0.02	0.01	0.01	0.01	0.01
5203	Central San Bernardino Valley	0.07	0.09	0.08	0.10	0.28	0.44	0.46	0.15	0.18	0.13	0.38	0.23	1.01	2.88	0.80	0.48	0.54	0.54
	District Maximum	0.07	0.09	0.08	0.10	0.21	0.09	0.23	0.06	0.17	0.03	0.03	0.28	0.23	1.97	2.88	0.80	0.45	0.45

* Less than 12 full months of data.

Refer to 2003 AQMP for 1976-1994 data

TABLE A-20
Lead (TSP) – Annual Maximum 3-Month Rolling Average ($\mu\text{g}/\text{m}^3$)
 (To Be Used for Comparison to Federal Standard of $0.15 \mu\text{g}/\text{m}^3$, 3-Month Rolling Average)

STN#	LOCATION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
LOS ANGELES COUNTY:																			
69	East San Fernando Valley	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
72	South Coastal Los Angeles County 1	0.04	0.04	0.04	0.04	0.05	0.05	0.04	0.03	0.04	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
77	South Coastal Los Angeles County 2	--	--	--	--	--	--	--	--	--	0.06	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
84	South Central Los Angeles County 1	0.05	0.07	0.07	0.05	0.09	0.07	0.11	0.04	0.04	0.03	0.03	0.02	0.03	0.03	--	--	--	--
112	South Central Los Angeles County 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.01	0.01	0.01
85	South San Gabriel Valley	0.06	0.06	0.07	0.06	0.10	0.08	0.05	0.05	0.03	0.03	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.01
87	Central Los Angeles	0.06	0.06	0.07	0.05	0.07	0.05	0.05	0.04	0.06	0.06	0.02	0.01	0.03	0.02	0.02	0.02	0.01	0.01
94	Southwest Coastal Los Angeles County	0.04	0.04	0.05	0.05	0.04	0.05	0.04	0.03	0.07	0.07	--	--	--	--	--	--	--	--
820	Southwest Coastal Los Angeles County	--	--	--	--	--	--	--	--	--	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LOS ANGELES COUNTY (Source-Specific):																			
	Van Nuys Airport, Van Nuys	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.04	0.04	0.04
	Trojan Battery, Santa Fe Springs	--	--	--	--	--	--	--	--	--	--	--	--	--	0.08	0.12	0.07	0.11	0.11
	Quemetco, City of Industry	--	--	--	--	0.22	0.37	0.33	0.12	0.15	0.11	0.22	0.09	--	--	0.10	0.10	0.06	0.06
	Exide (Rehrig), Vernon	--	--	--	--	--	--	--	--	--	--	--	--	--	2.49	0.66	0.39	0.46	0.46
	Exide (ATSF), Vernon	--	--	--	--	--	--	--	--	--	--	--	0.21	0.55	0.22	0.08	0.05	0.06	0.06
	Exide (Ayers St.), Vernon	--	--	--	--	--	--	--	--	--	--	--	--	--	0.03	0.02	0.02	0.02	0.02
ORANGE COUNTY:																			
3176	Central Orange County	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RIVERSIDE COUNTY:																			
4144	Metropolitan Riverside County 1	0.04	0.05	0.04	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.03	0.01	0.01	0.01
4146	Metropolitan Riverside County 2	0.03	0.03	0.05	0.06	0.04	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SAN BERNARDINO COUNTY:																			
5175	Northwest San Bernardino Valley	0.04	0.04	0.04	0.04	0.05	0.05	0.04	0.02	0.04	0.03	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01
5203	Central San Bernardino Valley	0.04	0.05	0.03	0.04	0.05	0.05	0.05	0.03	0.08	0.07	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01
	District Maximum	0.06	0.07	0.07	0.06	0.22	0.37	0.33	0.12	0.15	0.11	0.22	0.21	0.55	2.49	0.66	0.39	0.46	0.46

* Less than 12 full months of data.

Refer to 2003 AQMP for 1976-1994 data

**DRAFT FINAL 2012 AQMP
APPENDIX III**

BASE AND FUTURE YEAR EMISSION INVENTORY

NOVEMBER 2012

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD**

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CHAPTER 1

INVENTORY DEVELOPMENT

Background

Air Contaminants

Inventory Source Categories

Stationary Sources

Mobile Sources

Inventory Type

Average Annual Day Inventory

Planning Inventory

BACKGROUND

To protect the public health and welfare, federal and state standards limit concentration levels of air contaminants in ambient air. An emission inventory of air pollutants and their sources is essential to identify the major contributors of air contaminants and the measures required to reduce air pollution. 2008 is the base year used to project future year emissions for the Draft Final 2012 Air Quality Management Plan (AQMP). The 2008 base year emissions inventory reflects adopted District air regulations that are implemented as of June, 2012 and CARB rules adopted by August 2011. Both the federal and state Clean Air Acts specify 1990 as the base year to measure emission reduction progress. In these inventories, only anthropogenic sources (i.e., those associated with human activity) are considered.

This appendix includes six attachments: Attachment A – Average Annual Emissions Summary by Major Source Category; Attachment B – Summer Planning Emissions Summary by Major Source Category; Attachment C – Top South Coast Air Basin (SCAB) VOC and NO_x producers which emitted equal to or greater than ten (10) tons per year in 2008; Attachment D – On-Road Emissions by Vehicle Category; Attachment E – Emissions from Diesel Fuel Combustion by Major Source Category; and Attachment F – 2008 Base Year Greenhouse Gas Emission Inventory Methodology and 2008 Greenhouse Gas Emissions Summary by Major Source Category. The years of 2008, 2014, 2017, 2019, 2023, and 2030 are provided in Attachments A, B, D and E, except year 2017 in Attachment D. Since Year 2017 transportation activity data is not provided by Southern California Association of Governments (SCAG), year 2017 on-road data is derived from the interpolation of the data between 2014 and 2019.

Information necessary to produce the emission inventory for the Basin is obtained from the District and other governmental agencies, including California Air Resources Board (CARB), California Department of Transportation (Caltrans), and SCAG. Each of these agencies is responsible for collecting data (e.g., industry growth factors, socio-economic projections, travel activity levels, emission factors, emission speciation profile, and emissions) and developing methodologies (e.g., model and demographic forecast improvements) required to generate a comprehensive emissions inventory. Entire statewide emissions inventories are compiled and maintained by CARB in its emission related information databases named California Emission Inventory Development and Reporting System (CEIDARS), and California Emission Forecasting and Planning Inventory System (CEFIS). CARB is the agency responsible for developing the emissions inventory for all the mobile sources, except the aircraft. CARB provided on-

road and most of the off-road inventories from its EMFAC 2011 and 2011 In-Use Fleet Off-Road Models. Caltrans provides SCAG with information regarding highway projects. SCAG incorporates these data into their Travel Demand Model for estimating/projecting vehicle miles traveled (VMT) and speeds. SCAG's socio-economic and transportation activities projections in their 2012 Regional Transportation Plan (RTP) are applied in the Draft Final 2012 AQMP. On-road emissions are derived from the emission factors in CARB's EMFAC2011 and transportation activities and speed distribution from SCAG's Travel Demand Model.

AIR CONTAMINANTS

Currently, air quality standards exist for the following criteria air contaminants: ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), fine suspended particulate less than 10 microns (PM₁₀), fine particulate less than 2.5 microns (PM_{2.5}), lead, and sulfate. This appendix presents emission levels in the Basin for the criteria air contaminants and their precursors. Specifically, data are included for emissions of total organic gases (TOG), volatile organic compounds (VOC), oxides of nitrogen (NO_x), oxides of sulfur (SO_x), CO, particulate matter (PM), PM₁₀, PM_{2.5}, and ammonia (NH₃).

Ozone is formed from photochemical reactions involving other air contaminants so it is not inventoried. Although air quality standards for NO_x and SO_x are based on NO₂ and SO₂, respectively, emissions of NO_x and SO_x are in the emissions inventory because multiple species of NO_x and SO_x contribute to the formation of particulate, and NO_x and VOC react in the presence of sunlight to produce ozone.

TOG incorporates all gaseous compounds containing the element carbon with the exception of the inorganic compounds, CO, carbon dioxide (CO₂), carbonic acid, carbonates, and metallic carbides. VOC, a subset of TOG, includes all organic gases in TOG except acetone, ethane, methane, methylene chloride, methylchloroform, perchloroethylene, methyl acetate, parachlorobenzotrifluoride, and a number of Freon-type gases. It should be noted that this definition of VOC is different from the one used by the CARB, which includes some compounds not considered as VOCs according to U.S. EPA. Table III-1-1 lists the compounds that are exempt in U.S. EPA's VOC list, but are included in CARB's VOC list. Certain CFCs are still included in CARB's VOC list. According to CARB, the total emission inventory difference between U.S. EPA VOC and CARB's VOC is very small.

PM represents all airborne particulate matter. Important subsets of PM are PM10 and PM2.5. In the Draft Final 2012 AQMP, the amount of VOC in TOG and the amount of PM10 and PM2.5 in PM are calculated for each process primarily using species and size fraction profiles provided by CARB. Besides average annual day emissions that are reported for all criteria pollutants, summer planning inventories (VOC and NOx) are reported for ozone purposes.

TABLE III-1-1

List of Compounds Exempt in U.S. EPA's Definition of VOC; Included in CARB's Definition of VOC

COMPOUND	CAS *
3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	422-56-0
1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	507-55-1
1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC-43-10mee)	138495-42-8
difluoromethane (HFC-32)	75-10-5
ethylfluoride (HFC-161)	353-36-6
1,1,1,3,3,3-hexafluoropropane (HFC-236fa)	690-39-1
1,1,2,2,3-pentafluoropropane (HFC-245ca)	679-86-7
1,1,2,3,3-pentafluoropropane (HFC-245ea)	24270-66-4
1,1,1,2,3-pentafluoropropane (HFC-245eb)	431-31-2
1,1,1,3,3-pentafluoropropane (HFC-245fa)	460-73-1
1,1,1,2,3,3-hexafluoropropane (HFC-236ea)	431-63-0
1,1,1,3,3-pentafluorobutane (HFC-365mfc)	406-58-6
chlorofluoromethane (HCFC-31)	593-70-4
1-chloro-1-fluoroethane (HCFC-151a)	1615-75-4
1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a)	354-23-4
1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane (C ₄ F ₉ OCH ₃)	163702-07-6
2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane (CF ₃) ₂ CF ₂ OCH ₃)	163702-08-7
1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (C ₄ F ₉ OC ₂ H ₅)	163702-05-4
2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane (CF ₃) ₂ CF ₂ OC ₂ H ₅)	163702-06-5
1, 1, 1, 2, 2, 3, 3-heptafluoro-3-methoxy-propane (n-C ₃ F ₇ OCH ₃) or HFE-7000	375-03-1
3-ethoxy-1, 1, 1, 2, 3, 4, 4, 5, 5, 6, 6 – dodecafluoro-2-(trifluoromethyl) hexane (HFE-7500)	297730-93-9
1, 1, 1, 2, 3, 3, 3-heptafluoropropane (HFC 227ea)	431-89-0
Methyl formate (HCOOCH ₃)	107-31-3
Tert butyl acetate (TBAC)	540-88-5

* Chemical Abstract Service (CAS) identification numbers have been included in brackets [] for convenience.

INVENTORY SOURCE CATEGORIES

Stationary Sources

Stationary sources of emissions are grouped into two categories - point sources and area sources. Point source emissions are from facilities having one or more pieces of equipment registered and permitted with the District. Therefore, the District is able to collect facility emission-related information from the larger of these facilities. Area source emissions are from numerous small facilities or pieces of equipment, such as gasoline-dispensing facilities, residential water heaters, consumer products and architectural coatings, for which locations may not be specifically identified. For modeling purposes, area source emissions are spatially allocated to grid cells using demographic data (e.g., population, housing, and land use).

Point Sources

The 2008 point source emission inventory is based on the emissions data reported by point source facilities in the calendar year 2008 Annual Emissions Reporting (AER) Program. This program applies to facilities emitting 4 tons or more of VOC, NO_x, SO_x, or PM or emitting more than 100 tons of CO per year, as specified in Rule 301(e). Facilities subject to the AER Program calculate and report their emissions primarily based on their throughput data (e.g., fuel usage, material usage), appropriate emission factors or source tests, and control efficiency (if applicable). Under the calendar year 2008 AER Program, approximately, 1,800 facilities reported their annual emissions to the District. Emissions from smaller industrial facilities not subject to the AER program, which represent a small fraction of the overall inventory, are included as part of the area source inventory.

In order to prepare the point source inventory, emissions data for each facility were categorized based on EPA's Source Classification Codes (SCCs) for each emission source category. Since the AER program collects emissions data on an aggregate basis (i.e., equipment and processes with same emission factor are grouped and reported together), facility's equipment permit data were used in conjunction with the reported data to assign the appropriate SCC codes and develop the inventory at the SCC level. For modeling purposes, facility location is specified in Universal Transverse Mercator (UTM) coordinates. Business operation activity profile is also recorded. Facility business type is assigned to the facilities based on North American Industry Classification System (NAICS) Code according to their primary activity. The growth projections and impact of the AQMP on the local economy are presented by NAICS.

Area Sources

The District and CARB shared the responsibility for developing the 2008 area source emissions inventory for approximately 400 area source categories. Specifically, the District developed the area source inventory for about 150 categories whereas CARB developed the remaining area source categories (such as consumer products, and degreasing). For each area source category, a specific methodology is used for estimating emissions. In the 2008 area source inventory, a number of existing methodologies were used with updated activity data such as fuel data or sales data (e.g., fuel combustion categories, oil/gas production). Five new categories (i.e., LPG transmission, Storage and pipeline cleaning, three architectural coating colorants) were added to the inventory, other existing methodologies were refined based on more recent studies (e.g., landfills, composting waste, consumer products, architectural coatings), and some of the area sources were expanded (i.e., Commercial/Industrial internal combustion to include portable equipment engines).

Changes in Point Sources

The point source inventory continued its downward trend primarily due to the implementation of existing stationary source regulations. As indicated in Figure 1-1, the point sources decreased between 2002 and 2008 in VOC, NO_x and SO_x emissions. The decreases are from 52, 41, and 20 tons per day to 34, 34 and 13 tons per day for VOC, NO_x and SO_x respectively. In addition to the effect of existing regulations, another reason for the decreases is due to the recessionary impacts.

Changes in Area Sources

The area source inventory also decreased between 2002 and 2008 for all criteria pollutants, except NO_x. Figure 1-2 shows VOC, NO_x, SO_x and PM_{2.5} changed from 265, 48, 2, 51 tons per day to 231, 53, 1 and 39 tons per day between 2002 and 2008. The reason for NO_x increase is because the expansion of fuel consumption to include commercial and industrial portable equipment emissions.

Rule Implementation

A list of the District's VOC, NO_x, PM_{2.5} and SO_x emission reduction commitment by measure/adopted date by pollutant since 2007 State Implementation Plan (SIP) is presented in Table III-1-2. Table III-1-3 lists SCAB NO_x, VOC, PM_{2.5}, and SO_x emission progress since 2007 SIP to date on CARB rules for year of 2014 and year 2023.

COMPARISON OF 2002 BASE YEAR IN 2007 AQMP AND 2008 BASE YEAR IN 2012 AQMP

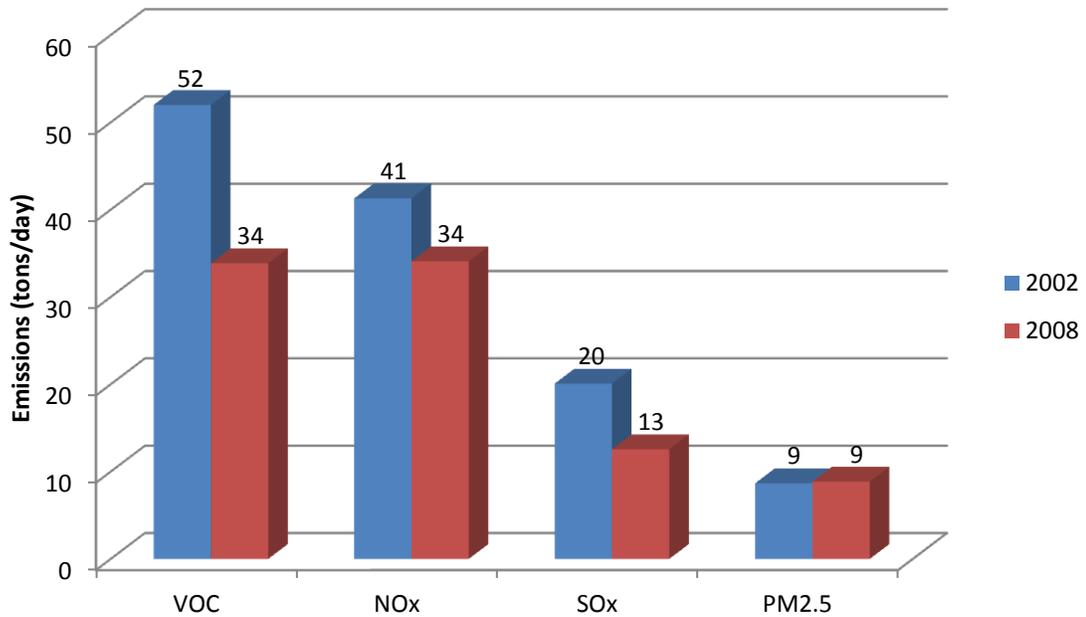


FIGURE III-1-1

Total Point Source Emissions
(VOC & NOx – Summer Planning; SOx & PM2.5 – Annual Average Inventory)

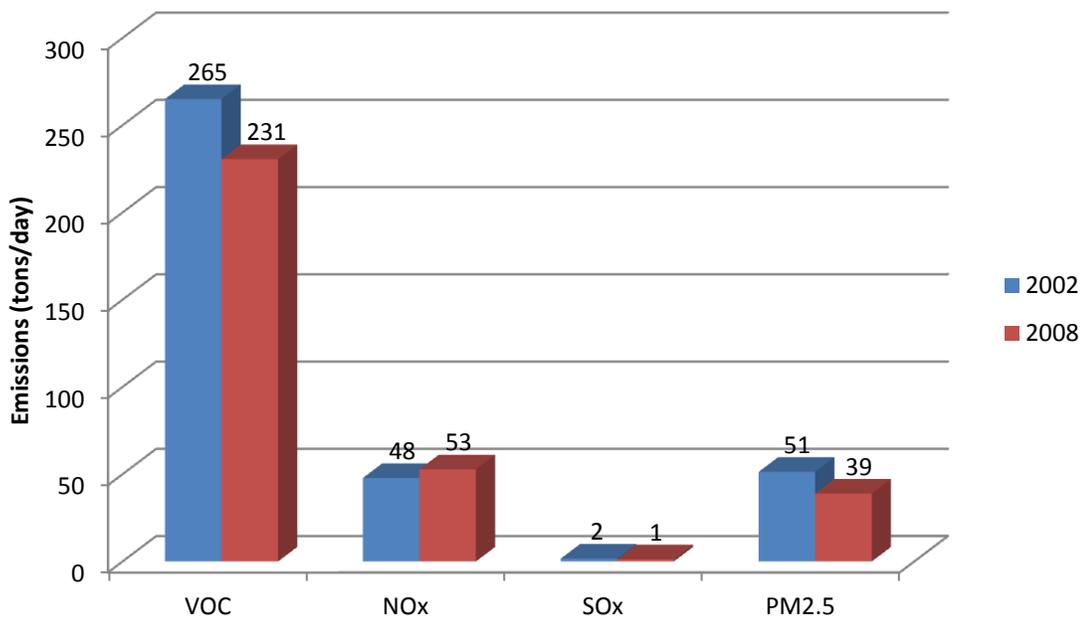


FIGURE III-1-2

Total Area Source Emissions
(VOC & NOx – Summer Planning; SOx & PM2.5 – Annual Average Inventory)

TABLE III-1-2

2007 AQMP Emission Reductions (tons per day) by Measure/Adoption Date

Control Measure #	CONTROL MEASURE TITLE	Adoption Date	ACHIEVED ^(a)	
			2014	2023
VOC EMISSIONS				
FUG-04	Pipeline and Storage Tank Degassing[VOC]- R1149	2008	0.04	0.04
BCM-03	Emission Reductions from Wood Burning Fireplaces and Wood Stoves [All]	2008	0.44	0.70
MCS-01	Facility Modernization [NO _x , VOC, PM] - <i>R1110.2</i>	2008+	0.3	0.3
CTS-01	Emission Reductions from Lubricants [VOC][R1144]	2009	3.9	3.2
CTS-04	Emission Reductions from the Reduction of VOC Content of Consumer Products Not Regulated by the State Board [VOC][R1143]	2009	9.7	10.1
MCS-04	Further Emission Reductions from Greenwaste Composting Operations [VOC][R1133.3]	2011	0.88	0.88
MCS-07	Application of All Feasible Measures [VOC][R1113, R1177] ^(b)	2011	7.2	11.1
TOTAL VOC REDUCTIONS (TPD)			22.5	26.4
CMB-01	NO _x Reduction from Non-RECLAIM Ovens, Dryers and Furnaces [NO _x][R1147]	2008	3.5	4.1
BCM-03	Emission Reductions from Wood Burning Fireplaces and Wood Stoves [All][R445]	2008	0.06	0.10
	SOON Program	2008	1.8	NA
MCS-01	Facility Modernization [NO _x , VOC, PM] - <i>R1110.2, PR1146, PR1146.1</i>	2008+	2.17	3.15
CMB-03	Further NO _x Reductions from Space Heaters [NO _x]	2009	0.1	3.0
TOTAL NO_x REDUCTIONS (TPD)			7.6	10.3
BCM-03	Emission Reductions from Wood Burning Fireplaces and Wood Stoves [PM2.5]	2008	1.0	1.6
MCS-01	Facility Modernization [NO _x , VOC, PM] - <i>R1155</i> ^(c)	2009	NA	NA
TOTAL PM2.5 REDUCTIONS (TPD)			1	1.6

TABLE III-1-2 (concluded)

2007 AQMP Emission Reductions (tons per day) by Measure/Adoption Date

Control Measure #	CONTROL MEASURE TITLE	Adoption Date	ACHIEVED ^(a)	
			2014	2023
SO_x EMISSIONS				
CMB-02	Further SO _x Reductions for RECLAIM (BARCT) [SO _x]	2010	4.0	5.7
TOTAL SO_x REDUCTIONS (TPD)			4.0	5.7

^(a) 2014 reductions estimated in average annual day, 2023 in planning inventory.

^(b) Includes achieved VOC reductions from Rule 1113: 4.1 tpd (2014); 4.4 tpd (2023) and Rule 1177: 3.1 tpd (2014); 6.7 tpd (2023)

^(c) R1155 was adopted as part of MCS-01 implementation in 2009, but PM_{2.5} reduction potential cannot be quantified.

NA: Not Applicable, no SIP reductions quantified in the 2007 AQMP

TABLE III-1-3

South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
	2014 ^a	2023 ^b	2014 ^a	2023 ^b
NO_x EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	134.2	74.3	131.6	73.1
Cleaner In-Use Heavy-Duty Trucks & Buses	151.2	76.8	132.6	49.4
Cleaner In-Use Off-Road Equipment (over 25hp)	28.0	18.9	27.5	15.8
Ship Auxiliary Engine Cold Ironing & Clean Tech.	23.7	40.3	15.6	12.0
Cleaner Main Ship Engines and Fuel - Main Engines	38.5	65.8	20.9	21.3
Accelerated Intro. of Cleaner Line-Haul Locomotives	18.3	21.0	18.3	21.0
Clean Up Existing Harbor Craft	15.2	18.4	11.1	8.4
Cargo Handling Equipment	3.2	1.8	3.2	1.8
New Emission Standards for Recreational Boats	11.0	18.3	11.0	18.3
Co-Benefits from Greenhouse Gas Reduction Measures	0.0	--	0.0	--
All other local, state, and federal emissions	166	157	159	147 ^d
TOTAL NO_x REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	589	493	530	368
VOC EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	132.1	97.4	123.5	92.1
Cleaner In-Use Heavy-Duty Trucks & Buses	8.7	6.6	5.4	5.3
Cleaner In-Use Off-Road Equipment (over 25hp)	2.6	2.0	2.5	1.7
Ship Auxiliary Engine Cold Ironing & Clean Tech.	0.9	1.5	0.7	0.9
Cleaner Main Ship Engines and Fuel - Main Engines	1.9	3.2	1.4	2.5
Accelerated Intro. of Cleaner Line-Haul Locomotives	2.3	2.4	2.3	2.4
Clean Up Existing Harbor Craft	1.2	1.0	1.1	0.5
Cargo Handling Equipment	0.3	0.6	0.3	0.6
New Emission Standards for Recreational Boats	37.9	50.8	37.9	50.8
Expanded Off-Road Rec. Vehicle Emission Standards	6.7	13.4	6.7	13.4
Consumer Products Program	102.6	109.5	96.7	102.4
All other local, state, and federal emissions	221	241	206	226 ^d
TOTAL VOC REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	518	529	485	498

TABLE III-1-3 (concluded)

South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
	2014 ^a	2023 ^b	2014 ^a	2023 ^b
PM2.5 EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	7.8	--	7.5	--
Cleaner In-Use Heavy-Duty Trucks & Buses	6.0	--	3.4	--
Cleaner In-Use Off-Road Equipment (over 25hp)	1.3	--	1.3	--
Ship Auxiliary Engine Cold Ironing & Clean Tech.	0.5	--	0.4	--
Cleaner Main Ship Engines and Fuel - Main Engines	3.9	--	0.4	--
Accelerated Intro. of Cleaner Line-Haul Locomotives	0.7	--	0.7	--
Clean Up Existing Harbor Craft	0.6	--	0.4	--
Cargo Handling Equipment	0.1	--	0.1	--
All other local, state, and federal emissions	74	--	73	--
TOTAL PM2.5 REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	95	--	87	--
SO_x EMISSIONS (TPD)^c				
Cleaner In-Use Heavy-Duty Trucks & Buses	0.3	--	0.3	--
Ship Auxiliary Engine Cold Ironing & Clean Tech.	1.1	--	0.8	--
Cleaner Main Ship Engines and Fuel - Main Engines	38.7	--	1.7	--
All other local, state, and federal emissions	21	--	17	--
TOTAL SO_x REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	61	--	20	--

- a. The 2014 emissions data reflect the 2014 Emissions Inventory that was included in the March 2011 *Progress Report on Implementation of PM2.5 State Implementation Plans*.
- b. The 2023 emissions data tables reflect the 2023 Emissions Inventory that was current as of August 2011.
- c. These are remaining emissions. If achieved emissions are lower than the committed emissions, it means the SIP targets are met.
- d. Includes benefits of local emission reductions that were not reflected in the revised RFP estimates.

Improved/Updated Methodologies

Fuel Combustion Sources - The emissions from commercial and industrial internal combustion engines were updated to include portable equipment emissions which were overlooked in the 2007 AQMP. The update causes increases in emissions for this category.

Landfills - The emission estimation methodology for this area source category was revised to incorporate the CARB's landfill GHG emission inventory data to calculate the amount of Methane (CH₄) being generated in 2008. The TOG and VOC emissions were estimated using the emission factors from the "1982 Task Force Report", which were the same factors used to estimate TOG/VOC emissions for this source category in the 2007 AQMP. The baseline emissions from source category in 2012 AQMP had drastically increased as compared with 2002 baseline used in 2007 AQMP. This was due to erroneous activity data reported by the point sources in 2002.

Metal Coating Operations - This area source category in the 2007 AQMP included the emissions from the small permitted facilities with VOC emissions below 4 tons per year. However, emissions from such smaller permitted facilities maybe underrepresented in the 2007 AQMP. During the amendment development process for Rule 1107, staff discovered numerous small shops using coating materials with compliant high solid concentrations, which are subsequently thinned beyond the allowable limit permitted by Rule 1107. The revised inventory adjusts the 2007 AQMP inventory to account for excess emissions from these coating activities as well.

LPG Transmission - This is a new area source category created to include the fugitive emissions associated with transfer and dispensing of LPG and is based on emission rates derived from AQMD source tests conducted in 2008 and 2011 and on sale volumes provided by the industry association and category breakdowns.

Storage Tanks and Pipeline Cleaning - A new area source category was added to include the emissions from the degassing of storage tanks and pipelines. As part of Rule 1149 amendment, the previous inventory for this category was updated to reflect more frequent degassing events as well as effectiveness of control techniques. It was determined that the actual degassing events were more than triple the amount estimated when the rule was originally developed. It was also assumed that once degassing rule requirements were fulfilled, there were no more fugitive emissions; however, a review of degassing logs indicated that sludge and product residual in the storage tanks significantly increase the emissions emanating from the storage tanks. Finally, the source category was expanded to include previously exempted tanks and pipelines.

Livestock Waste - The inventory for this category was updated to reflect the split of dairy cattle into milking cows, dry cows, calves, and heifers fractions since each has a different VOC emission factor as a function of their manure production.

Gasoline Dispensing - For this source category, the 2008 baseline emissions are the projected values as estimated in 2007 AQMP. However, in the 2007 AQMP, the emissions from gasoline dispensing were adjusted to account for 75% compliance levels identified in various audits conducted by the District since 1997. Based on the recent tests conducted at retail gas dispensing facilities on their In-Station Diagnostic (ISD) System, about 18% of the facilities demonstrated non-compliance (i.e., failed the test). As such, to account for this nonconformance with the requirements, the 75% compliance rate was carried over to 2012 AQMP.

Consumer Products - This category was updated to reflect the three most recent surveys conducted by ARB's Stationary Source Division (SSD) for the years 2003, 2006, and 2008. Together these surveys collected updated product information and ingredient information for approximately 350 product categories. Based on the survey data, CARB staff determined the total product sales and total VOC emissions for the various product categories. Before the emissions inventory was updated, some of the existing categories were split out into more specific categories, others were combined, and new categories were added to better reflect changes in formulations of existing products. The updated survey data reflect VOC reductions from several rulemaking with the net result being an overall emissions decrease. The updates conclude that the projected 2008 emissions in the 2007 AQMP are the same as the 2008 emissions in the Draft Final 2012 AQMP (98 tons per day).

Architectural Coatings - Three new area source categories were added under this category to accurately track the emissions from the colorants. VOC emissions from colorants, pigments added at the point of sale that impart the selected color, had specifically been excluded from Rule 1113, both in terms of the baseline emissions and any VOC restrictions. During the June 3, 2011 Rule 1113 amendment, VOC limits were included in the Rule. The emissions for architectural coatings were also updated to include the 2008 sales and emissions data that the manufacturers submitted under Rule 314 – Fees for Architectural Coatings. Rule 314 requires manufacturers to annually report the quantity and emissions of their architectural coatings sold into or within the District's jurisdiction. This data provides more accurate and updated emission estimates.

Composting - The emission estimation methodology for this area source category was revised to include the emissions from green waste composting covered under District

Rule 1133.3. The 2007 AQMP only included the emissions from co-composting, as it relates to the District Rule 1133.2.

Biogenic Volatile Organic Compounds - Emissions of biogenic volatile organic compounds (BVOCs) were updated to reflect the day specific temperature, relative humidity, and solar radiation inputs used in the ozone and PM_{2.5} air quality modeling. BVOC emissions were modeled for everyday in 2008. The 2008 BVOC inventory was developed by CARB.

Fugitive Dust - Subsequent to the approval of the 2003 AQMP, CARB released updated emission factors for several fugitive dust sources. The Final 2007 AQMP incorporated those updated emission factors and/or 2002 activity data for source categories such as entrained paved and unpaved road dust, construction, windblown dust, and farming operations. One of the more significant changes was that the factors used to quantify the PM_{2.5} fraction of PM₁₀ were updated based on studies by the Dust Emissions Joint Forum of the Western Regional Air Partnership (WRAP). These fractions represented the latest technical information for deriving the PM fine fraction (PM_{2.5-10}) of crustal fugitive dust from various sources, including paved and unpaved roads, agriculture, aggregate handling and storage piles, construction/demolition, and wind erosion. The fractions are currently in AP-42 guidance for fugitive dust sources (EPA, November 2006). As noted in the 2007 AQMP, the unspecified category emissions inventories were developed to reflect emissions from private paved and unpaved roads, and emissions from aggregate processing and storage based on facilities subject to Rule 1156 (cement manufacturing) and Rule 1157 (aggregate and related operations). The 2008 baseline inventory for the 2012 AQMP also includes these updates. In addition, the paved road emissions inventory methodology was modified using the latest AP-42 method for quantifying emissions from paved roads (January 2011). In conjunction with CARB, in using this latest paved road methodology, California-specific PM_{2.5}/PM₁₀ fraction (15%) and silt loading variables were used in lieu of the AP-42 default factors. Overall emission estimates were lower for the 2012 AQMP. Table III-1-4 indicates the changes in PM_{2.5} (tons per day) to the fugitive dust inventories. The updated paved road emissions methodology resulted in a significant reduction in emissions, as did the lower construction emissions which are a result of depressed economy.

TABLE III-1-4

Comparison of 2002 and 2008 PM2.5 Emissions (Tons per day)

SOURCE CATEGORY	2007 AQMP	DRAFT FINAL 2012 AQMP
	2002 Inventory	2008 Inventory
Paved Road Dust	18.9	7.0
Unpaved Road Dust	1.4	0.6
Construction	4.0	2.1
Windblown	0.4	0.3
Farming Operations	0.2	0.3
TOTAL	24.9	10.3

Special Studies

Aircraft – The aircraft emissions inventory is updated for the 2008 base year and the 2035 forecast year based on the latest available activity data and calculation methodologies. A total of 43 airports were identified as having aircraft operations within the District boundaries including commercial air carrier, air taxi, general aviation, and military aircraft operations. The sources of activity data included airport operators (for several commercial and military airports), Federal Aviation Administration’s (FAA) databases (i.e., Bureau of Transportation Statistics, Air Traffic Activity Data System, Terminal Area Forecast), and SCAG’s projections. For commercial air carrier operations, SCAG’s 2035 forecast, which is consistent with the forecast adopted for the 2012 Regional Transportation Plan (RTP), was used reflecting the future aircraft fleet mix. The emissions calculation methodology was primarily based on the application of FAA’s Emissions and Dispersion Modeling System (EDMS) model for airports with detailed activity data for commercial air carrier operations (by aircraft make and model). For other airports and aircraft types (i.e., general aviation, air taxi, military), the total number of landing and takeoff activity data was used in conjunction with the EPA’s average emission factors by major aircraft type (e.g., general aviation, air taxi, military). For the intermediate milestone years, the emissions inventories were linearly interpolated between 2008 and 2035.

Ammonia Sources –New 2008 ammonia emissions inventory has been developed for the Draft Final 2012 AQMP development. In conjunction with the ongoing efforts by CARB to develop a state-wide inventory, the District and CARB staffs have worked extensively to develop a new and comprehensive 2008 ammonia inventory for all ammonia source categories. All source categories were reviewed and updated for

emission factors, activity data, and spatial and temporal surrogates. Two new source categories of wood combustion and off-road mobile sources were added to the 2008 inventory. There has been a change in major ammonia emission sources. In 2002 inventory, major sources were on-road mobile (30%), livestock (22%), and domestic (21%) sources while domestic (23%), on-road mobile (20%), industrial (19%), composting (17%) and livestock (14%) sources are major ammonia sources in new 2008 inventory. 2008 Basin total ammonia emissions is 107 tons per day that is 12 tons per day less than 2002 Basin total ammonia emissions of 119 tons per day. 2008 Basin ammonia emissions from livestock, fertilizer application and on-road mobile emissions are decreased from 2002 emissions while soil, landfill, industrial, and composting emissions are increased from 2002 emissions. This updated ammonia emissions inventory has been used for PM modeling for the Draft Final 2012 AQMP development. Table III-1-5 summarizes the changes to the ammonia inventory.

TABLE III-1-5

Comparison of 2002 and 2008 Ammonia Emissions (Tons per day)

SOURCE CATEGORY	2007 AQMP	DRAFT FINAL 2012 AQMP
	2002 Inventory	2008 Inventory
Livestock	26.0	15.5
Soil	1.4	1.8
Domestic	25.1	25.0
Landfill	1.1	3.5
Composting	9.7	17.7
Fertilizer	6.1	1.5
Sewage Treatment	0.1	0.2
Wood Combustion	--	0.1
Industrial	13.2	20.2
On-Road Mobile Source	36.1	21.3
Off-Road Mobile Sources	--	0.1
TOTAL	118.8	107.0

Mobile Sources

On-Road Mobile Sources

The Draft Final 2012 AQMP emission estimates for on-road motor vehicles come from applying the emission rates in CARB's EMFAC2011 model to the transportation activity data provided by Southern California Association of Government (SCAG) in its adopted 2012 Regional Transportation Plan (RTP). The California Department of Transportation (Caltrans), the Department of Motor Vehicles (DMV), and SCAG supply CARB with data necessary to develop the on-road mobile source emissions inventory. DMV maintains a count of registered vehicles and Caltrans provides highway network, traffic counts and road capacity data. SCAG maintains the regional transportation model containing the temporal and spatial distribution of motor vehicle activity (travel time, travel speed, and volume of traffic for AM-peak, mid-day, PM-peak, evening and night hours). In addition, SCAG periodically conducts origin and destination surveys to validate the regional transportation model. SCAG also updates a demographic database for population, housing, employment and patterns of land use within the District's jurisdiction.

Emission rate data in the EMFAC2011 are collected from various sources, such as individual vehicles in a laboratory setting, tunnel studies and certification data, etc. Vehicle activity data are obtained from regional planning agencies, such as SCAG. The EMFAC2011 model calculates exhaust and evaporative emission rates by vehicle type for different vehicle speeds and environmental conditions (temperature and relative humidity). Temperature and humidity profiles are used to produce month specific, annual average, and episodic inventories.

Parameters accounted for by the EMFAC2011 include the following: type of emissions control technology, fuel type, distribution of operating speeds, speed and temperature correction factors, and the reduction in emissions resulting from the state's motor vehicle regulatory programs.

The EMFAC2011 includes the following mobile source breakdowns:

- (1) eight vehicle classes (light-duty passenger; light-duty trucks under 3,750 pounds; light-duty trucks between 3,750 pounds and 5,750 pounds; medium-duty trucks between 5,751 pounds and 8,500 pounds; light-heavy-duty trucks between 8,501 pounds and 10,000 pounds; light-heavy-duty trucks between 10,001 pounds and 14,000 pounds; medium heavy duty trucks between 14,001 pounds and 33,000 pounds; and heavy-heavy-duty-trucks for over 33,000 pounds);

- (2) two vehicle fuel types (gas and diesel);
- (3) truck types (ports, agriculture, construction, interstate, out-of-state, public fleet, utility fleet, power take off, tractor);
- (4) instate and out-of-state;
- (5) forty-five calendar years (1990-2035);
- (6) two vehicle exhaust processes (starts and running);
- (7) four evaporative processes (diurnal, hot soak, running loss, and resting loss);
- (8) seven pollutants (HC, CO, CO₂, NO_x, PM, SO_x, lead); and
- (9) fuel consumption.

To develop the detailed emission inputs needed by air quality dispersion models such as the Community Multi-scale Air Quality model (CMAQ) and Comprehensive Air Quality Model with eXtentions (CAMx), emissions from on-road motor vehicles are estimated at the grid level using Caltrans' Direct Travel Impact Model (DTIM). DTIM calculates emissions based on detailed information regarding each link (roadway segment) in an area for each hour of the day. The required inputs of DTIM include traffic volume, traffic speed, vehicle fleet characteristics, ambient temperature, and emission factors of vehicle fleets.

It should be noted that even though the EMFAC2011 is expanded to include more sub-vehicle class categories for some of the major vehicle class categories (i.e., medium-heavy duty diesel trucks & heavy-heavy diesel trucks) based on their weights (heavy or small), types (agricultural, construction, CA international registration plan), by road types (in-state or out-of-state), etc, the on-road mobile sources emissions in the Draft Final 2012 AQMP are reported by major vehicle class categories to compare with previous inventory reporting.

The characteristics of DTIM include:

- (1) emissions calculations based on specific information, such as link speed, link volume, and temperature;
- (2) spatial and temporal distribution of emissions to provide hourly gridded emissions; and,

(3) emission impacts of various types of transportation and regional planning alternatives (e.g., changes in roadway network configuration, or public transportation services).

DTIM reformats and sorts emission rates for all vehicle classes produced by the EMFAC2011. It then produces average emission rates for specific vehicle classes identified by the user. Finally, it produces regional mobile source emissions and hourly gridded mobile emissions. DTIM does this by combining emission rates with vehicle activity estimates derived from a transportation demand model and supplemental information on temperatures and temporal patterns.

The EMFAC2011 was the basis for on-road planning inventories, emission budgets, and rate-of-progress calculations. EMFAC2011 has been updated to:

- Include the impacts of recently adopted diesel regulations including the Truck and Bus Rule and other diesel truck fleet rules: the Pavley Clean Car Standard, and the Low Carbon Fuel Standard.
- Reflect the latest emissions inventory methods for heavy duty trucks and buses, and the impact of the economic recession.

A detailed description of the EMFAC2011 changes is available at CARB's website (<http://www.arb.ca.gov/msei/msei.htm>).

Several additional external adjustments are made to EMFAC2011 to reflect CARB's rules and regulations which were adopted after the development of EMFAC2011. The adjustments include the advanced clean cars regulations adopted in January 2012, reformulated gasoline, and Smog Check improvements. Figure 1-3 compares the 2008 and 2023 on-road baseline emissions between EMFAC2007 V2.3 and EMFAC2012 used in the 2007 AQMP and Draft Final 2012 AQMP, respectively. It should be noted that the comparison for 2008 reflects changes in methodology, but the comparison for 2023 also includes adopted rules and updated growth projections since the release of EMFAC2007. In general, the emissions are lower in EMFAC2011 than in EMFAC2007. The lower emissions can be attributed to additional rules and regulations which reduce emissions, future growth corrections, and recessionary impacts.

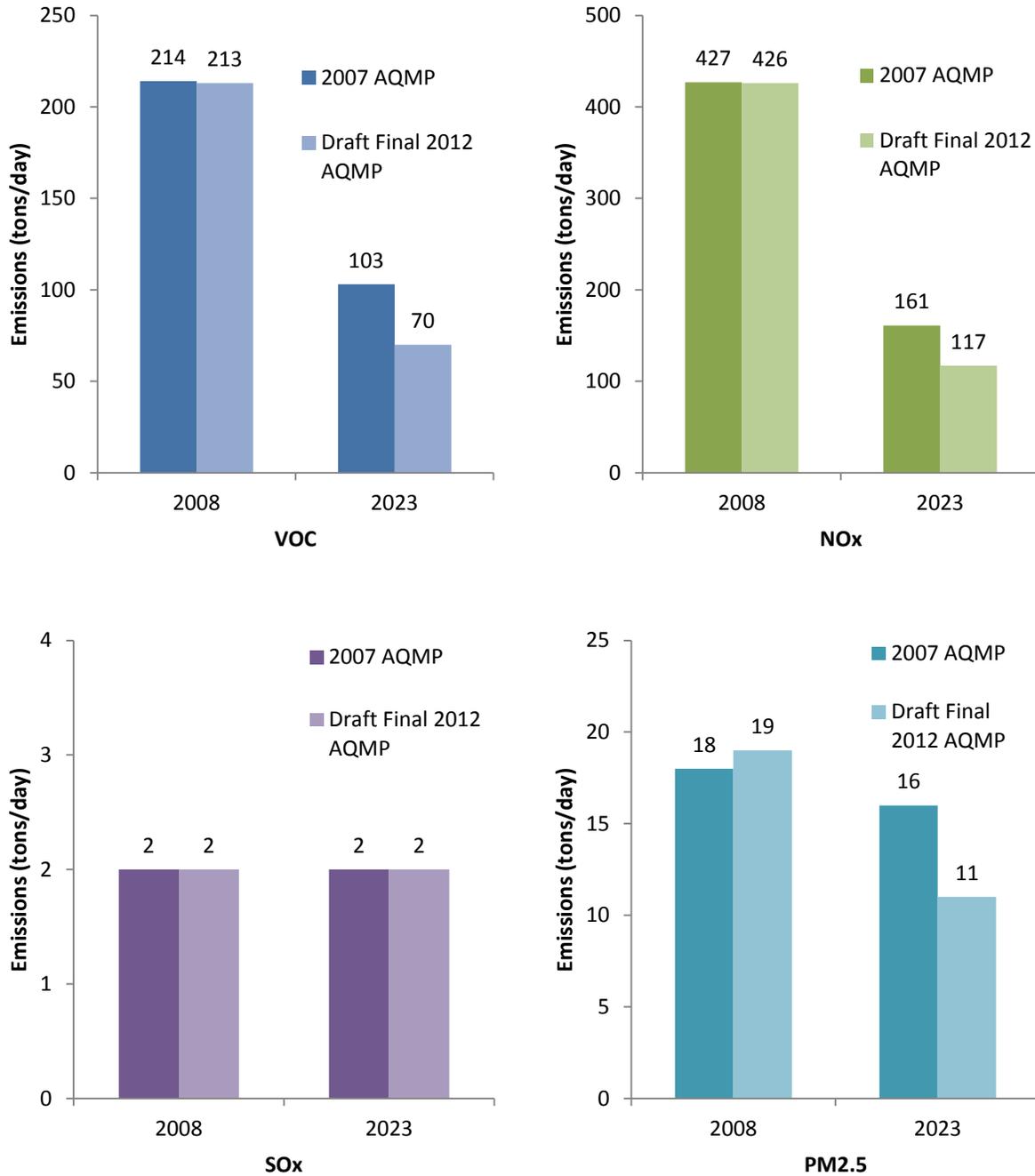


FIGURE III-1-3

Comparison of On-Road Emissions Between EMFAC2007 V2.3 (2007 AQMP) and EMFAC2011 (Draft Final 2012 AQMP)
 (VOC & NOx – Summer Planning; SOx & PM2.5 – Annual Average Inventory)

Off-Road Mobile Sources

Mobile sources not included in the on-road mobile source emissions inventory are considered as off-road mobile sources. CARB uses a number of models to estimate emissions for more than one hundred off-road equipment types. The models account for the effects of various adopted regulations, technology types, and seasonal conditions on emissions. The models combine population, equipment activity, horsepower, load factors, population growth, retirement factors, and emission factors to yield the annual emission by county, air basin or statewide. Temporal usage profiles are used to develop seasonal emission estimates which are then spatially allocated to the county or air basin using surrogates such as population.

The emission inventories were developed using CARB's 2011 In-Use Off-Road Fleet Inventory model for the Draft Final 2012 AQMP. The 2011 In-Use-Off-Road Fleet Inventory model was last updated in 2011 and most data was obtained several years before. It reflects CARB's rules and regulations adopted since the 2007 AQMP. The description of these models is presented as follows:

- **2011 In-Use Off-Road Fleet Inventory Model** - This is an Access database model that forecasts future vehicle population data by type, model year, and horsepower from the Off-Road Simulation Model (OSM). The Model was developed in 2010 to support the analysis for amendments to the In-Use Off-Road Diesel Fueled Fleets Regulation. The equipment population in CARB's In-Use Off-Road Fleet Inventory Model is updated using the equipment population reported to CARB for rule compliance. According to CARB, the total population in 2009 was 26% lower than had been anticipated in 2007 due to fleet downsizing during the recent recession. The equipment hours of use in the Model are updated based on the reported activity data between 2007 and 2009. According to CARB, the new data indicated in most cases 30% or greater reduced activity in 2009 compared to 2007 as a result of the recession. The equipment load factor in CARB's In-Use Off-Road Fleet Inventory model is updated using a 2009 academic study and information from engine manufacturers. According to CARB, the new data suggest the load factors should be reduced by 33%. The model calculates NO_x, PM, and VOC, CO₂ and SO_x emissions. The models can be downloaded from CARB's website at http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles
- **Cargo Handling Emission Inventory Model** - This is an Access database model for diesel equipment subject to regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards. Cargo handling equipment has been updated for

population, activity, recessionary impacts on growth, and engine load. The updates are based on new information collected since 2005. The new information includes CARB's regulatory reporting data which provides an accounting of all the cargo handling equipment in the state including their model year, horsepower and activity. In addition, the Ports of Los Angeles and Long Beach have developed annual emissions inventories and a number of the major rail yards and other ports in the state have completed individual emission inventories. The model can be downloaded from CARB's website at http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

- **Transportation Refrigeration Unit (TRU) Model** – This is an Access database model for diesel engines subject to Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate (TRU Rule). The TRU model was developed to support analysis for the 2011 amendments to the TRU Rule. The current inventory is based on updated activity, population, growth and turn-over data, and updated emission factors and takes into consideration the requirements of the TRU Rule. The model can be downloaded from CARB's website at http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles
- **Ocean Going Vessel (OGV) Model** – This is an Access database model for marine vessels and engines. Ocean-going vessel emissions in the Draft Final 2012 AQMP include CARB's fuel regulation for ocean-going vessels and the 2007 shore power regulation. In addition, the improvements and corrections include recoding the model for speed, updating auxiliary engine information, updating ship routing, revising vessel speed reduction compliance rates, and an adjustment factor to account for the effects of the recession. In March 2010, the International Maritime Organization (IMO) officially designated the waters within 200 miles of the North American Coast as an Emissions Control Area (ECA). Beginning August 2012, this requires ships that travel these waters to use fuel with a sulfur content of less than or equal to 1.0% and in 2015 the sulfur limit will be further reduced to 0.1%. Additionally, vessels built after January 1, 2016 will be required to meet the most stringent IMO Tier 3 NOx emission levels while transiting within the 200 mile ECA zone. Outer Continental Shelf (OCS) emissions (i.e. emissions from vessels beyond the three-mile state waters line) are included in the ships emissions. The model can be downloaded from CARB's website at http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

- **Commercial Harbor Craft Emission Inventory Models** – These are newly developed models. Three Access database models were developed for diesel engines which are subject to regulation to reduce emissions from diesel engines on commercial harbor craft operated with California Waters and 24 nautical miles of the California baseline (Harbor Craft Rule). One model was originally developed in 2007 to support the analysis for the Harbor Craft Rule. The other two models were developed to support analysis for the 2010 amendments to the rule which added additional vessel categories to the Harbor Craft Rule. The inventory values from the three models are added together to obtain the AQMP values. The model can be downloaded from CARB's website at http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles
- **Aircraft** - The aircraft emissions inventory is updated for the 2008 base year and the 2035 forecast year based on the latest available activity data and calculation methodologies. A total of 43 airports were identified as having aircraft operations within the District boundaries including commercial air carrier, air taxi, general aviation, and military aircraft operations. The sources of activity data include airport operators (for several commercial and military airports), FAA's databases (i.e., Bureau of Transportation Statistics, Air Traffic Activity Data System, Terminal Area Forecast), and SCAG. For commercial air carrier operations, SCAG's 2035 forecast, which is consistent with the forecast adopted for the 2012 RTP, reflects the future aircraft fleet mix. The emissions calculation methodology is primarily based on the application of FAA's Emissions and Dispersion Modeling System (EDMS) model for airports with detailed activity data for commercial air carrier operations (by aircraft make and model). For other airports and aircraft types (i.e., general aviation, air taxi, military), the total number of landing and takeoff activity data is used in conjunction with the EPA's average emission factors by major aircraft type (e.g., general aviation, air taxi, military). For the intermediate milestone years, the emissions inventories are linearly interpolated between 2008 and 2035.
- **Locomotives** – The locomotive inventories reflect the 2008 U.S.EPA locomotive regulations and adjustments due to the economic activity.

Figure 1-4 shows a comparison of the off-road baseline emissions in the 2007 AQMP and Draft Final 2012 AQMP. In general, the emissions are lower in the 2011 In-Use Off-Road Fleet Inventory model, except for 2008 SO_x emissions. The projected 2008 off-road NO_x emissions in the 2007 AQMP have 339 tons per day. The 2008 base year off-road NO_x emissions in the Draft Final 2012 AQMP are 208 tons per day. The 2011

In-Use Off-Road Fleet Inventory emissions are low because more rules and regulations adopted since 2007 OFFROAD model are included, updated data are used, and future growth corrections and recession impact are included. The higher 2008 SOx emissions estimated reflects the delay in the implementation of the ocean going vessels fuel SOx standard.

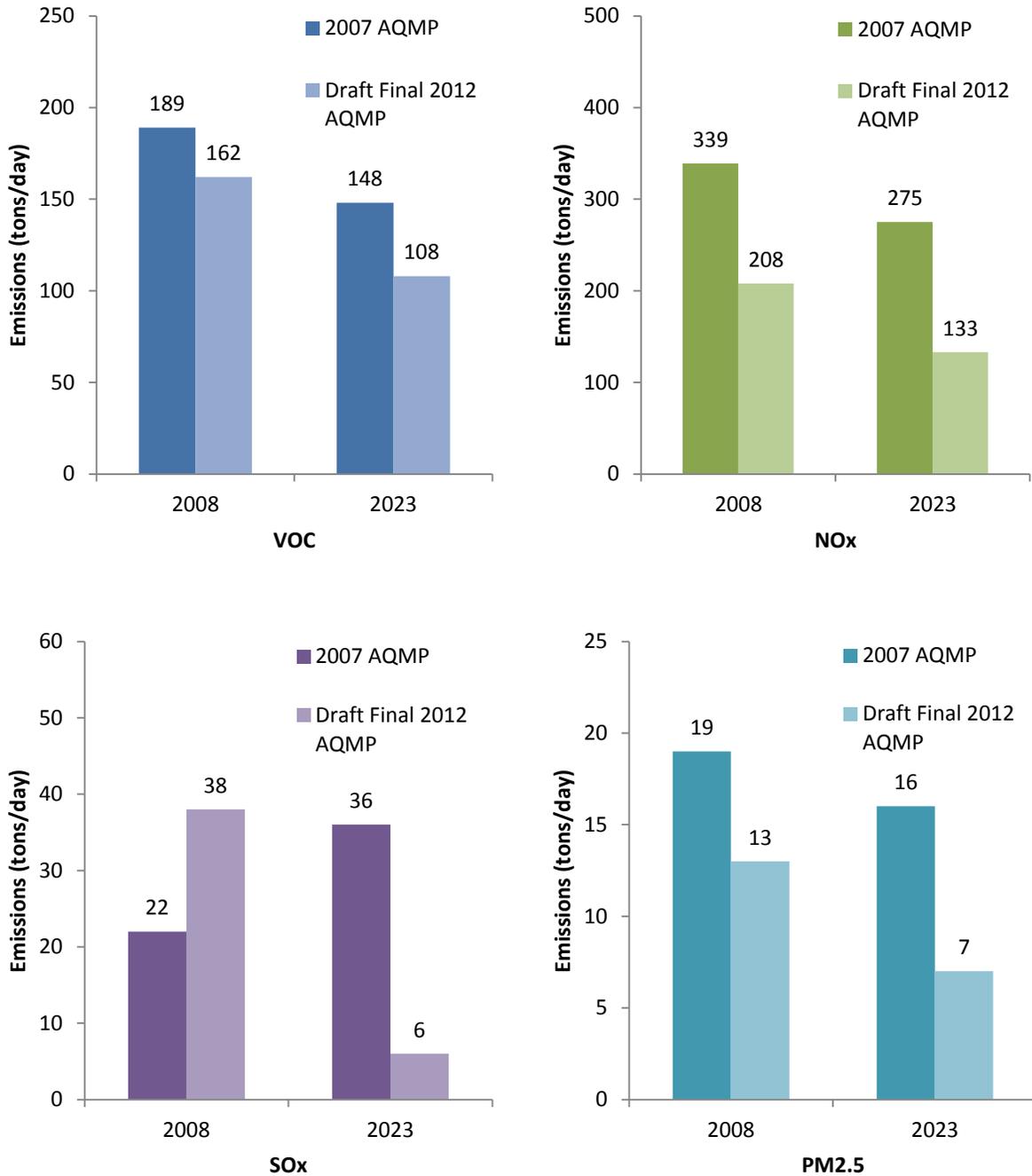


FIGURE III-1-4

Comparison of Off-Road Emissions Between 2007 AQMP and Draft Final 2012 AQMP (VOC & NOx – Summer Planning; SOx & PM2.5 – Annual Average Inventory)

INVENTORY TYPE

Different inventories are prepared for the Draft Final 2012 AQMP for regulatory and SIP performance tracking, and transportation conformity. Two inventory types are included in the Draft Final 2012 AQMP. They are annual average inventory and summer planning inventory.

Average Annual Day Inventory

The average annual day emissions inventory was derived primarily by dividing the annual total emissions by 365, except for the emissions derived from CARB's EMFAC2011 (on-road mobile sources) and In-Use Off-Road Fleet Inventory (most off-road mobile sources) models. In addition, the average annual day inventory was developed for all criteria pollutants regardless of their attainment status. The average annual day emissions are used to estimate cost-effectiveness of proposed control measures and future tracking of AQMP implementation (e.g., annual progress report on rule adoption).

Planning Inventory

Summer planning inventory provides the basis for tracking emission reduction progress specified by the federal Clean Air Act (CAA) and California Clean Air Act (CCAA). The CAA requires the District to produce a plan for reducing all non-attainment pollutants or their precursors by fifteen percent between 1990 and 1996, and three percent each year thereafter, averaged every consecutive three years until reaching the attainment date. The CCAA requires emission reductions by five percent or more per year, averaged every three consecutive years until 2000. In addition, the CAA specifies 1990 as the base year, whereas the CCAA specifies 1987 as the base year.

SCAB is designated as an extreme non-attainment area for Ozone for the federal air quality standards, and a non-attainment area for Ozone for the state air quality standards. The intent of the summer planning inventory is to characterize emission levels representative of those that occur during the typical season of air quality violations. The summer, or ozone, planning inventory contains emissions of ozone precursors (i.e. VOC and NOx) during the summertime.

The challenge of bringing the Basin air quality into compliance with state and federal ozone air quality standards is complicated by the fact that ambient concentrations of ozone are typically at their highest during the summer (defined as May through October for planning purposes). Any strategy designed to mitigate air pollution in the Basin must consider this summer variation in ambient air quality.

CARB has developed guidelines for the development of planning inventories. For point sources emission estimates represent an “average annual operating day.” Emissions from point sources are calculated by dividing the total annual emissions produced by a source by the number of days the source was in operation. For example, if a company emitted 150 tons in a year and the production lines operated 5 days a week for 40 weeks, then the average operating emissions from this facility are calculated to be 150 tons divided by 200 days or 0.75 tons per day.

For area and other mobile sources, planning emissions represent an “average seasonal operating day.” As an example, VOC emissions produced by asphalt road-paving operations are calculated by taking into account the variation in monthly levels and weekly operating days for paving activity during the year. Road paving varies from maximum rates during the summer season. Paving activity varies throughout the week with, on average, five operating days in a week. The allocation of annual area source emissions among the seasons is based on estimated relative monthly and weekly emissions patterns. As pointed out earlier, sources included in CARB’s In-Use Off-Road Fleet Inventory model include seasonal activity and temperature profiles which are used to develop the planning inventories. CARB’s summer planning on-road emission rates in the EMFAC2011 are applied to incorporate with SCAG’s updated activity data in the 2012 RTP.

CHAPTER 2

SUMMARY OF EMISSIONS

Baseline Emission Inventories

Base Year Emission Data

Future Year Emission Data

Future Year Emission Inventories

Growth Surrogate

Growth Factors

Emission Trend Analysis

Impact of Growth

Mobile and Area Source Credit Programs

Controlled Emission Inventories

Emission Impacts of AQMD Programs

Proposed Control Measures

CEPA Emission Calculations

CARB Emission Data Reports System

BASELINE EMISSION INVENTORIES

Base Year Emissions

The 2008 emission inventory is used as the base year inventory to project future year emissions. It represents the most recent and comprehensive inventory development. Attachment C lists SCAB top VOC and NO_x producers which emitted equal to or greater than ten (10) tons per year in 2008. The total VOC emissions from these facilities represent 70% of the total point sources VOC emissions and 8% of the total stationary VOC emissions. The total NO_x emissions from these facilities represent 84% of the total point sources NO_x emissions and 29% of the total stationary sources NO_x emissions. The stationary sources emissions result primarily from the combustion of fuels, evaporation of solvents or fuels, and processing of materials. Hence, stationary sources are grouped under fuel combustion; waste disposal; cleaning and surface coatings; petroleum production and marketing; industrial processes; solvent evaporation; and other miscellaneous processes.

Mobile sources are divided into two source categories: 1) on-road, and 2) other (off-road) mobile sources. On-road mobile sources include light-duty passenger vehicles; light-, medium-, and heavy- heavy duty trucks; motorcycles; urban buses; school buses and motor homes. Other mobile sources include aircraft; trains; ships and commercial boats; off-road recreational vehicles; off-road equipment; farm equipment; and fuel storage and cargo handling equipment.

Table III-2-1A compares the annual average emissions between the 2008 base year in the Draft Final 2012 AQMP and the projected 2008 emissions in the 2007 AQMP by major source category for VOC and NO_x, while Table III-2-1B compares the annual average emissions between the 2008 base year in the Draft Final 2012 AQMP and the projected 2008 emissions in the 2007 AQMP for SO_x and PM_{2.5}. Due to the economic recession which began in 2007, it is expected that the 2008 base year emissions should be lower than the projected 2008 emissions. Yet, several categories show higher emissions in the 2008 base year in the 2012 AQMP, such as fuel consumption, waste disposal, petroleum production and marketing for VOC; fuel consumption for NO_x; off-road emissions for SO_x; and industrial processes for PM_{2.5}. As mentioned earlier the differences are due to the methodology updates, implementation delays and inclusion of overlooked emissions.

TABLE III-2-1A

Comparison of VOC and NO_x Emissions By Major Source Category of
2008 Base Year in 2012 AQMP and Projected 2008 in 2007 AQMP
Annual Average Inventory (tpd¹)

SOURCE CATEGORY	2007	2012	%	2007	2012	%
	AQMP	AQMP	Change	AQMP	AQMP	Change
	VOC			NO _x		
Stationary Sources						
Fuel Combustion	7	14	+100%	30	41	+36%
Waste Disposal	8	12	+50%	2	2	0%
Cleaning and Surface Coatings	37	37	0%	0	0	0%
Petroleum Production and Marketing	32	41	+28%	0	0	0%
Industrial Processes	19	16	-16%	0	0	0%
Solvent Evaporation						
Consumer Products	97	98	+1%	0	0	0%
Architectural Coatings	23	22	-5%	0	0	0%
Others	3	2	-33%	0	0	0%
Misc. Processes	15	15	0%	26	26	0%
RECLAIM SOURCES	0	0	0%	29	23	-21%
Total Stationary Sources	241	257	+7%	87	92	+6%
Mobile Sources						
On-Road Vehicles	207	209	+1%	447	462	+3%
Off-Road Vehicles	150	127	-15%	325	204	-37%
Total Mobile Sources	357	336	-6%	772	666	-14%
TOTAL	598	593	-1%	859	758	-12%

¹ Values are rounded to nearest integer.

TABLE III-2-1B

Comparison of SO_x and PM_{2.5} Emissions By Major Source Category of
2008 Base Year in 2012 AQMP and Projected 2008 in 2007 AQMP
Annual Average (tpd¹)

SOURCE CATEGORY	2007	2012	%	2007	2012	%
	AQMP	AQMP	Change	AQMP	AQMP	Change
	SO _x			PM _{2.5}		
Stationary Sources						
Fuel Combustion	2	2	0%	6	6	0%
Waste Disposal	0	0	0%	0	0	0%
Cleaning and Surface Coatings	0	0	0%	1	1	0%
Petroleum Production and Marketing	1	1	0%	1	2	+100%
Industrial Processes	0	0	0%	5	7	+40%
Solvent Evaporation						
Consumer Products	0	0	0%	0	0	0%
Architectural Coatings	0	0	0%	0	0	0%
Others	0	0	0%	0	0	0%
Misc. Processes *	1	1	0%	52	32	-39%
RECLAIM SOURCES	12	10	-17%	0	0	0%
Total Stationary Sources	16	14	-12%	65	48	-26%
Mobile Sources						
On-Road Vehicles	2	2	0%	18	19	6%
Off-Road Vehicles	14	38	+171%	18	13	-28%
Total Mobile Sources	16	40	+150%	36	32	-11%
TOTAL	32	54	+69%	101	80	-21%

¹ Values are rounded to nearest integer.

*Includes residential fuel combustion, farming operations, construction, road dust, waste burning and disposal.

Future Year Emissions

Future baseline emissions, assuming no additional air quality regulations are introduced, are given in this appendix for the years 2014, 2017, 2019, 2023, and 2030. These emissions are forecast from the 2008 base year by incorporating the controls implemented under AQMD rules adopted as of June 2012, and CARB adopted by August 2011, and a specific set of growth rates from SCAG for population, industry, and motor vehicle activity. Growth projections from SCAG were replaced for certain categories where more specific information is available to improve emission forecasts.

For example, 2011 California Gas Fuel Report's energy demand forecasts for natural gas, including the energy efficiency, are used to forecast the emissions of those source categories. Several external adjustments are made to include CARB's rules adopted after August 2011, and emission reductions are not included in the EMFAC2011 or In-Use Off-Road Fleet Inventory models. These external adjustments in the Draft Final 2012 AQMP include large spark ignition engines, non-agricultural internal combustion engines, advanced clean vehicles (LEVIII), Smog Check improvement, pleasure craft, and locomotives.

The impact of New Source Review and emissions budgeted for several District programs are addressed in the Controlled Emission Data section. Due to the adoption of the Regional Clean Air Incentive Market (RECLAIM) program in October 1993, emissions are divided into two categories, RECLAIM and non-RECLAIM. Future emissions from RECLAIM sources are estimated based on their allocations specified by District Rule 2002. The methodology used to forecast emissions for non-RECLAIM sources is described in the following sections. Baseline emissions for future years are obtained using the following equation:

$$(F.Y.)_i = (B.Y.)_i(C.F.)_i(G.F.)_i$$

where (F.Y.)_i is the forecast emissions of an air pollutant in the South Coast Air Basin for a future year. (B.Y.)_i refers to the base year emissions of the air pollutant (i.e., 2008). The control factor, (C.F.)_i, is an indicator of the level of control on a specific source category as a result of adopted state and local air quality regulations. (G.F.)_i is a growth factor determined for different categories of industry and socioeconomic data.

Control Factors

The impact of AQMD rules adopted or amended with compliance dates after 2008 are included in the baseline emission forecasts by means of control factors. Control factors were developed in reference to 2008 and applied to source categories and/or specific industries affected by the adopted rules/amendments. For industry, the standard industrial codes (SIC) system is used, and for equipment, EPA's SCC system is used. A control factor (C.F.)_i is calculated by the following equation for an individual source category:

$$(C.F.)_i = 1 - \text{Control Efficiency}$$

Control efficiency is mostly based on estimates projected during rulemaking. Control factors represent the remaining emissions after a rule or regulation is implemented after

2008. Table III-2-2 lists control factors for the years 2014 and 2023 for District rules with post-2008 compliance dates.

Growth Factors

For growth purposes, facility business type is assigned to the facilities based on North American Industry Classification System (NAICS) Code according to their primary activity. Growth projections by NAICS were developed by SCAG. The Draft Final 2012 AQMP growth data is based on SCAG's 2012 RTP. The data was adjusted with the most recent data from Bureau of Labor Statistics (BLS), California Department of Finance (DOF), California Employment Development Department and U.S. Census Bureau (Census). The SCAG's 2012 RTP growth estimates are lower than SCAG's 2008 RTP for the following reasons: (1) Recent population projections from BLS, DOF and Census indicate that SCAG region will face significant slow growth, which will affect long-term employment growth in SCAG region. This is due to the aging trend of the baby-boomer population and the recessionary impacts; (2) The Draft Final 2012 AQMP employment growth is adjusted by both the economic recession and globalization. Since the employment forecast is based on a historical trend, sluggish job growth in recent years translates into slower short-term and long-term employment growth for the SCAG region.

Each emission inventory source grows based on its growth surrogate. Growth surrogates include industry output growth, employment growth, demographic growth and others. The selection of the surrogate by which emission growth is projected depends on the type of activity. For instance, manufacturing sectors use output growth as surrogate. Output growth is the product of employment and productivity. Employment growth is chosen for labor intensive sectors, such as construction and laundering. Certain emission sources use demographic data as their surrogate, such as architectural coatings (housing units as surrogate) and composting (population as surrogate). Some growth projections are from ARB's special studies or Southern California Gas Company 2011 Gas Fuel Report for natural gas combustion related categories.

TABLE III-2-2A

Control Factors by District Rules with Post-2008 Compliance Dates

RULES*	DESCRIPTION	2014				2023			
		VOC	NOx	SOx	PM	VOC	NOx	SOx	PM
1105.1	Fluid Catalytic Cracking Units (FCCUs)	-	-	-	0.83	-	-	-	0.83
1110.2**	Gaseous & Liquid Fuel Engines	0.93	0.26	-	-	0.93	0.26	-	-
1111	Natural-Gas-Fired, Fan-Type Central Furnaces	-	0.99	-	-	0.73	-	-	-
1113	Architectural Coatings	0.90	-	-	-	0.90	-	-	-
1118	Refinery Flares	0.68	0.59	0.50	0.54	0.68	0.59	0.50	0.54
1121	Residential - Natural-Gas-Fired Water Heaters	-	0.59	-	-	-	0.34	-	-
1133.2	Co-Composting & Related Operations	0.93	-	-	-	0.93	-	-	-
1133.3	Greenwaste Composting Operations	0.67	-	-	-	0.67	-	-	-
1143	Consumer Paint Thinners & Multi-Purpose Solvents	0.04	-	-	-	0.04	-	-	-
1144	Metalworking Fluids & Direct-contact Lubricant	0.33	-	-	-	0.33	-	-	-
1146	Large Ind/Comm Boilers, Steam Generator, & Process Heaters	-	0.50	-	-	-	0.36	-	-
1146.1	Small Ind/Comm Boilers, Steam Generators & Process Heaters	-	0.40	-	-	-	0.31	-	-
1146.2	Large Water Heaters & Small Boilers	-	0.67	-	-	-	0.60	-	-
1147	Nox Reductions from Miscellaneous Sources	-	0.44	-	-	-	0.39	-	-
1149	Storage Tank & Pipeline Cleaning & Degassing	0.11	-	-	-	0.11	-	-	-
1151	Motor Vehicle & Equip. Non-Assembly Line Coating	0.96	-	-	-	0.96	-	-	-
1156	Cement Manufacturing Facilities	-	-	-	0.97	-	-	-	0.97
1177	LPG Transfer and Dispensing	0.65	-	-	-	0.29	-	-	-
1178	Storage Tanks at Petroleum Facilities	0.88	-	-	-	0.88	-	-	-
445	Wood Burning Devices	-	-	-	0.89	-	-	-	0.89

*Current as of June 2012. Only rules with emissions impact after 2008 are listed.

** Emission reductions from biogas are adjusted in Section of "SIP Set Aside Account".

TABLE III-2-2B

Emission Reductions (Tons per Day) in the Baseline by District Rules

RULES*	DESCRIPTION	2014				2023			
		VOC	NO _x	SO _x	PM _{2.5}	VOC	NO _x	SO _x	PM _{2.5}
1105.1	Fluid Catalytic Cracking Units (FCCUs)	-	-	-	0.07	-	-	-	0.07
1110.2**	Gaseous & Liquid Fuel Engines	0.47	5.61	-	-	0.44	5.43	-	-
1111	Natural-Gas-Fired, Fan-Type Central Furnaces	-	0.09	-	-	-	2.44	-	-
1113	Architectural Coatings	1.66	-	-	-	1.80	-	-	-
1118	Refinery Flares	0.03	0.13	0.11	0.06	0.04	0.13	0.11	0.07
1121	Residential - Natural-Gas-Fired Water Heaters	-	2.78	-	-	-	4.32	-	-
1133.2	Co-Composting & Related Operations	0.16	-	-	-	0.16	-	-	-
1133.3	Greenwaste Composting Operations	0.77	-	-	-	0.77	-	-	-
1143	Consumer Paint Thinners & Multi-Purpose Solvents	9.90	-	-	-	10.60	-	-	-
1144	Metalworking Fluids & Direct-contact Lubricant	3.72	-	-	-	3.96	-	-	-
1146	Large Ind/Comm Boilers, Steam Generator, & Process Heaters	-	1.11	-	-	-	1.71	-	-
1146.1	Small Ind/Comm Boilers, Steam Generators & Process Heaters	-	0.67	-	-	-	0.66	-	-
1146.2	Large Water Heaters & Small Boilers	-	3.17	-	-	-	3.48	-	-
1147	Nox Reductions from Miscellaneous Sources	-	1.57	-	-	-	2.20	-	-
1149	Storage Tank & Pipeline Cleaning & Degassing	1.45	-	-	-	1.53	-	-	-
1151	Motor Vehicle & Equip. Non-Assembly Line Coating	0.32	-	-	-	0.39	-	-	-
1156	Cement Manufacturing Facilities	-	-	-	0.01	-	-	-	0.01
1177	LPG Transfer and Dispensing	3.07	-	-	-	6.68	-	-	-
1178	Storage Tanks at Petroleum Facilities	0.12	-	-	-	0.13	-	-	-
445	Wood Burning Devices	-	-	-	0.63	-	-	-	0.63
TOTAL		21.68	15.13	0.11	0.76	26.49	20.38	0.11	0.77

*Adopted or amended as of June 2012. Only rules with emissions impact after 2008 are listed.

** Emission reductions from biogas are adjusted in Section of "SIP Set Aside Account".

*** Emission reductions are annual average emissions presented in sequence.

The demographic forecasts from the year 2008 to the years 2023, and 2030 for population, housing, employment, and motor vehicle activity are shown in Table III-2-3.

TABLE III-2-3

Baseline Demographic Forecasts in the Draft Final 2012 AQMP

CATEGORY	2008	2023 (% GROWTH)		2030 (% GROWTH)	
Population (Millions)	15.6	17.3	11%	18.1	16%
Housing Units (Millions)	5.1	5.7	12%	6.0	18%
Total Employment (Millions)	7.0	7.7	10%	8.1	16%
Daily VMT (Millions)	379	396	4%	421	11%

Current forecasts indicate that this region will experience a population growth of 11 percent by the year 2023 with a 4 percent increase in vehicle miles traveled (VMT); and a population growth of 16% by the year 2030 with a 11% increase in VMT.

As compared to the projection from the 2007 AQMP, the current projection for the Draft Final 2012 AQMP for the year 2030 shows about a 1.5 million (7.6%) decrease in population, 900,000 (10%) decrease in total employment and 32 million miles (7.1%) decrease in the daily VMT forecast.

Table III-2-4 shows the relative distribution of population by county in the Basin for the years 1997, 2002, 2008, 2014, 2023, and 2030. By 2030 the population in Los Angeles County is projected to increase by 12 percent from 2008 levels, compared with increases for Orange, San Bernardino, and Riverside counties of 14 percent, 39 percent, and 24 percent respectively.

TABLE III-2-4

Population Distribution by County in SCAB (in Thousands)

YEAR	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO	BASIN TOTAL
1997	8,881	2,750	1,072	1,250	13,954
2002	9,486	2,931	1,278	1,410	15,105
2008	9,398	2,989	1,683	1,510	15,580
2014	9,648	3,119	1,842	1,592	16,201
2023	10,107	3,316	2,114	1,745	17,282
2030	10,509	3,408	2,335	1,878	18,130

* Source – SCAG socio-economic data (11/11)

Growth factors for specified ranges of NAICS categories were projected by SCAG, and are based on predictions of growth for different industrial sectors per county. SCAG has provided growth factors for the years 2005, 2011, 2012, 2015, 2018, 2020, 2023, 2025, and 2030. The growth factors for other years are interpolated. Table III-2-5 lists the point sources growth surrogate by NAICS. Table III-2-6 has the area sources growth surrogate by source category. Tables III-2-7 to III-2-10 illustrate the growth factors for point sources by NAICS for years of 2014, 2019, 2023 and 2030 in the Draft Final 2012 AQMP. Tables III-2-11 to III-2-14 contain the growth factors for years of 2014, 2019, 2023, and 2030 in the Draft Final 2012 AQMP for the area sources by source category.

TABLE III-2-5

Point Sources Growth Surrogate by Source Category

NAICS	SOURCE DESCRIPTION	GROWTH SURROGATE
111	Crop Production	111-115 Output
112	Animal Production	111-115 Output
113	Forestry and Logging	111-115 Output
114	Fishing Hunting and Trapping	111-115 Output
115	Support Activities for Agriculture and Forestry	111-115 Output
211	Oil and Gas Extraction	211 Output
212	Mining (except Oil and Gas)	212-213 Output
213	Support Activities for Mining	212-213 Output
221111	Hydroelectric Power Generation	SCG-Electricity Power
221112	Fossil Fuel Electric Generation	SCG-Electricity Power
221113	Nuclear Electric Generation	SCG-Electricity Power
221119	Other Electric Generation	SCG-Electricity Power
221121	Electric Bulk Transmission and Control	SCG-Electricity Power
221122	Electric Power Distribution	SCG-Electricity Power
221	Utilities - Except Electricity	Total Employment
236	Construction of Buildings	236-238 Employment
237	Heavy and Civil Engineering Construction	236-238 Employment
238	Specialty Trade Contractors	236-238 Employment
311	Food Manufacturing	311 Output
312	Beverage and Tobacco Product Manufacturing	312 Output
313	Textile Mills	313 Output
314	Textile Product Mills	314 Output
315	Apparel Manufacturing	315 Output
316	Leather and Allied Product Manufacturing	316 Output
321	Wood Product Manufacturing	321 Output
322	Paper Manufacturing	322 Output
323	Printing and Related Support Activities	323 Output
324	Petroleum and Coal Products Manufacturing	No Growth

TABLE III-2-5 (continued)

Point Sources Growth Surrogate by Source Category

NAICS	SOURCE DESCRIPTION	GROWTH SURROGATE
325	Chemical Manufacturing	325 Output
326	Plastics and Rubber Products Manufacturing	326 Output
327	Nonmetallic Mineral Product Manufacturing	327 Output
331	Primary Metal Manufacturing	331 Output
332	Fabricated Metal Product Manufacturing	332 Output
333	Machinery Manufacturing	333 Output
334	Computer and Electronic Product Manufacturing	334 Output
335	Electrical Equipment -Appliance-Component Manufacturing	335 Output
336	Transportation Equipment Manufacturing	336 Output
337	Furniture and Related Product Manufacturing	337 Output
339	Miscellaneous Manufacturing	339 Output
423	Merchant Wholesalers-Durable Goods	423 Employment
424	Merchant Wholesalers - Nondurable Goods	424 Employment
425	Wholesale Electronic Markets and Agents and Brokers	425 Employment
441	Motor Vehicle and Parts Dealers	441 Employment
442	Furniture and Home Furniture Stores	442 Employment
443	Electronics and Appliance Stores	443 Employment
444	Building Material-Garden Equipment-Supplies Dealers	444 Employment
445	Food and Beverage Stores	445-6 Employment
446	Health and Personal Care Stores	445-6 Employment
447	Gasoline Stations	447 Output
448	Clothing and Clothing Accessories Stores	448 Output
451	Sporting Goods-Hobby-Book- Music Stores	451-454 Output
452	General Merchandise Stores	451-454 Output
453	Miscellaneous Store Retailers	451-454 Output
454	Nonstore Retailers	451-454 Output
481	Air Transportation	481 Output

TABLE III-2-5 (continued)

Point Sources Growth Surrogate by Source Category

NAICS	SOURCE DESCRIPTION	GROWTH SURROGATE
482	Rail Transportation	482 Output
483	Water Transportation	483 Output
484	Truck Transportation	484 Output
485	Transit and Ground Passenger Transportation	485 Output
486	Pipeline Transportation	486 Output
487	Scenic and Sightseeing Transportation	487 Output
488	Support Activities for Transportation	488 Output
491	Postal Service	491-493 Employment
492	Couriers and Messengers	491-493 Employment
493	Warehousing and Storage	491-493 Output
511	Publishing Industries (except Internet)	511-519 Output
512	Motion Picture and Sound Recording Industries	511-519 Output
515	Broadcasting (except Internet)	511-519 Output
517	Telecommunications	511-519 Output
518	Data Processing- Hosting and Related Services	511-519 Output
519	Other Information Services	511-519 Output
521	Monetary Authorities-Central Bank	521-525 Employment
522	Credit Intermediation and Related Activities	521-525 Employment
523	Securities-Commodity-Other Financial Investments	521-525 Employment
524	Insurance Carriers and Related Activities	521-525 Employment
525	Funds-Trusts-and Other Financial Vehicles	521-525 Employment
531	Real Estate	531-533 Employment
532	Rental and Leasing Services	531-533 Employment
533	Lessors of Nonfinancial Intangible Assets (no Copyright)	531-533 Employment
541	Professional-Scientific-and Technical Services	541 Employment
551	Management of Companies and Enterprises	551 Employment
561	Administrative and Support Services	561-562 Employment
562	Waste Management and Remediation Services	561-562 Employment

TABLE III-2-5 (concluded)

Point Sources Growth Surrogate by Source Category

NAICS	SOURCE DESCRIPTION	GROWTH SURROGATE
611	Educational Services	Pop 5 to 24
621	Ambulatory Health Care Services	Population
622	Hospitals	Pop 0 to 4 and 65 up
623	Nursing and Residential Care Facilities	Pop 65 up
624	Social Assistance	621-624 Employment
711	Performing Arts-Spectator Sports-and Related Industries	711-713 Output
712	Museums-Historical Sites-and Similar Institutions	711-713 Output
713	Amusement-Gambling-and Recreation Industries	711-713 Output
721	Accommodation	Total Employment
722	Food Services and Drinking Places	Total Employment
811	Repair and Maintenance	Total Employment
812	Personal and Laundry Services	Total Employment
813	Religious-Grant-Civic-Professional-and Similar Org	811-814 Employment
814	Private Households	811-814 Employment
921	Executive-Legislative-and Other General Govt Support	921-928 Employment
922	Justice-Public Order-and Safety Activities	921-928 Employment
923	Administration of Human Resource Programs	921-928 Employment
924	Administration of Environmental Quality Programs	921-928 Employment
925	Admin of Housing Pgms-Urban-Community Development	921-928 Employment
926	Administration of Economic Programs	921-928 Employment
927	Space Research and Technology	921-928 Employment
928	National Security and International Affairs	921-928 Employment

TABLE III-2-6

Area Sources Growth Surrogate by Source Category

SOURCE DESCRIPTION	SURROGATE
Cogen	SCG- Cogen *
Gaseous Fuel	No Growth
Industrial Natural Gas (Unspecified)	SCG - Industrial Combustion *
Ind. Stationary IC Engines - Natural Gas	SCG - Industrial Combustion *
Industrial LPG Combustion	Manufacturing Output
Industrial Distillate Oil Combustion	Manufacturing Output
Ag Irrigation IC Engines-Stationary	ARB Data from San Joaquin Study
Ag Irrigation IC Engines-Portable	ARB Data from San Joaquin Study
Commercial Natural Gas Comb. (Other)	SCG - Commercial Combustion *
Commercial LPG Combustion	Service Output
Commercial Space Heating	SCG- Commercial Space *
Commercial Water Heating	SCG - Commercial Water *
Resource Recovery	SCG – Cogen *
Stationary Engines - Diesel	ARB Growth Data
Municipal Waste Disposal	ARB Growth Data
Biological Waste - Composting	Population
Laundering	Total Employment
Degreasing	Manufacturing Output
Auto Refinishing	Misc. Services Employment
Marine Coating	Water Transportation Output
Paper Coating	Paper Manufacturing Output
Metal Part and Products Coatings	Fabricated Metal Output
Wood and Fabricated Furniture Coatings	Furniture Output
Plastic Parts Coatings	Plastic Output
Semiconductor Coatings	Computer Output
Aircraft and Aerospace Coatings	Air Transportation Output
Printing	Printing Output
Adhesive and Sealants (Solvent Based)	Manufacturing Output
Adhesive and Sealants (Water Based)	Manufacturing Output

TABLE III-2-6 (continued)

Area Sources Growth Surrogate by Source Category

SOURCE DESCRIPTION	SURROGATE
Miscellaneous Industrial Solvents	Manufacturing Output
Oil Production Fugitive	NAICS 211 Output
Gasoline Dispensing Tank-Working Losses	Gasoline Consumption
Vehicle Refueling-Vapor Displacement Losses	Gasoline Consumption
Gasoline Dispensing Tank-Breathing Losses	Gasoline Consumption
Vehicle Refueling-Spillage	Gasoline Consumption
Natural Gas Transmission Losses	Natural Gas
Bulk Gasoline Storage and Transfer (Unspec)	Crude Oil
Tank Cargo-Pressure Related Fug. Losses	Gasoline Consumption
Tank Cargo-Vapor Hose Fugitive Losses	Gasoline Consumption
Tank Cargo-Product Hose Fugitive Losses	Gasoline Consumption
Storage Tank and Pipeline Cleaning	Gasoline Consumption
LPG Transfer and Dispensing - Fugitive Losses	Households
Rubber and Rubber Products	Plastic Output
Plastic and Plastic Products	Plastic Output
Fiberglass and Fiberglass Products	Plastic Output
Wine Fermentation	ARB Growth Data
Ag Crop Processing Losses	Agriculture Output
Bakeries	Food Output
Wine Aging	ARB Growth Data
Other Mineral Processes	Mineral Product Output
Sand and Gravel Excavation	Mineral Product Output
Asphaltic Concrete Production	No Growth
Grinding/Crushing of Aggregates	Mineral Product Output
Surface Blasting	Mining Extraction Output
Cement Concrete Manufacturing and Fabrication	Mineral Product Output

TABLE III-2-6 (continued)

Area Sources Growth Surrogate by Source Category

SOURCE DESCRIPTION	SURROGATE
Open Pile Storage	No Growth
Secondary Metal Production	Primary Metal Output
Industrial Lubricant	Population
Wood Product Losses	Furniture Output
Consumer Products	Population
Architectural Coatings	Households
Ag Pesticides Methyl Bromide	ARB Data from San Joaquin Study
Ag Pesticides non-Methyl Bromide	ARB Data from San Joaquin Study
non-Ag Pesticides-Methyl Bromide	ARB Growth Surrogate
non-Ag Pesticides-non-Methyl Bromide	ARB Growth Surrogate
Asphalt Paving	Construction Employment
Residential Natural Gas Comb -Other	SCG - Residential Comb.*
Residential Distillate Oil Combustion	Households
Residential LPG Combustion	Households
Residential Natural Gas Space Heating	SCG - Residential Space *
Residential Natural Gas Water Heating	SCG - Residential Water *
Residential Natural Gas Cooking	SCG - Residential Cooking *
Residential Wood Stoves	No Growth
Residential Wood Fireplaces	No Growth
Farming Operations	ARB Growth Data
Residential Building Construction - Dust	Construction Employment
Commercial Building Construction - Dust	Construction Employment
Industrial Building Construction - Dust	Construction Employment
Road Construction - Dust	Construction Employment
Institutional Building Construction - Dust	Construction Employment
Paved Road Travel (Unspecified)	No Growth
Paved Road Travel-Freeways	Center Line (freeway)
Paved Road Travel-Major	Center Line (major)
Paved Road Travel-Local	Center Line (other)

TABLE III-2-6 (concluded)

Area Sources Growth Surrogate by Source Category

SOURCE DESCRIPTION	SURROGATE
Paved Road Travel-Local	Center Line (other)
Unpaved Road Travel -City and County Roads	No Growth
Unpaved Road Travel - US Forest and Park Roads	No Growth
Unpaved Road Travel -BLM Roads	No Growth
Unpaved Road Travel -Farm Roads	ARB Data from San Joaquin Study
Unpaved Roads (Unspecified)	No Growth
Ag Land (Non-Pasture) - Wind Dust	ARB Data from San Joaquin Study
Unpaved Roads - Wind Dust	No Growth
Ag Land (Pasture) - Wind Dust	ARB Data from San Joaquin Study
Fires	No Growth
Ag Burning - Pruning	ARB Data from San Joaquin Study
Weed Abatement	No Growth
Forest Management	Forest
Range Improvement	Agriculture Employment
Cooking	Total Employment

* These projections by SCG incorporate the energy efficiency programs/standards.

TABLE III-2-7

NAIC Emission Growth Factors by County in the SCAB for the Year 2014

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Agriculture, Forestry, Animal, Fishing and Hunting	11	1.061	0.985	1.265	0.892
Oil and Gas Extraction	211	1.073	0.997	1.281	0.903
Mining (except Oil and Gas)	212	1.070	0.993	1.276	0.900
Support Activities for Mining	213	1.070	0.993	1.276	0.900
Utilities - Except Electricity	221	1.005	0.945	1.160	1.048
Utilities – Electricity *	221	0.882	0.882	0.882	0.882
Construction	23	0.862	0.875	1.099	1.019
Food Manufacturing	311	1.026	0.981	1.068	1.059
Beverage and Tobacco Product Manufacturing	312	0.942	0.901	0.981	0.973
Textile Mills	313	1.304	1.247	1.357	1.346
Textile Product Mills	314	1.250	1.196	1.301	1.291
Apparel Manufacturing	315	1.182	1.130	1.230	1.220
Leather and Allied Product Manufacturing	316	1.108	1.060	1.153	1.144
Wood Product Manufacturing	321	0.976	0.933	1.016	1.008
Paper Manufacturing	322	1.009	0.965	1.050	1.042
Printing and Related Support Activities	323	0.927	0.886	0.964	0.957
Petroleum and Coal Products Manufacturing	324	1.000	1.000	1.000	1.000
Chemical Manufacturing	325	1.115	1.067	1.161	1.152
Plastics and Rubber Products Manufacturing	326	1.171	1.120	1.219	1.209
Nonmetallic Mineral Product Manufacturing	327	1.007	0.963	1.048	1.040
Primary Metal Manufacturing	331	0.932	0.892	0.970	0.963
Fabricated Metal Product Manufacturing	332	1.035	0.990	1.077	1.069
Machinery Manufacturing	333	1.057	1.011	1.100	1.091

* These factors incorporate SCAG’s employment growth projections (1.0053) and SCG’s efficiency improvement and renewable portfolio standards of 0.877.

TABLE III-2-7 (continued)

NAIC Emission Growth Factors by County in the SCAB for the Year 2014

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Computer and Electronic Product Manufacturing	334	1.485	1.421	1.546	1.534
Electrical Equipment -Appliance-Component Manufacturing	335	1.065	1.019	1.109	1.100
Transportation Equipment Manufacturing	336	1.122	1.073	1.168	1.159
Furniture and Related Product Manufacturing	337	1.117	1.068	1.162	1.153
Miscellaneous Manufacturing	339	1.099	1.052	1.144	1.135
Wholesale Trade	42	0.983	0.924	1.098	0.985
Motor Vehicle and Parts Dealers	441	0.994	0.919	1.158	1.022
Furniture and Home Furniture Stores	442	0.994	0.919	1.158	1.022
Electronics and Appliance Stores	443	0.994	0.919	1.158	1.022
Building Material-Garden Equipment-Supplies Dealers	444	0.994	0.919	1.158	1.022
Food and Beverage Stores	445	0.994	0.919	1.158	1.022
Health and Personal Care Stores	446	0.994	0.919	1.158	1.022
Gasoline Stations	447	1.243	1.149	1.447	1.277
Clothing and Clothing Accessories Stores	448	1.243	1.149	1.447	1.277
Sporting Goods-Hobby-Book-Music Stores	451	1.243	1.149	1.447	1.277
General Merchandise Stores	452	1.243	1.149	1.447	1.277
Miscellaneous Store Retailers	453	1.243	1.149	1.447	1.277
Nonstore Retailers	454	1.243	1.149	1.447	1.277
Air Transportation	481	1.212	1.131	1.584	1.314
Rail Transportation	482	1.066	0.995	1.000	1.156
Water Transportation	483	1.255	1.171	1.640	1.361
Truck Transportation	484	1.130	1.054	1.477	1.225
Transit and Ground Passenger Transportation	485	1.051	0.980	1.373	1.139

TABLE III-2-7 (concluded)

NAIC Emission Growth Factors by County in the SCAB for the Year 2014

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Pipeline Transportation	486	1.047	0.977	1.368	1.135
Scenic and Sightseeing Transportation	487	1.039	0.969	1.357	1.126
Support Activities for Transportation	488	1.039	0.969	1.357	1.126
Postal Service	491	0.997	0.930	1.302	1.080
Couriers and Messengers	492	0.997	0.930	1.302	1.080
Warehousing and Storage	493	1.130	1.054	1.477	1.225
Information	51	1.325	1.173	1.857	1.576
Finance and Insurance	52	0.979	0.943	1.124	0.989
Real Estate and Rental and Leasing	53	0.979	0.943	1.124	0.989
Professional-Scientific-and Technical Services	541	1.017	0.975	1.098	1.049
Management of Companies and Enterprises	551	1.017	0.975	1.098	1.049
Administrative and Support Services	561	1.017	0.975	1.098	1.049
Waste Management and Remediation Services	562	1.017	0.975	1.098	1.049
Educational Services	611	0.997	1.020	1.074	1.032
Ambulatory Health Care Services	621	1.027	1.043	1.095	1.054
Hospitals	622	1.095	1.121	1.149	1.112
Nursing and Residential Care Facilities	623	1.137	1.163	1.198	1.176
Social Assistance	624	1.070	1.006	1.186	1.051
Arts, Entertainment, Museums, and Recreation	71	1.053	0.981	1.201	1.066
Accommodation and Food Services	72	1.005	0.945	1.160	1.048
Repair and Maintenance	811	1.005	0.945	1.160	1.048
Personal and Laundry Services	812	1.005	0.945	1.160	1.048
Religious-Grant-Civic-Professional-and Similar Org	813	0.998	0.930	1.257	1.131
Private Households	814	0.998	0.930	1.257	1.131
Public Administration	92	1.087	1.034	1.653	1.524

Base year is 2008.

TABLE III-2-8

NAIC Emission Growth Factors by County in the SCAB for the Year 2019

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Agriculture, Forestry, Animal, Fishing and Hunting	11	1.099	1.197	1.524	1.149
Oil and Gas Extraction	211	1.118	1.217	1.551	1.169
Mining (except Oil and Gas)	212	1.112	1.210	1.542	1.162
Support Activities for Mining	213	1.112	1.210	1.542	1.162
Utilities - Except Electricity	221	1.042	0.991	1.388	1.143
Utilities – Electricity *	221	0.865	0.865	0.865	0.865
Construction	23	0.996	1.064	1.751	1.393
Food Manufacturing	311	1.114	1.078	1.429	1.267
Beverage and Tobacco Product Manufacturing	312	0.961	0.930	1.232	1.092
Textile Mills	313	1.697	1.641	2.177	1.930
Textile Product Mills	314	1.572	1.521	2.017	1.787
Apparel Manufacturing	315	1.428	1.382	1.832	1.624
Leather and Allied Product Manufacturing	316	1.275	1.234	1.635	1.450
Wood Product Manufacturing	321	1.024	0.990	1.313	1.164
Paper Manufacturing	322	1.083	1.048	1.389	1.232
Printing and Related Support Activities	323	0.936	0.905	1.200	1.064
Petroleum and Coal Products Manufacturing	324	1.000	1.000	1.000	1.000
Chemical Manufacturing	325	1.290	1.248	1.655	1.467
Plastics and Rubber Products Manufacturing	326	1.403	1.358	1.800	1.596
Nonmetallic Mineral Product Manufacturing	327	1.078	1.043	1.382	1.226
Primary Metal Manufacturing	331	0.947	0.916	1.213	1.076
Fabricated Metal Product Manufacturing	332	1.132	1.095	1.452	1.287
Machinery Manufacturing	333	1.175	1.137	1.507	1.336

* These factors incorporate SCAG's employment growth projections (1.0634) and SCG's efficiency improvement and renewable portfolio standards of 0.813.

TABLE III-2-8 (continued)

NAIC Emission Growth Factors by County in the SCAB for the Year 2019

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Computer and Electronic Product Manufacturing	334	2.139	2.070	2.747	2.433
Electrical Equipment -Appliance-Component Manufacturing	335	1.191	1.152	1.527	1.354
Transportation Equipment Manufacturing	336	1.302	1.260	1.670	1.480
Furniture and Related Product Manufacturing	337	1.292	1.249	1.656	1.468
Miscellaneous Manufacturing	339	1.259	1.218	1.615	1.432
Wholesale Trade	42	1.023	0.955	1.237	1.088
Motor Vehicle and Parts Dealers	441	1.019	0.944	1.284	1.079
Furniture and Home Furniture Stores	442	1.019	0.944	1.284	1.079
Electronics and Appliance Stores	443	1.019	0.944	1.284	1.079
Building Material-Garden Equipment-Supplies Dealers	444	1.019	0.944	1.284	1.079
Food and Beverage Stores	445	1.019	0.944	1.284	1.079
Health and Personal Care Stores	446	1.019	0.944	1.284	1.079
Gasoline Stations	447	1.502	1.392	1.892	1.590
Clothing and Clothing Accessories Stores	448	1.502	1.392	1.892	1.590
Sporting Goods-Hobby-Book- Music Stores	451	1.502	1.392	1.892	1.590
General Merchandise Stores	452	1.502	1.392	1.892	1.590
Miscellaneous Store Retailers	453	1.502	1.392	1.892	1.590
Nonstore Retailers	454	1.502	1.392	1.892	1.590
Air Transportation	481	1.416	1.325	2.001	1.687
Rail Transportation	482	1.136	1.063	1.000	1.353
Water Transportation	483	1.499	1.403	2.119	1.787
Truck Transportation	484	1.258	1.177	1.778	1.499
Transit and Ground Passenger Transportation	485	1.107	1.036	1.564	1.319

TABLE III-2-8 (concluded)

NAIC Emission Growth Factors by County in the SCAB for the Year 2019

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Pipeline Transportation	486	1.100	1.029	1.555	1.311
Scenic and Sightseeing Transportation	487	1.084	1.015	1.532	1.292
Support Activities for Transportation	488	1.084	1.015	1.532	1.292
Postal Service	491	1.010	0.945	1.427	1.204
Couriers and Messengers	492	1.010	0.945	1.427	1.204
Warehousing and Storage	493	1.256	1.175	1.775	1.496
Information	51	1.711	1.562	2.425	1.837
Finance and Insurance	52	1.033	0.985	1.253	1.080
Real Estate and Rental and Leasing	53	1.033	0.985	1.253	1.080
Professional-Scientific-and Technical Services	541	1.106	1.067	1.306	1.138
Management of Companies and Enterprises	551	1.106	1.067	1.306	1.138
Administrative and Support Services	561	1.106	1.067	1.306	1.138
Waste Management and Remediation Services	562	1.106	1.067	1.306	1.138
Educational Services	611	0.982	1.029	1.134	1.060
Ambulatory Health Care Services	621	1.052	1.084	1.178	1.107
Hospitals	622	1.199	1.246	1.298	1.223
Nursing and Residential Care Facilities	623	1.302	1.347	1.431	1.387
Social Assistance	624	1.101	1.035	1.456	1.180
Arts, Entertainment, Museums, and Recreation	71	1.089	1.002	1.330	1.095
Accommodation and Food Services	72	1.042	0.991	1.388	1.143
Repair and Maintenance	811	1.042	0.991	1.388	1.143
Personal and Laundry Services	812	1.042	0.991	1.388	1.143
Religious-Grant-Civic-Professional-and Similar Org	813	1.019	0.993	1.617	1.301
Private Households	814	1.019	0.993	1.617	1.301
Public Administration	92	1.077	0.973	1.533	1.145

Base year is 2008.

TABLE III-2-9

NAIC Emission Growth Factors by County in the SCAB for the Year 2023

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Agriculture, Forestry, Animal, Fishing and Hunting	11	1.120	1.271	1.629	1.307
Oil and Gas Extraction	211	1.128	1.279	1.639	1.315
Mining (except Oil and Gas)	212	1.122	1.273	1.631	1.309
Support Activities for Mining	213	1.122	1.273	1.631	1.309
Utilities - Except Electricity	221	1.063	1.023	1.550	1.239
Utilities – Electricity *	221	0.859	0.859	0.859	0.859
Construction	23	1.033	1.137	2.085	1.597
Food Manufacturing	311	1.141	1.102	1.600	1.373
Beverage and Tobacco Product Manufacturing	312	0.960	0.927	1.346	1.155
Textile Mills	313	1.884	1.820	2.643	2.267
Textile Product Mills	314	1.701	1.644	2.387	2.047
Apparel Manufacturing	315	1.535	1.483	2.153	1.847
Leather and Allied Product Manufacturing	316	1.337	1.291	1.875	1.608
Wood Product Manufacturing	321	1.041	1.006	1.461	1.253
Paper Manufacturing	322	1.108	1.070	1.554	1.333
Printing and Related Support Activities	323	0.938	0.907	1.317	1.129
Petroleum and Coal Products Manufacturing	324	1.000	1.000	1.000	1.000
Chemical Manufacturing	325	1.356	1.310	1.902	1.631
Plastics and Rubber Products Manufacturing	326	1.494	1.444	2.096	1.798
Nonmetallic Mineral Product Manufacturing	327	1.097	1.060	1.539	1.320
Primary Metal Manufacturing	331	0.954	0.922	1.339	1.148
Fabricated Metal Product Manufacturing	332	1.162	1.123	1.631	1.399
Machinery Manufacturing	333	1.219	1.178	1.710	1.467

* These factors incorporate SCAG’s employment growth projections (1.1035) and SCG’s efficiency improvement and renewable portfolio standards of 0.778.

TABLE III-2-9 (continued)

NAIC Emission Growth Factors by County in the SCAB for the Year 2023

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Computer and Electronic Product Manufacturing	334	2.511	2.426	3.522	3.021
Electrical Equipment -Appliance-Component Manufacturing	335	1.235	1.193	1.733	1.486
Transportation Equipment Manufacturing	336	1.367	1.321	1.918	1.645
Furniture and Related Product Manufacturing	337	1.355	1.309	1.901	1.630
Miscellaneous Manufacturing	339	1.326	1.281	1.861	1.596
Wholesale Trade	42	1.043	0.975	1.352	1.185
Motor Vehicle and Parts Dealers	441	1.031	0.962	1.393	1.151
Furniture and Home Furniture Stores	442	1.031	0.962	1.393	1.151
Electronics and Appliance Stores	443	1.031	0.962	1.393	1.151
Building Material-Garden Equipment-Supplies Dealers	444	1.031	0.962	1.393	1.151
Food and Beverage Stores	445	1.031	0.962	1.393	1.151
Health and Personal Care Stores	446	1.031	0.962	1.393	1.151
Gasoline Stations	447	1.620	1.511	2.187	1.807
Clothing and Clothing Accessories Stores	448	1.620	1.511	2.187	1.807
Sporting Goods-Hobby-Book-Music Stores	451	1.620	1.511	2.187	1.807
General Merchandise Stores	452	1.620	1.511	2.187	1.807
Miscellaneous Store Retailers	453	1.620	1.511	2.187	1.807
Nonstore Retailers	454	1.620	1.511	2.187	1.807
Air Transportation	481	1.495	1.409	2.271	1.924
Rail Transportation	482	1.168	1.101	1.000	1.503
Water Transportation	483	1.577	1.487	2.396	2.030
Truck Transportation	484	1.319	1.243	2.004	1.698
Transit and Ground Passenger Transportation	485	1.132	1.066	1.719	1.456

TABLE III-2-9 (concluded)

NAIC Emission Growth Factors by County in the SCAB for the Year 2023

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Pipeline Transportation	486	1.122	1.057	1.704	1.443
Scenic and Sightseeing Transportation	487	1.105	1.041	1.679	1.422
Support Activities for Transportation	488	1.105	1.041	1.679	1.422
Postal Service	491	1.020	0.961	1.550	1.313
Couriers and Messengers	492	1.020	0.961	1.550	1.313
Warehousing and Storage	493	1.307	1.232	1.985	1.682
Information	51	1.899	1.757	2.882	2.089
Finance and Insurance	52	1.055	1.012	1.374	1.163
Real Estate and Rental and Leasing	53	1.055	1.012	1.374	1.163
Professional-Scientific-and Technical Services	541	1.148	1.122	1.463	1.237
Management of Companies and Enterprises	551	1.148	1.122	1.463	1.237
Administrative and Support Services	561	1.148	1.122	1.463	1.237
Waste Management and Remediation Services	562	1.148	1.122	1.463	1.237
Educational Services	611	0.990	1.044	1.200	1.097
Ambulatory Health Care Services	621	1.075	1.109	1.257	1.156
Hospitals	622	1.295	1.351	1.464	1.332
Nursing and Residential Care Facilities	623	1.459	1.507	1.661	1.589
Social Assistance	624	1.129	1.074	1.650	1.298
Arts, Entertainment, Museums, and Recreation	71	1.116	1.031	1.466	1.172
Accommodation and Food Services	72	1.063	1.023	1.550	1.239
Repair and Maintenance	811	1.063	1.023	1.550	1.239
Personal and Laundry Services	812	1.063	1.023	1.550	1.239
Religious-Grant-Civic-Professional-and Similar Org	813	1.033	1.028	1.851	1.437
Private Households	814	1.033	1.028	1.851	1.437
Public Administration	92	1.087	0.976	1.612	1.126

Base year is 2008.

TABLE III-2-10

NAIC Emission Growth Factors by County in the SCAB for the Year 2030

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Agriculture, Forestry, Animal, Fishing and Hunting	11	1.167	1.348	1.899	1.497
Oil and Gas Extraction	211	1.153	1.331	1.876	1.478
Mining (except Oil and Gas)	212	1.149	1.326	1.869	1.473
Support Activities for Mining	213	1.149	1.326	1.869	1.473
Utilities - Except Electricity	221	1.093	1.070	1.792	1.411
Utilities – Electricity *	221	0.861	0.861	0.861	0.861
Construction	23	1.054	1.214	2.517	1.898
Food Manufacturing	311	1.186	1.128	1.779	1.521
Beverage and Tobacco Product Manufacturing	312	0.955	0.909	1.434	1.226
Textile Mills	313	2.259	2.150	3.390	2.899
Textile Product Mills	314	1.950	1.855	2.926	2.502
Apparel Manufacturing	315	1.738	1.653	2.607	2.229
Leather and Allied Product Manufacturing	316	1.449	1.378	2.174	1.859
Wood Product Manufacturing	321	1.071	1.019	1.606	1.374
Paper Manufacturing	322	1.149	1.093	1.724	1.475
Printing and Related Support Activities	323	0.941	0.896	1.412	1.208
Petroleum and Coal Products Manufacturing	324	1.000	1.000	1.000	1.000
Chemical Manufacturing	325	1.476	1.404	2.215	1.894
Plastics and Rubber Products Manufacturing	326	1.664	1.583	2.497	2.135
Nonmetallic Mineral Product Manufacturing	327	1.128	1.073	1.692	1.447
Primary Metal Manufacturing	331	0.966	0.919	1.450	1.240
Fabricated Metal Product Manufacturing	332	1.215	1.156	1.823	1.559
Machinery Manufacturing	333	1.297	1.234	1.946	1.664

* These factors incorporate SCAG's employment growth projections (1.1648) and SCG's efficiency improvement and renewable portfolio standards of 0.739.

TABLE III-2-10 (continued)

NAIC Emission Growth Factors by County in the SCAB for the Year 2030

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Computer and Electronic Product Manufacturing	334	3.320	3.159	4.982	4.260
Electrical Equipment -Appliance-Component Manufacturing	335	1.313	1.250	1.971	1.685
Transportation Equipment Manufacturing	336	1.486	1.414	2.230	1.906
Furniture and Related Product Manufacturing	337	1.471	1.399	2.207	1.887
Miscellaneous Manufacturing	339	1.449	1.379	2.175	1.860
Wholesale Trade	42	1.061	1.001	1.497	1.312
Motor Vehicle and Parts Dealers	441	1.050	0.986	1.571	1.285
Furniture and Home Furniture Stores	442	1.050	0.986	1.571	1.285
Electronics and Appliance Stores	443	1.050	0.986	1.571	1.285
Building Material-Garden Equipment-Supplies Dealers	444	1.050	0.986	1.571	1.285
Food and Beverage Stores	445	1.050	0.986	1.571	1.285
Health and Personal Care Stores	446	1.050	0.986	1.571	1.285
Gasoline Stations	447	1.842	1.731	2.756	2.255
Clothing and Clothing Accessories Stores	448	1.842	1.731	2.756	2.255
Sporting Goods-Hobby-Book-Music Stores	451	1.842	1.731	2.756	2.255
General Merchandise Stores	452	1.842	1.731	2.756	2.255
Miscellaneous Store Retailers	453	1.842	1.731	2.756	2.255
Nonstore Retailers	454	1.842	1.731	2.756	2.255
Air Transportation	481	1.639	1.565	2.783	2.373
Rail Transportation	482	1.223	1.168	1.000	1.771
Water Transportation	483	1.719	1.641	2.918	2.488
Truck Transportation	484	1.430	1.365	2.428	2.070
Transit and Ground Passenger Transportation	485	1.173	1.120	1.992	1.698

TABLE III-2-10 (concluded)

NAIC Emission Growth Factors by County in the SCAB for the Year 2030

NAIC SECTOR	NAIC	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
Pipeline Transportation	486	1.157	1.104	1.965	1.675
Scenic and Sightseeing Transportation	487	1.138	1.086	1.932	1.647
Support Activities for Transportation	488	1.138	1.086	1.932	1.647
Postal Service	491	1.035	0.988	1.757	1.498
Couriers and Messengers	492	1.035	0.988	1.757	1.498
Warehousing and Storage	493	1.397	1.333	2.372	2.022
Information	51	2.254	2.112	3.794	2.767
Finance and Insurance	52	1.081	1.054	1.555	1.302
Real Estate and Rental and Leasing	53	1.081	1.054	1.555	1.302
Professional-Scientific-and Technical Services	541	1.203	1.206	1.706	1.421
Management of Companies and Enterprises	551	1.203	1.206	1.706	1.421
Administrative and Support Services	561	1.203	1.206	1.706	1.421
Waste Management and Remediation Services	562	1.203	1.206	1.706	1.421
Educational Services	611	1.020	1.065	1.324	1.170
Ambulatory Health Care Services	621	1.118	1.140	1.388	1.244
Hospitals	622	1.460	1.517	1.704	1.532
Nursing and Residential Care Facilities	623	1.720	1.763	2.039	1.952
Social Assistance	624	1.182	1.148	1.954	1.513
Arts, Entertainment, Museums, and Recreation	71	1.164	1.091	1.719	1.347
Accommodation and Food Services	72	1.093	1.070	1.792	1.411
Repair and Maintenance	811	1.093	1.070	1.792	1.411
Personal and Laundry Services	812	1.093	1.070	1.792	1.411
Religious-Grant-Civic-Professional-and Similar Org	813	1.055	1.072	2.177	1.669
Private Households	814	1.055	1.072	2.177	1.669
Public Administration	92	1.118	1.009	1.839	1.263

Base year is 2008.

TABLE III-2-11

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2014

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
020	Cogeneration	0.882	0.882	0.882	0.882
030	Petroleum Production Fuel Combustion - Gaseous Fuel	1.073	0.997	1.289	0.903
050	Industrial Combustion And Stationary Ice- Natural Gas	0.865	0.825	0.860	0.860
050	Industrial Combustion - L.P.G./Distillate Oil/Other Fuel	1.105	1.082	1.140	1.110
060	Commercial Natural Gas Combustion - Space Heating	0.942	0.902	0.940	0.940
060	Commercial Natural Gas Combustion - Water Heating	0.993	0.950	0.991	0.991
060	Commercial Natural Gas Combustion - Other	0.973	0.945	0.985	0.985
060	Commercial L.P.G. Combustion	1.211	1.146	1.316	1.232
099	Resource Recovery	0.882	0.882	0.882	0.882
110	Sewage Treatment Plants-Potws - Ammonia	1.000	1.000	1.000	1.000
120	Landfills - Municipal Solid Waste Disposal (Biodegradation)	1.102	1.106	1.104	1.112
199	Composting - Ammonia	1.000	1.000	1.000	1.000
199	Composting Waste Disposal	1.027	1.043	1.095	1.054
210	Dry Cleaning	1.005	0.945	1.160	1.048
220	Degreasing	1.105	1.082	1.140	1.110
230	Auto Refinishing - Coatings	0.998	0.930	1.257	1.131
230	Marine Coatings	1.255	1.171	1.640	1.361
230	Paper Coatings	1.009	0.965	1.050	1.042
230	Fabric Coatings	1.250	1.196	1.301	1.291
230	Can And Coil, Metal Parts And Products Coatings	1.035	0.990	1.077	1.069
230	Wood Furniture And Fabricated Products Coatings	1.117	1.068	1.162	1.153
230	Plastic Parts	1.171	1.120	1.219	1.209

TABLE III-2-11 (continued)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2014

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
230	Semiconductor Coatings	1.485	1.421	1.546	1.534
230	Aircraft And Aerospace Coatings	1.212	1.131	1.584	1.314
240	Printing	0.927	0.886	0.964	0.957
250	Adhesives And Sealants	1.105	1.082	1.140	1.110
299	Miscellaneous Industrial Solvent Uses	1.105	1.082	1.140	1.110
310	Oil And Gas Production	1.073	0.997	1.289	0.903
330	Petroleum Marketing - Natural Gas Transmission Losses	0.910	0.910	0.910	0.910
330	LPG Transfer And Dispensing - Fugitive Losses	1.032	1.031	1.077	1.058
330	Gasoline Dispensing & Transfers/Storage/Cargo Tanks	1.017	1.042	1.135	1.107
330	Bulk Gasoline Storage & Transfer (Unspecified)	0.910	0.910	0.910	0.910
410	Chemical	1.171	1.120	1.219	1.209
420	Wine Fermentation & Aging	1.101	1.101	1.107	1.113
420	Bakeries	1.026	0.981	1.068	1.059
420	Agricultural Products Processing Losses	1.101	1.101	1.107	1.113
420	Agricultural Crop Processing Losses	1.061	0.985	1.265	0.892
430	Mineral Processes - Sand/Gravel/Cement Concrete	1.007	0.963	1.048	1.040
430	Asphaltic Concrete Production	1.000	1.000	1.000	1.000
430	Surface Blasting	1.070	0.993	1.276	0.900
440	Secondary Metal Production	0.932	0.892	0.970	0.963
450	Wood Processing Losses	1.117	1.068	1.162	1.153
499	Industrial Lubricant	1.027	1.043	1.095	1.054
499	Industrial Process Losses (Unspecified Material)	1.000	1.000	1.000	1.000
510	Consumer Products	1.027	1.043	1.095	1.054
520	Architectural Coatings	1.032	1.031	1.077	1.058

TABLE III-2-11 (continued)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2014

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
540	Asphalt Paving	0.862	0.875	1.099	1.019
610	Residential Wood Combustion	1.000	1.000	1.000	1.000
610	Residential Natural Gas Combustion - Space Heating	0.924	0.927	0.943	0.943
610	Residential Distillate Oil Combustion - Space Heating	1.032	1.031	1.077	1.058
610	Residential Natural Gas Combustion - Water Heating	0.914	0.918	0.933	0.933
610	Residential Natural Gas Combustion - Cooking	0.929	0.933	0.949	0.949
610	Residential Natural Gas Combustion - Other	0.933	0.930	0.945	0.945
610	Residential L.P.G. Combustion (Unspecified)	1.032	1.031	1.077	1.058
620	Tilling & Harvest Operations - Dust	1.041	1.065	0.713	0.993
620	Livestock Husbandry - Dairy Cattle	1.000	1.000	0.904	0.873
620	Livestock Husbandry - Others	1.000	1.000	1.000	1.000
630	Building And Road Construction - Dust	0.862	0.875	1.099	1.019
640	Paved Road Travel - Freeways - Dust	1.000	1.040	1.000	1.031
640	Paved Road Travel - (Unspecified) Dust	1.000	1.000	1.000	1.000
640	Paved Road Travel - Major Streets - Dust	1.002	1.002	1.005	1.017
640	Paved Road Travel - Local/Collector Streets - Dust	1.002	1.003	1.015	1.007
645	Unpaved Road Travel - Farm Roads - Dust	1.041	1.065	0.713	0.993
645	Unpaved Road Travel - Others - Dust	1.000	1.000	1.000	1.000
650	Agricultural Lands - Windblown Dust	0.742	0.735	0.870	0.778
650	Unpaved Roads And Associated Areas - Windblown Dust	1.000	1.000	1.000	1.000
660	Structural/Automobile Fires	1.000	1.000	1.000	1.000
670	Agricultural Burning - Pruning & Field Crops	1.041	1.065	0.713	0.993

TABLE III-2-11 (concluded)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2014

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
670	Agricultural Burning - Range Improvement	0.985	0.914	1.175	0.828
670	Wildland Fire Use And Waste Burning (Unspecified)	1.000	1.000	1.031	1.030
670	Agricultural Burning - Weed Abatement	1.000	1.000	1.000	1.000
690	Cooking	1.005	0.945	1.160	1.048

Base year is 2008.

TABLE III-2-12

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2019

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
020	Cogeneration	0.865	0.865	0.865	0.865
030	Petroleum Production Fuel Combustion - Gaseous Fuel=Lower(A1)	1.118	1.217	1.551	1.169
050	Industrial Combustion And Stationary Ice- Natural Gas	0.816	0.776	0.809	0.809
050	Industrial Combustion - L.P.G./Distillate Oil/Other Fuels	1.281	1.296	1.620	1.383
060	Commercial Natural Gas Combustion - Space Heating	0.915	0.876	0.913	0.913
060	Commercial Natural Gas Combustion - Water Heating	0.982	0.939	0.980	0.980
060	Commercial Natural Gas Combustion - Other	0.939	0.911	0.950	0.950
060	Commercial L.P.G. Combustion	1.517	1.440	1.745	1.530
099	Resource Recovery	0.865	0.865	0.865	0.865
110	Sewage Treatment Plants-Potws - Ammonia	1.000	1.000	1.000	1.000
120	Landfills - Municipal Solid Waste Disposal (Biodegradation)	1.177	1.187	1.183	1.197
199	Composting - Ammonia	1.000	1.000	1.000	1.000
199	Composting Waste Disposal	1.052	1.084	1.178	1.107
210	Dry Cleaning	1.042	0.991	1.388	1.143

TABLE III-2-12 (continued)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2019

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
220	Degreasing	1.281	1.296	1.620	1.383
230	Auto Refinishing - Coatings	1.019	0.993	1.617	1.301
230	Marine Coatings	1.499	1.403	2.119	1.787
230	Paper Coatings	1.083	1.048	1.389	1.232
230	Fabric Coatings	1.572	1.521	2.017	1.787
230	Can And Coil, Metal Parts And Products Coatings	1.132	1.095	1.452	1.287
230	Wood Furniture And Fabricated Products Coatings	1.292	1.249	1.656	1.468
230	Plastic Parts	1.403	1.358	1.800	1.596
230	Semiconductor Coatings	2.139	2.070	2.747	2.433
230	Aircraft And Aerospace Coatings	1.416	1.325	2.001	1.687
240	Printing	0.936	0.905	1.200	1.064
250	Adhesives And Sealants	1.281	1.296	1.620	1.383
299	Miscellaneous Industrial Solvent Uses	1.281	1.296	1.620	1.383
310	Oil And Gas Production	1.118	1.217	1.551	1.169
330	Petroleum Marketing - Natural Gas Transmission Losses	0.835	0.835	0.835	0.835
330	LPG Transfer And Dispensing - Fugitive Losses	1.074	1.057	1.176	1.132
330	Gasoline Dispensing & Transfers/Storage/Cargo Tanks	1.037	1.083	1.264	1.203
330	Bulk Gasoline Storage & Transfer (Unspecified)	0.835	0.835	0.835	0.835
410	Chemical	1.403	1.358	1.800	1.596
420	Wine Fermentation & Aging	1.211	1.209	1.217	1.232
420	Bakeries	1.114	1.078	1.429	1.267
420	Agricultural Products Processing Losses	1.211	1.209	1.217	1.232
420	Agricultural Crop Processing Losses	1.099	1.197	1.524	1.008
430	Mineral Processes - Sand/Gravel/Cement Concrete	1.078	1.043	1.382	1.226

TABLE III-2-12 (continued)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2019

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
430	Asphaltic Concrete Production	1.000	1.000	1.000	1.000
430	Surface Blasting	1.112	1.210	1.542	1.162
440	Secondary Metal Production	0.947	0.916	1.213	1.076
450	Wood Processing Losses	1.292	1.249	1.656	1.468
499	Industrial Lubricant	1.052	1.084	1.178	1.107
499	Industrial Process Losses (Unspecified Material)	1.000	1.000	1.000	1.000
510	Consumer Products	1.052	1.084	1.178	1.107
520	Architectural Coatings	1.074	1.057	1.176	1.132
540	Asphalt Paving	0.996	1.064	1.751	1.393
610	Residential Wood Combustion	1.000	1.000	1.000	1.000
610	Residential Natural Gas Combustion - Space Heating	0.914	0.917	0.933	0.933
610	Residential Distillate Oil Combustion - Space Heating	1.074	1.057	1.176	1.132
610	Residential Natural Gas Combustion - Water Heating	0.898	0.902	0.917	0.917
610	Residential Natural Gas Combustion - Cooking	0.926	0.930	0.945	0.945
610	Residential Natural Gas Combustion - Other	0.941	0.938	0.953	0.953
610	Residential L.P.G. Combustion (Unspecified)	1.074	1.057	1.176	1.132
620	Tilling & Harvest Operations - Dust	1.041	1.065	0.600	0.993
620	Livestock Husbandry - Dairy Cattle	1.000	1.000	0.663	0.642
620	Livestock Husbandry - Others	1.000	1.000	1.000	1.000
630	Building And Road Construction - Dust	0.996	1.064	1.751	1.393
640	Paved Road Travel - Freeways - Dust	1.005	1.061	1.112	1.041
640	Paved Road Travel - (Unspecified) - Dust	1.000	1.000	1.000	1.000
640	Paved Road Travel - Major Streets - Dust	1.002	1.002	1.033	1.021
640	Paved Road Travel - Local/Collector Streets - Dust	1.002	1.009	1.037	1.017

TABLE III-2-12 (concluded)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2019

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
645	Unpaved Road Travel - Farm Roads - Dust	1.041	1.065	0.600	0.993
645	Unpaved Road Travel - Others - Dust	1.000	1.000	1.000	1.000
650	Agricultural Lands - Windblown Dust	0.577	0.566	0.775	0.630
650	Unpaved Roads And Associated Areas - Windblown Dust	1.000	1.000	1.000	1.000
660	Structural/Automobile Fires	1.000	1.000	1.000	1.000
670	Agricultural Burning - Pruning & Field Crops	1.041	1.065	0.600	0.993
670	Agricultural Burning - Range Improvement	0.965	1.050	1.338	1.008
670	Wildland Fire Use And Waste Burning (Unspecified)	1.000	1.000	1.075	1.075
670	Agricultural Burning - Weed Abatement	1.000	1.000	1.000	1.000
690	Cooking	1.042	0.991	1.388	1.143

Base year is 2008.

TABLE III-2-13

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2023

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
020	Cogeneration	0.859	0.859	0.859	0.859
030	Petroleum Production Fuel Combustion - Gaseous Fuel	1.128	1.279	1.639	1.315
050	Industrial Combustion And Stationary Ice-Natural Gas	0.739	0.698	0.896	0.896
050	Industrial Combustion - L.P.G./Distillate Oil/Other Fuels	1.358	1.387	1.872	1.532
060	Commercial Natural Gas Combustion - Space Heating	0.860	0.819	1.052	1.052
060	Commercial Natural Gas Combustion - Water Heating	0.933	0.889	1.141	1.141

TABLE III-2-13 (continued)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2023

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
060	Commercial Natural Gas Combustion - Other	0.879	0.847	1.087	1.087
060	Commercial L.P.G. Combustion	1.685	1.621	2.073	1.775
099	Resource Recovery	0.859	0.859	0.859	0.859
110	SEWAGE TREATMENT PLANTS- Potws - AMMONIA	1.000	1.000	1.000	1.000
120	Landfills - Municipal Solid Waste Disposal (Biodegradation)	1.239	1.249	1.249	1.266
199	Composting - Ammonia	1.000	1.000	1.000	1.000
199	Composting Waste Disposal	1.075	1.109	1.257	1.156
210	Dry Cleaning	1.063	1.023	1.550	1.239
220	Degreasing	1.358	1.387	1.872	1.532
230	Auto Refinishing - Coatings	1.033	1.028	1.851	1.437
230	Marine Coatings	1.577	1.487	2.396	2.030
230	Paper Coatings	1.108	1.070	1.554	1.333
230	Fabric Coatings	1.701	1.644	2.387	2.047
230	Can And Coil, Metal Parts And Products Coatings	1.162	1.123	1.631	1.399
230	Wood Furniture And Fabricated Products Coatings	1.355	1.309	1.901	1.630
230	Plastic Parts	1.494	1.444	2.096	1.798
230	Semiconductor Coatings	2.511	2.426	3.522	3.021
230	Aircraft And Aerospace Coatings	1.495	1.409	2.271	1.924
240	Printing	0.938	0.907	1.317	1.129
250	Adhesives And Sealants	1.358	1.387	1.872	1.532
299	Miscellaneous Industrial Solvent Uses	1.358	1.387	1.872	1.532
310	Oil And Gas Production	1.128	1.279	1.639	1.315
330	Petroleum Marketing - Natural Gas Transmission Losses	0.775	0.775	0.775	0.775
330	LPG Transfer And Dispensing - Fugitive Losses	1.102	1.084	1.264	1.187

TABLE III-2-13 (continued)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2023

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
330	Gasoline Dispensing & Transfers/Storage/Cargo Tanks	1.055	1.101	1.368	1.282
330	Bulk Gasoline Storage & Transfer (Unspecified)	0.775	0.775	0.775	0.775
410	Chemical	1.494	1.444	2.096	1.798
420	Wine Fermentation & Aging	1.281	1.276	1.293	1.306
420	Bakeries	1.141	1.102	1.600	1.373
420	Agricultural Products Processing Losses	1.281	1.276	1.293	1.306
420	Agricultural Crop Processing Losses	1.120	1.271	1.629	1.119
430	Mineral Processes - Sand/Gravel/Cement Concrete	1.097	1.060	1.539	1.320
430	Asphaltic Concrete Production	1.000	1.000	1.000	1.000
430	Surface Blasting	1.122	1.273	1.631	1.309
440	Secondary Metal Production	0.954	0.922	1.339	1.148
450	Wood Processing Losses	1.355	1.309	1.901	1.630
499	Industrial Lubricant	1.075	1.109	1.257	1.156
499	Industrial Process Losses (Unspecified Material)	1.000	1.000	1.000	1.000
510	Consumer Products	1.075	1.109	1.257	1.156
520	Architectural Coatings	1.102	1.084	1.264	1.187
540	Asphalt Paving	1.033	1.137	2.085	1.597
610	Residential Wood Combustion	1.000	1.000	1.000	1.000
610	Residential Natural Gas Combustion - Space Heating	0.894	0.873	0.983	0.983
610	Residential Distillate Oil Combustion - Space Heating	1.102	1.084	1.264	1.187
610	Residential Natural Gas Combustion - Water Heating	0.876	0.856	0.964	0.964
610	Residential Natural Gas Combustion - Cooking	0.911	0.890	1.002	1.002

TABLE III-2-13 (concluded)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2023

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
610	Residential Natural Gas Combustion - Other	0.952	0.910	1.025	1.025
610	Residential L.P.G. Combustion (Unspecified)	1.102	1.084	1.264	1.187
620	Tilling & Harvest Operations - Dust	1.041	1.065	0.552	0.993
620	Livestock Husbandry - Dairy Cattle	1.000	1.000	0.470	0.458
620	Livestock Husbandry - Others	1.000	1.000	1.000	1.000
630	Building And Road Construction - Dust	1.033	1.137	2.085	1.597
640	Paved Road Travel - Freeways - Dust	1.011	1.080	1.224	1.051
640	Paved Road Travel - (Unspecified) - Dust	1.000	1.000	1.000	1.000
640	Paved Road Travel - Major Streets - Dust	1.002	1.002	1.061	1.025
640	Paved Road Travel - Local/Collector Streets - Dust	1.001	1.010	1.042	1.020
645	Unpaved Road Travel - Farm Roads - Dust	1.041	1.065	0.552	0.993
645	Unpaved Road Travel - Others - Dust	1.000	1.000	1.000	1.000
650	Agricultural Lands - Windblown Dust	0.472	0.461	0.706	0.532
650	Unpaved Roads And Associated Areas - Windblown Dust	1.000	1.000	1.000	1.000
660	Structural/Automobile Fires	1.000	1.000	1.000	1.000
670	Agricultural Burning - Pruning & Field Crops	1.041	1.065	0.552	0.993
670	Agricultural Burning - Range Improvement	0.959	1.088	1.394	1.119
670	Wildland Fire Use And Waste Burning (Unspecified)	1.000	1.000	1.131	1.130
670	Agricultural Burning - Weed Abatement	1.000	1.000	1.000	1.000
690	Cooking	1.063	1.023	1.550	1.239

Base year is 2008.

TABLE III-2-14

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2030

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
020	Cogeneration	0.861	0.861	0.861	0.861
030	Petroleum Production Fuel Combustion - Gaseous Fuel	1.153	1.331	1.876	1.478
050	Industrial Combustion And Stationary Ice- Natural Gas	0.673	0.646	0.973	0.973
050	Industrial Combustion - L.P.G./Distillate Oil/Other Fuels	1.507	1.549	2.212	1.769
060	Commercial Natural Gas Combustion - Space Heating	0.818	0.795	0.883	0.883
060	Commercial Natural Gas Combustion - Water Heating	0.890	0.864	1.302	1.302
060	Commercial Natural Gas Combustion - Other	0.857	0.840	1.266	1.266
060	Commercial L.P.G. Combustion	2.014	1.989	2.716	2.310
099	Resource Recovery	0.861	0.861	0.861	0.861
110	Sewage Treatment Plants-POTWS - Ammonia	1.000	1.000	1.000	1.000
120	Landfills - Municipal Solid Waste Disposal (Biodegradation)	1.352	1.368	1.384	1.402
199	Composting - Ammonia	1.000	1.000	1.000	1.000
199	Composting Waste Disposal	1.118	1.140	1.388	1.244
210	Dry Cleaning	1.093	1.070	1.792	1.411
220	Degreasing	1.507	1.549	2.212	1.769
230	Auto Refinishing - Coatings	1.055	1.072	2.177	1.669
230	Marine Coatings	1.719	1.641	2.918	2.488
230	Paper Coatings	1.149	1.093	1.724	1.475
230	Fabric Coatings	1.950	1.855	2.926	2.502
230	Can And Coil, Metal Parts And Products Coatings	1.215	1.156	1.823	1.559
230	Wood Furniture And Fabricated Products Coatings	1.471	1.399	2.207	1.887
230	Plastic Parts	1.664	1.583	2.497	2.135

TABLE III-2-14 (continued)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2030

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
230	Semiconductor Coatings	3.320	3.159	4.982	4.260
230	Aircraft And Aerospace Coatings	1.639	1.565	2.783	2.373
240	Printing	0.941	0.896	1.412	1.208
250	Adhesives And Sealants	1.507	1.549	2.212	1.769
299	Miscellaneous Industrial Solvent Uses	1.507	1.549	2.212	1.769
310	Oil And Gas Production	1.153	1.331	1.876	1.478
330	Petroleum Marketing - Natural Gas Transmission Losses	0.670	0.670	0.670	0.670
330	LPG Transfer And Dispensing - Fugitive Losses	1.149	1.117	1.411	1.28
330	Gasoline Dispensing & Transfers/Storage/Cargo Tanks	1.091	1.145	1.540	1.413
330	Bulk Gasoline Storage & Transfer (Unspecified)	0.670	0.670	0.670	0.670
410	Chemical	1.664	1.583	2.497	2.135
420	Wine Fermentation & Aging	1.411	1.400	1.428	1.438
420	Bakeries	1.186	1.128	1.779	1.521
420	Agricultural Products Processing Losses	1.411	1.400	1.428	1.438
420	Agricultural Crop Processing Losses	1.167	1.348	1.899	1.226
430	Mineral Processes - Sand/Gravel/Cement Concrete	1.128	1.073	1.692	1.447
430	Asphaltic Concrete Production	1.000	1.000	1.000	1.000
430	Surface Blasting	1.149	1.326	1.869	1.473
440	Secondary Metal Production	0.966	0.919	1.450	1.240
450	Wood Processing Losses	1.471	1.399	2.207	1.887
499	Industrial Lubricant	1.118	1.140	1.388	1.244
499	Industrial Process Losses (Unspecified Material)	1.000	1.000	1.000	1.000
510	Consumer Products	1.118	1.140	1.388	1.244
520	Architectural Coatings	1.149	1.117	1.411	1.280

TABLE III-2-14 (continued)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2030

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
540	Asphalt Paving	1.054	1.214	2.517	1.898
610	Residential Wood Combustion	1.000	1.000	1.000	1.000
610	Residential Natural Gas Combustion - Space Heating	0.857	0.827	1.041	1.041
610	Residential Distillate Oil Combustion - Space Heating	1.149	1.117	1.411	1.280
610	Residential Natural Gas Combustion - Water Heating	0.844	0.814	1.025	1.025
610	Residential Natural Gas Combustion - Cooking	0.884	0.853	1.074	1.074
610	Residential Natural Gas Combustion - Other	0.949	0.874	1.100	1.100
610	Residential L.P.G. Combustion (Unspecified)	1.149	1.117	1.411	1.280
620	Tilling & Harvest Operations - Dust	1.041	1.065	0.490	0.993
620	Livestock Husbandry - Dairy Cattle	1.000	1.000	0.470	0.458
620	Livestock Husbandry - Others	1.000	1.000	1.000	1.000
630	Building And Road Construction - Dust	1.054	1.214	2.517	1.898
640	Paved Road Travel - Freeways - Dust	1.014	1.080	1.224	1.051
640	Paved Road Travel - (Unspecified)- Dust	1.000	1.000	1.000	1.000
640	Paved Road Travel - Major Streets - Dust	1.003	1.002	1.399	1.025
640	Paved Road Travel - Local/Collector Streets - Dust	1.003	1.010	1.066	1.029
645	Unpaved Road Travel - Farm Roads - Dust	1.041	1.065	0.490	0.993
645	Unpaved Road Travel - Others - Dust	1.000	1.000	1.000	1.000
650	Agricultural Lands - Windblown Dust	0.329	0.317	0.599	0.394
650	Unpaved Roads And Associated Areas - Windblown Dust	1.000	1.000	1.000	1.000
660	Structural/Automobile Fires	1.000	1.000	1.000	1.000
670	Agricultural Burning - Pruning & Field Crops	1.041	1.065	0.490	0.993

TABLE III-2-14 (concluded)

Stationary Area Source Emission Growth Factors in the SCAB for the Year 2030

EIC3	CATEGORY DESCRIPTION	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
670	Agricultural Burning - Range Improvement	0.956	1.104	1.556	1.226
670	Wildland Fire Use And Waste Burning (Unspecified)	1.000	1.000	1.259	1.259
670	Agricultural Burning - Weed Abatement	1.000	1.000	1.000	1.000
690	Cooking	1.093	1.070	1.792	1.411

Base year is 2008.

Emission Trend Analysis

Figures 2-1 through 2-4 present the relative contributions by source categories (i.e., point, area, on-road, and off-road) to total emission levels in 2008 annual average (VOC, NO_x, CO, SO_x and PM_{2.5}), 2008 summer planning (VOC and NO_x), 2023 annual average (VOC, NO_x, CO, SO_x and PM_{2.5}) and 2023 summer planning (VOC and NO_x), respectively. As seen in the figures, in 2008 (average annual day) on-road and off-road mobile sources are major contributors of CO (95 percent), NO_x (88 percent), SO_x (75 percent) and VOC (57 percent) emissions. Top fine particulate matter (PM_{2.5}) producers include cooking (14%); residential fuel consumption (10%); and entrained road dust (10%). For 2023 (average annual day), mobile sources continue to be major contributors to total CO and NO_x emissions by approximately 90 percent, 78 percent, respectively. However, contribution to VOC and SO_x by mobile sources is reduced due to CARB regulations over time. Area sources become major contributors to VOC emissions (from 38 percent in 2008 to 53 percent in 2023). Figures 2-5 through 2-8 illustrate the emission trends by pollutant (VOC, NO_x, PM_{2.5}, and SO_x) for 2008, 2014, 2019, and 2023 respectively.

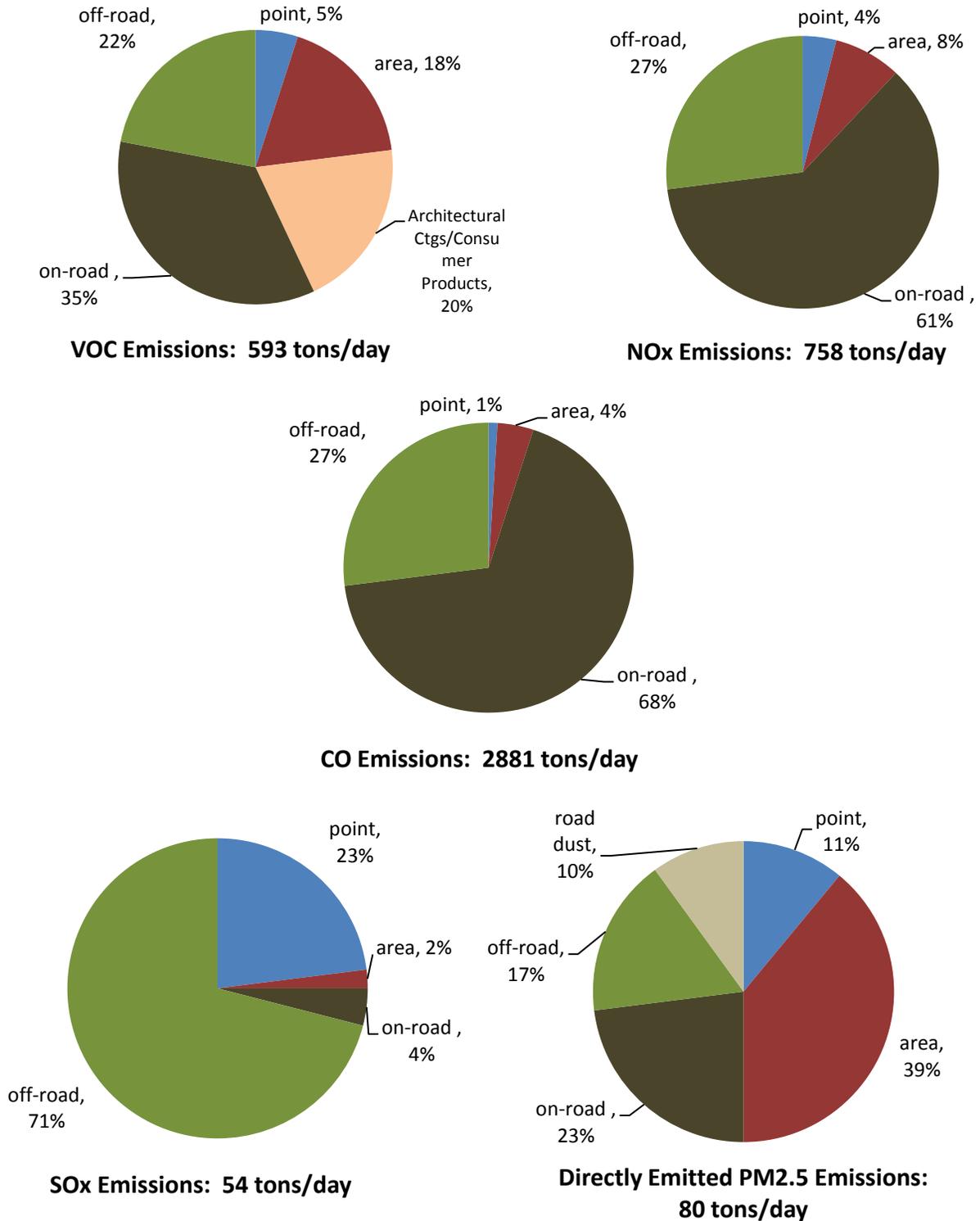
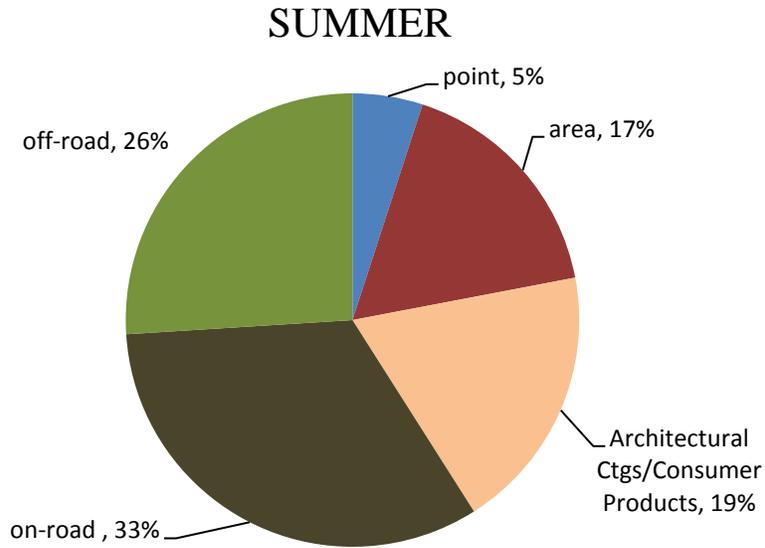
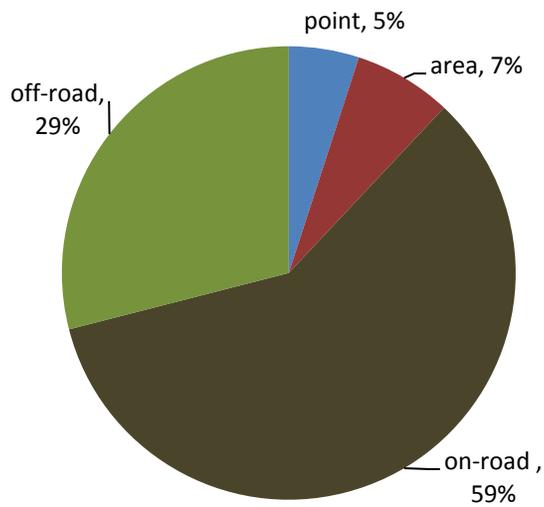


FIGURE III-2-1

Relative Contribution by Source Category to 2008 Emission Inventory – Average Annual Day



VOC Emissions: 639 tons/day



NOx Emissions: 721 tons/day

FIGURE III-2-2

Relative Contribution by Source Category to 2008 Emissions Inventory – Summer Planning

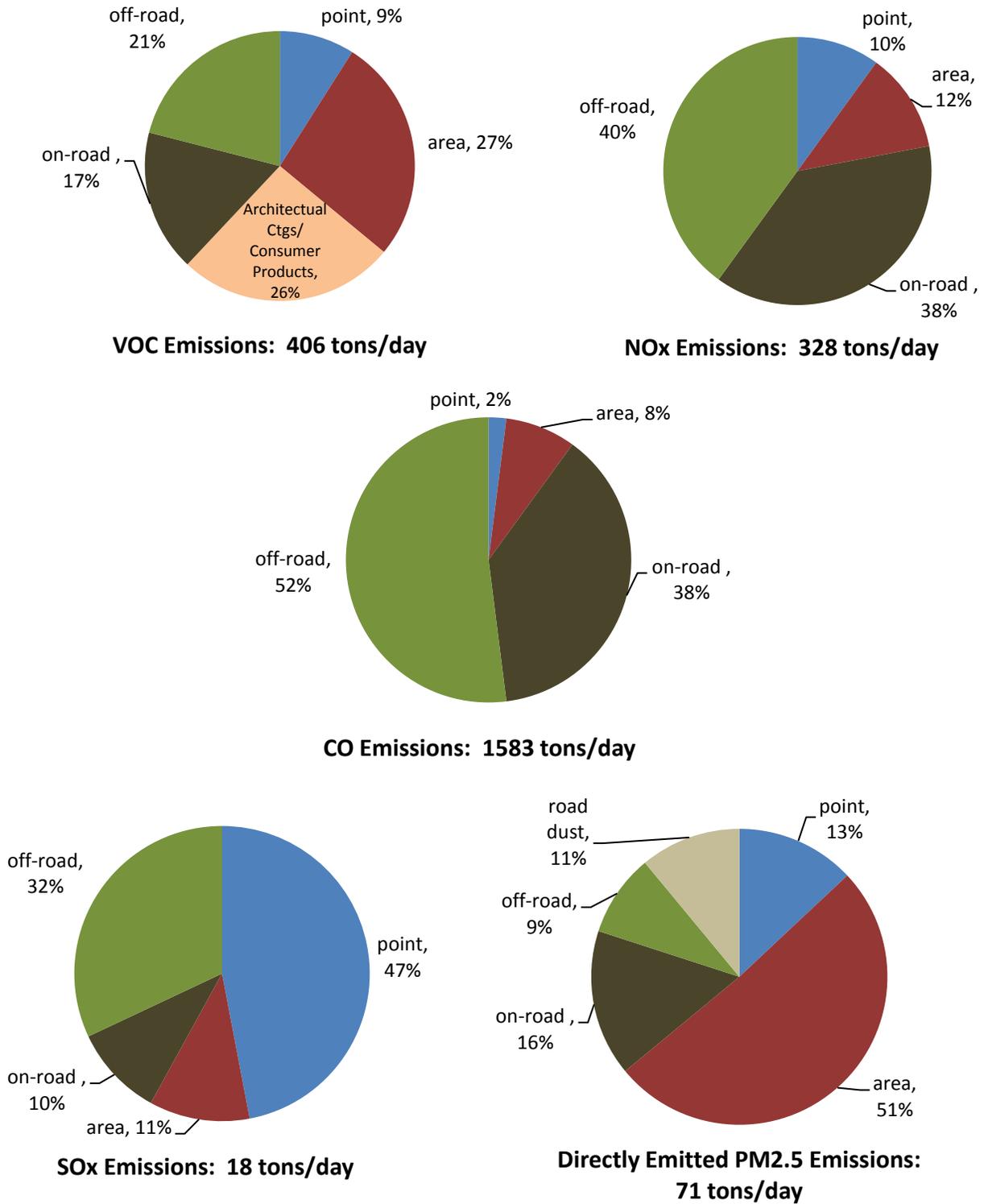
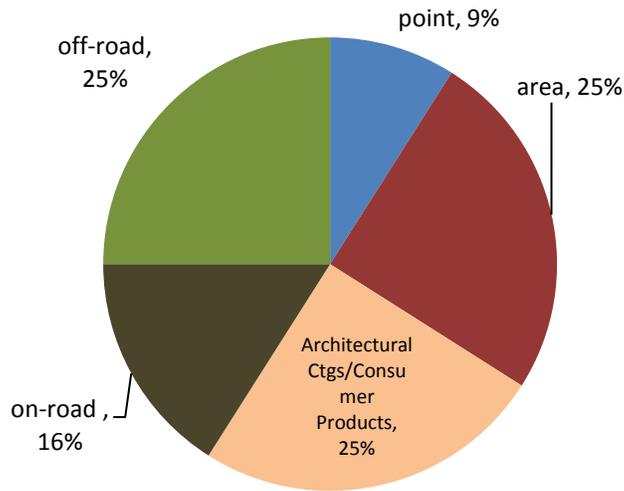


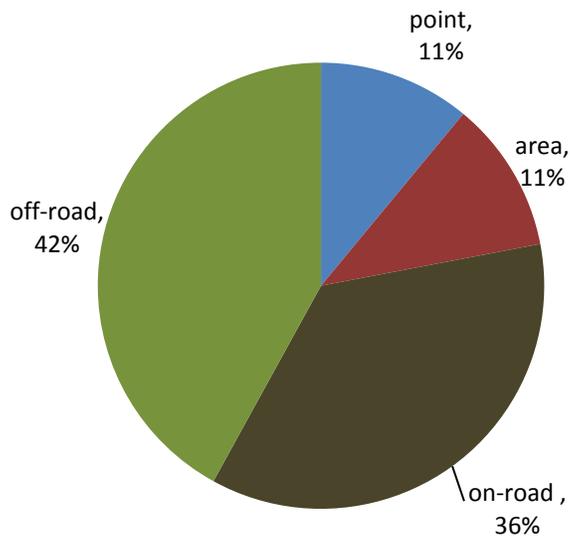
FIGURE III-2-3

Relative Contribution by Source Category to 2023 Emission Inventory – Average Annual Day

SUMMER



VOC Emissions: 438 tons/day



NOx Emissions: 319 tons/day

FIGURE III-2-4

Relative Contribution by Source Category to 2023 Emissions Inventory – Summer Planning

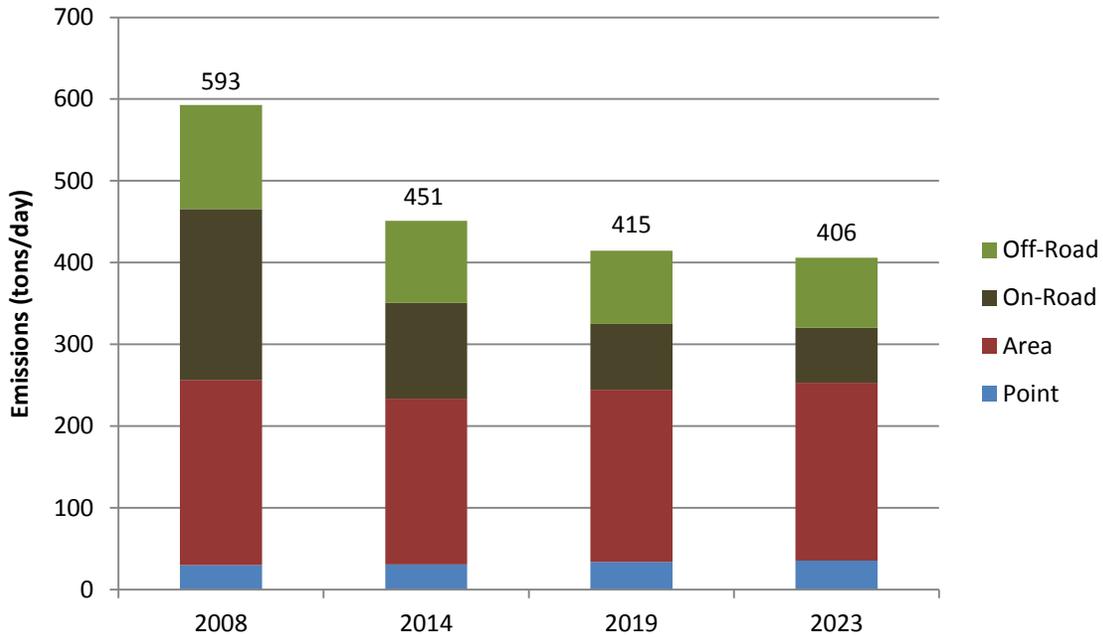


FIGURE III-2-5A
VOC Emission Trend by Source Category – Average Annual Day

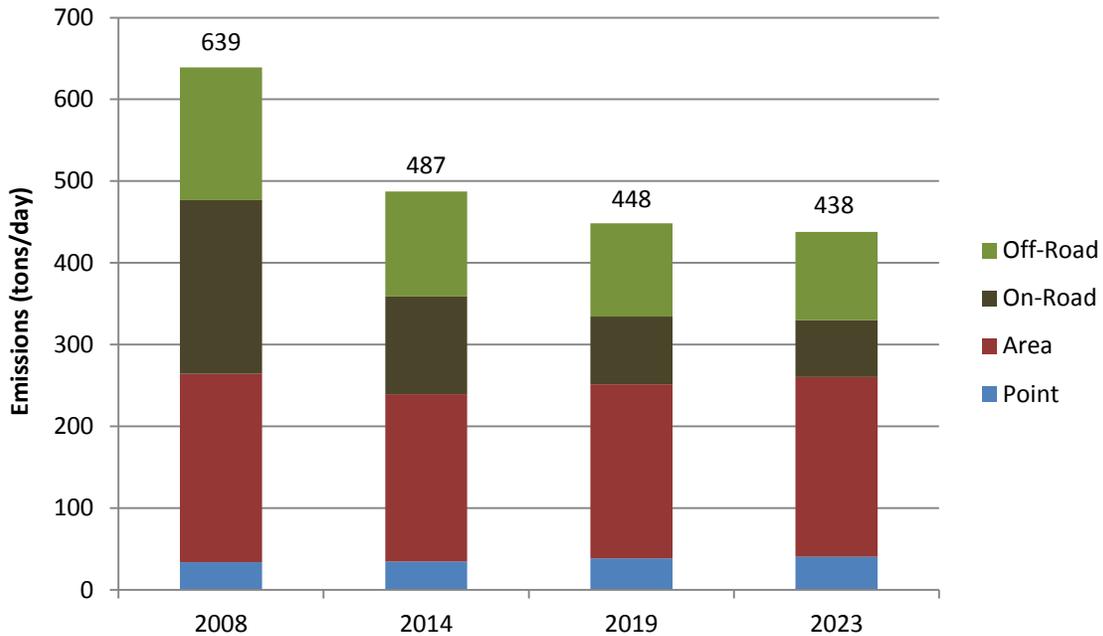


FIGURE III-2-5B
VOC Emission Trend by Source Category – Summer Planning

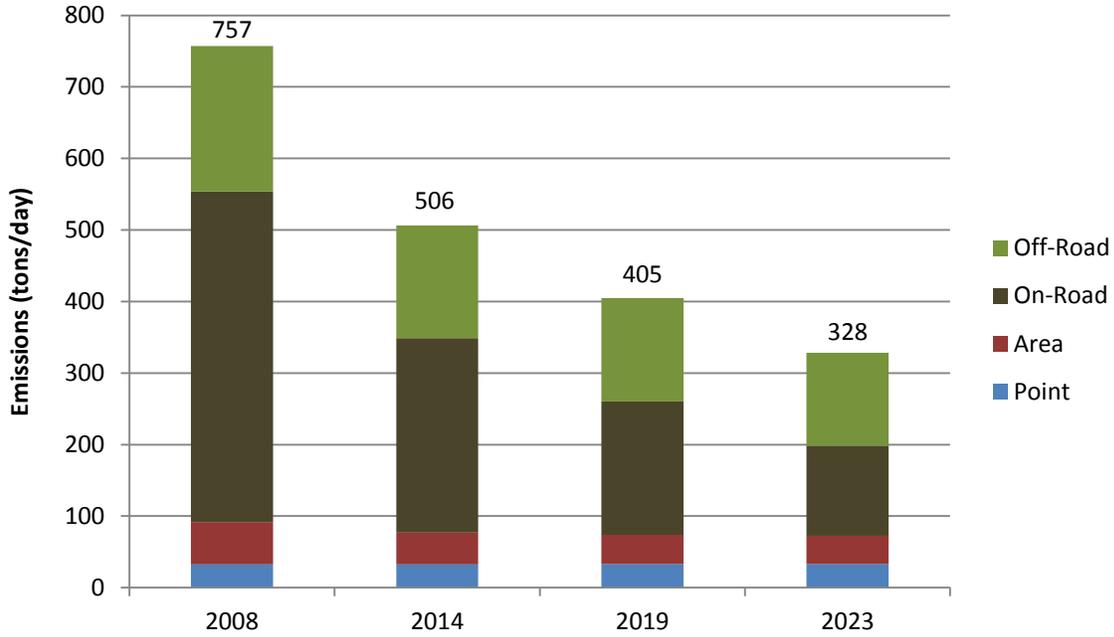


FIGURE III-2-6A
NOx Emission Trend by Source Category – Average Annual Day

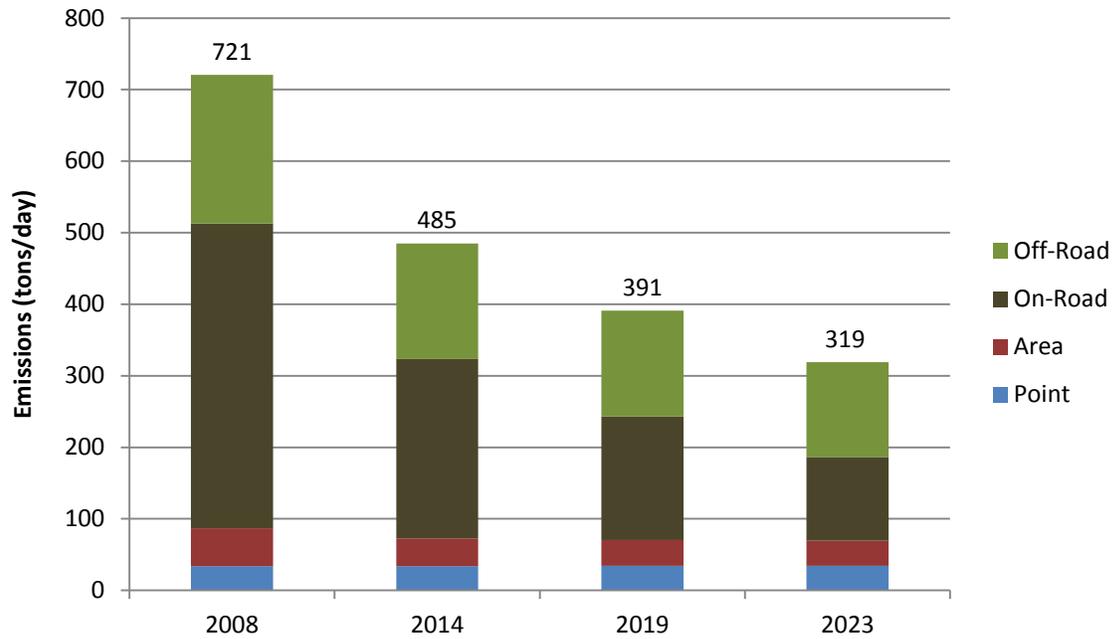


FIGURE III-2-6B
NOx Emission Trend by Source Category – Summer Planning

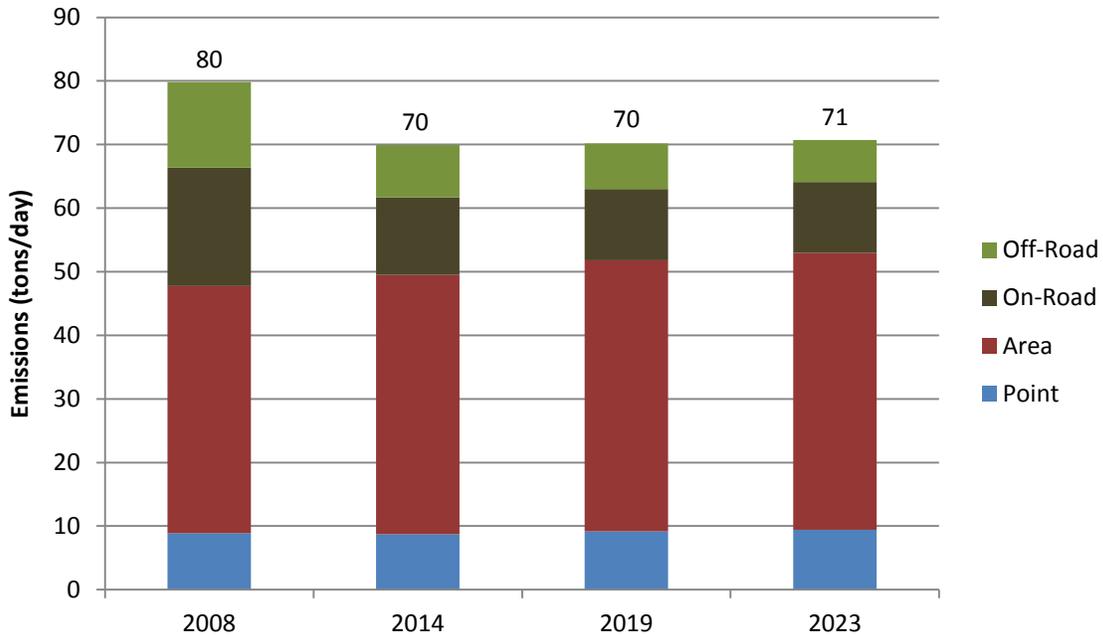


FIGURE III-2-7
PM2.5 Emission Trend by Source Category – Average Annual Day

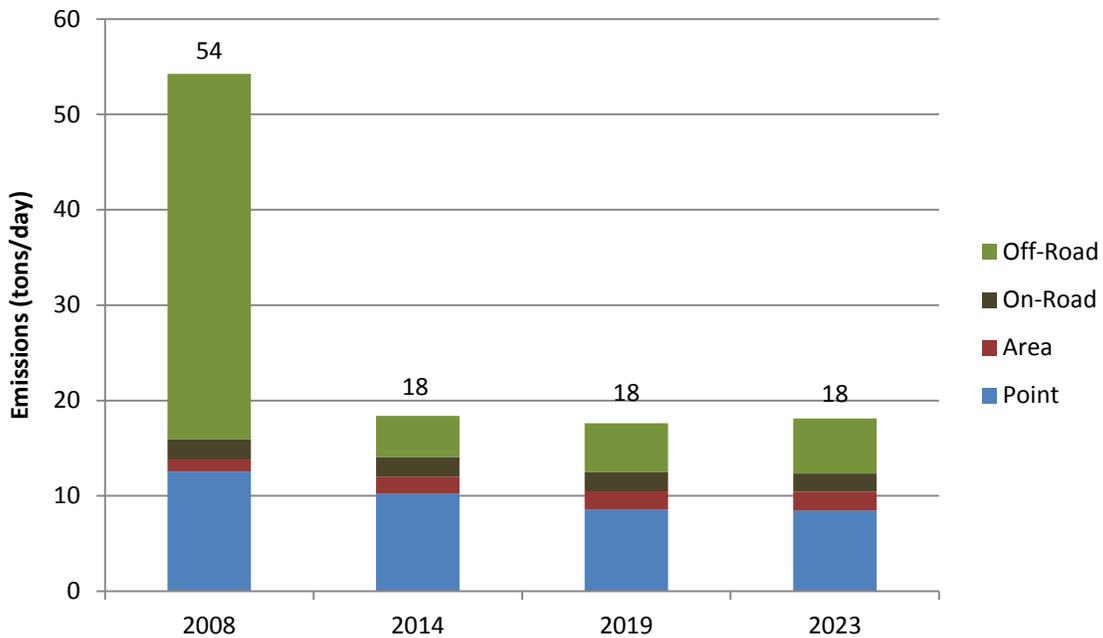


FIGURE III-2-8
SOx Emission Trend by Source Category – Average Annual Day

VOC Emissions

As presented in Figure III-2-5, emissions from area sources, off-road mobile sources and on-road mobile sources all show a significant decrease over time. Between 2008 and 2023, summer planning VOC emissions from off-road mobile sources are expected to fall from 162 tons per day to 108 tons per day, while on-road emissions should fall from 213 tons per day to 70 tons per day. Area source reductions are derived mainly from the AQMD's adopted rules for architectural coatings (Rule 1113), refinery flares (Rule 1118), greenwaste composting operations (Rule 1133.3), consumer paint thinners and multi-purpose solvents (Rule 1143) and metalworking fluids and direct-contact lubricants (Rule 1144). Off-road reductions result primarily from turnover to cleaner off-road equipment, pleasure craft and off-road recreational vehicles. Since its adoption in 1990, California's Low Emission Vehicle I (LEV I) program has produced significant emission reductions from on-road passenger vehicles by relying on a systems-wide approach to achieve reductions from fuels and mobile source exhaust and evaporative emissions. Both LEV I and LEV II, adopted in 1998, include four primary elements: (1) increasingly stringent exhaust emission standards, (2) an increasingly stringent annual fleet average standard for non-methane organic gas (NMOG), (3) banking and trading provisions, and (4) a requirement that a specific percentage of vehicles be Zero Emission Vehicles (ZEVs), vehicles with no emissions. Under LEV II, sport utility vehicles, pick-up trucks, and mini-vans must achieve the same emission standards as cars, beginning in 2004-2007. Additional VOC emission reductions are from the adoption of the LEV III program.

NO_x Emissions

Figure III-2-6 illustrates the NO_x emissions by major source category. Summer planning NO_x emissions are projected to decrease from both off-road mobile (208 tons per day to 133 tons per day) and on-road mobile (426 tons per day to 117 tons per day) sources from 2008 to 2023. The on-road reductions largely reflect the cleaner in-use heavy-duty trucks and buses. Reductions from on-road emissions are also projected for light- and medium-duty vehicles through the adoption of the LEV VIII program with more stringent tail-pipe and greenhouse gas standards for light- and medium-duty vehicles. Off-road NO_x emission reductions result primarily from cleaner in-use off-road equipment (over 25 horse power); ship auxiliary engine cold ironing & clean technology; cleaner main ship engines.

PM2.5 Emissions

Figure III-2-7 shows the PM2.5 emission trend. A good portion of the emissions are from dust. The projected dust inventories in 2008 and 2023 for paved and unpaved roads are both 8 tons per day (annual average inventory).

SOx Emissions

Figure III-2-8 illustrate the SOx emissions trend. The significant decrease in SOx emissions between 2008 and 2014 (from 54 tons per day to 18 tons per day) is due to the full implementation of the SOx RECLAIM and implementation of the cleaner sulfur content marine fuels.

Impact of Growth

The Draft Final 2012 AQMP forecasts the 2030 emissions inventories “with growth” through a detailed consultation process with the Southern California Association of Governments (SCAG). The region is likely to see a 16% growth in population, 18% growth in housing units, 16% growth in employment, and 11% growth in vehicle miles traveled between 2008 and 2030. To illustrate the impact of demographic growth on emissions, year 2030 no-growth emissions were estimated by removing the growth factors from the 2030 baseline emissions. Table III-2-15 presents the comparison of the projected 2030 emissions with and without growth. It should be noted that in this analysis, the benefit of potential applications of BACT under New Source Review (NSR) is not included. The growth impacts to year 2030 for VOC, NOx, CO, SOx and PM2.5 are 77, 76, 311, 5 and 11 tons per day respectively.

General Conformity Budget

EPA’s General Conformity rule (40 CFR part 93, subpart B, and 40 CFR Part 51, Subpart W, as adopted by reference in SCAQMD Rule 1901, September 1994) establishes an applicability test for determining which Federal actions are subject to the conformity requirement for the nonattainment or maintenance areas. If a proposed action results in emissions increases which are less than the de minimis thresholds for the relevant pollutants or precursors, then no conformity determination needs to be made. If the emissions from a proposed action exceed the de minimis threshold for any given pollutant (or precursor) for which the area is designated as maintenance or in nonattainment, then the Federal agency must make a positive conformity determination for that pollutant(s) on the basis of one of the criteria listed in 40 CFR 93.158 before the project can proceed. The conformity determination must demonstrate that the emissions from the proposed project are accounted for in the most recently approved SIP. The

South Coast Air Basin is designated as an extreme nonattainment area for ozone and as a nonattainment area for PM_{2.5}. The general conformity de minimis threshold is 10 tons per year of VOC and 10 tons per year of NO_x for the extreme ozone nonattainment areas; and 100 tons per year of PM_{2.5} for the PM_{2.5} nonattainment areas.

Based on historical records none of the projects requiring general conformity determinations received by the District exceeded the PM_{2.5} threshold. Rather, NO_x is the main pollutant of concern, with emissions occurring primarily during the two to three year construction phase of projects. To streamline the review process and to facilitate the conformity determination, two separate VOC and NO_x general conformity budgets are established: 1 tpd of NO_x and 0.2 tpd of VOC are set aside for this purpose every year, starting in 2013 until 2030, from the projected emission growth in the Draft Final 2012 AQMP. This set aside account will be re-evaluated in the next AQMP for need and adequacy based on the data gathered at that time. These set-aside emissions in the Draft Final 2012 AQMP represent less than 1% and 2% of projected mobile source growth in emissions shown in Table 2-15 for VOC and NO_x, respectively.

The District will set up a tracking system for projects requiring conformity determinations on a first come first serve basis. The District will debit the project emissions from the applicable set aside accounts until it is depleted. The unused portion cannot be carried forward to the following year. For those projects that come in after the conformity budget is exhausted, the corresponding federal agency will have to go through the regular general conformity determination process to demonstrate that these emissions are accounted for in the SIP. The set aside accounts will be revised and updated via AQMP/SIP revisions.

Southern California Edison (SCE) is currently in the process of, or has plans to construct six linear transmission line projects which would traverse federal lands within the jurisdiction of the District. The projects are: (1) Devers-Palo Verde NO. 2 Transmission Project (DPV2); (2) Tehachapi Renewable Transmission Project (TRTP); (3) Falcon Ridge Substation Project (Falcon Ridge); (4) Path 42 Upgrade Project (Path 42); (5) West of Devers Interim Project (WOD Interim); and (6) West of Devers Upgrade Project (WOD Upgrade). SCE submitted to the District the NO_x emissions estimates expected to be generated during the construction of these transmission lines from 2012 and 2022. The total estimated NO_x emissions from these six projects within the South Coast Air Basin are 95 tons per year for 2012; 55 tons per year for year 2013; 10 tons per year for year 2014; 20 tons per year for 2015; 50 tons per year for 2016 and 2017; and 20 tons per year for 2018 through 2022. These emissions have been accounted for in the general conformity set aside account for NO_x.

Pre-Base-Year Offsets

The District's growth projections include pre-base year emissions, consistent with the requirements of 40 CFR § 51.165(a)(3)(i)(C)(I). To the extent offsets are required under NSR for permitted facilities to be sited or expanded in this region, pre-2008 emission credits authorized under District's Reg XIII can be used and are explicitly identified and accounted for in the Draft Final 2012 AQMP through growth projections, up to the amounts shown in Table III-2-15. While Table III-2-15 includes projected growth in certain sources not subject to NSR, the AQMP does not limit growth to individual source categories. Therefore, Table III-2-15 explicitly identifies pre-base-year offsets in the amounts up to the difference between the growth and no-growth projections for the point and area source categories that are potentially subject to NSR and could potentially require the use of pre-base-year offsets. *See* 57 Fed. Reg. 13,498.

This growth presents a formidable challenge to our air quality improvement efforts, because the projected growth will offset the impressive progress made in reducing VOC and NOx and PM2.5 emissions through adopted regulations. Meeting U.S. EPA's current and future more stringent air quality standards will require the continuation of aggressive emissions reductions efforts from all levels of government.

TABLE III-2-15

Growth Impact to 2030 Emissions* in Tons per Day

WITH GROWTH	VOC	NOx	CO	SOx	PM2.5
Point	38	33	38	9	10
Area	230	39	131	2	37
Road Dust	0	0	0	0	8
On-Road	55	101	446	2	12
Off-Road	84	116	886	7	6
Total	407	289	1501	20	73
NO GROWTH	VOC	NOx	CO	SOx	PM2.5
Point	29	32	33	8	8
Area	188	28	117	1	32
Road Dust	0	0	0	0	8
On-Road	49	82	398	2	10
Off-Road	64	71	642	4	4
Total	330	213	1190	15	62
IMPACT OF GROWTH	VOC	NOx	CO	SOx	PM2.5
Point	9	1	5	1	2
Area	42	11	14	1	5
Road Dust	0	0	0	0	0
On-Road	6	19	47	0	2
Off-Road	20	45	245	3	2
Total	77	76	311	5	11

*Annual Average Inventory

It should be noted that the AQMP is designed to accommodate growth. Therefore, the proposed control measures are sufficient to reduce emissions while allowing growth. For permitted stationary sources, offsets are required under the federal and state new source review programs. To the extent offsets are required, either via the open market trades or accessing the District's R1315 bank, pre-2008 emission credits can be used and these emissions are accounted for in the SIP through growth projections as shown in Table III-2-15. However, It needs to be emphasized that AQMP emissions reflect projected actual emissions for the source category, not potential to emit or allowable emissions and do not include offset ratio greater than one for ceratain pollutants.

UNCERTAINTY IN THE INVENTORY

An effective AQMP relies on an adequate emission inventory. Over the years, significant improvements have been made to quantify emission sources for which control measures are developed. Increased use of continuous monitoring and source tests has contributed to the improvement in point source inventories. Technical assistance to facilities and auditing of reported emissions by the District also have improved the accuracy of the emissions inventory. Area source inventories that rely on average emission factors and regional activities have inherent uncertainty. Industry-specific surveys and source-specific studies during rule development have provided much-needed refinement to the emissions estimates.

Mobile source inventories remain the greatest challenge due to the constantly new collected information from the large number and types of equipment and engines. Every AQMP revision provides an opportunity to further improve the current knowledge of mobile source inventories. The Draft Final 2012 AQMP is not an exception. As described earlier, many improvements were made to EMFAC2011 and such work is still ongoing. However, it should be acknowledged that there are still areas that could be significantly improved if better data were available. Technology change and improvement in the area of electric, hybrid, flexible fuel, and fuel cell vehicles, or the change in future gasoline prices, all add uncertainty to the on-road emissions inventory.

Additionally, the latest recession started in 2007. The recession was unforeseen and was not considered in the 2007 AQMP. As we prepare the Draft Final 2012 AQMP, we are still in the midst of economic recovery. The impact of this recession is deep and thus adds to the uncertainty in the emissions provided here. Relative to future growth, there are many challenges with making accurate projections, such as where vehicle trips will occur, the distribution between various modes of transportation (such as trucks and trains), as well as estimates for population growth and changes to the number and type of

jobs. Forecasts are made with the best information available; nevertheless, they contribute to the overall uncertainty in emission projections. Fortunately, AQMP updates are generally performed every three to four years; thereby allowing for frequent improvements to the inventories.

CONTROLLED EMISSION INVENTORIES

This section describes the methodology used to estimate the controlled and remaining emissions after the proposed control measures in the Draft Final 2012 AQMP are implemented for the years 2014 and 2023. Emission reductions are derived by applying the control efficiency of a control measure to the projected baseline inventories. In addition to the proposed control measures, the impacts of phase-out VOC and SIP Reserve set aside tracking and other budgeted emissions for various District programs are also discussed in this section.

To project emission reductions and remaining emissions from the implementation of the proposed control measures, a mathematical algorithm called Controlled Emissions Projection Algorithm (CEPA) is used. CEPA is developed to calculate projected remaining emissions and/or emission reductions for specified control scenarios. CEPA is briefly discussed in this section. A more comprehensive and extensive discussion of CEPA is presented in Technical Report III-A of the 1991 AQMP.

Since 1998, the District has been implementing several funding incentive programs for the replacement or retrofit of heavy duty diesel vehicles, including the Carl Moyer and Lower Emission School Bus programs, Proposition 1B Goods Movement program, and the SOON off-road equipment program. Over the years, thousands of diesel engines in the on-road and off-road sectors have been converted to natural gas, repowered, or retrofitted with particulate traps to achieve significant emissions reductions.

Based contracts awarded and executed since the 2007 AQMP under the Proposition 1B and Carl Moyer programs, the typical useful life of the vehicles, and the expected emissions benefits in 2014 beyond the benefits included in the future-year baseline inventory, an additional 16 tons/day of NO_x emissions reductions, 0.28 tons/day of VOC emissions reductions, and 0.46 tons/day of direct PM_{2.5} emissions reductions will be achieved in 2014. These contracts continue to be closely tracked and the resulting level of emission reductions will be confirmed once achieved. The District has dedicated staff performing field audits to ensure that the agreed upon protocols are followed. Based on past contract performance, emission reductions from these awarded contracts were discounted by 30 percent to reflect the fact that occasionally, contract awards are not completed and monies are returned.

Table III-2-16 summarizes emission reductions in 2014 from the mobile source incentive programs. It should be noted that these surplus reductions, attributable to accelerated fleet turnover or early compliance with state regulations, will diminish over time given that the baseline emissions inventory already incorporates normal fleet turnover and rule compliance.

TABLE III-2-16

Summary of Emissions Reductions from Mobile Source Incentive Programs
(2014 Tons per Day)

	VOC	NO_x	PM_{2.5}
Carl Moyer Programs	0.28	8.0	0.20
Proposition 1B Incentive Funding	--	7.6	0.26
Total	0.28	15.6	0.46

Emission Impacts of AQMD Programs

There are several District regulatory programs that have specific impacts on future emissions through certain “set-aside” or exemption provisions. As a result, special emission accounts were created for the Draft Final 2012 AQMP to track these emissions. For air quality modeling purposes, these emissions (except RECLAIM allocations) are distributed across the entire non-RECLAIM point source.

SIP Set Aside Accounts

Background

The Draft Final 2012 AQMP includes a few accounts to track growth from emission trade-offs from regulatory programs, and a SIP Reserve for potential technology assessments (Table III-2-17). The methodology and assumptions used to develop these tracking accounts for the Draft Final 2012 AQMP are discussed in detail below. It should be noted that emission increases or decreases discussed herein are in reference to the projected AQMP baseline.

VOC Emissions from Phase-Out of Toxics

Due to increasing focus on air toxic controls certain amount of conversion from toxics to VOCs may be inevitable in the future. Therefore, three tons per day are included for potential VOC emission increases to reduce toxics, such as controlling of methylene chloride in coating stripping applications may increase VOC emissions.

SIP Reserve for Potential Technology Assessments

To achieve air quality goals, adopted and amended rules and regulations that rely on technology forcing emission limits are often needed. Technology forcing emission limits are designed to provide ample time for the development and implementation of new air pollution technologies. In the event, however, that the new air pollution control technology does not come to fruition by the implementation date of the adopted or amended rule there may be a need to delay or relax the future emission limits. The SIP Reserve is designed to ensure that delaying or relaxing future emission limits for technology forcing rules will not interfere with the Basin's attainment demonstration. In addition, the SIP Reserve allows the District to adopt and amend rules with technology forcing limits, while maintaining SIP approvability if a rule relaxation or delay is needed.

The potential delay of R1110.2 biogas engine reductions beyond 2014 was included in the estimates for 2011.

TABLE III-2-17

Summary of SIP Set-Aside Accounts for the Draft Final 2012 AQMP
(2014/2023 Tons per Day)

	VOC	NO _x
VOC Emissions from Phase-out of ODC or Toxics	1/3	N/A
SIP Reserve (Technology Assessment)	0/2	1/2
Total Addition to Controlled SIP Inventories	1/5	1/2

Proposed Control Measures

In order to assess emission reduction potential and remaining emissions from proposed control measures, a control factor profile needs to be developed identifying source category targeted by a measure, its control efficiency, and implementation schedule.

Control Efficiency/Control Factor

One factor that determines the effectiveness of a control measure is its control efficiency (CE), expressed in percentage. Control efficiency is dependent on the specific control technologies proposed, and each control measure may have one or more technology options available. If there is only one feasible control technology in a control measure, its control efficiency is primarily based on an engineering evaluation of the proposed technology. However, if several control technologies are available to control an emission source, the average control efficiency is used. If multiple control technologies are proposed to reduce emissions from various steps of an operation, a weighted average control efficiency is developed to represent an overall control of the emission sources. Once the control efficiency of a control measure is determined, it is used to estimate emission reductions of the proposed measure. Control efficiencies for the proposed control measures are identified and discussed in detail in Appendix IV of the Draft Final 2012 AQMP.

The control factor (CF) is used to estimate remaining emissions once a proposed control measure is implemented. A control factor equal to 0 indicates complete emission control or 100 percent efficiency. A control factor equal to 1 indicates no emission control or emissions remain unchanged. A high control factor value indicates a low control efficiency. As the control efficiency goes up, the control factor value goes down. The equation to calculate a control factor follows:

$$\mathbf{CF = 1 - (CE/100)}$$

And, the remaining emissions can be calculated as:

$$\mathbf{REM = BE * CF}$$

Where REM is Remaining Emissions, and BE is Baseline Emissions

The Draft Final 2012 AQMP has many milestones for which emission reduction progress needs to be projected. As a result, control factors for each milestone year were developed. The control factor profile for each measure is developed considering the following factors:

- proposed adoption date;
- implementation lead time; and
- phase-in period, if any.

The adoption date as proposed in the Draft Final 2012 AQMP is the date the District or other agency is expected to adopt the control measure as a rule. The implementation lead time reflects the time allowed for the emission sources to install controls. When a rule is implemented, it is not unusual that it may have multiple interim implementation dates prior to full implementation. This is because the requirements in a rule may require two or three phases to reach the final emission target (e.g., a technology-forcing regulation). Or, a rule may regulate such a large population of equipment that it is impractical to implement it all at once, and it becomes administratively necessary to phase in its implementation. In either case, a control profile would indicate an initial implementation date and an ending implementation date. The adoption and implementation schedule of the proposed control measures is presented in Chapter 4 of the Draft Final 2012 AQMP.

Impact Factors

Each proposed control measure describes specific emission sources subject to potential controls. Based on the description of these sources, corresponding sources as tracked in the emission inventory are identified. In general, emission sources are grouped by major source category, which can be further subcategorized into point sources denoted by Source Classification Codes (SCC) and area sources denoted by Category Emission Source (CES) Codes. To track emission reductions more accurately, the control factors at the SCC/CES level become necessary.

An SCC, an 8-digit EPA code, is used to identify emissions from a point source at the equipment level. A CES, a 5-digit CARB code, is used to describe an area source for which emissions are distributed across the region with no specific locations.

For some measures the controls apply not only to the type of equipment, but also to the industries engaged in a particular activity. In those cases, control factors will be developed by pairing SCCs and Standard Industrial Classification (SIC) Codes to clearly and specifically point out the emission sources in the inventory that the measure is designed to reduce. Such SCC/SIC pairs significantly enhance the ability to quantify emissions closely following the intent of a proposed control measure.

There are instances where an SCC or CES category is not fully impacted by a control measure. As a result, an impact factor (IF) is developed as a weighing factor for such an adjustment. The following equation illustrates how the impact factor (IF) is included in the CF calculation.

$$CF = 1 - ((CE / 100) \times IF)$$

Impact factors will accurately track the measure's baseline emissions, and calculate more accurate reductions from the proposed control measures.

CEPA Emission Calculations

The District uses the CEPA program to calculate emission projections for the proposed AQMP control measures. Based on the control factor profile and projected baseline emissions, CEPA estimates emission reductions and remaining emissions for future years by pollutant (i.e., summer VOC and NO_x; winter CO and NO₂; and average annual day for VOC, NO_x, CO, SO_x and PM₁₀).

CEPA allows interaction of multiple control measures affecting a specific emission source, avoiding double counting of emission reductions from additional measures. It

also provides flexibility in analyzing various scenarios and improves accuracy by standardizing calculation methodologies.

To run CEPA, the program requires four data input files. These input files are as follows:

1. Master Measure File - This file contains all the measures proposed in the AQMP. There is one master measure file in the CEPA program.
2. Scenario File - This file is a listing of selected measures to characterize emission reductions, and is a subset of the master measure file. For example, it can contain a group of control measures for mobile sources only, or a group of measures to be implemented by U.S. EPA.
3. Control Factor File - This file shows control factor by pollutant by SCC/SIC (or CES/CES) pairs for each control measure in a specified year.
4. Baseline Emission File - This file contains projected emission data (tons per day) for future years based on the 2008 emissions inventory. There are different types of baseline emission data available for CEPA runs. These are the average annual day emissions inventory with pollutants VOC, NO_x, CO, SO_x, PM₁₀; and PM_{2.5}; and the planning inventory with pollutants VOC and NO_x during summer, and CO and NO₂ during winter.

CEPA calculates the remaining emissions at the SCC/SIC level. It can generate many types of emission summary reports or electronic files. For example, the program can provide composite control factors for on-road mobile sources in sixteen categories used in the air quality modeling analysis or composite control factors from all the proposed control measures in the scenario file. It can also provide remaining emissions by SCC/SIC or CES/CES pairs; by major source category; or by SIC. It can present emission reductions by each control measure in the absence of other competing measures; or reductions for each control measure following a pre-determined implementation sequence. The result of CEPA runs will be presented in Appendix V of the Draft Final 2012 AQMP.

CARB Emission Data Reports System

As mentioned in Chapter 1, of this appendix the entire emission inventories are compiled and maintained by CARB in its statewide emission related information databases named California Emission Inventory Development and Reporting System (CEIDARS), and California Emission Forecasting and Planning Inventory System (CEFIS).

In both systems, emissions are tracked by CARB's coding method called Emission Inventory Codes (EIC code). The EIC code is a 14-digit number arranged into four fields: major category, source category, materials description and emission sub-category. For example, EIC 210-200-3300-0000 is for dry cleaning using perchloroethylene. 210 indicates this source is under laundering group. 200 means the source category is dry cleaning. 3300 refers to the material perchloroethylene. 0000 implies there is no sub-category for this particular source. EIC separates emission sources into four major divisions: stationary, area, non-anthropogenic, and mobile source. This coding system allows flexibility in how sources are selected, sorted and grouped to fit users' needs. EIC links area sources and point sources together to allow a computer program to automatically reconcile point and area source emissions. In the Draft Final 2012 AQMP, all the emission summary reports are based on CARB's EIC codes. Because only the anthropogenic sources are included in this document, all summary reports in appendices include three major divisions. They are stationary, area, and mobile source.

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ATTACHMENT A

DRAFT FINAL 2012 AQMP APPENDIX III

**ANNUAL AVERAGE EMISSIONS
BY MAJOR SOURCE CATEGORY**

Table A-1
2008 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	5.54	1.01	9.91	0.50	0.31	1.18	1.18	1.17	1.32
20	Cogeneration	0.33	0.05	0.40	0.02	0.01	0.06	0.05	0.05	0.29
30	Oil and Gas Production (combustion)	0.90	0.10	0.56	0.73	0.02	0.10	0.10	0.10	0.24
40	Petroleum Refining (Combustion)	4.65	1.30	5.09	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	30.15	6.08	18.91	19.28	0.49	1.35	1.34	1.34	2.21
52	Food and Agricultural Processing	0.20	0.06	1.07	0.29	0.00	0.06	0.06	0.06	0.10
60	Service and Commercial	15.34	4.80	17.61	15.48	0.87	1.36	1.36	1.35	3.21
99	Other (Fuel Combustion)	1.76	0.40	3.38	4.16	0.25	0.38	0.29	0.21	0.01
Total Fuel Combustion		58.87	13.81	56.94	40.46	1.95	6.11	5.95	5.82	8.35
Waste Disposal										
110	Sewage Treatment	0.09	0.05	0.01	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	556.59	7.90	0.51	0.51	0.32	0.13	0.13	0.13	3.54
130	Incineration	0.39	0.07	0.37	1.00	0.08	0.17	0.08	0.06	0.14
140	Soil Remediation	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	4.80	4.05	0.01	0.00	0.03	0.60	0.29	0.03	22.97
Total Waste Disposal		561.88	12.07	0.89	1.53	0.42	0.92	0.51	0.24	26.81
Cleaning and Surface Coatings										
210	Laundering	3.20	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	54.28	10.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	21.43	20.49	0.01	0.01	0.00	1.64	1.57	1.52	0.14
240	Printing	2.03	2.03	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	4.07	3.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.52	0.52	0.04	0.06	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		85.53	37.02	0.04	0.07	0.00	1.65	1.58	1.53	0.20
Petroleum Production and Marketing										
310	Oil and Gas Production	2.39	1.35	0.07	0.08	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.17	4.12	5.38	0.32	0.67	2.99	1.92	1.68	0.20
330	Petroleum Marketing	125.26	35.35	0.00	0.01	0.01	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		133.84	40.83	5.45	0.41	0.68	3.00	1.93	1.68	0.20
Industrial Processes										
410	Chemical	7.58	6.18	0.16	0.00	0.00	0.63	0.49	0.41	0.06
420	Food and Agriculture	1.54	1.52	0.00	0.00	0.00	0.47	0.24	0.10	0.00
430	Mineral Processes	0.45	0.40	0.84	0.03	0.01	8.61	5.68	3.11	0.07
440	Metal Processes	0.16	0.13	0.22	0.03	0.01	0.58	0.40	0.27	0.00
450	Wood and Paper	0.14	0.14	0.00	0.00	0.00	5.52	3.85	2.32	0.00
460	Glass and Related Products	0.01	0.01	0.00	0.00	0.00	0.11	0.10	0.09	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
499	Other (Industrial Processes)	8.21	7.40	0.34	0.03	0.00	1.31	0.91	0.58	9.32
Total Industrial Processes		18.09	15.76	1.57	0.09	0.03	17.26	11.68	6.87	9.45
Solvent Evaporation										
510	Consumer Products	123.26	97.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	23.55	21.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.17	1.17	0.00	0.00	0.00	0.00	0.00	0.00	1.53
540	Asphalt Paving/Roofing	0.96	0.88	0.00	0.00	0.00	0.02	0.02	0.02	0.00
Total Solvent Evaporation		148.95	121.70	0.00	0.00	0.00	0.02	0.02	0.02	1.53

Table A-1 (Continued)
2008 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	19.96	8.71	49.17	24.35	0.50	8.59	8.17	7.94	0.11
620	Farming Operations	36.61	2.93	0.00	0.00	0.00	2.70	1.38	0.34	15.51
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	43.19	21.12	2.12	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	101.97	46.60	7.04	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	9.93	5.90	0.59	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.09	2.03	0.29	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	3.28	1.87	19.75	1.44	0.04	2.44	2.35	2.11	0.04
690	Cooking	2.57	1.80	0.00	0.00	0.00	10.79	10.79	10.79	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				23.23	10.20				
Total Miscellaneous Processes		62.76	15.54	71.95	49.10	10.74	184.15	98.77	31.62	40.69
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	102.31	94.99	830.87	72.33	0.80	11.18	10.95	5.02	8.95
722	Light Duty Trucks 1 (T1)	24.96	23.08	218.99	18.92	0.11	1.45	1.41	0.70	1.22
723	Light Duty Trucks 2 (T2)	33.15	30.60	328.65	41.81	0.39	3.90	3.82	1.70	4.56
724	Medium Duty Trucks (T3)	25.46	23.18	286.54	37.77	0.42	3.23	3.17	1.39	4.96
732	Light Heavy Duty Gas Trucks 1 (T4)	9.30	8.50	87.71	18.62	0.08	0.62	0.61	0.26	0.93
733	Light Heavy Duty Gas Trucks 2 (T5)	1.24	1.13	11.94	2.08	0.01	0.07	0.06	0.03	0.10
734	Medium Heavy Duty Gas Trucks (T6)	2.89	2.67	29.01	4.35	0.01	0.05	0.05	0.02	0.04
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.74	0.68	12.78	1.27	0.00	0.01	0.01	0.00	0.00
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.76	0.64	3.24	24.57	0.02	0.53	0.52	0.30	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.26	0.22	1.10	8.13	0.01	0.20	0.20	0.11	0.00
744	Medium Heavy Duty Diesel Truck (T6)	2.01	1.68	6.33	41.76	0.05	2.22	2.21	1.69	0.13
746	Heavy Heavy Duty Diesel Trucks (HHD)	10.70	8.95	37.97	160.61	0.16	7.44	7.43	6.32	0.26
750	Motorcycles (MCY)	10.89	9.71	78.09	2.42	0.00	0.08	0.08	0.04	0.01
760	Diesel Urban Buses (UB)	0.62	0.52	2.52	14.05	0.02	0.93	0.92	0.51	0.02
762	Gas Urban Buses (UB)	0.47	0.40	4.58	0.78	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.19	0.17	2.65	0.18	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.23	0.19	0.67	2.78	0.00	0.28	0.28	0.19	0.01
777	Gas Other Buses (OB)	0.63	0.58	6.98	1.27	0.00	0.02	0.02	0.01	0.02
779	Diesel Other Buses (OB)	0.36	0.30	1.28	6.13	0.01	0.28	0.28	0.23	0.01
780	Motor Homes (MH)	0.54	0.46	13.62	2.20	0.01	0.08	0.08	0.05	0.03
Total On-Road Motor Vehicles		227.71	208.64	1965.51	462.05	2.10	32.59	32.10	18.57	21.27
Other Mobile Sources										
810	Aircraft	2.92	2.84	33.48	12.82	1.32	0.81	0.76	0.37	0.00
820	Trains	2.57	2.15	6.12	26.07	0.12	0.75	0.75	0.69	0.00
833	Ocean Going Vessels	2.16	1.93	3.74	40.73	36.77	4.12	4.01	3.87	0.03
835	Commercial Harbor Crafts	1.52	1.27	5.50	18.54	0.01	0.86	0.86	0.79	0.00
840	Recreational Boats	38.51	36.24	107.81	6.36	0.00	2.28	2.19	2.09	0.00
850	Off-Road Recreational Vehicles	7.73	7.39	9.22	0.13	0.01	0.04	0.04	0.03	0.00
860	Off-Road Equipment	70.62	63.85	605.13	92.24	0.08	5.74	5.67	5.28	0.06
870	Farm Equipment	1.56	1.35	7.16	6.66	0.01	0.40	0.40	0.37	0.00
890	Fuel Storage and Handling	10.37	10.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		137.95	127.35	778.17	203.55	38.32	15.00	14.68	13.48	0.09
Total Stationary and Area Sources		1069.91	256.73	136.84	91.65	13.82	213.11	120.44	47.77	87.23
Total On-Road Vehicles		227.71	208.64	1965.51	462.05	2.10	32.59	32.10	18.57	21.27
Total Other Mobile		137.95	127.35	778.17	203.55	38.32	15.00	14.68	13.48	0.09
Total		1435.57	592.72	2880.53	757.26	54.24	260.69	167.22	79.83	108.60

Table A-2
2014 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	4.87	0.89	8.71	0.20	0.28	1.04	1.04	1.04	1.17
20	Cogeneration	0.33	0.05	0.39	0.01	0.01	0.06	0.05	0.05	0.27
30	Oil and Gas Production (combustion)	0.93	0.10	0.57	0.66	0.02	0.10	0.10	0.10	0.25
40	Petroleum Refining (Combustion)	4.42	1.28	5.06	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	25.87	5.93	18.23	13.20	0.52	1.31	1.30	1.29	2.01
52	Food and Agricultural Processing	0.19	0.06	1.06	0.09	0.00	0.06	0.06	0.06	0.10
60	Service and Commercial	14.47	4.47	16.78	9.53	0.93	1.38	1.37	1.37	3.17
99	Other (Fuel Combustion)	1.56	0.36	3.05	3.80	0.22	0.36	0.28	0.20	0.01
Total Fuel Combustion		52.65	13.15	53.85	27.49	1.99	5.93	5.77	5.64	7.94
Waste Disposal										
110	Sewage Treatment	0.09	0.05	0.01	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	614.57	8.71	0.51	0.51	0.32	0.14	0.14	0.14	3.90
130	Incineration	0.43	0.07	0.38	0.90	0.08	0.18	0.08	0.06	0.14
140	Soil Remediation	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	4.21	3.41	0.01	0.00	0.03	0.62	0.30	0.03	23.40
Total Waste Disposal		619.30	12.24	0.92	1.43	0.43	0.95	0.53	0.24	27.61
Cleaning and Surface Coatings										
210	Laundering	3.24	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	59.63	11.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	22.48	21.52	0.01	0.00	0.00	1.72	1.65	1.59	0.14
240	Printing	1.82	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.04
250	Adhesives and Sealants	4.49	3.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.58	0.58	0.04	0.03	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		92.24	39.28	0.05	0.03	0.00	1.74	1.66	1.60	0.20
Petroleum Production and Marketing										
310	Oil and Gas Production	2.51	1.42	0.07	0.09	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.15	4.11	4.98	0.19	0.56	2.84	1.82	1.58	0.20
330	Petroleum Marketing	112.98	31.99	0.00	0.01	0.01	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		121.66	37.54	5.05	0.29	0.57	2.85	1.83	1.59	0.20
Industrial Processes										
410	Chemical	8.48	6.90	0.18	0.00	0.00	0.71	0.55	0.46	0.06
420	Food and Agriculture	1.52	1.49	0.00	0.00	0.00	0.48	0.24	0.10	0.00
430	Mineral Processes	0.45	0.40	0.86	0.02	0.01	8.72	5.73	3.11	0.08
440	Metal Processes	0.16	0.13	0.21	0.03	0.01	0.58	0.39	0.26	0.00
450	Wood and Paper	0.15	0.15	0.00	0.00	0.00	6.12	4.27	2.57	0.00
460	Glass and Related Products	0.01	0.01	0.00	0.00	0.00	0.11	0.10	0.09	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.00
499	Other (Industrial Processes)	4.44	3.88	0.25	0.03	0.00	1.26	0.87	0.54	9.32
Total Industrial Processes		15.21	12.95	1.50	0.08	0.03	18.00	12.17	7.14	9.45
Solvent Evaporation										
510	Consumer Products	103.24	84.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	16.49	15.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.99	0.99	0.00	0.00	0.00	0.00	0.00	0.00	1.05
540	Asphalt Paving/Roofing	0.91	0.84	0.00	0.00	0.00	0.02	0.02	0.02	0.00
Total Solvent Evaporation		121.64	102.01	0.00	0.00	0.00	0.02	0.02	0.02	1.05

Table A-2 (continued)
2014 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	19.73	8.61	48.36	19.79	0.49	7.73	7.36	7.15	0.11
620	Farming Operations	34.11	2.73	0.00	0.00	0.00	2.29	1.18	0.30	13.93
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	39.59	19.36	1.94	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	102.76	46.96	7.09	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	9.85	5.85	0.58	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	3.51	1.76	0.25	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	5.66	3.23	50.65	1.52	0.47	5.37	5.17	4.60	0.04
690	Cooking	2.60	1.82	0.00	0.00	0.00	10.89	10.89	10.89	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				26.51	7.99				
Total Miscellaneous Processes		62.44	16.62	102.03	47.90	8.95	182.45	98.97	33.23	39.11
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	46.70	42.86	421.38	34.77	0.83	10.76	10.56	4.52	6.51
722	Light Duty Trucks 1 (T1)	14.22	13.12	120.88	10.23	0.11	1.37	1.34	0.62	0.97
723	Light Duty Trucks 2 (T2)	20.46	18.79	202.78	22.85	0.39	3.75	3.69	1.58	3.49
724	Medium Duty Trucks (T3)	21.35	19.39	218.73	26.78	0.39	2.96	2.91	1.25	4.07
732	Light Heavy Duty Gas Trucks 1 (T4)	7.53	6.86	62.75	16.32	0.09	0.63	0.62	0.26	0.79
733	Light Heavy Duty Gas Trucks 2 (T5)	0.75	0.69	6.16	1.61	0.01	0.07	0.06	0.03	0.08
734	Medium Heavy Duty Gas Trucks (T6)	1.40	1.27	16.86	2.69	0.01	0.05	0.05	0.02	0.05
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.24	0.20	8.45	1.14	0.00	0.01	0.01	0.00	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.67	0.56	3.29	18.44	0.02	0.50	0.50	0.27	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.23	0.19	1.12	5.99	0.01	0.19	0.19	0.10	0.00
744	Medium Heavy Duty Diesel Truck (T6)	1.13	0.94	3.82	24.55	0.05	1.39	1.38	0.94	0.12
746	Heavy Heavy Duty Diesel Trucks (HHD)	3.97	3.33	17.84	80.39	0.16	2.55	2.54	1.84	0.24
750	Motorcycles (MCY)	8.42	7.04	61.89	2.35	0.00	0.09	0.09	0.04	0.02
760	Diesel Urban Buses (UB)	0.60	0.50	2.41	13.40	0.02	0.95	0.94	0.51	0.02
762	Gas Urban Buses (UB)	0.41	0.32	3.98	0.76	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.10	0.09	1.50	0.13	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.05	0.04	0.16	2.25	0.00	0.17	0.16	0.08	0.01
777	Gas Other Buses (OB)	0.43	0.40	5.20	0.93	0.00	0.01	0.01	0.01	0.01
779	Diesel Other Buses (OB)	0.16	0.13	0.59	4.42	0.01	0.15	0.15	0.10	0.01
780	Motor Homes (MH)	0.22	0.18	5.35	1.61	0.01	0.08	0.08	0.04	0.03
Total On-Road Motor Vehicles		129.05	116.91	1165.13	271.62	2.10	25.70	25.29	12.23	16.46
Other Mobile Sources										
810	Aircraft	3.59	3.51	37.02	13.94	1.50	0.88	0.83	0.42	0.00
820	Trains	2.00	1.68	6.59	21.73	0.02	0.62	0.62	0.57	0.00
833	Ocean Going Vessels	2.33	2.08	3.86	35.13	2.70	0.85	0.85	0.82	0.03
835	Commercial Harbor Crafts	1.28	1.08	6.27	11.89	0.01	0.53	0.53	0.49	0.00
840	Recreational Boats	30.94	29.30	104.40	5.91	0.00	1.84	1.77	1.69	0.00
850	Off-Road Recreational Vehicles	6.79	6.54	7.87	0.13	0.01	0.03	0.03	0.02	0.00
860	Off-Road Equipment	53.11	48.72	593.53	64.03	0.08	4.27	4.20	3.93	0.06
870	Farm Equipment	1.03	0.89	6.53	4.62	0.01	0.27	0.26	0.24	0.00
890	Fuel Storage and Handling	6.63	6.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		107.71	100.41	766.07	157.38	4.33	9.28	9.09	8.18	0.10
Total Stationary and Area Sources		1085.13	233.80	163.40	77.22	11.97	211.94	120.95	49.47	85.57
Total On-Road Vehicles		129.05	116.91	1165.13	271.62	2.10	25.70	25.29	12.23	16.46
Total Other Mobile		107.71	100.41	766.07	157.38	4.33	9.28	9.09	8.18	0.10
Total		1321.90	451.12	2094.59	506.22	18.40	246.92	155.33	69.89	102.13

Table A-3
2017 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	4.85	0.89	8.67	0.20	0.28	1.04	1.04	1.03	1.16
20	Cogeneration	0.34	0.05	0.40	0.01	0.01	0.06	0.05	0.05	0.27
30	Oil and Gas Production (combustion)	1.00	0.11	0.61	0.73	0.02	0.11	0.11	0.11	0.26
40	Petroleum Refining (Combustion)	4.42	1.28	5.06	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	26.09	6.37	19.45	13.49	0.58	1.37	1.36	1.35	2.02
52	Food and Agricultural Processing	0.21	0.06	1.12	0.07	0.00	0.07	0.07	0.07	0.10
60	Service and Commercial	14.61	4.47	16.90	9.29	1.02	1.39	1.39	1.38	3.15
99	Other (Fuel Combustion)	1.53	0.32	2.91	3.30	0.22	0.35	0.27	0.20	0.01
Total Fuel Combustion		53.05	13.55	55.13	27.09	2.13	6.00	5.84	5.72	7.95
Waste Disposal										
110	Sewage Treatment	0.10	0.05	0.02	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	640.92	9.09	0.53	0.54	0.34	0.14	0.14	0.14	4.07
130	Incineration	0.47	0.08	0.41	0.96	0.08	0.19	0.09	0.07	0.16
140	Soil Remediation	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	4.57	3.66	0.01	0.00	0.03	0.72	0.35	0.04	24.23
Total Waste Disposal		646.07	12.89	0.97	1.52	0.45	1.07	0.60	0.26	28.62
Cleaning and Surface Coatings										
210	Laundering	3.38	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	67.03	12.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	24.59	23.54	0.01	0.00	0.00	1.88	1.81	1.74	0.15
240	Printing	1.91	1.91	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	5.16	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.65	0.65	0.04	0.03	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		102.72	43.44	0.05	0.03	0.00	1.90	1.82	1.75	0.21
Petroleum Production and Marketing										
310	Oil and Gas Production	2.67	1.51	0.07	0.09	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.15	4.11	4.98	0.19	0.56	2.84	1.82	1.58	0.20
330	Petroleum Marketing	108.41	29.57	0.00	0.01	0.01	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		117.24	35.21	5.06	0.29	0.57	2.85	1.83	1.59	0.20
Industrial Processes										
410	Chemical	9.64	7.85	0.19	0.00	0.00	0.79	0.62	0.52	0.06
420	Food and Agriculture	1.60	1.57	0.00	0.00	0.00	0.53	0.26	0.11	0.00
430	Mineral Processes	0.46	0.41	0.90	0.02	0.01	9.08	5.95	3.21	0.08
440	Metal Processes	0.17	0.14	0.23	0.03	0.01	0.61	0.42	0.28	0.00
450	Wood and Paper	0.16	0.16	0.00	0.00	0.00	6.89	4.81	2.90	0.00
460	Glass and Related Products	0.01	0.01	0.00	0.00	0.00	0.12	0.11	0.10	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.00
499	Other (Industrial Processes)	4.58	3.98	0.28	0.03	0.00	1.31	0.90	0.56	9.33
Total Industrial Processes		16.63	14.12	1.60	0.09	0.03	19.36	13.09	7.67	9.47
Solvent Evaporation										
510	Consumer Products	104.93	86.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	16.94	15.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.96	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.87
540	Asphalt Paving/Roofing	1.09	1.00	0.00	0.00	0.00	0.03	0.02	0.02	0.00
Total Solvent Evaporation		123.93	103.94	0.00	0.00	0.00	0.03	0.02	0.02	0.87

Table A-3 (continued)
2017 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	19.71	8.61	48.29	17.31	0.50	7.72	7.34	7.14	0.11
620	Farming Operations	31.27	2.50	0.00	0.00	0.00	2.05	1.06	0.29	11.93
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	46.17	22.58	2.26	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	103.04	47.09	7.11	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	9.83	5.84	0.58	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	3.28	1.66	0.24	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	5.67	3.23	50.66	1.52	0.47	5.37	5.17	4.60	0.04
690	Cooking	2.70	1.89	0.00	0.00	0.00	11.31	11.31	11.31	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				26.51	6.99				
Total Miscellaneous Processes		59.69	16.46	101.97	45.42	7.96	189.21	102.49	33.95	37.11
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	33.97	31.21	312.91	25.85	0.80	10.71	10.52	4.47	5.89
722	Light Duty Trucks 1 (T1)	11.46	10.63	93.85	8.28	0.11	1.34	1.31	0.59	0.88
723	Light Duty Trucks 2 (T2)	16.18	14.91	154.20	16.66	0.38	3.77	3.70	1.57	3.16
724	Medium Duty Trucks (T3)	19.04	17.38	181.16	21.67	0.38	2.95	2.90	1.24	3.75
732	Light Heavy Duty Gas Trucks 1 (T4)	6.74	6.17	52.88	14.96	0.09	0.65	0.64	0.27	0.74
733	Light Heavy Duty Gas Trucks 2 (T5)	0.62	0.57	4.55	1.40	0.01	0.07	0.07	0.03	0.08
734	Medium Heavy Duty Gas Trucks (T6)	1.05	0.96	12.89	2.08	0.01	0.05	0.05	0.02	0.05
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.18	0.15	7.91	1.07	0.00	0.01	0.01	0.00	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.60	0.50	3.16	15.66	0.02	0.50	0.49	0.26	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.20	0.17	1.14	5.12	0.01	0.19	0.19	0.10	0.00
744	Medium Heavy Duty Diesel Truck (T6)	0.83	0.69	3.04	17.35	0.05	1.20	1.19	0.75	0.13
746	Heavy Heavy Duty Diesel Trucks (HHD)	3.87	3.24	18.65	67.67	0.18	2.33	2.32	1.59	0.27
750	Motorcycles (MCY)	8.10	6.64	58.07	2.35	0.00	0.09	0.09	0.03	0.02
760	Diesel Urban Buses (UB)	0.56	0.47	2.24	12.32	0.02	0.95	0.94	0.50	0.02
762	Gas Urban Buses (UB)	0.40	0.31	3.65	0.73	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.09	0.07	1.14	0.12	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.04	0.04	0.14	2.09	0.00	0.16	0.16	0.08	0.01
777	Gas Other Buses (OB)	0.39	0.36	4.47	0.79	0.00	0.01	0.01	0.01	0.01
779	Diesel Other Buses (OB)	0.13	0.11	0.52	3.25	0.01	0.13	0.13	0.08	0.01
780	Motor Homes (MH)	0.15	0.12	3.29	1.38	0.01	0.08	0.08	0.04	0.03
Total On-Road Motor Vehicles		104.61	94.69	919.87	220.79	2.08	25.19	24.78	11.63	15.07
Other Mobile Sources										
810	Aircraft	3.94	3.86	38.79	14.51	1.59	0.91	0.86	0.45	0.00
820	Trains	1.81	1.51	7.43	23.52	0.02	0.58	0.58	0.54	0.00
833	Ocean Going Vessels	2.76	2.47	4.48	39.87	3.11	0.98	0.98	0.94	0.04
835	Commercial Harbor Crafts	1.26	1.06	6.65	10.66	0.01	0.45	0.45	0.42	0.00
840	Recreational Boats	27.58	26.19	108.09	5.87	0.00	1.65	1.58	1.51	0.00
850	Off-Road Recreational Vehicles	6.84	6.62	8.35	0.15	0.00	0.03	0.03	0.02	0.00
860	Off-Road Equipment	49.19	45.07	602.32	58.21	0.09	3.92	3.85	3.60	0.07
870	Farm Equipment	0.78	0.68	6.31	3.61	0.01	0.20	0.20	0.18	0.00
890	Fuel Storage and Handling	5.70	5.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		99.87	93.14	782.41	156.40	4.83	8.72	8.53	7.66	0.11
Total Stationary and Area Sources		1119.33	239.61	164.79	74.44	11.14	220.42	125.68	50.97	84.44
Total On-Road Vehicles		104.61	94.69	919.87	220.79	2.08	25.19	24.78	11.63	15.07
Total Other Mobile		99.87	93.14	782.41	156.40	4.83	8.72	8.53	7.66	0.11
Total		1323.80	427.43	1867.06	451.63	18.05	254.32	158.99	70.26	99.62

Table A-4
2019 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	4.77	0.88	8.54	0.19	0.27	1.02	1.02	1.02	1.14
20	Cogeneration	0.34	0.05	0.40	0.01	0.01	0.06	0.05	0.05	0.27
30	Oil and Gas Production (combustion)	1.03	0.11	0.63	0.78	0.02	0.11	0.11	0.11	0.27
40	Petroleum Refining (Combustion)	4.42	1.28	5.06	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	26.03	6.57	20.02	13.70	0.62	1.39	1.38	1.37	2.01
52	Food and Agricultural Processing	0.22	0.06	1.16	0.07	0.00	0.07	0.07	0.07	0.11
60	Service and Commercial	14.65	4.45	16.92	9.22	1.07	1.39	1.39	1.38	3.13
99	Other (Fuel Combustion)	1.55	0.33	2.93	3.30	0.22	0.35	0.27	0.20	0.01
Total Fuel Combustion		53.02	13.73	55.67	27.27	2.21	6.02	5.86	5.73	7.91
Waste Disposal										
110	Sewage Treatment	0.10	0.05	0.02	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	658.26	9.33	0.54	0.56	0.35	0.15	0.15	0.15	4.17
130	Incineration	0.50	0.08	0.43	0.99	0.08	0.20	0.09	0.07	0.16
140	Soil Remediation	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	4.76	3.80	0.01	0.00	0.03	0.78	0.38	0.04	24.65
Total Waste Disposal		663.63	13.27	1.00	1.56	0.46	1.13	0.63	0.27	29.15
Cleaning and Surface Coatings										
210	Laundering	3.45	0.15	0.00	0.00	0.00	0.01	0.00	0.00	0.00
220	Degreasing	70.75	13.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	25.68	24.59	0.01	0.00	0.00	1.96	1.88	1.82	0.15
240	Printing	1.96	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	5.53	4.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.69	0.69	0.04	0.03	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		108.07	45.60	0.05	0.03	0.00	1.98	1.90	1.83	0.21
Petroleum Production and Marketing										
310	Oil and Gas Production	2.73	1.55	0.08	0.09	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.15	4.11	4.98	0.19	0.56	2.84	1.82	1.58	0.20
330	Petroleum Marketing	108.23	29.97	0.00	0.01	0.01	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		117.14	35.65	5.06	0.29	0.57	2.85	1.83	1.59	0.20
Industrial Processes										
410	Chemical	10.24	8.35	0.20	0.00	0.00	0.83	0.65	0.55	0.06
420	Food and Agriculture	1.63	1.61	0.00	0.00	0.00	0.55	0.27	0.11	0.00
430	Mineral Processes	0.47	0.41	0.91	0.03	0.01	9.26	6.07	3.26	0.09
440	Metal Processes	0.18	0.14	0.23	0.03	0.01	0.64	0.43	0.29	0.00
450	Wood and Paper	0.17	0.17	0.00	0.00	0.00	7.27	5.08	3.06	0.00
460	Glass and Related Products	0.01	0.01	0.00	0.00	0.00	0.12	0.11	0.10	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.00
499	Other (Industrial Processes)	4.66	4.04	0.29	0.03	0.00	1.33	0.92	0.57	9.34
Total Industrial Processes		17.37	14.74	1.64	0.09	0.03	20.03	13.54	7.94	9.49
Solvent Evaporation										
510	Consumer Products	106.21	87.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	17.25	16.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.94	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.76
540	Asphalt Paving/Roofing	1.20	1.10	0.00	0.00	0.00	0.03	0.03	0.03	0.00
Total Solvent Evaporation		125.60	105.38	0.00	0.00	0.00	0.03	0.03	0.03	0.76

Table A-4 (continued)
2019 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	19.70	8.60	48.26	16.74	0.50	7.71	7.34	7.14	0.11
620	Farming Operations	29.37	2.35	0.00	0.00	0.00	1.88	0.99	0.28	10.60
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	50.38	24.63	2.47	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	104.00	47.53	7.18	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	9.83	5.84	0.58	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	3.13	1.59	0.23	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	5.67	3.23	50.67	1.53	0.47	5.37	5.17	4.61	0.04
690	Cooking	2.75	1.92	0.00	0.00	0.00	11.53	11.53	11.53	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				26.51	6.23				
Total Miscellaneous Processes		57.83	16.34	101.95	44.85	7.20	194.27	105.05	34.42	35.78
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	25.37	23.43	239.48	19.65	0.76	10.66	10.47	4.42	5.47
722	Light Duty Trucks 1 (T1)	9.71	9.07	75.26	6.80	0.11	1.31	1.29	0.57	0.81
723	Light Duty Trucks 2 (T2)	13.42	12.45	121.27	12.48	0.37	3.78	3.71	1.57	2.93
724	Medium Duty Trucks (T3)	17.65	16.20	156.39	18.24	0.37	2.95	2.89	1.23	3.54
732	Light Heavy Duty Gas Trucks 1 (T4)	6.23	5.73	46.28	13.87	0.09	0.66	0.65	0.27	0.70
733	Light Heavy Duty Gas Trucks 2 (T5)	0.53	0.49	3.49	1.25	0.01	0.07	0.07	0.03	0.07
734	Medium Heavy Duty Gas Trucks (T6)	0.82	0.75	10.24	1.67	0.01	0.05	0.05	0.02	0.05
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.15	0.12	7.55	1.03	0.00	0.01	0.01	0.00	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.55	0.46	3.20	13.71	0.02	0.49	0.48	0.25	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.19	0.16	1.22	4.50	0.01	0.18	0.18	0.09	0.00
744	Medium Heavy Duty Diesel Truck (T6)	0.63	0.53	2.51	12.55	0.05	1.07	1.06	0.61	0.13
746	Heavy Heavy Duty Diesel Trucks (HHD)	3.80	3.18	19.19	59.19	0.19	2.19	2.18	1.42	0.29
750	Motorcycles (MCY)	7.91	6.40	55.53	2.35	0.00	0.09	0.09	0.03	0.02
760	Diesel Urban Buses (UB)	0.54	0.45	2.13	11.59	0.02	0.95	0.94	0.50	0.02
762	Gas Urban Buses (UB)	0.39	0.30	3.43	0.71	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.07	0.06	0.90	0.11	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.04	0.03	0.13	1.99	0.00	0.16	0.16	0.07	0.01
777	Gas Other Buses (OB)	0.36	0.34	3.98	0.69	0.00	0.01	0.01	0.01	0.01
779	Diesel Other Buses (OB)	0.11	0.09	0.48	2.47	0.01	0.11	0.11	0.07	0.01
780	Motor Homes (MH)	0.11	0.09	1.92	1.22	0.01	0.08	0.07	0.04	0.04
Total On-Road Motor Vehicles		88.58	80.32	754.59	186.08	2.03	24.84	24.43	11.21	14.15
Other Mobile Sources										
810	Aircraft	4.16	4.08	39.96	14.88	1.65	0.93	0.88	0.47	0.00
820	Trains	1.67	1.40	7.80	23.04	0.02	0.55	0.55	0.51	0.00
833	Ocean Going Vessels	3.00	2.69	4.82	36.09	3.32	1.04	1.04	1.00	0.04
835	Commercial Harbor Crafts	1.24	1.04	7.08	9.69	0.01	0.38	0.38	0.35	0.00
840	Recreational Boats	25.55	24.31	110.29	5.84	0.00	1.53	1.47	1.40	0.00
850	Off-Road Recreational Vehicles	6.93	6.72	8.65	0.17	0.00	0.03	0.03	0.02	0.00
860	Off-Road Equipment	47.61	43.61	610.71	52.03	0.09	3.55	3.48	3.27	0.07
870	Farm Equipment	0.65	0.56	6.24	3.01	0.01	0.16	0.16	0.14	0.00
890	Fuel Storage and Handling	5.28	5.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		96.10	89.67	795.56	144.74	5.12	8.17	7.98	7.16	0.11
Total Stationary and Area Sources		1142.65	244.71	165.39	74.10	10.47	226.32	128.83	51.81	83.51
Total On-Road Vehicles		88.58	80.32	754.59	186.08	2.03	24.84	24.43	11.21	14.15
Total Other Mobile		96.10	89.67	795.56	144.74	5.12	8.17	7.98	7.16	0.11
Total		1327.32	414.70	1715.53	404.93	17.62	259.32	161.24	70.17	97.77

Table A-5
2023 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	4.75	0.87	8.49	0.19	0.27	1.02	1.01	1.01	1.14
20	Cogeneration	0.35	0.05	0.41	0.01	0.01	0.06	0.05	0.05	0.27
30	Oil and Gas Production (combustion)	1.05	0.12	0.64	0.81	0.02	0.12	0.12	0.12	0.27
40	Petroleum Refining (Combustion)	4.42	1.28	5.06	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	25.29	6.78	20.60	13.82	0.66	1.41	1.40	1.39	2.01
52	Food and Agricultural Processing	0.23	0.06	1.22	0.07	0.00	0.07	0.07	0.07	0.11
60	Service and Commercial	14.75	4.42	17.02	9.17	1.14	1.40	1.40	1.39	3.05
99	Other (Fuel Combustion)	1.55	0.30	2.87	2.94	0.22	0.34	0.26	0.19	0.01
Total Fuel Combustion		52.39	13.89	56.30	27.01	2.33	6.03	5.87	5.75	7.84
Waste Disposal										
110	Sewage Treatment	0.10	0.05	0.02	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	693.45	9.83	0.56	0.58	0.36	0.15	0.15	0.15	4.40
130	Incineration	0.53	0.09	0.45	1.03	0.09	0.21	0.09	0.08	0.17
140	Soil Remediation	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	5.06	4.00	0.01	0.00	0.03	0.86	0.42	0.04	25.27
Total Waste Disposal		699.15	13.99	1.05	1.62	0.48	1.23	0.68	0.29	30.01
Cleaning and Surface Coatings										
210	Laundering	3.59	0.15	0.00	0.00	0.00	0.01	0.00	0.00	0.00
220	Degreasing	75.79	14.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	27.29	26.13	0.01	0.01	0.00	2.07	1.99	1.92	0.16
240	Printing	2.03	2.02	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	6.04	5.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.75	0.75	0.04	0.03	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		115.47	48.65	0.06	0.03	0.00	2.09	2.00	1.93	0.22
Petroleum Production and Marketing										
310	Oil and Gas Production	2.79	1.58	0.08	0.10	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.15	4.11	4.98	0.19	0.56	2.84	1.82	1.58	0.20
330	Petroleum Marketing	107.80	30.78	0.00	0.01	0.01	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		116.76	36.49	5.07	0.30	0.57	2.85	1.83	1.59	0.20
Industrial Processes										
410	Chemical	11.03	9.01	0.21	0.00	0.00	0.89	0.70	0.58	0.06
420	Food and Agriculture	1.68	1.65	0.00	0.00	0.00	0.58	0.28	0.11	0.00
430	Mineral Processes	0.47	0.42	0.94	0.03	0.02	9.50	6.22	3.33	0.09
440	Metal Processes	0.19	0.15	0.25	0.03	0.01	0.66	0.45	0.30	0.00
450	Wood and Paper	0.18	0.18	0.00	0.00	0.00	7.73	5.40	3.25	0.00
460	Glass and Related Products	0.02	0.01	0.00	0.00	0.00	0.12	0.11	0.10	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.00
499	Other (Industrial Processes)	4.78	4.15	0.30	0.04	0.00	1.37	0.95	0.59	9.35
Total Industrial Processes		18.35	15.56	1.71	0.09	0.03	20.89	14.12	8.27	9.50
Solvent Evaporation										
510	Consumer Products	108.99	89.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	17.82	16.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.91	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.59
540	Asphalt Paving/Roofing	1.34	1.23	0.00	0.00	0.00	0.03	0.03	0.03	0.00
Total Solvent Evaporation		129.06	108.33	0.00	0.00	0.00	0.03	0.03	0.03	0.59

Table A-5 (continued)
2023 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	19.68	8.59	48.17	15.58	0.50	7.70	7.32	7.12	0.11
620	Farming Operations	26.74	2.14	0.00	0.00	0.00	1.67	0.89	0.27	8.68
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	54.99	26.89	2.69	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	104.87	47.93	7.24	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	9.81	5.83	0.58	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	2.87	1.47	0.21	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	5.67	3.23	50.70	1.53	0.47	5.38	5.17	4.61	0.04
690	Cooking	2.86	2.00	0.00	0.00	0.00	11.97	11.97	11.97	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				26.51	6.08				
Total Miscellaneous Processes		55.29	16.20	101.90	43.69	7.05	199.71	107.91	35.10	33.86
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	18.92	17.47	181.50	13.83	0.66	10.62	10.43	4.40	5.17
722	Light Duty Trucks 1 (T1)	7.94	7.46	54.81	4.86	0.10	1.30	1.28	0.55	0.73
723	Light Duty Trucks 2 (T2)	11.20	10.45	92.58	8.57	0.34	3.85	3.78	1.59	2.76
724	Medium Duty Trucks (T3)	15.46	14.38	119.86	13.38	0.35	3.00	2.95	1.25	3.33
732	Light Heavy Duty Gas Trucks 1 (T4)	5.32	4.96	36.80	11.72	0.09	0.69	0.68	0.27	0.66
733	Light Heavy Duty Gas Trucks 2 (T5)	0.43	0.41	2.57	1.06	0.01	0.07	0.07	0.03	0.07
734	Medium Heavy Duty Gas Trucks (T6)	0.63	0.58	7.29	1.17	0.01	0.05	0.05	0.02	0.05
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.12	0.09	7.08	0.96	0.00	0.01	0.01	0.00	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.46	0.39	3.36	10.24	0.02	0.48	0.48	0.23	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.17	0.14	1.44	3.36	0.01	0.18	0.18	0.09	0.00
744	Medium Heavy Duty Diesel Truck (T6)	0.48	0.40	2.05	5.24	0.05	0.95	0.93	0.49	0.14
746	Heavy Heavy Duty Diesel Trucks (HHD)	3.73	3.12	19.30	32.63	0.20	2.31	2.30	1.49	0.31
750	Motorcycles (MCY)	7.69	6.19	51.71	2.31	0.00	0.09	0.08	0.03	0.02
760	Diesel Urban Buses (UB)	0.52	0.43	2.09	11.03	0.02	0.97	0.96	0.50	0.02
762	Gas Urban Buses (UB)	0.39	0.29	3.02	0.70	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.05	0.04	0.58	0.08	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.04	0.04	0.14	1.81	0.00	0.15	0.15	0.07	0.00
777	Gas Other Buses (OB)	0.32	0.30	3.21	0.53	0.00	0.01	0.01	0.01	0.01
779	Diesel Other Buses (OB)	0.12	0.10	0.54	0.98	0.01	0.12	0.11	0.07	0.02
780	Motor Homes (MH)	0.08	0.06	0.89	1.05	0.01	0.08	0.08	0.04	0.04
Total On-Road Motor Vehicles		74.07	67.31	590.80	125.51	1.88	24.94	24.53	11.14	13.37
Other Mobile Sources										
810	Aircraft	4.61	4.52	42.32	15.62	1.77	0.98	0.93	0.51	0.00
820	Trains	1.54	1.29	8.60	22.23	0.02	0.51	0.51	0.47	0.00
833	Ocean Going Vessels	3.64	3.26	5.76	32.04	3.85	1.23	1.23	1.18	0.05
835	Commercial Harbor Crafts	1.25	1.05	7.39	9.20	0.01	0.35	0.35	0.32	0.00
840	Recreational Boats	21.84	20.85	114.79	5.83	0.01	1.32	1.27	1.21	0.00
850	Off-Road Recreational Vehicles	7.13	6.93	9.12	0.19	0.00	0.03	0.03	0.02	0.00
860	Off-Road Equipment	46.38	42.50	632.13	42.67	0.11	3.03	2.96	2.79	0.08
870	Farm Equipment	0.50	0.43	6.22	2.11	0.01	0.10	0.10	0.09	0.00
890	Fuel Storage and Handling	4.62	4.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		91.51	85.43	826.33	129.89	5.78	7.54	7.36	6.59	0.13
Total Stationary and Area Sources		1186.49	253.11	166.08	72.75	10.46	232.83	132.45	52.97	82.23
Total On-Road Vehicles		74.07	67.31	590.80	125.51	1.88	24.94	24.53	11.14	13.37
Total Other Mobile		91.51	85.43	826.33	129.89	5.78	7.54	7.36	6.59	0.13
Total		1352.07	405.85	1583.21	328.14	18.12	265.32	164.34	70.69	95.72

Table A-6
2030 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	4.77	0.87	8.52	0.19	0.27	1.02	1.02	1.01	1.14
20	Cogeneration	0.36	0.05	0.42	0.01	0.01	0.06	0.05	0.05	0.27
30	Oil and Gas Production (combustion)	1.08	0.12	0.66	0.84	0.02	0.12	0.12	0.12	0.28
40	Petroleum Refining (Combustion)	4.42	1.28	5.06	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	25.17	7.27	21.95	14.52	0.73	1.47	1.45	1.44	2.05
52	Food and Agricultural Processing	0.24	0.07	1.32	0.07	0.00	0.07	0.07	0.07	0.12
60	Service and Commercial	15.44	4.60	17.84	9.60	1.28	1.46	1.46	1.45	3.09
99	Other (Fuel Combustion)	1.61	0.31	2.94	2.97	0.22	0.34	0.27	0.20	0.01
Total Fuel Combustion		53.10	14.57	58.71	28.21	2.54	6.16	6.00	5.88	7.94
Waste Disposal										
110	Sewage Treatment	0.11	0.06	0.02	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	760.70	10.79	0.59	0.60	0.38	0.16	0.16	0.16	4.81
130	Incineration	0.59	0.10	0.49	1.09	0.09	0.22	0.10	0.08	0.18
140	Soil Remediation	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	5.58	4.36	0.02	0.00	0.03	0.99	0.48	0.05	26.39
Total Waste Disposal		766.98	15.31	1.11	1.71	0.50	1.39	0.76	0.31	31.55
Cleaning and Surface Coatings										
210	Laundering	3.82	0.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
220	Degreasing	84.74	16.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	29.72	28.46	0.01	0.01	0.00	2.23	2.14	2.06	0.16
240	Printing	2.10	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	6.85	5.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.84	0.84	0.05	0.03	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		128.06	53.56	0.06	0.03	0.00	2.25	2.16	2.08	0.22
Petroleum Production and Marketing										
310	Oil and Gas Production	2.87	1.63	0.08	0.10	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.15	4.11	4.98	0.19	0.56	2.84	1.82	1.58	0.20
330	Petroleum Marketing	108.50	32.26	0.00	0.01	0.01	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		117.55	38.02	5.07	0.30	0.57	2.85	1.83	1.59	0.20
Industrial Processes										
410	Chemical	12.30	10.06	0.23	0.00	0.00	0.98	0.77	0.65	0.07
420	Food and Agriculture	1.73	1.70	0.00	0.00	0.00	0.62	0.29	0.11	0.00
430	Mineral Processes	0.48	0.42	0.97	0.03	0.02	9.83	6.43	3.41	0.10
440	Metal Processes	0.21	0.17	0.27	0.03	0.01	0.71	0.48	0.32	0.00
450	Wood and Paper	0.20	0.20	0.00	0.00	0.00	8.48	5.92	3.56	0.00
460	Glass and Related Products	0.02	0.01	0.00	0.00	0.00	0.13	0.11	0.10	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.05	0.03	0.02	0.00
499	Other (Industrial Processes)	4.98	4.31	0.33	0.04	0.00	1.45	1.00	0.62	9.36
Total Industrial Processes		19.92	16.87	1.81	0.10	0.03	22.23	15.03	8.80	9.52
Solvent Evaporation										
510	Consumer Products	113.73	93.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	18.75	17.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.89	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.38
540	Asphalt Paving/Roofing	1.50	1.39	0.00	0.00	0.00	0.03	0.03	0.03	0.00
Total Solvent Evaporation		134.88	113.29	0.00	0.00	0.00	0.03	0.03	0.03	0.38

Table A-6 (continued)
2030 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	19.63	8.57	48.02	13.45	0.51	7.67	7.29	7.09	0.11
620	Farming Operations	26.74	2.14	0.00	0.00	0.00	1.62	0.86	0.26	8.68
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	60.31	29.49	2.96	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	107.73	49.23	7.43	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	9.80	5.82	0.58	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	2.50	1.30	0.18	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	5.68	3.24	50.77	1.53	0.47	5.38	5.18	4.62	0.04
690	Cooking	3.02	2.11	0.00	0.00	0.00	12.65	12.65	12.65	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				26.51	6.08				
Total Miscellaneous Processes		55.42	16.30	101.81	41.57	7.06	208.10	112.27	36.18	33.86
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	11.50	10.57	123.73	8.46	0.64	11.16	10.96	4.67	5.22
722	Light Duty Trucks 1 (T1)	5.68	5.35	33.18	2.70	0.11	1.39	1.37	0.59	0.69
723	Light Duty Trucks 2 (T2)	9.39	8.78	71.48	5.50	0.35	4.19	4.11	1.74	2.83
724	Medium Duty Trucks (T3)	13.48	12.66	87.98	8.70	0.32	3.25	3.20	1.36	3.28
732	Light Heavy Duty Gas Trucks 1 (T4)	4.39	4.14	27.86	8.95	0.08	0.74	0.72	0.29	0.64
733	Light Heavy Duty Gas Trucks 2 (T5)	0.36	0.34	2.02	0.86	0.01	0.08	0.08	0.03	0.06
734	Medium Heavy Duty Gas Trucks (T6)	0.55	0.51	5.25	0.80	0.01	0.06	0.06	0.02	0.06
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.12	0.10	7.46	1.05	0.00	0.01	0.01	0.00	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.36	0.30	3.88	5.80	0.02	0.50	0.49	0.22	0.02
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.15	0.12	1.88	1.90	0.01	0.19	0.19	0.08	0.01
744	Medium Heavy Duty Diesel Truck (T6)	0.54	0.45	2.26	5.65	0.06	1.03	1.01	0.53	0.15
746	Heavy Heavy Duty Diesel Trucks (HHD)	4.34	3.63	21.90	35.83	0.24	2.63	2.61	1.66	0.37
750	Motorcycles (MCY)	8.14	6.56	49.84	2.42	0.00	0.09	0.09	0.03	0.02
760	Diesel Urban Buses (UB)	0.43	0.36	1.69	8.47	0.02	0.99	0.97	0.49	0.03
762	Gas Urban Buses (UB)	0.17	0.14	1.94	0.59	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.04	0.03	0.34	0.06	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.06	0.05	0.19	1.27	0.00	0.15	0.15	0.07	0.00
777	Gas Other Buses (OB)	0.29	0.28	2.52	0.40	0.00	0.01	0.01	0.01	0.01
779	Diesel Other Buses (OB)	0.14	0.12	0.62	1.15	0.01	0.13	0.13	0.08	0.02
780	Motor Homes (MH)	0.06	0.05	0.37	0.92	0.01	0.09	0.09	0.04	0.05
Total On-Road Motor Vehicles		60.18	54.54	446.40	101.48	1.91	26.68	26.24	11.92	13.47
Other Mobile Sources										
810	Aircraft	5.40	5.31	46.45	16.94	1.98	1.06	1.01	0.58	0.00
820	Trains	1.27	1.07	10.39	19.03	0.03	0.41	0.41	0.37	0.00
833	Ocean Going Vessels	5.30	4.74	8.24	28.55	5.23	1.73	1.73	1.66	0.07
835	Commercial Harbor Crafts	1.26	1.06	7.49	8.99	0.01	0.34	0.34	0.32	0.00
840	Recreational Boats	17.41	16.64	123.77	5.90	0.01	1.05	1.01	0.96	0.00
850	Off-Road Recreational Vehicles	7.51	7.33	9.91	0.22	0.00	0.03	0.03	0.02	0.00
860	Off-Road Equipment	47.74	43.84	673.74	34.99	0.12	2.66	2.58	2.45	0.09
870	Farm Equipment	0.36	0.32	6.29	1.25	0.01	0.04	0.04	0.04	0.00
890	Fuel Storage and Handling	3.96	3.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		90.22	84.25	886.27	115.87	7.39	7.32	7.15	6.40	0.16
Total Stationary and Area Sources		1275.90	267.92	168.58	71.92	10.70	243.01	138.08	54.87	83.68
Total On-Road Vehicles		60.18	54.54	446.40	101.48	1.91	26.68	26.24	11.92	13.47
Total Other Mobile		90.22	84.25	886.27	115.87	7.39	7.32	7.15	6.40	0.16
Total		1426.30	406.71	1501.25	289.27	20.00	277.02	171.47	73.19	97.31

ATTACHMENT B

DRAFT FINAL 2012 AQMP APPENDIX III

**SUMMER PLANNING EMISSIONS
BY MAJOR SOURCE CATEGORY**

Table B-1

2008 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	5.58	1.03	9.94	0.54	0.31	1.19	1.18	1.18	1.34
20	Cogeneration	0.33	0.05	0.40	0.02	0.01	0.06	0.05	0.05	0.29
30	Oil and Gas Production (combustion)	0.90	0.10	0.56	0.73	0.02	0.10	0.10	0.10	0.24
40	Petroleum Refining (Combustion)	4.65	1.30	5.09	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	30.38	6.15	19.54	19.63	0.50	1.42	1.41	1.40	2.32
52	Food and Agricultural Processing	0.22	0.06	1.14	0.33	0.00	0.07	0.07	0.07	0.10
60	Service and Commercial	15.42	4.82	17.99	15.69	0.87	1.38	1.38	1.37	3.23
99	Other (Fuel Combustion)	1.77	0.41	3.42	4.30	0.26	0.39	0.30	0.22	0.01
Total Fuel Combustion		59.26	13.92	58.07	41.25	1.97	6.22	6.05	5.92	8.50
Waste Disposal										
110	Sewage Treatment	0.09	0.05	0.01	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	556.95	7.91	0.56	0.59	0.37	0.16	0.16	0.16	3.54
130	Incineration	0.41	0.07	0.38	1.05	0.08	0.18	0.08	0.07	0.15
140	Soil Remediation	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	4.82	4.06	0.01	0.00	0.03	0.60	0.29	0.03	23.05
Total Waste Disposal		562.28	12.10	0.97	1.65	0.48	0.95	0.54	0.27	26.90
Cleaning and Surface Coatings										
210	Laundering	3.22	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	56.42	10.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	26.63	25.49	0.01	0.01	0.00	2.20	2.11	2.04	0.17
240	Printing	2.27	2.27	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	4.13	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.53	0.53	0.04	0.06	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		93.19	42.95	0.05	0.07	0.00	2.22	2.13	2.05	0.23
Petroleum Production and Marketing										
310	Oil and Gas Production	2.39	1.35	0.07	0.08	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.17	4.12	5.38	0.32	0.67	2.99	1.92	1.68	0.20
330	Petroleum Marketing	125.33	35.42	0.00	0.01	0.01	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		133.91	40.90	5.45	0.41	0.69	3.00	1.93	1.68	0.20
Industrial Processes										
410	Chemical	8.39	6.84	0.16	0.00	0.00	0.69	0.53	0.44	0.06
420	Food and Agriculture	1.60	1.57	0.00	0.00	0.00	0.55	0.26	0.10	0.00
430	Mineral Processes	0.51	0.45	0.95	0.04	0.02	9.55	6.22	3.35	0.08
440	Metal Processes	0.19	0.15	0.23	0.04	0.02	0.73	0.50	0.33	0.00
450	Wood and Paper	0.15	0.15	0.00	0.00	0.00	5.55	3.87	2.33	0.00
460	Glass and Related Products	0.01	0.01	0.00	0.00	0.00	0.11	0.10	0.09	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.00
499	Other (Industrial Processes)	10.70	9.69	0.34	0.04	0.00	1.42	0.98	0.62	9.32
Total Industrial Processes		21.55	18.87	1.68	0.11	0.04	18.62	12.48	7.27	9.46
Solvent Evaporation										
510	Consumer Products	125.63	99.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	26.51	24.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.31	1.31	0.00	0.00	0.00	0.00	0.00	0.00	1.87
540	Asphalt Paving/Roofing	1.18	1.09	0.00	0.00	0.00	0.03	0.03	0.02	0.00
Total Solvent Evaporation		154.63	126.79	0.00	0.00	0.00	0.03	0.03	0.02	1.87

Table B-1 (continued)
2008 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	5.50	2.38	15.74	18.05	0.31	2.85	2.77	2.73	0.02
620	Farming Operations	36.61	2.93	0.00	0.00	0.00	2.50	1.29	0.33	15.51
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	64.82	31.70	3.18	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	102.22	46.72	7.05	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	10.25	6.09	0.60	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	6.08	2.94	0.43	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	2.70	1.54	16.46	1.17	0.04	2.02	1.95	1.74	0.04
690	Cooking	2.57	1.80	0.00	0.00	0.00	10.79	10.79	10.79	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				23.86	10.24				
Total Miscellaneous Processes		47.72	8.88	35.22	43.16	10.59	201.98	104.67	27.26	40.60
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	105.47	98.25	831.84	64.40	0.84	11.18	10.95	5.02	8.95
722	Light Duty Trucks 1 (T1)	25.47	23.61	218.69	16.67	0.11	1.45	1.41	0.70	1.22
723	Light Duty Trucks 2 (T2)	33.59	31.05	331.36	37.14	0.41	3.90	3.82	1.70	4.56
724	Medium Duty Trucks (T3)	25.65	23.38	288.51	33.57	0.44	3.23	3.17	1.39	4.96
732	Light Heavy Duty Gas Trucks 1 (T4)	8.96	8.18	80.93	16.98	0.08	0.62	0.61	0.26	0.93
733	Light Heavy Duty Gas Trucks 2 (T5)	1.18	1.08	11.04	1.90	0.01	0.07	0.07	0.03	0.10
734	Medium Heavy Duty Gas Trucks (T6)	2.68	2.48	26.47	3.93	0.01	0.05	0.05	0.03	0.04
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.69	0.63	12.35	1.12	0.00	0.01	0.01	0.00	0.00
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.76	0.64	3.24	23.30	0.02	0.53	0.53	0.30	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.26	0.22	1.10	7.71	0.01	0.20	0.20	0.11	0.00
744	Medium Heavy Duty Diesel Truck (T6)	2.01	1.68	6.26	39.49	0.05	2.22	2.21	1.69	0.13
746	Heavy Heavy Duty Diesel Trucks (HHD)	10.66	8.92	37.32	152.39	0.16	7.43	7.41	6.31	0.26
750	Motorcycles (MCY)	11.02	9.91	73.24	2.12	0.00	0.08	0.08	0.04	0.01
760	Diesel Urban Buses (UB)	0.62	0.52	2.52	13.28	0.02	0.93	0.92	0.51	0.02
762	Gas Urban Buses (UB)	0.47	0.40	4.52	0.69	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.18	0.16	2.55	0.16	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.23	0.19	0.64	2.65	0.00	0.28	0.28	0.19	0.01
777	Gas Other Buses (OB)	0.58	0.54	6.10	1.16	0.00	0.02	0.02	0.01	0.02
779	Diesel Other Buses (OB)	0.36	0.30	1.24	5.83	0.01	0.28	0.28	0.23	0.01
780	Motor Homes (MH)	0.54	0.46	13.37	1.98	0.01	0.08	0.08	0.05	0.03
Total On-Road Motor Vehicles		231.38	212.58	1953.27	426.48	2.18	32.57	32.08	18.56	21.27
Other Mobile Sources										
810	Aircraft	2.92	2.84	33.50	12.82	1.32	0.81	0.76	0.37	0.00
820	Trains	2.57	2.15	6.12	26.07	0.12	0.75	0.75	0.69	0.00
833	Ocean Going Vessels	2.16	1.93	3.75	40.74	36.78	4.12	4.01	3.87	0.03
835	Commercial Harbor Crafts	1.52	1.27	5.50	18.55	0.01	0.86	0.86	0.79	0.00
840	Recreational Boats	61.58	57.73	153.00	8.88	0.01	3.72	3.58	3.41	0.00
850	Off-Road Recreational Vehicles	9.76	9.42	8.90	0.12	0.01	0.04	0.04	0.03	0.00
860	Off-Road Equipment	76.67	69.66	644.09	92.37	0.08	5.97	5.89	5.49	0.06
870	Farm Equipment	1.90	1.65	9.23	8.10	0.01	0.49	0.49	0.45	0.01
890	Fuel Storage and Handling	15.39	15.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		174.47	161.98	864.09	207.65	38.34	16.75	16.37	15.10	0.10
Total Stationary and Area Sources		1072.54	264.41	101.44	86.65	13.77	233.01	127.83	44.48	87.76
Total On-Road Vehicles		231.38	212.58	1953.27	426.48	2.18	32.57	32.08	18.56	21.27
Total Other Mobile		174.47	162.98	864.09	207.65	38.34	16.75	16.37	15.10	0.10
Total		1478.39	638.97	2918.80	720.78	54.29	282.34	176.29	78.13	109.13

Table B-2

2014 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	4.90	0.90	8.74	0.23	0.28	1.05	1.04	1.04	1.18
20	Cogeneration	0.33	0.05	0.39	0.01	0.01	0.06	0.05	0.05	0.27
30	Oil and Gas Production (combustion)	0.93	0.10	0.57	0.66	0.02	0.10	0.10	0.10	0.25
40	Petroleum Refining (Combustion)	4.42	1.28	5.06	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	26.09	6.00	18.89	13.34	0.53	1.38	1.37	1.36	2.12
52	Food and Agricultural Processing	0.22	0.06	1.13	0.10	0.00	0.07	0.07	0.07	0.10
60	Service and Commercial	14.56	4.49	17.14	9.61	0.94	1.39	1.39	1.38	3.19
99	Other (Fuel Combustion)	1.57	0.37	3.08	3.94	0.23	0.37	0.29	0.21	0.01
Total Fuel Combustion		53.02	13.26	55.00	27.91	2.01	6.04	5.87	5.75	8.10
Waste Disposal										
110	Sewage Treatment	0.09	0.05	0.01	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	614.93	8.73	0.56	0.59	0.38	0.16	0.16	0.16	3.90
130	Incineration	0.45	0.08	0.40	0.93	0.08	0.18	0.08	0.07	0.15
140	Soil Remediation	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	4.22	3.42	0.01	0.00	0.03	0.63	0.31	0.03	23.47
Total Waste Disposal		619.70	12.28	0.99	1.53	0.48	0.98	0.56	0.27	27.70
Cleaning and Surface Coatings										
210	Laundering	3.26	0.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
220	Degreasing	61.97	11.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	27.88	26.71	0.01	0.01	0.00	2.31	2.22	2.14	0.16
240	Printing	2.03	2.03	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	4.56	3.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.59	0.59	0.04	0.03	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		100.28	45.44	0.05	0.03	0.00	2.33	2.23	2.15	0.22
Petroleum Production and Marketing										
310	Oil and Gas Production	2.51	1.42	0.07	0.09	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.15	4.11	4.98	0.19	0.56	2.84	1.82	1.58	0.20
330	Petroleum Marketing	113.05	32.07	0.00	0.01	0.01	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		121.73	37.61	5.05	0.29	0.57	2.85	1.83	1.59	0.20
Industrial Processes										
410	Chemical	9.39	7.65	0.18	0.00	0.00	0.77	0.60	0.49	0.06
420	Food and Agriculture	1.57	1.54	0.00	0.00	0.00	0.57	0.27	0.10	0.00
430	Mineral Processes	0.51	0.46	0.97	0.03	0.02	9.69	6.29	3.36	0.08
440	Metal Processes	0.19	0.16	0.22	0.04	0.01	0.73	0.49	0.33	0.00
450	Wood and Paper	0.16	0.16	0.00	0.00	0.00	6.15	4.29	2.59	0.00
460	Glass and Related Products	0.01	0.01	0.00	0.00	0.00	0.11	0.10	0.09	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.00
499	Other (Industrial Processes)	5.46	4.77	0.25	0.04	0.00	1.37	0.93	0.58	9.32
Total Industrial Processes		17.29	14.74	1.62	0.11	0.04	19.41	12.99	7.55	9.46
Solvent Evaporation										
510	Consumer Products	104.63	86.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	19.29	18.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.10	1.10	0.00	0.00	0.00	0.00	0.00	0.00	1.28
540	Asphalt Paving/Roofing	1.12	1.03	0.00	0.00	0.00	0.02	0.02	0.02	0.00
Total Solvent Evaporation		126.14	106.29	0.00	0.00	0.00	0.02	0.02	0.02	1.28

Table B-2 (continued)
2014 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	5.32	2.30	15.10	13.97	0.31	2.60	2.53	2.49	0.02
620	Farming Operations	34.11	2.73	0.00	0.00	0.00	2.13	1.11	0.29	13.93
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	59.42	29.06	2.91	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	103.01	47.07	7.11	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	10.17	6.04	0.60	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	5.12	2.50	0.36	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	4.61	2.63	41.19	1.24	0.38	4.37	4.20	3.74	0.04
690	Cooking	2.60	1.82	0.00	0.00	0.00	10.89	10.89	10.89	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				27.23	8.02				
Total Miscellaneous Processes		46.98	9.71	59.32	42.52	8.71	198.16	103.85	28.81	39.02
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	48.46	44.63	424.91	31.00	0.87	10.76	10.56	4.52	6.51
722	Light Duty Trucks 1 (T1)	14.71	13.61	121.57	9.02	0.12	1.37	1.34	0.62	0.97
723	Light Duty Trucks 2 (T2)	20.93	19.24	205.12	20.33	0.41	3.75	3.69	1.58	3.49
724	Medium Duty Trucks (T3)	21.70	19.71	220.13	23.84	0.41	2.96	2.91	1.25	4.07
732	Light Heavy Duty Gas Trucks 1 (T4)	7.23	6.58	57.18	15.01	0.09	0.63	0.62	0.26	0.79
733	Light Heavy Duty Gas Trucks 2 (T5)	0.72	0.66	5.60	1.49	0.01	0.07	0.06	0.03	0.08
734	Medium Heavy Duty Gas Trucks (T6)	1.31	1.18	15.01	2.43	0.01	0.05	0.05	0.02	0.05
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.23	0.19	8.23	1.02	0.00	0.01	0.01	0.00	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.67	0.56	3.29	17.48	0.02	0.50	0.50	0.27	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.23	0.19	1.12	5.69	0.01	0.19	0.19	0.10	0.00
744	Medium Heavy Duty Diesel Truck (T6)	1.13	0.94	3.77	23.30	0.05	1.39	1.38	0.94	0.12
746	Heavy Heavy Duty Diesel Trucks (HHD)	3.94	3.29	16.93	76.43	0.16	2.55	2.54	1.84	0.24
750	Motorcycles (MCY)	8.62	7.29	58.21	2.06	0.00	0.09	0.09	0.04	0.02
760	Diesel Urban Buses (UB)	0.60	0.50	2.41	12.67	0.02	0.95	0.94	0.51	0.02
762	Gas Urban Buses (UB)	0.41	0.32	3.94	0.67	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.10	0.08	1.45	0.12	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.05	0.04	0.15	2.15	0.00	0.17	0.16	0.08	0.01
777	Gas Other Buses (OB)	0.40	0.36	4.45	0.86	0.00	0.01	0.01	0.01	0.01
779	Diesel Other Buses (OB)	0.16	0.13	0.56	4.21	0.01	0.15	0.14	0.10	0.01
780	Motor Homes (MH)	0.23	0.19	5.36	1.47	0.01	0.08	0.08	0.04	0.03
Total On-Road Motor Vehicles		131.81	119.73	1159.39	251.27	2.19	25.69	25.28	12.23	16.46
Other Mobile Sources										
810	Aircraft	3.59	3.51	37.04	13.94	1.50	0.88	0.83	0.42	0.00
820	Trains	2.00	1.68	6.59	21.73	0.02	0.62	0.62	0.57	0.00
833	Ocean Going Vessels	2.33	2.08	3.86	35.14	2.70	0.85	0.85	0.82	0.03
835	Commercial Harbor Crafts	1.28	1.08	6.27	11.89	0.01	0.53	0.53	0.49	0.00
840	Recreational Boats	49.95	47.09	147.84	8.28	0.01	3.00	2.89	2.75	0.00
850	Off-Road Recreational Vehicles	8.70	8.46	7.47	0.12	0.01	0.03	0.03	0.02	0.00
860	Off-Road Equipment	57.91	53.29	632.12	64.40	0.09	4.48	4.40	4.12	0.07
870	Farm Equipment	1.25	1.08	8.43	5.62	0.01	0.32	0.32	0.30	0.01
890	Fuel Storage and Handling	10.19	10.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		137.21	128.42	849.63	161.12	4.34	10.71	10.46	9.49	0.10
Total Stationary and Area Sources		1085.16	239.34	122.03	72.39	11.82	229.79	127.36	46.15	85.99
Total On-Road Vehicles		131.81	119.73	1159.39	251.27	2.19	25.69	25.28	12.23	16.46
Total Other Mobile		137.21	128.42	849.63	161.12	4.34	10.71	10.46	9.49	0.10
Total		1354.18	487.49	2131.06	484.78	18.35	266.20	163.11	67.87	102.56

Table B-3

2017 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	4.88	0.90	8.70	0.23	0.28	1.04	1.04	1.03	1.18
20	Cogeneration	0.34	0.05	0.40	0.01	0.01	0.06	0.05	0.05	0.27
30	Oil and Gas Production (combustion)	1.00	0.11	0.61	0.73	0.02	0.11	0.11	0.11	0.26
40	Petroleum Refining (Combustion)	4.42	1.28	5.06	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	26.34	6.44	20.17	13.63	0.59	1.45	1.43	1.42	2.14
52	Food and Agricultural Processing	0.23	0.07	1.20	0.08	0.00	0.07	0.07	0.07	0.11
60	Service and Commercial	14.70	4.49	17.28	9.37	1.02	1.41	1.40	1.40	3.17
99	Other (Fuel Combustion)	1.54	0.33	2.94	3.44	0.24	0.36	0.28	0.21	0.01
Total Fuel Combustion		53.46	13.67	56.36	27.50	2.16	6.12	5.95	5.83	8.12
Waste Disposal										
110	Sewage Treatment	0.10	0.05	0.02	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	641.29	9.10	0.59	0.62	0.40	0.17	0.17	0.17	4.07
130	Incineration	0.50	0.08	0.43	0.98	0.08	0.19	0.09	0.07	0.16
140	Soil Remediation	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	4.59	3.68	0.01	0.00	0.03	0.73	0.36	0.04	24.31
Total Waste Disposal		646.49	12.92	1.05	1.62	0.51	1.10	0.63	0.29	28.71
Cleaning and Surface Coatings										
210	Laundering	3.40	0.17	0.00	0.00	0.00	0.01	0.00	0.00	0.00
220	Degreasing	69.66	13.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	30.48	29.21	0.01	0.01	0.00	2.53	2.43	2.34	0.17
240	Printing	2.13	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	5.24	4.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.66	0.66	0.04	0.03	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		111.57	50.19	0.05	0.03	0.00	2.55	2.44	2.35	0.23
Petroleum Production and Marketing										
310	Oil and Gas Production	2.67	1.51	0.07	0.09	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.15	4.11	4.98	0.19	0.56	2.84	1.82	1.58	0.20
330	Petroleum Marketing	108.49	29.65	0.00	0.01	0.02	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		117.32	35.29	5.06	0.29	0.58	2.85	1.83	1.59	0.20
Industrial Processes										
410	Chemical	10.68	8.70	0.19	0.00	0.00	0.86	0.67	0.56	0.07
420	Food and Agriculture	1.66	1.62	0.00	0.00	0.00	0.63	0.29	0.11	0.00
430	Mineral Processes	0.52	0.47	1.01	0.03	0.02	10.13	6.56	3.47	0.09
440	Metal Processes	0.21	0.17	0.23	0.04	0.02	0.78	0.52	0.35	0.00
450	Wood and Paper	0.18	0.18	0.00	0.00	0.00	6.93	4.83	2.91	0.00
460	Glass and Related Products	0.02	0.01	0.00	0.00	0.00	0.12	0.11	0.10	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.00
499	Other (Industrial Processes)	5.62	4.90	0.28	0.04	0.00	1.43	0.97	0.60	9.34
Total Industrial Processes		18.88	16.05	1.72	0.11	0.04	20.90	13.98	8.11	9.49
Solvent Evaporation										
510	Consumer Products	106.36	87.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	19.82	18.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.05	1.05	0.00	0.00	0.00	0.00	0.00	0.00	1.06
540	Asphalt Paving/Roofing	1.33	1.24	0.00	0.00	0.00	0.03	0.03	0.03	0.00
Total Solvent Evaporation		128.57	108.35	0.00	0.00	0.00	0.03	0.03	0.03	1.06

Table B-3 (continued)
2017 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	5.31	2.30	15.06	12.02	0.31	2.59	2.52	2.49	0.02
620	Farming Operations	31.27	2.50	0.00	0.00	0.00	1.89	0.99	0.28	11.93
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	69.30	33.89	3.40	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	103.28	47.20	7.13	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	10.16	6.04	0.60	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.72	2.32	0.33	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	4.62	2.63	41.22	1.24	0.38	4.37	4.20	3.74	0.04
690	Cooking	2.70	1.89	0.00	0.00	0.00	11.31	11.31	11.31	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				27.23	7.01				
Total Miscellaneous Processes		44.23	9.55	59.29	40.56	7.71	208.07	108.91	29.69	37.02
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	35.40	32.60	317.59	23.02	0.84	10.71	10.52	4.47	5.89
722	Light Duty Trucks 1 (T1)	11.93	11.08	94.77	7.30	0.12	1.34	1.31	0.59	0.88
723	Light Duty Trucks 2 (T2)	16.65	15.36	156.69	14.83	0.40	3.77	3.70	1.57	3.16
724	Medium Duty Trucks (T3)	19.46	17.77	182.54	19.28	0.40	2.95	2.90	1.24	3.75
732	Light Heavy Duty Gas Trucks 1 (T4)	6.48	5.92	47.82	13.84	0.09	0.65	0.64	0.27	0.74
733	Light Heavy Duty Gas Trucks 2 (T5)	0.59	0.54	4.09	1.30	0.01	0.07	0.07	0.03	0.08
734	Medium Heavy Duty Gas Trucks (T6)	0.98	0.89	11.29	1.89	0.01	0.05	0.05	0.02	0.05
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.18	0.14	7.72	0.95	0.00	0.01	0.01	0.00	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.60	0.50	3.16	14.85	0.02	0.50	0.49	0.26	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.20	0.17	1.14	4.85	0.01	0.19	0.19	0.10	0.00
744	Medium Heavy Duty Diesel Truck (T6)	0.83	0.69	2.99	16.44	0.05	1.20	1.19	0.75	0.13
746	Heavy Heavy Duty Diesel Trucks (HHD)	3.82	3.19	17.44	64.46	0.18	2.33	2.32	1.58	0.27
750	Motorcycles (MCY)	8.37	6.96	54.57	2.07	0.00	0.09	0.09	0.03	0.02
760	Diesel Urban Buses (UB)	0.56	0.47	2.24	11.64	0.02	0.95	0.94	0.50	0.02
762	Gas Urban Buses (UB)	0.40	0.31	3.62	0.65	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.08	0.07	1.11	0.10	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.04	0.04	0.13	2.00	0.00	0.16	0.16	0.08	0.01
777	Gas Other Buses (OB)	0.36	0.33	3.79	0.73	0.00	0.01	0.01	0.01	0.01
779	Diesel Other Buses (OB)	0.13	0.11	0.50	3.10	0.01	0.13	0.12	0.08	0.01
780	Motor Homes (MH)	0.16	0.13	3.31	1.26	0.01	0.08	0.08	0.04	0.03
Total On-Road Motor Vehicles		107.22	97.28	916.51	204.57	2.16	25.19	24.78	11.63	15.07
Other Mobile Sources										
810	Aircraft	3.93	3.85	38.81	14.51	1.59	0.91	0.86	0.45	0.00
820	Trains	1.81	1.51	7.43	23.52	0.02	0.58	0.58	0.54	0.00
833	Ocean Going Vessels	2.76	2.47	4.48	39.88	3.11	0.98	0.98	0.94	0.04
835	Commercial Harbor Crafts	1.26	1.06	6.65	10.66	0.01	0.45	0.45	0.42	0.00
840	Recreational Boats	44.70	42.25	152.44	8.24	0.01	2.69	2.58	2.46	0.00
850	Off-Road Recreational Vehicles	8.83	8.62	7.93	0.14	0.00	0.03	0.03	0.02	0.00
860	Off-Road Equipment	53.68	49.33	641.78	58.49	0.09	4.11	4.03	3.78	0.07
870	Farm Equipment	0.95	0.82	8.16	4.38	0.01	0.24	0.24	0.22	0.01
890	Fuel Storage and Handling	8.82	8.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		126.74	118.70	867.69	159.83	4.84	9.99	9.76	8.83	0.11
Total Stationary and Area Sources		1120.53	246.02	123.54	70.13	11.00	241.63	133.78	47.90	84.85
Total On-Road Vehicles		107.22	97.28	916.51	204.57	2.16	25.19	24.78	11.63	15.07
Total Other Mobile		126.74	118.70	867.69	159.83	4.84	9.99	9.76	8.83	0.11
Total		1354.48	462.00	1907.74	434.53	18.00	276.80	168.31	68.36	100.03

Table B-4

2019 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	4.81	0.89	8.57	0.23	0.27	1.03	1.02	1.02	1.16
20	Cogeneration	0.34	0.05	0.40	0.01	0.01	0.06	0.05	0.05	0.27
30	Oil and Gas Production (combustion)	1.03	0.11	0.63	0.78	0.02	0.11	0.11	0.11	0.27
40	Petroleum Refining (Combustion)	4.42	1.28	5.06	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	26.29	6.65	20.77	13.84	0.62	1.47	1.46	1.45	2.14
52	Food and Agricultural Processing	0.24	0.07	1.23	0.08	0.00	0.08	0.07	0.07	0.12
60	Service and Commercial	14.75	4.48	17.31	9.30	1.07	1.41	1.41	1.40	3.15
99	Other (Fuel Combustion)	1.57	0.33	2.97	3.45	0.24	0.36	0.28	0.21	0.01
Total Fuel Combustion		53.44	13.86	56.94	27.70	2.24	6.14	5.97	5.85	8.09
Waste Disposal										
110	Sewage Treatment	0.10	0.05	0.02	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	658.64	9.35	0.60	0.64	0.41	0.18	0.18	0.18	4.17
130	Incineration	0.52	0.09	0.45	1.01	0.08	0.20	0.09	0.08	0.17
140	Soil Remediation	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	4.78	3.81	0.01	0.00	0.03	0.78	0.38	0.04	24.74
Total Waste Disposal		664.06	13.31	1.08	1.67	0.53	1.17	0.67	0.31	29.25
Cleaning and Surface Coatings										
210	Laundering	3.47	0.17	0.00	0.00	0.00	0.01	0.00	0.00	0.00
220	Degreasing	73.51	14.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	31.83	30.51	0.02	0.01	0.00	2.64	2.53	2.44	0.18
240	Printing	2.18	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	5.62	4.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.70	0.70	0.04	0.03	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		117.32	52.65	0.06	0.03	0.00	2.66	2.55	2.46	0.24
Petroleum Production and Marketing										
310	Oil and Gas Production	2.73	1.55	0.08	0.09	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.15	4.11	4.98	0.19	0.56	2.84	1.82	1.58	0.20
330	Petroleum Marketing	108.32	30.06	0.00	0.01	0.02	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		117.22	35.73	5.06	0.29	0.58	2.85	1.83	1.59	0.20
Industrial Processes										
410	Chemical	11.35	9.26	0.20	0.00	0.00	0.91	0.71	0.59	0.07
420	Food and Agriculture	1.70	1.66	0.00	0.00	0.00	0.66	0.30	0.11	0.00
430	Mineral Processes	0.53	0.47	1.03	0.03	0.02	10.36	6.71	3.54	0.09
440	Metal Processes	0.21	0.18	0.24	0.04	0.02	0.80	0.54	0.36	0.00
450	Wood and Paper	0.18	0.18	0.00	0.00	0.00	7.31	5.10	3.07	0.00
460	Glass and Related Products	0.02	0.01	0.00	0.00	0.00	0.12	0.11	0.10	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.00
499	Other (Industrial Processes)	5.72	4.98	0.29	0.04	0.00	1.45	0.99	0.61	9.34
Total Industrial Processes		19.71	16.74	1.77	0.12	0.04	21.64	14.48	8.39	9.50
Solvent Evaporation										
510	Consumer Products	107.66	88.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	20.17	18.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.03	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.93
540	Asphalt Paving/Roofing	1.47	1.36	0.00	0.00	0.00	0.03	0.03	0.03	0.00
Total Solvent Evaporation		130.34	109.87	0.00	0.00	0.00	0.03	0.03	0.03	0.93

Table B-4 (continued)
2019 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	5.30	2.29	15.04	11.83	0.32	2.59	2.52	2.48	0.02
620	Farming Operations	29.37	2.35	0.00	0.00	0.00	1.74	0.92	0.27	10.60
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	75.62	36.98	3.71	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	104.24	47.64	7.19	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	10.15	6.03	0.60	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.47	2.21	0.32	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	4.62	2.63	41.24	1.24	0.38	4.37	4.21	3.74	0.04
690	Cooking	2.75	1.92	0.00	0.00	0.00	11.53	11.53	11.53	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				27.23	6.25				
Total Miscellaneous Processes		42.38	9.44	59.30	40.38	6.95	215.16	112.47	30.26	35.68
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	26.57	24.56	244.89	17.48	0.79	10.66	10.47	4.42	5.47
722	Light Duty Trucks 1 (T1)	10.15	9.49	76.32	5.98	0.11	1.31	1.29	0.57	0.81
723	Light Duty Trucks 2 (T2)	13.91	12.90	123.86	11.12	0.39	3.78	3.71	1.57	2.93
724	Medium Duty Trucks (T3)	18.13	16.65	157.77	16.22	0.39	2.95	2.89	1.23	3.54
732	Light Heavy Duty Gas Trucks 1 (T4)	5.98	5.50	41.57	12.90	0.09	0.66	0.65	0.27	0.70
733	Light Heavy Duty Gas Trucks 2 (T5)	0.51	0.47	3.09	1.17	0.01	0.07	0.07	0.03	0.07
734	Medium Heavy Duty Gas Trucks (T6)	0.77	0.70	8.81	1.54	0.01	0.05	0.05	0.02	0.05
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.14	0.11	7.38	0.90	0.00	0.01	0.01	0.00	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.55	0.46	3.20	13.01	0.02	0.49	0.48	0.25	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.19	0.16	1.22	4.26	0.01	0.18	0.18	0.09	0.00
744	Medium Heavy Duty Diesel Truck (T6)	0.63	0.53	2.47	11.87	0.05	1.07	1.06	0.61	0.13
746	Heavy Heavy Duty Diesel Trucks (HHD)	3.74	3.13	17.78	56.47	0.19	2.19	2.17	1.41	0.29
750	Motorcycles (MCY)	8.23	6.76	52.14	2.07	0.00	0.09	0.09	0.03	0.02
760	Diesel Urban Buses (UB)	0.54	0.45	2.13	10.96	0.02	0.95	0.94	0.50	0.02
762	Gas Urban Buses (UB)	0.40	0.30	3.41	0.63	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.07	0.06	0.89	0.10	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.04	0.03	0.12	1.90	0.00	0.16	0.16	0.07	0.01
777	Gas Other Buses (OB)	0.34	0.31	3.35	0.64	0.00	0.01	0.01	0.01	0.01
779	Diesel Other Buses (OB)	0.11	0.09	0.45	2.36	0.01	0.11	0.11	0.07	0.01
780	Motor Homes (MH)	0.11	0.09	1.95	1.12	0.01	0.08	0.07	0.04	0.04
Total On-Road Motor Vehicles		91.09	82.77	752.79	172.70	2.11	24.83	24.43	11.20	14.15
Other Mobile Sources										
810	Aircraft	4.16	4.08	40.01	14.88	1.65	0.93	0.88	0.47	0.00
820	Trains	1.67	1.40	7.80	23.04	0.02	0.55	0.55	0.51	0.00
833	Ocean Going Vessels	3.01	2.69	4.82	36.10	3.33	1.04	1.04	1.00	0.04
835	Commercial Harbor Crafts	1.24	1.04	7.08	9.69	0.01	0.38	0.38	0.35	0.00
840	Recreational Boats	41.48	39.28	155.34	8.22	0.01	2.49	2.39	2.28	0.00
850	Off-Road Recreational Vehicles	8.99	8.78	8.23	0.16	0.00	0.03	0.03	0.02	0.00
860	Off-Road Equipment	52.04	47.82	651.01	52.25	0.10	3.73	3.66	3.44	0.07
870	Farm Equipment	0.79	0.68	8.08	3.66	0.01	0.19	0.19	0.18	0.01
890	Fuel Storage and Handling	8.17	8.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		121.54	113.91	882.37	147.99	5.13	9.35	9.12	8.25	0.12
Total Stationary and Area Sources		1144.47	251.60	124.21	70.19	10.33	249.65	138.00	48.88	83.91
Total On-Road Vehicles		91.09	82.77	752.79	172.70	2.11	24.83	24.43	11.20	14.15
Total Other Mobile		121.54	113.91	882.37	147.99	5.13	9.35	9.12	8.25	0.12
Total		1357.10	448.27	1759.37	390.89	17.56	283.83	171.55	68.33	98.18

Table B-5

2023 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	4.78	0.88	8.51	0.23	0.27	1.02	1.02	1.01	1.15
20	Cogeneration	0.35	0.05	0.41	0.01	0.01	0.06	0.05	0.05	0.27
30	Oil and Gas Production (combustion)	1.05	0.12	0.64	0.81	0.02	0.12	0.12	0.12	0.27
40	Petroleum Refining (Combustion)	4.42	1.28	5.06	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	25.57	6.86	21.38	13.97	0.67	1.49	1.48	1.47	2.15
52	Food and Agricultural Processing	0.25	0.07	1.30	0.08	0.01	0.08	0.08	0.08	0.12
60	Service and Commercial	14.85	4.45	17.42	9.26	1.15	1.42	1.42	1.41	3.07
99	Other (Fuel Combustion)	1.57	0.31	2.91	3.09	0.24	0.36	0.28	0.20	0.01
Total Fuel Combustion		52.84	14.02	57.63	27.45	2.35	6.16	6.00	5.88	8.03
Waste Disposal										
110	Sewage Treatment	0.10	0.05	0.02	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	693.85	9.85	0.62	0.66	0.43	0.18	0.18	0.18	4.40
130	Incineration	0.56	0.09	0.48	1.05	0.09	0.21	0.10	0.08	0.18
140	Soil Remediation	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	5.08	4.02	0.01	0.00	0.03	0.86	0.42	0.04	25.38
Total Waste Disposal		699.59	14.03	1.13	1.73	0.54	1.27	0.72	0.32	30.12
Cleaning and Surface Coatings										
210	Laundering	3.62	0.18	0.00	0.00	0.00	0.01	0.00	0.00	0.00
220	Degreasing	78.73	15.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	33.78	32.37	0.02	0.01	0.00	2.79	2.67	2.58	0.18
240	Printing	2.25	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	6.13	5.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.76	0.75	0.04	0.03	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		125.26	56.10	0.06	0.03	0.00	2.81	2.69	2.59	0.25
Petroleum Production and Marketing										
310	Oil and Gas Production	2.79	1.58	0.08	0.10	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.15	4.11	4.98	0.19	0.56	2.84	1.82	1.58	0.20
330	Petroleum Marketing	107.88	30.86	0.00	0.01	0.02	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.03	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		116.85	36.57	5.07	0.30	0.58	2.85	1.83	1.59	0.20
Industrial Processes										
410	Chemical	12.22	9.98	0.21	0.00	0.00	0.96	0.75	0.63	0.07
420	Food and Agriculture	1.74	1.70	0.00	0.00	0.00	0.70	0.32	0.12	0.00
430	Mineral Processes	0.54	0.48	1.05	0.03	0.02	10.66	6.90	3.62	0.10
440	Metal Processes	0.23	0.19	0.26	0.04	0.02	0.84	0.57	0.37	0.00
450	Wood and Paper	0.20	0.20	0.00	0.00	0.00	7.77	5.42	3.27	0.00
460	Glass and Related Products	0.02	0.02	0.00	0.00	0.00	0.12	0.11	0.10	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.01	0.00
499	Other (Industrial Processes)	5.87	5.11	0.30	0.04	0.00	1.50	1.02	0.63	9.35
Total Industrial Processes		20.82	17.66	1.83	0.12	0.04	22.59	15.11	8.75	9.52
Solvent Evaporation										
510	Consumer Products	110.48	90.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	20.85	19.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.99	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.73
540	Asphalt Paving/Roofing	1.64	1.52	0.00	0.00	0.00	0.03	0.03	0.03	0.00
Total Solvent Evaporation		133.96	112.98	0.00	0.00	0.00	0.03	0.03	0.03	0.73

Table B-5 (continued)
2023 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	5.29	2.29	14.99	11.46	0.32	2.58	2.51	2.47	0.02
620	Farming Operations	26.74	2.14	0.00	0.00	0.00	1.53	0.82	0.26	8.68
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	82.55	40.36	4.04	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	105.11	48.04	7.25	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	10.14	6.03	0.60	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.04	2.01	0.29	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	4.63	2.64	41.30	1.24	0.38	4.38	4.21	3.75	0.04
690	Cooking	2.86	2.00	0.00	0.00	0.00	11.97	11.97	11.97	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				27.23	6.10				
Total Miscellaneous Processes		39.86	9.30	59.31	40.01	6.80	222.75	116.40	31.05	33.76
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	19.75	18.24	186.96	12.34	0.69	10.62	10.43	4.40	5.17
722	Light Duty Trucks 1 (T1)	8.33	7.83	55.92	4.33	0.10	1.30	1.28	0.55	0.73
723	Light Duty Trucks 2 (T2)	11.68	10.91	95.27	7.66	0.36	3.85	3.78	1.59	2.76
724	Medium Duty Trucks (T3)	16.03	14.93	121.63	11.92	0.36	3.00	2.95	1.25	3.33
732	Light Heavy Duty Gas Trucks 1 (T4)	5.11	4.76	32.58	10.93	0.09	0.69	0.68	0.27	0.66
733	Light Heavy Duty Gas Trucks 2 (T5)	0.41	0.39	2.24	1.00	0.01	0.07	0.07	0.03	0.07
734	Medium Heavy Duty Gas Trucks (T6)	0.59	0.54	6.16	1.08	0.01	0.05	0.05	0.02	0.05
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.12	0.09	6.91	0.86	0.00	0.01	0.01	0.00	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.46	0.39	3.36	9.74	0.02	0.48	0.48	0.23	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.17	0.14	1.44	3.19	0.01	0.18	0.18	0.09	0.00
744	Medium Heavy Duty Diesel Truck (T6)	0.48	0.40	2.00	4.99	0.05	0.95	0.93	0.49	0.14
746	Heavy Heavy Duty Diesel Trucks (HHD)	3.66	3.06	17.58	31.39	0.20	2.31	2.30	1.49	0.31
750	Motorcycles (MCY)	8.04	6.58	48.63	2.03	0.00	0.09	0.08	0.03	0.02
760	Diesel Urban Buses (UB)	0.52	0.43	2.09	10.43	0.02	0.97	0.96	0.50	0.02
762	Gas Urban Buses (UB)	0.39	0.30	3.02	0.61	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.05	0.04	0.57	0.07	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.04	0.04	0.13	1.73	0.00	0.15	0.15	0.07	0.00
777	Gas Other Buses (OB)	0.30	0.28	2.68	0.50	0.00	0.01	0.01	0.01	0.01
779	Diesel Other Buses (OB)	0.12	0.10	0.50	0.94	0.01	0.12	0.11	0.07	0.02
780	Motor Homes (MH)	0.08	0.07	0.90	0.97	0.01	0.08	0.08	0.04	0.04
Total On-Road Motor Vehicles		76.33	69.51	590.55	116.72	1.95	24.94	24.53	11.14	13.37
Other Mobile Sources										
810	Aircraft	4.61	4.52	42.34	15.62	1.77	0.98	0.93	0.51	0.00
820	Trains	1.54	1.29	8.60	22.23	0.02	0.51	0.51	0.47	0.00
833	Ocean Going Vessels	3.64	3.26	5.76	32.05	3.85	1.23	1.23	1.18	0.05
835	Commercial Harbor Crafts	1.25	1.05	7.39	9.21	0.01	0.35	0.35	0.32	0.00
840	Recreational Boats	35.74	33.95	161.28	8.23	0.01	2.15	2.06	1.97	0.00
850	Off-Road Recreational Vehicles	9.31	9.12	8.68	0.17	0.00	0.03	0.03	0.02	0.00
860	Off-Road Equipment	50.90	46.80	674.37	42.78	0.11	3.21	3.12	2.95	0.08
870	Farm Equipment	0.60	0.53	8.07	2.57	0.01	0.12	0.12	0.11	0.01
890	Fuel Storage and Handling	7.17	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		114.77	107.65	916.49	132.86	5.79	8.57	8.35	7.53	0.13
Total Stationary and Area Sources		1189.18	260.66	125.03	69.64	10.32	258.47	142.77	50.21	82.61
Total On-Road Vehicles		76.33	69.51	590.55	116.72	1.95	24.94	24.53	11.14	13.37
Total Other Mobile		114.77	107.65	916.49	132.86	5.79	8.57	8.35	7.53	0.13
Total		1380.28	437.82	1632.07	319.22	18.07	291.97	175.66	68.88	96.11

Table B-6

2030 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Fuel Combustion										
10	Electric Utilities	4.80	0.88	8.55	0.23	0.27	1.02	1.02	1.02	1.15
20	Cogeneration	0.36	0.05	0.42	0.01	0.01	0.06	0.05	0.05	0.27
30	Oil and Gas Production (combustion)	1.08	0.12	0.66	0.84	0.02	0.12	0.12	0.12	0.28
40	Petroleum Refining (Combustion)	4.42	1.28	5.06	0.00	0.00	1.62	1.56	1.54	0.97
50	Manufacturing and Industrial	25.47	7.35	22.80	14.68	0.74	1.56	1.54	1.53	2.20
52	Food and Agricultural Processing	0.27	0.07	1.40	0.08	0.01	0.08	0.08	0.08	0.13
60	Service and Commercial	15.54	4.62	18.26	9.69	1.29	1.48	1.48	1.47	3.12
99	Other (Fuel Combustion)	1.63	0.32	2.98	3.13	0.24	0.36	0.28	0.21	0.01
Total Fuel Combustion		53.57	14.70	60.14	28.67	2.57	6.30	6.13	6.01	8.14
Waste Disposal										
110	Sewage Treatment	0.11	0.06	0.02	0.01	0.00	0.01	0.01	0.01	0.17
120	Landfills	761.10	10.81	0.65	0.69	0.45	0.19	0.19	0.19	4.81
130	Incineration	0.62	0.10	0.51	1.12	0.09	0.22	0.11	0.09	0.19
140	Soil Remediation	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
199	Other (Waste Disposal)	5.60	4.38	0.02	0.00	0.03	1.00	0.49	0.05	26.52
Total Waste Disposal		767.43	15.36	1.20	1.83	0.57	1.43	0.80	0.35	31.69
Cleaning and Surface Coatings										
210	Laundering	3.84	0.18	0.00	0.00	0.00	0.01	0.01	0.00	0.00
220	Degreasing	87.99	16.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	36.73	35.20	0.02	0.01	0.00	3.00	2.88	2.77	0.19
240	Printing	2.34	2.34	0.00	0.00	0.00	0.00	0.00	0.00	0.05
250	Adhesives and Sealants	6.97	6.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.85	0.85	0.05	0.03	0.00	0.01	0.01	0.01	0.01
Total Cleaning and Surface Coatings		138.71	61.62	0.07	0.03	0.00	3.02	2.89	2.79	0.25
Petroleum Production and Marketing										
310	Oil and Gas Production	2.87	1.63	0.08	0.10	0.00	0.01	0.01	0.01	0.00
320	Petroleum Refining	6.15	4.11	4.98	0.19	0.56	2.84	1.82	1.59	0.20
330	Petroleum Marketing	108.59	32.35	0.00	0.01	0.02	0.00	0.00	0.00	0.00
399	Other (Petroleum Production and Marketing)	0.03	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		117.64	38.11	5.07	0.30	0.58	2.85	1.83	1.59	0.20
Industrial Processes										
410	Chemical	13.62	11.13	0.23	0.00	0.00	1.06	0.83	0.70	0.07
420	Food and Agriculture	1.80	1.76	0.00	0.00	0.00	0.75	0.33	0.12	0.00
430	Mineral Processes	0.55	0.48	1.09	0.03	0.02	11.09	7.16	3.72	0.10
440	Metal Processes	0.25	0.20	0.28	0.05	0.02	0.89	0.60	0.40	0.00
450	Wood and Paper	0.21	0.21	0.00	0.00	0.00	8.52	5.94	3.58	0.00
460	Glass and Related Products	0.03	0.02	0.00	0.00	0.00	0.13	0.11	0.10	0.00
470	Electronics	0.00	0.00	0.00	0.00	0.00	0.05	0.03	0.02	0.00
499	Other (Industrial Processes)	6.12	5.32	0.33	0.04	0.00	1.58	1.08	0.67	9.36
Total Industrial Processes		22.57	19.13	1.93	0.13	0.04	24.06	16.09	9.30	9.54
Solvent Evaporation										
510	Consumer Products	115.29	94.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	21.93	20.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.46
540	Asphalt Paving/Roofing	1.85	1.72	0.00	0.00	0.00	0.04	0.03	0.03	0.00
Total Solvent Evaporation		140.02	118.17	0.00	0.00	0.00	0.04	0.03	0.03	0.46

Table B-6 (continued)
2030 Summer Planning Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5	NH3
Miscellaneous Processes										
610	Residential Fuel Combustion	5.26	2.28	14.89	10.73	0.33	2.56	2.49	2.45	0.02
620	Farming Operations	26.74	2.14	0.00	0.00	0.00	1.49	0.80	0.25	8.68
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	90.53	44.27	4.44	0.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	107.98	49.34	7.45	0.00
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	10.13	6.02	0.60	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	3.42	1.73	0.25	0.00
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41	0.00
670	Waste Burning and Disposal	4.65	2.65	41.44	1.25	0.38	4.39	4.23	3.76	0.04
690	Cooking	3.02	2.11	0.00	0.00	0.00	12.65	12.65	12.65	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.03
	RECLAIM				27.23	6.10				
Total Miscellaneous Processes		40.01	9.42	59.36	39.28	6.81	233.60	121.98	32.27	33.77
On-Road Motor Vehicles										
710	Light Duty Passenger Auto (LDA)	11.93	10.96	128.79	7.56	0.68	11.16	10.96	4.67	5.22
722	Light Duty Trucks 1 (T1)	5.96	5.62	34.26	2.41	0.11	1.39	1.37	0.59	0.69
723	Light Duty Trucks 2 (T2)	9.87	9.24	74.39	4.87	0.37	4.19	4.11	1.74	2.83
724	Medium Duty Trucks (T3)	14.18	13.33	90.46	7.75	0.34	3.25	3.20	1.36	3.28
732	Light Heavy Duty Gas Trucks 1 (T4)	4.21	3.98	24.09	8.40	0.08	0.74	0.72	0.29	0.64
733	Light Heavy Duty Gas Trucks 2 (T5)	0.34	0.32	1.73	0.81	0.01	0.08	0.08	0.03	0.06
734	Medium Heavy Duty Gas Trucks (T6)	0.51	0.48	4.36	0.75	0.01	0.06	0.06	0.02	0.06
736	Heavy Heavy Duty Gas Trucks ((HHD)	0.12	0.09	7.30	0.92	0.00	0.01	0.01	0.00	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.36	0.30	3.88	5.50	0.02	0.50	0.49	0.22	0.02
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.15	0.12	1.88	1.81	0.01	0.19	0.19	0.08	0.01
744	Medium Heavy Duty Diesel Truck (T6)	0.54	0.45	2.20	5.39	0.06	1.03	1.01	0.53	0.15
746	Heavy Heavy Duty Diesel Trucks (HHD)	4.25	3.56	19.86	34.53	0.24	2.63	2.61	1.66	0.37
750	Motorcycles (MCY)	8.54	6.99	47.02	2.08	0.00	0.09	0.09	0.03	0.02
760	Diesel Urban Buses (UB)	0.43	0.36	1.69	8.01	0.02	0.99	0.97	0.49	0.03
762	Gas Urban Buses (UB)	0.17	0.14	1.92	0.52	0.00	0.01	0.01	0.00	0.01
771	Gas School Buses (SB)	0.04	0.03	0.33	0.05	0.00	0.00	0.00	0.00	0.00
772	Diesel School Buses (SB)	0.06	0.05	0.17	1.22	0.00	0.15	0.15	0.07	0.00
777	Gas Other Buses (OB)	0.28	0.26	2.09	0.37	0.00	0.01	0.01	0.01	0.01
779	Diesel Other Buses (OB)	0.14	0.12	0.57	1.11	0.01	0.13	0.13	0.08	0.02
780	Motor Homes (MH)	0.06	0.05	0.36	0.85	0.01	0.09	0.09	0.04	0.05
Total On-Road Motor Vehicles		62.13	56.45	447.35	94.93	1.99	26.68	26.24	11.92	13.47
Other Mobile Sources										
810	Aircraft	5.40	5.31	46.47	16.94	1.98	1.06	1.01	0.58	0.00
820	Trains	1.27	1.07	10.39	19.03	0.03	0.41	0.41	0.37	0.00
833	Ocean Going Vessels	5.30	4.74	8.24	28.56	5.23	1.73	1.73	1.66	0.07
835	Commercial Harbor Crafts	1.26	1.06	7.49	9.00	0.01	0.34	0.34	0.32	0.00
840	Recreational Boats	28.81	27.39	173.39	8.37	0.01	1.71	1.65	1.57	0.00
850	Off-Road Recreational Vehicles	9.90	9.72	9.39	0.20	0.00	0.03	0.03	0.02	0.00
860	Off-Road Equipment	52.65	48.52	719.90	35.04	0.13	2.83	2.75	2.61	0.09
870	Farm Equipment	0.44	0.39	8.17	1.51	0.01	0.05	0.05	0.05	0.01
890	Fuel Storage and Handling	6.19	6.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Other Mobile Sources		111.22	104.36	983.44	118.65	7.40	8.17	7.97	7.18	0.17
Total Stationary and Area Sources		1279.96	276.51	127.77	70.24	10.58	271.29	149.76	52.34	84.05
Total On-Road Vehicles		62.13	56.45	447.35	94.93	1.99	26.68	26.24	11.92	13.47
Total Other Mobile		111.22	104.36	983.44	118.65	7.40	8.17	7.97	7.18	0.17
Total		1453.32	437.31	1558.56	283.82	19.95	306.14	183.96	71.44	97.69

ATTACHMENT C

DRAFT FINAL 2012 AQMP APPENDIX III

TOP VOC AND NOX

POINT SOURCES PRODUCERS IN 2008

VOC and NOx Stationary Sources in 2008 Emitting 10 Tons/Year and Higher

SCAB VOC EMISSION PRODUCERS

	FACID	FNAME	FCITY	ROG
1	800089	EXXONMOBIL OIL CORPORATION	TORRANCE	630
2	800030	CHEVRON PRODUCTS CO.	EL SEGUNDO	567
3	131003	BP WEST COAST PROD.LLC BP CARSON REF.	CARSON	515
4	800363	CONOCOPHILLIPS COMPANY	WILMINGTON	267
5	800436	TESORO REFINING AND MARKETING CO	WILMINGTON	252
6	3721	DART CONTAINER CORP OF CALIFORNIA	CORONA	194
7	16642	ANHEUSER-BUSCH INC., (LA BREWERY)	VAN NUYS	191
8	800372	EQUILON ENTER. LLC, SHELL OIL PROD. US	CARSON	147
9	52517	REXAM BEVERAGE CAN COMPANY	CHATSWORTH	129
10	155877	MILLERCOORS, LLC	IRWINDALE	123
11	800183	PARAMOUNT PETR CORP (EIS USE)	PARAMOUNT	121
12	800026	ULTRAMAR INC (NSR USE ONLY)	WILMINGTON	116
13	800362	CONOCOPHILLIPS COMPANY	CARSON	112
14	117785	BALL METAL BEVERAGE CONTAINER CORP.	TORRANCE	110
15	70021	XERXES CORP (A DELAWARE CORP)	ANAHEIM	106
16	151843	INSULFOAM LLC	CHINO	88
17	2825	MCP FOODS INC	ANAHEIM	88
18	94872	METAL CONTAINER CORP	MIRA LOMA	87
19	119907	BERRY PETROLEUM COMPANY	SANTA CLARITA	84
20	800057	KINDER MORGAN LIQUIDS TERMINALS, LLC	CARSON	83
21	800129	SFPP, L.P.	BLOOMINGTON	81
22	800128	SO CAL GAS CO (EIS USE)	NORTHRIDGE	71
23	37881	VERTIS, INC.	POMONA	63
24	121737	MOUNTAINVIEW GENERATING STATION	REDLANDS	60
25	5973	SO CAL GAS CO	VALENCIA	56
26	800074	LA CITY, DWP HAYNES GENERATING STATION	LONG BEACH	56
27	800171	EXXONMOBIL OIL CORPORATION	VERNON	55
28	29110	ORANGE COUNTY SANITATION DISTRICT	HUNTINGTON BEACH	51
29	2044	G B MFG INC/CALIF ACRYLIC, DBA CAL SPAS	POMONA	50
30	152330	KIK AEROSOL SOCAL LLC	CITY OF INDUSTRY	49
31	82657	QUEST DIAGNOSTICS INC	SAN JUAN CAPISTRAN	48
32	800278	SFPP, L.P. (NSR USE)	CARSON	48
33	800240	TIN, INC. TEMPLE-INLAND, DBA	ONTARIO	47
34	800330	THUMS LONG BEACH	LONG BEACH	47
35	7949	CUSTOM FIBERGLASS MFG CO/CUSTOM HARDTOP	LONG BEACH	46
36	4477	SO CAL EDISON CO	AVALON	46
37	115130	VERTIS, INC	RIVERSIDE	43
38	800075	LA CITY, DWP SCATTERGOOD GENERATING STN	PLAYA DEL REY	42
39	153095	SA RECYCLING LLC, ADAMS STEEL DBA	ANAHEIM	41
40	11640	ARLON ADHESIVE SYSTEM/DECORATIVE FILMS	SANTA ANA	40
41	4571	NATVAR, A TEKNI PLEX COMPANY INC	CITY OF INDUSTRY	38
42	119940	BUILDING MATERIALS MANUFACTURING CORP	FONTANA	38
43	800264	EDGINGTON OIL COMPANY	LONG BEACH	36
44	144455	LIFOAM INDUSTRIES, LLC	VERNON	35
45	800198	ULTRAMAR INC (NSR USE ONLY)	WILMINGTON	35
46	152952	SA RECYCLING LLC DBA SA RECYCLING OF LA	TERMINAL ISLAND	34

SCAB NOX EMISSION PRODUCERS

	FACID	FNAME	FCITY	NOX
1	800030	CHEVRON PRODUCTS CO.	EL SEGUNDO	850
2	800436	TESORO REFINING AND MARKETING CO	WILMINGTON	844
3	800089	EXXONMOBIL OIL CORPORATION	TORRANCE	760
4	131003	BP WEST COAST PROD.LLC BP CARSON REF.	CARSON	711
5	800363	CONOCOPHILLIPS COMPANY	WILMINGTON	702
6	800181	CALIFORNIA PORTLAND CEMENT CO (NSR USE)	COLTON	607
7	800362	CONOCOPHILLIPS COMPANY	CARSON	330
8	44577	LONG BEACH CITY, SERRF PROJECT	LONG BEACH	262
9	800026	ULTRAMAR INC (NSR USE ONLY)	WILMINGTON	246
10	800128	SO CAL GAS CO (EIS USE)	NORTHRIDGE	226
11	100154	COLMAC ENERGY INC	MECCA	195
12	151178	PACIFIC ENERGY RESOURCES, LTD.	HUNTINGTON BEACH	190
13	131249	BP WEST COAST PRODUCTS LLC,BP WILMINGTON	WILMINGTON	185
14	46268	CALIFORNIA STEEL INDUSTRIES INC	FONTANA	141
15	800263	U.S. GOVT, DEPT OF NAVY	SAN CLEMENTE	124
16	121737	MOUNTAINVIEW GENERATING STATION	REDLANDS	116
17	800074	LA CITY, DWP HAYNES GENERATING STATION	LONG BEACH	104
18	37336	COMMERCE REFUSE TO ENERGY FACILITY	COMMERCE	102
19	800240	TIN, INC. TEMPLE-INLAND, DBA	ONTARIO	99
20	25070	LA CNTY SANITATION DISTRICT-PUENTE HILLS	CITY OF INDUSTRY	97
21	4477	SO CAL EDISON CO	AVALON	89
22	800236	LA CO. SANITATION DIST	CARSON	79
23	151798	TESORO REFINING AND MARKETING CO	CARSON	76
24	115394	AES ALAMITOS, LLC	LONG BEACH	73
25	800193	LA CITY, DWP VALLEY GENERATING STATION	SUN VALLEY	73
26	18931	TAMCO	RANCHO CUCAMONG	72
27	800183	PARAMOUNT PETR CORP (EIS USE)	PARAMOUNT	71
28	7427	OWENS-BROCKWAY GLASS CONTAINER INC	VERNON	69
29	119907	BERRY PETROLEUM COMPANY	SANTA CLARITA	65
30	20604	RALPHS GROCERY CO	COMPTON	64
31	124838	EXIDE TECHNOLOGIES	VERNON	49
32	800335	LA CITY, DEPT OF AIRPORTS	LOS ANGELES	48
33	107652	RALPHS GROCERY CO	RIVERSIDE	46
34	11435	THE PQ CORP	SOUTH GATE	43
35	5973	SO CAL GAS CO	VALENCIA	42
36	115389	AES HUNTINGTON BEACH, LLC	HUNTINGTON BEACH	41
37	800170	LA CITY, DWP HARBOR GENERATING STATION	WILMINGTON	39
38	800234	LOMA LINDA UNIV	LOMA LINDA	39
39	50310	WASTE MGMT DISP &RECY SERVS INC (BRADLEY	SUN VALLEY	38
40	69646	OC WASTE & RECYCLING, FRB	IRVINE	38
41	800075	LA CITY, DWP SCATTERGOOD GENERATING STN	PLAYA DEL REY	37
42	800327	GLENDALE CITY, GLENDALE WATER & POWER	GLENDALE	37
43	51620	WHEELABRATOR NORWALK ENERGY CO INC	NORWALK	36
44	29110	ORANGE COUNTY SANITATION DISTRICT	HUNTINGTON BEACH	36
45	115315	RRI ENERGY WEST, INC.	ETIWANDA	33
46	117297	MM PRIMA DESHECHA ENERGY, LLC	SAN JUAN CAPISTRAN	33

VOC and NOx Stationary Sources in 2008 Emitting 10 Tons/Year and Higher

47	115394	AES ALAMITOS, LLC	LONG BEACH	34
48	53729	TREND OFFSET PRINTING SERVICES, INC	LOS ALAMITOS	34
49	139808	INLAND EMPIRE REGIONAL COMPOSTING AUTHOR	RANCHO CUCAMONGA	32
SCAB VOC EMISSION PRODUCERS				
50	149814	SIERRACIN/SYLMAR CORP	SYLMAR	31
51	18294	NORTHROP GRUMMAN CORP, AIRCRAFT DIV	EL SEGUNDO	31
52	800080	LUNDAY-THAGARD COMPANY	SOUTH GATE	30
53	151798	TESORO REFINING AND MARKETING CO	CARSON	30
54	8547	QUEMETCO INC	CITY OF INDUSTRY	30
55	800367	IPS CORPORATION	GARDENA	29
56	84273	TEVA PARENTERAL MEDICINES, INC	IRVINE	28
57	139799	LITHOGRAPHIX INC	HAWTHORNE	27
58	17301	ORANGE COUNTY SANITATION DISTRICT	FOUNTAIN VALLEY	27
59	101656	AIR PRODUCTS AND CHEMICALS, INC.	WILMINGTON	26
60	126964	EDWARDS LIFSCIENCES LLC	IRVINE	26
61	800236	LA CO. SANITATION DIST	CARSON	26
62	145215	RAMONA FARMS	SAN JACINTO	25
63	144345	ENTENMANN'S, INC	PLACENTIA	25
64	124723	GREKA OIL & GAS, INC	PLACENTIA	24
65	124619	IMPRESS USA INC	TERMINAL ISLAND	23
66	25501	FABRI-COTE, DIV A & S GLASS FABRICS CO IN	LOS ANGELES	23
67	21887	KIMBERLY-CLARK WORLDWIDE INC.-FULT. MILL	FULLERTON	22
68	800038	THE BOEING COMPANY - C17 PROGRAM	LONG BEACH	22
69	7713	DELUXE PACKAGES	SANTA FE SPRINGS	22
70	800052	ARCO TERMINAL SERVICES CORP., TERMINAL 2	LONG BEACH	22
71	43605	FREE FLOW PACKAGING INTERNATIONAL, INC.	COMMERCE	21
72	800214	LA CITY, SANITATION BUREAU (HTP)	PLAYA DEL REY	21
73	14492	JOHNSON LAMINATING & COATING INC	CARSON	21
74	157259	GRAPHIC PACKAGING INTERNATIONAL, INC	IRVINE	21
75	800393	VALERO WILMINGTON ASPHALT PLANT	WILMINGTON	21
76	104017	AERA ENERGY LLC	HUNTINGTON BEACH	21
77	103609	ST. JUDE MEDICAL CRMD	SYLMAR	20
78	3417	AIR PROD & CHEM INC	CARSON	20
79	800365	CONOCOPHILLIPS CO. L A TERMINAL	LOS ANGELES	20
80	115962	BEST CONTRACTING SERVICES INC	GARDENA	20
81	800397	BP WEST COAST PROD., ARCO COLTON	BLOOMINGTON	20
82	76915	ST. JAMES OIL CORP.	LOS ANGELES	20
83	101977	SIGNAL HILL PETROLEUM INC	SIGNAL HILL	19
84	8309	CAMBRO MANUFACTURING CO	HUNTINGTON BEACH	19
85	58563	MERCURY PLASTICS INC	CITY OF INDUSTRY	18
86	123141	J TALLEY CORP, TALLEY & OCHOA METAL FAB.	SAN JACINTO	17
87	800022	CALNEV PIPE LINE, LLC	BLOOMINGTON	17
88	88228	VORTEX WHIRLPOOL SYSTEMS, INC	PERRIS	17
89	800113	ROHR, INC.	RIVERSIDE	17
90	142686	L. A. SPAS, INC	ANAHEIM	17
91	124725	FORTUNE FASHIONS IND	VERNON	17
92	3525	P.B. FASTENERS	GARDENA	17
93	61536	SPECIALTY FINISHES CO	FONTANA	17

47	800386	LA CO., SHERIFF DEPT	SAUGUS	33
48	50418	O C WASTE & RECYCLING, OLINDA ALPHA	BREA	31
49	128243	BURBANK CITY, BURBANK WATER & POWER, SCPPA	BURBANK	31
SCAB NOX EMISSION PRODUCERS				
50	142408	PENROSE LANDFILL GAS CONVERSION, LLC	SUN VALLEY	30
51	129497	THUMS LONG BEACH CO	LONG BEACH	30
52	104806	MM LOPEZ ENERGY LLC	SYLMAR	30
53	8547	QUEMETCO INC	CITY OF INDUSTRY	30
54	113873	MM WEST COVINA LLC	WEST COVINA	29
55	114801	RHODIA INC.	CARSON	28
56	550	LA CO., INTERNAL SERVICE DEPT	LOS ANGELES	28
57	101656	AIR PRODUCTS AND CHEMICALS, INC.	WILMINGTON	27
58	17301	ORANGE COUNTY SANITATION DISTRICT	FOUNTAIN VALLEY	27
59	49111	SUNSHINE CANYON LANDFILL	SYLMAR	27
60	129816	INLAND EMPIRE ENERGY CENTER, LLC	ROMOLAND	27
61	8582	SO CAL GAS CO/PLAYA DEL REY STORAGE FACI	PLAYA DEL REY	26
62	119133	EOP - 10960 WILSHIRE LLC	LOS ANGELES	26
63	13854	EAST LOS ANGELES COLLEGE	MONTEREY PARK	26
64	14502	VERNON CITY, LIGHT & POWER DEPT	VERNON	26
65	18452	UNIVERSITY OF CALIFORNIA, LOS ANGELES	LOS ANGELES	26
66	16978	CLOUGHERTY PACKING LLC/HORMEL FOODS CORP	VERNON	26
67	126498	STEELSCAPE, INC	RANCHO CUCAMONG	26
68	800080	LUNDAY-THAGARD COMPANY	SOUTH GATE	24
69	15504	SCHLOSSER FORGE COMPANY	RANCHO CUCAMONG	22
70	68466	CR TRANSFER, INC.	STANTON	22
71	4242	SAN DIEGO GAS & ELECTRIC	MORENO VALLEY	22
72	115663	EL SEGUNDO POWER, LLC	EL SEGUNDO	21
73	14966	U S GOV'T, V A MEDICAL CENTER, WEST L A	LOS ANGELES	21
74	22911	CARLTON FORGE WORKS	PARAMOUNT	20
75	23194	CITY OF HOPE MEDICAL CENTER	DUARTE	20
76	142517	CRIMSON RESOURCE MANAGEMENT	CASTAIC	20
77	800189	DISNEYLAND RESORT	ANAHEIM	19
78	94872	METAL CONTAINER CORP	MIRA LOMA	19
79	42514	LA COUNTY SANITATION DIST (CALABASAS)	AGOURA	19
80	105903	PRIME WHEEL	CARSON	19
81	16642	ANHEUSER-BUSCH INC., (LA BREWERY)	VAN NUYS	17
82	800265	UNIV OF SO CAL (EIS & NSR USE ONLY)	LOS ANGELES	17
83	43436	TST, INC.	FONTANA	17
84	71380	VEOLIA ES INDUSTRIAL SERVICES, INC	GARDENA	17
85	141555	CASTAIC CLAY PRODUCTS, LLC	CASTAIC	17
86	113518	RIDGEWOOD POWER MANAGEMENT, LLC	BREA	17
87	16389	CEDARS-SINAI MEDICAL CTR	LOS ANGELES	16
88	9755	UNITED AIRLINES INC	LOS ANGELES	16
89	68042	CORONA ENERGY PARTNERS, LTD	CORONA	16
90	800264	EDGINGTON OIL COMPANY	LONG BEACH	16
91	9163	INLAND EMPIRE UTL AGEN, A MUN WATER DIS	ONTARIO	16
92	2083	SUPERIOR INDUSTRIES INTERNATIONAL INC	VAN NUYS	16
93	113674	U S A WASTE OF CAL(EL SOBRANTE LANDFILL)	CORONA	15

VOC and NOx Stationary Sources in 2008 Emitting 10 Tons/Year and Higher

94	14146	MAC GREGOR YACHT CORP	COSTA MESA	17
95	45086	SIGNAL HILL PETROLEUM INC	LONG BEACH	17
96	16389	CEDARS-SINAI MEDICAL CTR	LOS ANGELES	17
97	18931	TAMCO	RANCHO CUCAMONGA	16
98	145100	P & D DAIRY	CHINO	16
99	132368	WORLD COLOR PRINTING	RIVERSIDE	16
SCAB VOC EMISSION PRODUCERS				
100	145211	R & J HARINGA DAIRY	SAN JACINTO	16
101	118733	MEDTRONIC INC., HEART VALVES DIV.	SANTA ANA	16
102	151984	TESORO REF & MKTG. CO., WILMINGTON	WILMINGTON	16
103	800051	ARCO TERMINAL SERVICES CORPORATION	LONG BEACH	16
104	133987	PLAINS EXPLORATION & PRODUCTION CO, LP	LOS ANGELES	16
105	800279	SFPP, L.P. (NSR USE ONLY)	ORANGE	16
106	115563	METAL COATERS OF CALIFORNIA	RANCHO CUCAMONGA	16
107	23401	HOOD MFG INC	SANTA ANA	16
108	116931	EQUILON ENT LLC, SHELL OIL PROD. U S	SIGNAL HILL	15
109	123970	SUNDANCE SPAS INC	CHINO	15
110	8582	SO CAL GAS CO/PLAYA DEL REY STORAGE FACI	PLAYA DEL REY	15
111	115663	EL SEGUNDO POWER, LLC	EL SEGUNDO	15
112	111814	CONOCOPHILLIPS/TORRANCE TANK FARM CO	TORRANCE	15
113	144826	PASTIME LAKES DAIRY	LAKEVIEW	15
114	800286	ARCO TERMINAL SERVICES CORP	SIGNAL HILL	15
115	52742	STOROPACK INC	DOWNEY	15
116	110924	WESTWAY TERMINAL COMPANY, LLC	SAN PEDRO	15
117	128243	BURBANK CITY,BURBANK WATER & POWER,SCPPA	BURBANK	15
118	800056	KINDER MORGAN LIQUIDS TERMINALS, LLC	WILMINGTON	14
119	18452	UNIVERSITY OF CALIFORNIA, LOS ANGELES	LOS ANGELES	14
120	800272	CHEMOIL TERMINALS CORPORATION	CARSON	14
121	144948	NORCO RANCH INC	FONTANA	14
122	73513	BJ SERVICES CO U S A	SANTA FE SPRINGS	14
123	149235	AMF ANAHEIM LLC	ANAHEIM	14
124	800263	U.S. GOVT, DEPT OF NAVY	SAN CLEMENTE	14
125	113674	U S A WASTE OF CAL(EL SOBRANTE LANDFILL)	CORONA	14
126	13011	M.C. GILL CORP	EL MONTE	14
127	145258	SYANN DAIRY, MARK VANDER DUSSEN DBA	CORONA	14
128	115389	AES HUNTINGTON BEACH, LLC	HUNTINGTON BEACH	14
129	110986	CALIFORNIA SPEEDWAY	FONTANA	14
130	800091	EXXONMOBIL OIL CORP	ANAHEIM	13
131	800092	EXXONMOBIL OIL CORP	TERMINAL ISLAND	13
132	119741	JENSEN PRECAST	FONTANA	13
133	126498	STEELSCAPE, INC	RANCHO CUCAMONGA	13
134	118314	ANTHONY, INC.	SAN FERNANDO	13
135	40806	NEW BASIS	RIVERSIDE	13
136	143523	ROBINSON CALF RANCH	ONTARIO	13
137	50310	WASTE MGMT DISP &RECY SERVS INC (BRADLEY	SUN VALLEY	13
138	72351	CAJOLEBEN, INC., GALASSO'S BAKERY, DBA	MIRA LOMA	13
139	47708	HELLMAN PROPERTIES LLC	SEAL BEACH	13
140	9163	INLAND EMPIRE UTL AGEN, A MUN WATER DIS	ONTARIO	13

94	123087	INDALEX WEST INC	CITY OF INDUSTRY	15
95	139010	RIPON COGENERATION LLC	POMONA	15
96	109914	THERMAL REMEDIATION SOLUTIONS, LLC	AZUSA	15
97	800168	PASADENA CITY, DWP (EIS USE)	PASADENA	15
98	12185	US GYPSUM CO	SOUTH GATE	14
99	35302	OWENS CORNING ROOFING AND ASPHALT, LLC	COMPTON	14
SCAB NOX EMISSION PRODUCERS				
100	117785	BALL METAL BEVERAGE CONTAINER CORP.	TORRANCE	14
101	3417	AIR PROD & CHEM INC	CARSON	14
102	17953	PACIFIC CLAY PRODUCTS INC	LAKE ELSINORE	13
103	116403	CR TRANSFER INC	STANTON	13
104	52517	REXAM BEVERAGE CAN COMPANY	CHATSWORTH	12
105	142417	TOYON LANDFILL GAS CONVERSION LLC	LOS ANGELES	12
106	800288	UNIV CAL IRVINE (NSR USE ONLY)	IRVINE	12
107	155877	MILLERCOORS, LLC	IRWINDALE	12
108	136	PRESS FORGE CO	PARAMOUNT	12
109	148236	AIR LIQUIDE LARGE INDUSTRIES U.S., LP	EL SEGUNDO	12
110	14495	VISTA METALS CORPORATION	FONTANA	12
111	47781	OLS ENERGY-CHINO	CHINO	12
112	145829	HOLLYWOOD PARK LAND COMPANY LLC	INGLEWOOD	12
113	95567	DOTY BROS EQUIPMENT CO	NORWALK	12
114	118406	CARSON COGENERATION COMPANY	CARSON	11
115	150351	SAMUEL P LEWIS DBA CHINO WELDING & ASSEM	MIRA LOMA	11
116	129660	NM MID VALLEY GENCO LLC	RIALTO	11
117	113303	CAITAC GARMENT PROCESSING INC	GARDENA	11
118	800129	SFPP, L.P.	BLOOMINGTON	11
119	800182	RIVERSIDE CEMENT CO (EIS USE)	RIVERSIDE	11
120	12428	NEW NGC, INC.	LONG BEACH	11
121	11245	HOAG MEM HOSP PRESBYTERIAN	NEWPORT BEACH	11
122	150783	FAIRPLEX	POMONA	11
123	346	FRITO-LAY, INC.	RANCHO CUCAMONG	11
124	18960	PASADENA CITY COLLEGE	PASADENA	11
125	115536	AES REDONDO BEACH, LLC	REDONDO BEACH	11
126	42633	LA COUNTY SANITATION DISTRICTS (SPADRA)	POMONA	11
127	10966	WEBER METALS INC	PARAMOUNT	11
128	115241	BOEING SATELLITE SYSTEMS INC	EL SEGUNDO	11
129	148468	DRI COMMERCIAL	IRVINE	11
130	16338	KAISER ALUMINUM FABRICATED PRODUCTS, LLC	LOS ANGELES	10
131	49805	LA CITY, BUREAU OF SANIT(LOPEZ CANYON)	LAKE VIEW TERRACE	10

VOC and NOx Stationary Sources in 2008 Emitting 10 Tons/Year and Higher

141	100154	COLMAC ENERGY INC	MECCA	13
142	800202	UNIVERSAL CITY STUDIOS, LLC.	UNIVERSAL CITY	13
143	800409	NORTHROP GRUMMAN SYSTEMS CORPORATION	REDONDO BEACH	13
144	148236	AIR LIQUIDE LARGE INDUSTRIES U.S., LP	EL SEGUNDO	13
145	152033	TESORO REF & MKTG CO., LONG BEACH	LONG BEACH	13
146	800327	GLENDALE CITY, GLENDALE WATER & POWER	GLENDALE	13
147	57094	GS ROOFING PRODUCTS CO, INC/CERTAINTED	WILMINGTON	13
148	800398	MASK-OFF COMPANY, INC	MONROVIA	13
149	800267	TRIUMPH PROCESSING, INC.	LYNWOOD	13
SCAB VOC EMISSION PRODUCERS				
150	3585	R. R. DONNELLEY & SONS CO, LA MFG DIV	TORRANCE	12
151	10656	NEWPORT LAMINATES	SANTA ANA	12
152	800193	LA CITY, DWP VALLEY GENERATING STATION	SUN VALLEY	12
153	124808	INEOS POLYPROPYLENE LLC	CARSON	12
154	111415	VAN CAN COMPANY	FONTANA	12
155	11362	HR TEXTRON INC	VALENCIA	12
156	145351	LEGEND DAIRY FARMS	ONTARIO	12
157	800417	PLAINS WEST COAST TERMINALS LLC	COMPTON	12
158	108742	REMO INC	VALENCIA	12
159	75770	ROSS-DOYLE INC	RIALTO	12
160	117882	NELSON NAMEPLATE COMPANY	LOS ANGELES	12
161	25070	LA CNTY SANITATION DISTRICT-PUENTE HILLS	CITY OF INDUSTRY	12
162	62851	PENN INDUSTRIES, INC.	CERRITOS	12
163	145095	CBJ DAIRY	SAN JACINTO	12
164	134590	FLEISCHMANN'S VINEGAR CO, INC	MONTEBELLO	12
165	151178	PACIFIC ENERGY RESOURCES, LTD.	HUNTINGTON BEACH	12
166	143973	MARVO HOLSTEINS	LAKEVIEW	11
167	6886	MARVIN ENGINEERING CO INC	INGLEWOOD	11
168	800369	EQUILON ENTER.LLC , SHELL OIL PROD. U S	VAN NUYS	11
169	12155	ARMSTRONG WORLD INDUSTRIES INC	SOUTH GATE	11
170	772	DEFT INC	IRVINE	11
171	800289	ALLERGAN INC	IRVINE	11
172	800003	HONEYWELL INTERNATIONAL INC	TORRANCE	11
173	100145	HARBOR FUMIGATION INC	SAN PEDRO	11
174	8936	FLEETWOOD MOTOR HOMES OF CAL INC	RIVERSIDE	11
175	1744	KIRKHILL - TA COMPANY	BREA	11
176	106897	AG-FUME SERVICES INC	SAN PEDRO	11
177	122858	SEKISUI TA INDUSTRIES, LLC	BREA	11
178	117290	B BRAUN MEDICAL, INC	IRVINE	11
179	10245	LA CITY, TERMINAL ISLAND TREATMENT PLANT	SAN PEDRO	11
180	117225	EQUILON ENTER. LLC, SHELL OIL PROD. U S	BLOOMINGTON	11
181	100806	ROBINSON HELICOPTER CO INC	TORRANCE	11
182	89248	OLD COUNTRY MILLWORK INC	LOS ANGELES	11
183	12876	FOAM FABRICATORS	COMPTON	11
184	39855	MIZKAN AMERICAS, INC	RANCHO CUCAMONGA	11
185	111238	RIBOST TERMINAL, LLC.	LONG BEACH	11
186	1703	EASTERN MUNICIPAL WATER DISTRICT	TEMECULA	11
187	132124	BP WEST COAST PRODUCTS, LLC/CARSON TERMI	CARSON	11

VOC and NOx Stationary Sources in 2008 Emitting 10 Tons/Year and Higher

188	144951	NORCO RANCH INC	MENIFEE	11
189	144144	JIM BOOTSMA, JR., DAIRY	LAKEVIEW	10
190	13397	JOHN BOYD DESIGNS	LOS ANGELES	10
191	146947	EAGLE LIVESTOCK INC	ONTARIO	10
192	75024	AAA FLAG & BANNER MFG CO INC	LOS ANGELES	10
193	69081	BAXTER HEALTHCARE CORP., HYLAND DIV	LOS ANGELES	10
194	44916	HEAD WEST INC	COMPTON	10
195	143870	ABACHERLI DAIRY, RONALD ABACHERLI	MENIFEE	10
196	7417	EASTERN MUNICIPAL WATER DIST	PERRIS	10

ATTACHMENT D

DRAFT FINAL 2012 AQMP APPENDIX III

**ON-ROAD EMISSIONS
BY VEHICLE CATEGORY**

Table D-1

2008 Annual Average Emissions (tons per day) in the South Coast Air Basin

	Light Gas	and Medium Diesel	Light Gas	Heavy Diesel	Medium Gas	Heavy Diesel	Heavy Gas	Heavy Diesel	Other Gas	Buses Diesel	Urban Gas	Buses Diesel	School Gas	Buses Diesel	Motor Gas	Homes Diesel	All Gas	Vehicles Diesel	Grand Total
vehicles	9925979	23158	268847	101395	20991	69513	1443	61760	7127	4701	1718	6819	1426	4831	55663	9182	10283194	281359	10564553
VMT/1000	344813	514	12703	4904	915	4259	107	8571	346	394	182	729	50	184	599	109	359715	19664	379379
Reactive Organic Gas Emissions																			
Run Exh	53.99	0.11	2.92	0.88	0.56	1.73	0.25	8.54	0.07	0.29	0.38	0.54	0.12	0.18	0.42	0.02	58.71	12.29	71.00
Idle Exh	0.00	0.00	0.17	0.01	0.03	0.03	0.00	0.86	0.02	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.22	0.96	1.18
Start Ex	39.83	0.00	3.68	0.00	1.32	0.00	0.28	0.00	0.37	0.00	0.03	0.00	0.03	0.00	0.01	0.00	45.53	0.00	45.53
Total Ex	93.82	0.11	6.78	0.89	1.90	1.76	0.53	9.40	0.46	0.32	0.41	0.54	0.15	0.20	0.43	0.02	104.46	13.25	117.70
Diurnal	9.79	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	9.81	0.01	9.82
Hot Soak	15.90	0.00	0.46	0.00	0.15	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.55	0.00	16.55
Running	53.00	0.00	2.52	0.00	0.64	0.00	0.15	0.00	0.12	0.00	0.02	0.00	0.03	0.00	0.02	0.00	56.49	0.00	56.49
Resting	6.34	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	6.36	0.00	6.36
Total	178.85	0.11	9.77	0.90	2.69	1.77	0.70	9.40	0.59	0.32	0.44	0.54	0.18	0.20	0.46	0.02	193.67	13.26	206.93
Carbon Monoxide Emissions																			
Run Exh	1321.12	0.48	54.10	4.24	12.68	6.07	8.25	35.16	1.60	1.14	4.13	2.52	2.32	0.54	13.41	0.07	1417.61	50.23	1467.84
Idle Exh	0.00	0.00	1.04	0.10	0.31	0.26	0.00	2.81	0.10	0.14	0.00	0.00	0.00	0.13	0.00	0.00	1.44	3.44	4.88
Start Ex	421.55	0.00	44.51	0.00	16.02	0.00	4.53	0.00	5.28	0.00	0.45	0.00	0.33	0.00	0.13	0.00	492.80	0.00	492.80
Total Ex	1742.67	0.48	99.64	4.34	29.01	6.33	12.78	37.97	6.98	1.28	4.58	2.52	2.64	0.67	13.55	0.07	1911.85	53.67	1965.52
Oxides of Nitrogen Emissions																			
Run Exh	139.59	0.80	12.18	32.41	3.00	40.93	1.11	155.22	0.62	5.84	0.73	14.05	0.16	2.48	1.24	0.95	158.64	252.68	411.32
Idle Exh	0.00	0.00	0.01	0.29	0.00	0.83	0.00	5.39	0.00	0.29	0.00	0.00	0.00	0.31	0.00	0.00	0.01	7.10	7.12
Start Ex	32.87	0.00	8.51	0.00	1.36	0.00	0.16	0.00	0.64	0.00	0.04	0.00	0.02	0.00	0.01	0.00	43.61	0.00	43.61
Total Ex	172.46	0.80	20.70	32.70	4.35	41.76	1.27	160.61	1.26	6.13	0.78	14.05	0.18	2.78	1.25	0.95	202.27	259.79	462.05
PM2.5 Emissions																			
Run Exh	1.75	0.08	0.03	0.21	0.00	1.40	0.00	5.85	0.00	0.19	0.00	0.21	0.00	0.11	0.00	0.02	1.79	8.07	9.86
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.14	0.14
Start Ex	0.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.36
Total Ex	2.10	0.08	0.05	0.21	0.01	1.40	0.00	5.98	0.00	0.20	0.00	0.21	0.00	0.11	0.00	0.02	2.16	8.21	10.37
TireWear	0.76	0.00	0.03	0.02	0.00	0.01	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.12	0.90
BrakeWear	5.98	0.01	0.22	0.18	0.02	0.26	0.00	0.25	0.01	0.02	0.00	0.29	0.00	0.07	0.01	0.01	6.24	1.09	7.33
Total	8.84	0.09	0.29	0.41	0.02	1.67	0.00	6.31	0.01	0.22	0.00	0.50	0.00	0.18	0.02	0.03	9.19	9.42	18.61
Fuel Consumption (1000 gallons) and SO2																			
Fuel	18356.18	18.80	961.98	257.80	75.16	481.75	10.53	1549.98	28.02	58.29	17.17	189.73	5.06	25.59	44.44	12.28	19498.55	2594.23	22092.78
SOx	1.72	0.00	0.09	0.03	0.01	0.05	0.00	0.16	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	1.83	0.27	2.10

*Emissions reflect SCAG's 2012 RTP activities and EMFAC2011 emission factors. Emission adjustments beyond the EMFAC2011 are not included.

Table D-2

2008 Summer Planning Emissions (tons per day) in the South Coast Air Basin

	Light Gas	and Medium Diesel	Light Gas	Heavy Diesel	Medium Gas	Heavy Diesel	Heavy Gas	Heavy Diesel	Other Gas	Buses Diesel	Urban Gas	Buses Diesel	School Gas	Buses Diesel	Motor Gas	Homes Diesel	All Gas	Vehicles Diesel	Grand Total
vehicles	9925979	23158	268847	101395	20991	69513	1443	61760	7127	4701	1718	6819	1426	4831	55663	9182	10283194	281359	10564553
VMT/1000	344813	514	12703	4904	915	4259	107	8571	346	394	182	729	50	184	599	109	359715	19664	379379
Reactive Organic Gas Emissions																			
Run Exh	54.54	0.11	2.99	0.88	0.56	1.73	0.25	8.54	0.07	0.29	0.38	0.54	0.12	0.18	0.40	0.02	59.32	12.29	71.61
Idle Exh	0.00	0.00	0.17	0.01	0.03	0.03	0.00	0.83	0.02	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.21	0.92	1.14
Start Ex	33.93	0.00	3.23	0.00	1.12	0.00	0.23	0.00	0.32	0.00	0.03	0.00	0.02	0.00	0.01	0.00	38.89	0.00	38.89
Total Ex	88.47	0.11	6.39	0.89	1.71	1.76	0.48	9.37	0.41	0.32	0.41	0.54	0.14	0.20	0.41	0.02	98.43	13.21	111.64
Diurnal	16.15	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	16.18	0.01	16.19
Hot Soak	17.55	0.00	0.50	0.00	0.16	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.26	0.00	18.26
Running	50.13	0.00	2.47	0.00	0.63	0.00	0.14	0.00	0.11	0.00	0.02	0.00	0.02	0.00	0.02	0.00	53.55	0.00	53.55
Resting	10.87	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	10.90	0.00	10.90
Total	183.17	0.11	9.39	0.90	2.50	1.77	0.65	9.37	0.54	0.32	0.44	0.54	0.17	0.20	0.46	0.02	197.31	13.22	210.53
Carbon Monoxide Emissions																			
Run Exh	1406.08	0.48	54.76	4.24	12.57	6.07	8.02	35.16	1.62	1.14	4.14	2.52	2.26	0.54	13.19	0.07	1502.64	50.23	1552.86
Idle Exh	0.00	0.00	1.04	0.10	0.22	0.19	0.00	2.16	0.10	0.10	0.00	0.00	0.00	0.09	0.00	0.00	1.36	2.64	4.00
Start Ex	337.07	0.00	36.18	0.00	13.67	0.00	4.32	0.00	4.38	0.00	0.38	0.00	0.28	0.00	0.11	0.00	396.40	0.00	396.40
Total Ex	1743.15	0.48	91.97	4.34	26.47	6.26	12.34	37.32	6.10	1.24	4.52	2.52	2.55	0.63	13.30	0.07	1900.40	52.87	1953.27
Oxides of Nitrogen Emissions																			
Run Exh	122.59	0.75	10.68	30.72	2.63	38.64	0.96	146.86	0.55	5.53	0.64	13.28	0.14	2.34	1.07	0.90	139.27	239.02	378.29
Idle Exh	0.00	0.00	0.01	0.29	0.00	0.85	0.00	5.53	0.00	0.30	0.00	0.00	0.00	0.31	0.00	0.00	0.01	7.29	7.31
Start Ex	30.56	0.00	8.19	0.00	1.30	0.00	0.16	0.00	0.61	0.00	0.04	0.00	0.02	0.00	0.01	0.00	40.88	0.00	40.88
Total Ex	153.15	0.75	18.88	31.01	3.93	39.49	1.12	152.39	1.16	5.83	0.69	13.28	0.16	2.65	1.08	0.90	180.17	246.31	426.48
PM2.5 Emissions																			
Run Exh	1.75	0.08	0.03	0.21	0.00	1.40	0.00	5.85	0.00	0.19	0.00	0.21	0.00	0.11	0.00	0.02	1.79	8.07	9.86
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.13	0.13
Start Ex	0.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.36
Total Ex	2.10	0.08	0.05	0.21	0.01	1.40	0.00	5.97	0.00	0.20	0.00	0.21	0.00	0.11	0.00	0.02	2.16	8.20	10.36
TireWear	0.76	0.00	0.03	0.02	0.00	0.01	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.12	0.90
BrakeWear	5.98	0.01	0.22	0.18	0.02	0.26	0.00	0.25	0.01	0.02	0.00	0.29	0.00	0.07	0.01	0.01	6.24	1.09	7.33
Total	8.84	0.09	0.29	0.41	0.02	1.67	0.00	6.30	0.01	0.22	0.00	0.50	0.00	0.18	0.02	0.03	9.19	9.41	18.59
Fuel Consumption (1000 gallons) and SO2																			
Fuel	19242.75	18.80	960.58	257.80	74.73	482.03	10.44	1551.77	27.86	58.40	17.16	189.73	5.05	25.69	44.40	12.28	20382.97	2596.51	22979.47
SOx	1.80	0.00	0.09	0.03	0.01	0.05	0.00	0.16	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	1.91	0.27	2.18

*Emissions reflect SCAG's 2012 RTP activities and EMFAC2011 emission factors. Emission adjustments beyond the EMFAC2011 are not included.

Table D-3

2014 Annual Average Emissions (tons per day) in the South Coast Air Basin

	Light and Medium Gas	Light Diesel	Heavy Gas	Heavy Diesel	Medium Gas	Medium Diesel	Heavy Gas	Heavy Diesel	Other Gas	Buses Diesel	Urban Gas	Urban Diesel	School Gas	Buses Diesel	Motor Gas	Homes Diesel	All Gas	Vehicles Diesel	Grand Total
vehicles	10346834	23777	303628	115774	20592	71326	1286	59736	7022	5497	1784	7111	1507	4641	59982	10459	10742635	298321	11040956
VMT/1000	350324	752	13250	4911	960	4101	186	8216	288	432	190	761	53	171	664	114	365915	19458	385373
Reactive Organic Gas Emissions																			
Run Exh	27.84	0.04	1.74	0.83	0.27	0.98	0.12	2.79	0.05	0.12	0.35	0.53	0.07	0.04	0.15	0.02	30.58	5.35	35.93
Idle Exh	0.00	0.00	0.18	0.02	0.03	0.02	0.00	0.66	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.22	0.72	0.94
Start Ex	21.65	0.00	3.20	0.00	0.74	0.00	0.08	0.00	0.26	0.00	0.03	0.00	0.02	0.00	0.01	0.00	25.98	0.00	25.98
Total Ex	49.49	0.04	5.11	0.84	1.03	0.99	0.20	3.45	0.32	0.14	0.38	0.53	0.09	0.05	0.15	0.02	56.78	6.07	62.85
Diurnal	6.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	6.58	0.01	6.59
Hot Soak	12.82	0.00	0.49	0.00	0.08	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.41	0.00	13.41
Running	35.91	0.00	2.83	0.00	0.31	0.00	0.02	0.00	0.10	0.00	0.03	0.00	0.02	0.00	0.02	0.00	39.24	0.00	39.24
Resting	5.13	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	5.14	0.00	5.14
Total	109.91	0.04	8.44	0.84	1.42	1.00	0.23	3.45	0.44	0.14	0.41	0.53	0.10	0.05	0.19	0.02	121.15	6.07	127.22
Carbon Monoxide Emissions																			
Run Exh	773.14	0.24	32.34	4.39	6.03	3.64	6.47	14.45	0.97	0.50	3.55	2.41	1.26	0.12	5.20	0.07	828.96	25.82	854.77
Idle Exh	0.00	0.00	1.11	0.12	0.29	0.18	0.00	3.40	0.09	0.09	0.00	0.00	0.00	0.03	0.00	0.00	1.49	3.82	5.31
Start Ex	254.44	0.00	35.11	0.00	10.55	0.00	1.98	0.00	4.14	0.00	0.43	0.00	0.24	0.00	0.08	0.00	306.97	0.00	306.97
Total Ex	1027.58	0.24	68.56	4.50	16.86	3.82	8.45	17.84	5.20	0.59	3.98	2.41	1.50	0.16	5.28	0.07	1137.42	29.64	1167.05
Oxides of Nitrogen Emissions																			
Run Exh	78.42	0.48	8.73	24.77	1.68	23.89	1.04	75.58	0.39	4.14	0.73	13.40	0.12	1.99	0.73	0.88	91.83	145.13	236.96
Idle Exh	0.00	0.00	0.01	0.33	0.00	0.66	0.00	4.81	0.00	0.28	0.00	0.00	0.00	0.27	0.00	0.00	0.01	6.35	6.36
Start Ex	20.16	0.00	9.38	0.00	1.05	0.00	0.12	0.00	0.56	0.00	0.05	0.00	0.02	0.00	0.01	0.00	31.34	0.00	31.34
Total Ex	98.58	0.48	18.11	25.10	2.74	24.55	1.16	80.39	0.95	4.42	0.78	13.40	0.13	2.25	0.74	0.88	123.18	151.48	274.66
PM2.5 Emissions																			
Run Exh	0.91	0.03	0.02	0.18	0.00	0.68	0.00	1.47	0.00	0.07	0.00	0.20	0.00	0.02	0.00	0.02	0.93	2.67	3.60
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03
Start Ex	0.20	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.21
Total Ex	1.11	0.03	0.03	0.18	0.00	0.68	0.00	1.50	0.00	0.07	0.00	0.20	0.00	0.02	0.00	0.02	1.14	2.70	3.85
TireWear	0.77	0.00	0.03	0.02	0.00	0.01	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.11	0.92
BrakeWear	6.08	0.01	0.23	0.19	0.02	0.25	0.00	0.24	0.00	0.03	0.00	0.30	0.00	0.06	0.01	0.01	6.35	1.09	7.44
Total	7.97	0.04	0.29	0.38	0.02	0.94	0.00	1.82	0.00	0.10	0.00	0.51	0.00	0.08	0.01	0.03	8.30	3.90	12.20
Fuel Consumption (1000 gallons) and SO2																			
Fuel	18419.87	25.07	996.83	256.75	74.89	462.53	14.96	1503.88	23.37	64.46	17.68	194.62	5.11	24.03	47.48	12.83	19600.18	2544.17	22144.35
SOx	1.73	0.00	0.09	0.03	0.01	0.05	0.00	0.16	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	1.84	0.27	2.11

*Emissions reflect SCAG's 2012 RTP activities and EMFAC2011 emission factors. Emission adjustments beyond the EMFAC2011 are not included.

Table D-4

2014 Summer Planning Emissions (tons per day) in the South Coast Air Basin

	Light and Medium Gas	Light Diesel	Heavy Gas	Heavy Diesel	Medium Gas	Medium Diesel	Heavy Gas	Heavy Diesel	Other Gas	Buses Diesel	Urban Gas	Urban Diesel	School Gas	Buses Diesel	Motor Gas	Homes Diesel	All Gas	Vehicles Diesel	Grand Total
vehicles	10346834	23777	303628	115774	20592	71326	1286	59736	7022	5497	1784	7111	1507	4641	59982	10459	10742635	298321	11040956
VMT/1000	350324	752	13250	4911	960	4101	186	8216	288	432	190	761	53	171	664	114	365915	19458	385373
Reactive Organic Gas Emissions																			
Run Exh	28.36	0.04	1.78	0.83	0.27	0.98	0.12	2.79	0.05	0.12	0.36	0.53	0.07	0.04	0.15	0.02	31.16	5.35	36.51
Idle Exh	0.00	0.00	0.18	0.02	0.02	0.02	0.00	0.63	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.68	0.90
Start Ex	18.43	0.00	2.82	0.00	0.64	0.00	0.07	0.00	0.23	0.00	0.03	0.00	0.02	0.00	0.01	0.00	22.23	0.00	22.23
Total Ex	46.78	0.04	4.78	0.84	0.93	0.99	0.19	3.42	0.29	0.14	0.39	0.53	0.09	0.05	0.15	0.02	53.61	6.03	59.64
Diurnal	10.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	10.73	0.01	10.74
Hot Soak	13.77	0.00	0.53	0.00	0.08	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.40	0.00	14.40
Running	34.00	0.00	2.77	0.00	0.31	0.00	0.02	0.00	0.10	0.00	0.03	0.00	0.01	0.00	0.02	0.00	37.25	0.00	37.25
Resting	8.16	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	8.18	0.00	8.18
Total	113.43	0.04	8.10	0.84	1.32	1.00	0.22	3.42	0.40	0.14	0.42	0.53	0.10	0.05	0.19	0.02	124.18	6.04	130.22
Carbon Monoxide Emissions																			
Run Exh	829.78	0.24	32.88	4.39	6.05	3.64	6.54	14.45	0.98	0.50	3.57	2.41	1.25	0.12	5.23	0.07	886.29	25.82	912.10
Idle Exh	0.00	0.00	1.11	0.12	0.21	0.13	0.00	2.49	0.09	0.07	0.00	0.00	0.00	0.02	0.00	0.00	1.41	2.83	4.24
Start Ex	202.09	0.00	28.47	0.00	8.74	0.00	1.69	0.00	3.38	0.00	0.36	0.00	0.20	0.00	0.06	0.00	245.01	0.00	245.01
Total Ex	1031.88	0.24	62.46	4.50	15.01	3.77	8.23	16.93	4.45	0.56	3.94	2.41	1.45	0.15	5.29	0.07	1132.71	28.64	1161.35
Oxides of Nitrogen Emissions																			
Run Exh	68.91	0.45	7.64	23.47	1.46	22.62	0.93	71.48	0.34	3.91	0.64	12.68	0.10	1.88	0.64	0.84	80.66	137.32	217.98
Idle Exh	0.00	0.00	0.01	0.33	0.00	0.68	0.00	4.95	0.00	0.30	0.00	0.00	0.00	0.28	0.00	0.00	0.01	6.54	6.55
Start Ex	18.74	0.00	9.02	0.00	1.01	0.00	0.11	0.00	0.54	0.00	0.05	0.00	0.02	0.00	0.01	0.00	29.49	0.00	29.49
Total Ex	87.65	0.45	16.67	23.80	2.48	23.30	1.04	76.43	0.88	4.21	0.69	12.68	0.12	2.15	0.64	0.84	110.16	143.86	254.02
PM2.5 Emissions																			
Run Exh	0.91	0.03	0.02	0.18	0.00	0.68	0.00	1.47	0.00	0.07	0.00	0.20	0.00	0.02	0.00	0.02	0.93	2.67	3.60
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03
Start Ex	0.20	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.21
Total Ex	1.11	0.03	0.03	0.18	0.00	0.68	0.00	1.50	0.00	0.07	0.00	0.20	0.00	0.02	0.00	0.02	1.14	2.70	3.84
TireWear	0.77	0.00	0.03	0.02	0.00	0.01	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.11	0.92
BrakeWear	6.08	0.01	0.23	0.19	0.02	0.25	0.00	0.24	0.00	0.03	0.00	0.30	0.00	0.06	0.01	0.01	6.35	1.09	7.44
Total	7.97	0.04	0.29	0.38	0.02	0.94	0.00	1.82	0.00	0.10	0.00	0.51	0.00	0.08	0.01	0.03	8.30	3.90	12.20
Fuel Consumption (1000 gallons) and SO2																			
Fuel	19330.50	25.07	995.70	256.75	74.58	462.83	14.92	1507.17	23.23	64.58	17.68	194.62	5.10	24.13	47.49	12.83	20509.18	2547.99	23057.18
SOx	1.81	0.00	0.09	0.03	0.01	0.05	0.00	0.16	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	1.92	0.27	2.19

*Emissions reflect SCAG's 2012 RTP activities and EMFAC2011 emission factors. Emission adjustments beyond the EMFAC2011 are not included.

Table D-5

2019 Annual Average Emissions (tons per day) in the South Coast Air Basin

	Light and Medium Gas	Light and Medium Diesel	Light Gas	Light Heavy Diesel	Medium Gas	Medium Heavy Diesel	Heavy Gas	Heavy Heavy Diesel	Other Gas	Buses Diesel	Urban Gas	Urban Diesel	School Gas	Buses Diesel	Motor Gas	Homes Diesel	All Gas	Vehicles Diesel	Grand Total
vehicles	10417656	23816	327623	126383	21360	75969	1310	67365	7206	6196	1870	7344	1595	4763	64061	11228	10842681	323064	11165745
VMT/1000	352644	768	14113	5237	1023	4503	181	9794	273	491	199	785	55	172	719	119	369207	21869	391076
Reactive Organic Gas Emissions																			
Run Exh	15.60	0.02	0.98	0.68	0.12	0.54	0.08	2.42	0.03	0.08	0.34	0.47	0.05	0.03	0.05	0.02	17.25	4.26	21.51
Idle Exh	0.00	0.00	0.19	0.02	0.03	0.02	0.00	0.93	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.98	1.21
Start Ex	12.79	0.00	2.62	0.00	0.44	0.00	0.04	0.00	0.21	0.00	0.03	0.00	0.01	0.00	0.00	0.00	16.15	0.00	16.15
Total Ex	28.40	0.02	3.79	0.70	0.59	0.55	0.13	3.35	0.25	0.10	0.37	0.47	0.06	0.03	0.05	0.02	33.63	5.25	38.88
Diurnal	4.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	4.94	0.00	4.95
Hot Soak	9.97	0.00	0.49	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.52	0.00	10.52
Running	27.34	0.00	2.84	0.00	0.21	0.00	0.01	0.00	0.12	0.00	0.03	0.00	0.02	0.00	0.02	0.00	30.58	0.00	30.58
Resting	4.30	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.31	0.00	4.31
Total	74.94	0.02	7.12	0.70	0.84	0.56	0.14	3.35	0.38	0.10	0.40	0.47	0.08	0.03	0.08	0.02	83.98	5.25	89.23
Carbon Monoxide Emissions																			
Run Exh	489.87	0.13	19.19	4.15	2.63	2.33	5.96	14.02	0.53	0.37	3.02	2.13	0.70	0.09	1.79	0.07	523.70	23.30	547.00
Idle Exh	0.00	0.00	1.17	0.13	0.29	0.18	0.00	5.17	0.09	0.11	0.00	0.00	0.00	0.04	0.00	0.00	1.55	5.63	7.18
Start Ex	161.46	0.00	28.67	0.00	7.32	0.00	1.58	0.00	3.37	0.00	0.41	0.00	0.20	0.00	0.05	0.00	203.06	0.00	203.06
Total Ex	651.33	0.13	49.03	4.28	10.24	2.51	7.55	19.19	3.98	0.48	3.43	2.13	0.90	0.13	1.84	0.07	728.31	28.93	757.23
Oxides of Nitrogen Emissions																			
Run Exh	49.57	0.32	6.18	18.91	0.89	12.03	0.95	53.26	0.23	2.24	0.68	11.59	0.10	1.73	0.43	0.80	59.02	100.89	159.91
Idle Exh	0.00	0.00	0.01	0.36	0.00	0.51	0.00	5.93	0.00	0.23	0.00	0.00	0.00	0.25	0.00	0.00	0.01	7.29	7.31
Start Ex	12.08	0.00	9.11	0.00	0.81	0.00	0.10	0.00	0.47	0.00	0.05	0.00	0.02	0.00	0.01	0.00	22.65	0.00	22.65
Total Ex	61.66	0.32	15.30	19.27	1.70	12.55	1.05	59.19	0.70	2.47	0.73	11.59	0.11	1.99	0.43	0.80	81.68	108.18	189.86
PM2.5 Emissions																			
Run Exh	0.77	0.01	0.01	0.14	0.00	0.32	0.00	1.02	0.00	0.03	0.00	0.18	0.00	0.01	0.00	0.02	0.79	1.75	2.54
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Start Ex	0.22	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.22
Total Ex	0.99	0.01	0.02	0.14	0.00	0.32	0.00	1.04	0.00	0.03	0.00	0.18	0.00	0.01	0.00	0.02	1.01	1.77	2.77
TireWear	0.78	0.00	0.03	0.02	0.00	0.02	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81	0.13	0.95
BrakeWear	6.12	0.01	0.24	0.20	0.02	0.28	0.00	0.29	0.00	0.03	0.00	0.31	0.00	0.06	0.01	0.01	6.41	1.19	7.59
Total	7.89	0.03	0.30	0.36	0.02	0.62	0.00	1.42	0.00	0.06	0.00	0.50	0.00	0.07	0.01	0.03	8.23	3.09	11.31
Fuel Consumption (1000 gallons) and SO2																			
Fuel	18486.09	25.20	1053.94	272.78	77.53	502.63	14.26	1785.52	21.95	72.07	18.38	195.12	5.27	24.02	50.40	13.54	19727.82	2890.87	22618.69
SOx	1.73	0.00	0.10	0.03	0.01	0.05	0.00	0.19	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	1.85	0.31	2.15

*Emissions reflect SCAG's 2012 RTP activities and EMFAC2011 emission factors. Emission adjustments beyond the EMFAC2011 are not included.

Table D-6

2019 Summer Planning Emissions (tons per day) in the South Coast Air Basin

	Light and Medium Gas	Medium Diesel	Light Heavy Gas	Heavy Diesel	Medium Gas	Heavy Diesel	Heavy Heavy Gas	Heavy Heavy Diesel	Other Buses Gas	Buses Diesel	Urban Buses Gas	Buses Diesel	School Buses Gas	Buses Diesel	Motor Homes Gas	Homes Diesel	All Vehicles Gas	Vehicles Diesel	Grand Total
vehicles	10417656	23816	327623	126383	21360	75969	1310	67365	7206	6196	1870	7344	1595	4763	64061	11228	10842681	323064	11165745
VMT/1000	352644	768	14113	5237	1023	4503	181	9794	273	491	199	785	55	172	719	119	369207	21869	391076
Reactive Organic Gas Emissions																			
Run Exh	16.10	0.02	1.00	0.68	0.12	0.54	0.09	2.42	0.03	0.08	0.35	0.47	0.05	0.03	0.05	0.02	17.78	4.26	22.05
Idle Exh	0.00	0.00	0.19	0.02	0.02	0.02	0.00	0.88	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.93	1.16
Start Ex	10.89	0.00	2.32	0.00	0.39	0.00	0.04	0.00	0.18	0.00	0.03	0.00	0.01	0.00	0.00	0.00	13.86	0.00	13.86
Total Ex	26.98	0.02	3.51	0.70	0.54	0.55	0.13	3.30	0.22	0.10	0.37	0.47	0.06	0.03	0.06	0.02	31.87	5.19	37.06
Diurnal	7.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	8.00	0.00	8.01
Hot Soak	10.56	0.00	0.52	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.15	0.00	11.15
Running	25.86	0.00	2.77	0.00	0.20	0.00	0.01	0.00	0.12	0.00	0.03	0.00	0.01	0.00	0.02	0.00	29.02	0.00	29.02
Resting	6.58	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	6.60	0.00	6.60
Total	77.97	0.02	6.83	0.70	0.79	0.55	0.14	3.30	0.35	0.10	0.41	0.47	0.07	0.03	0.09	0.02	86.64	5.20	91.83
Carbon Monoxide Emissions																			
Run Exh	531.12	0.13	19.57	4.15	2.68	2.33	6.10	14.02	0.54	0.37	3.07	2.13	0.72	0.09	1.83	0.07	565.61	23.30	588.91
Idle Exh	0.00	0.00	1.17	0.13	0.21	0.13	0.00	3.76	0.09	0.08	0.00	0.00	0.00	0.02	0.00	0.00	1.47	4.13	5.60
Start Ex	127.31	0.00	23.26	0.00	5.92	0.00	1.28	0.00	2.72	0.00	0.34	0.00	0.17	0.00	0.04	0.00	161.04	0.00	161.04
Total Ex	658.42	0.13	43.99	4.28	8.81	2.46	7.38	17.78	3.35	0.45	3.41	2.13	0.88	0.12	1.87	0.07	728.12	27.43	755.54
Oxides of Nitrogen Emissions																			
Run Exh	43.52	0.30	5.45	17.92	0.79	11.33	0.82	50.35	0.20	2.12	0.60	10.96	0.08	1.64	0.37	0.75	51.83	95.37	147.20
Idle Exh	0.00	0.00	0.01	0.36	0.00	0.53	0.00	6.12	0.00	0.24	0.00	0.00	0.00	0.26	0.00	0.00	0.01	7.52	7.53
Start Ex	11.23	0.00	8.77	0.00	0.78	0.00	0.10	0.00	0.46	0.00	0.05	0.00	0.01	0.00	0.01	0.00	21.40	0.00	21.40
Total Ex	54.75	0.30	14.23	18.28	1.57	11.87	0.92	56.47	0.65	2.36	0.64	10.96	0.10	1.90	0.38	0.75	73.24	102.89	176.13
PM2.5 Emissions																			
Run Exh	0.77	0.01	0.01	0.14	0.00	0.32	0.00	1.02	0.00	0.03	0.00	0.18	0.00	0.01	0.00	0.02	0.79	1.75	2.54
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Start Ex	0.22	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.22
Total Ex	0.99	0.01	0.02	0.14	0.00	0.32	0.00	1.03	0.00	0.03	0.00	0.18	0.00	0.01	0.00	0.02	1.01	1.76	2.77
TireWear	0.78	0.00	0.03	0.02	0.00	0.02	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81	0.13	0.95
BrakeWear	6.12	0.01	0.24	0.20	0.02	0.28	0.00	0.29	0.00	0.03	0.00	0.31	0.00	0.06	0.01	0.01	6.41	1.19	7.59
Total	7.89	0.03	0.30	0.36	0.02	0.62	0.00	1.42	0.00	0.06	0.00	0.50	0.00	0.07	0.01	0.03	8.23	3.08	11.31
Fuel Consumption (1000 gallons) and SO2																			
Fuel	19417.93	25.20	1053.01	272.78	77.31	502.96	14.22	1790.49	21.84	72.21	18.38	195.12	5.27	24.13	50.40	13.54	20658.36	2896.42	23554.78
SOx	1.82	0.00	0.10	0.03	0.01	0.05	0.00	0.19	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	1.94	0.31	2.24

*Emissions reflect SCAG's 2012 RTP activities and EMFAC2011 emission factors. Emission adjustments beyond the EMFAC2011 are not included.

Table D-7

2023 Annual Average Emissions (tons per day) in the South Coast Air Basin

	Light and Medium Gas	Diesel	Light Gas	Heavy Diesel	Medium Gas	Heavy Diesel	Heavy Gas	Heavy Diesel	Other Buses Gas	Diesel	Urban Buses Gas	Diesel	School Buses Gas	Diesel	Motor Homes Gas	Diesel	All Vehicles Gas	Diesel	Grand Total
vehicles	10526763	23898	344981	134099	22021	76214	1343	69530	7415	6442	1956	7611	1680	4769	71139	12504	10977298	335067	11312365
VMT/1000	355446	749	14808	5511	1046	4609	173	10412	275	527	209	814	59	168	809	135	372825	22925	395750
Reactive Organic Gas Emissions																			
Run Exh	12.49	0.01	0.56	0.58	0.06	0.40	0.07	2.17	0.02	0.08	0.32	0.45	0.03	0.03	0.03	0.02	13.57	3.74	17.32
Idle Exh	0.00	0.00	0.19	0.02	0.03	0.02	0.00	1.11	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.23	1.17	1.40
Start Ex	9.54	0.00	2.13	0.00	0.33	0.00	0.03	0.00	0.17	0.00	0.03	0.00	0.01	0.00	0.00	0.00	12.25	0.00	12.25
Total Ex	22.03	0.01	2.89	0.59	0.42	0.42	0.10	3.27	0.20	0.11	0.35	0.45	0.04	0.04	0.03	0.02	26.05	4.91	30.96
Diurnal	4.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	4.34	0.00	4.34
Hot Soak	8.60	0.00	0.48	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.14	0.00	9.14
Running	24.32	0.00	2.76	0.00	0.19	0.00	0.01	0.00	0.12	0.00	0.04	0.00	0.01	0.00	0.01	0.00	27.46	0.00	27.46
Resting	3.91	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.92	0.00	3.92
Total	63.19	0.01	6.14	0.59	0.64	0.42	0.11	3.27	0.33	0.11	0.39	0.45	0.05	0.04	0.05	0.02	70.91	4.92	75.82
Carbon Monoxide Emissions																			
Run Exh	390.69	0.09	12.02	3.95	1.35	1.85	5.57	13.05	0.30	0.38	2.62	2.09	0.43	0.10	0.77	0.08	413.74	21.59	435.33
Idle Exh	0.00	0.00	1.20	0.13	0.29	0.20	0.00	6.25	0.09	0.15	0.00	0.00	0.00	0.04	0.00	0.00	1.58	6.77	8.35
Start Ex	122.51	0.00	24.75	0.00	5.65	0.00	1.51	0.00	2.82	0.00	0.40	0.00	0.16	0.00	0.05	0.00	157.85	0.00	157.85
Total Ex	513.20	0.09	37.96	4.09	7.29	2.05	7.08	19.30	3.21	0.54	3.02	2.09	0.58	0.14	0.81	0.08	573.16	28.36	601.53
Oxides of Nitrogen Emissions																			
Run Exh	38.88	0.26	4.72	14.75	0.53	4.91	0.87	26.38	0.14	0.84	0.66	11.03	0.07	1.57	0.30	0.75	46.16	60.48	106.65
Idle Exh	0.00	0.00	0.01	0.38	0.00	0.33	0.00	6.25	0.00	0.15	0.00	0.00	0.00	0.24	0.00	0.00	0.01	7.36	7.37
Start Ex	8.76	0.00	8.63	0.00	0.66	0.00	0.10	0.00	0.40	0.00	0.05	0.00	0.01	0.00	0.01	0.00	18.61	0.00	18.61
Total Ex	47.64	0.26	13.37	15.13	1.19	5.24	0.97	32.63	0.54	0.99	0.71	11.03	0.08	1.81	0.30	0.75	64.79	67.84	132.63
PM2.5 Emissions																			
Run Exh	0.78	0.01	0.01	0.12	0.00	0.19	0.00	1.06	0.00	0.03	0.00	0.18	0.00	0.01	0.00	0.02	0.79	1.62	2.41
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Start Ex	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.27
Total Ex	1.04	0.01	0.01	0.12	0.00	0.19	0.00	1.08	0.00	0.03	0.00	0.18	0.00	0.01	0.00	0.02	1.06	1.63	2.69
TireWear	0.78	0.00	0.03	0.02	0.00	0.02	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82	0.14	0.96
BrakeWear	6.17	0.01	0.26	0.21	0.02	0.28	0.00	0.31	0.00	0.03	0.00	0.32	0.00	0.06	0.01	0.01	6.47	1.23	7.70
Total	8.00	0.02	0.30	0.35	0.02	0.49	0.00	1.49	0.00	0.06	0.00	0.50	0.00	0.07	0.01	0.03	8.34	3.01	11.35
Fuel Consumption (1000 gallons) and SO2																			
Fuel	18701.17	24.37	1106.75	286.49	78.85	511.62	13.69	1884.65	22.11	76.51	19.13	199.75	5.48	23.58	56.64	15.32	20003.82	3022.29	23026.10
SOx	1.75	0.00	0.10	0.03	0.01	0.05	0.00	0.20	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.00	1.88	0.32	2.19

*Emissions reflect SCAG's 2012 RTP activities and EMFAC2011 emission factors. Emission adjustments beyond the EMFAC2011 are not included.

Table D-8

2023 Summer Planning Emissions (tons per day) in the South Coast Air Basin

	Light Gas	Medium Diesel	Light Gas	Heavy Diesel	Medium Gas	Heavy Diesel	Heavy Gas	Heavy Diesel	Other Gas	Buses Diesel	Urban Gas	Buses Diesel	School Gas	Buses Diesel	Motor Gas	Homes Diesel	All Gas	Vehicles Diesel	Grand Total
vehicles	10526763	23898	344981	134099	22021	76214	1343	69530	7415	6442	1956	7611	1680	4769	71139	12504	10977298	335067	11312365
VMT/1000	355446	749	14808	5511	1046	4609	173	10412	275	527	209	814	59	168	809	135	372825	22925	395750
Reactive Organic Gas Emissions																			
Run Exh	12.88	0.01	0.58	0.58	0.06	0.40	0.07	2.17	0.02	0.08	0.33	0.45	0.03	0.03	0.03	0.02	13.99	3.74	17.73
Idle Exh	0.00	0.00	0.19	0.02	0.02	0.02	0.00	1.04	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.23	1.10	1.33
Start Ex	8.14	0.00	1.90	0.00	0.29	0.00	0.03	0.00	0.15	0.00	0.03	0.00	0.01	0.00	0.00	0.00	10.54	0.00	10.54
Total Ex	21.02	0.01	2.67	0.59	0.38	0.42	0.10	3.21	0.18	0.10	0.36	0.45	0.04	0.04	0.03	0.02	24.76	4.85	29.61
Diurnal	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	7.01	0.00	7.02
Hot Soak	9.06	0.00	0.51	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.63	0.00	9.63
Running	22.97	0.00	2.70	0.00	0.18	0.00	0.01	0.00	0.12	0.00	0.03	0.00	0.01	0.00	0.01	0.00	26.03	0.00	26.03
Resting	5.91	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	5.94	0.00	5.94
Total	65.96	0.01	5.89	0.59	0.60	0.42	0.11	3.21	0.31	0.10	0.40	0.45	0.05	0.04	0.05	0.02	73.37	4.85	78.22
Carbon Monoxide Emissions																			
Run Exh	424.89	0.09	12.27	3.95	1.38	1.85	5.69	13.05	0.31	0.38	2.69	2.09	0.44	0.10	0.79	0.08	448.44	21.59	470.03
Idle Exh	0.00	0.00	1.20	0.13	0.21	0.15	0.00	4.54	0.09	0.11	0.00	0.00	0.00	0.03	0.00	0.00	1.50	4.96	6.46
Start Ex	96.64	0.00	20.10	0.00	4.56	0.00	1.22	0.00	2.28	0.00	0.33	0.00	0.13	0.00	0.04	0.00	125.31	0.00	125.31
Total Ex	521.53	0.09	33.57	4.09	6.16	2.00	6.91	17.59	2.68	0.50	3.02	2.09	0.57	0.13	0.82	0.08	575.25	26.55	601.80
Oxides of Nitrogen Emissions																			
Run Exh	34.29	0.25	4.16	14.01	0.47	4.65	0.78	24.94	0.12	0.79	0.58	10.43	0.06	1.48	0.26	0.71	40.72	57.26	97.98
Idle Exh	0.00	0.00	0.01	0.38	0.00	0.34	0.00	6.45	0.00	0.15	0.00	0.00	0.00	0.25	0.00	0.00	0.01	7.58	7.59
Start Ex	8.14	0.00	8.30	0.00	0.63	0.00	0.09	0.00	0.39	0.00	0.05	0.00	0.01	0.00	0.01	0.00	17.62	0.00	17.62
Total Ex	42.44	0.25	12.48	14.40	1.10	4.99	0.87	31.39	0.51	0.94	0.62	10.43	0.08	1.73	0.26	0.71	58.35	64.84	123.19
PM2.5 Emissions																			
Run Exh	0.78	0.01	0.01	0.12	0.00	0.19	0.00	1.06	0.00	0.03	0.00	0.18	0.00	0.01	0.00	0.02	0.79	1.62	2.41
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Start Ex	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.27
Total Ex	1.04	0.01	0.01	0.12	0.00	0.19	0.00	1.07	0.00	0.03	0.00	0.18	0.00	0.01	0.00	0.02	1.06	1.63	2.69
TireWear	0.78	0.00	0.03	0.02	0.00	0.02	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82	0.14	0.96
BrakeWear	6.17	0.01	0.26	0.21	0.02	0.28	0.00	0.31	0.00	0.03	0.00	0.32	0.00	0.06	0.01	0.01	6.47	1.23	7.70
Total	8.00	0.02	0.30	0.35	0.02	0.49	0.00	1.48	0.00	0.06	0.00	0.50	0.00	0.07	0.01	0.03	8.34	3.01	11.35
Fuel Consumption (1000 gallons) and SO2																			
Fuel	19652.69	24.37	1105.94	286.49	78.68	511.95	13.66	1890.43	22.01	76.66	19.13	199.75	5.48	23.69	56.65	15.32	20954.24	3028.65	23982.89
SOx	1.84	0.00	0.10	0.03	0.01	0.05	0.00	0.20	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.00	1.96	0.32	2.28

*Emissions reflect SCAG's 2012 RTP activities and EMFAC2011 emission factors. Emission adjustments beyond the EMFAC2011 are not included.

Table D-9

2030 Annual Average Emissions (tons per day) in the South Coast Air Basin

	Light Gas	and Medium Diesel	Light Gas	Heavy Diesel	Medium Gas	Heavy Diesel	Heavy Gas	Heavy Diesel	Other Gas	Buses Diesel	Urban Gas	Buses Diesel	School Gas	Buses Diesel	Motor Gas	Homes Diesel	All Gas	Vehicles Diesel	Grand Total
vehicles	11173991	25023	375645	146558	24022	82513	1506	80008	7739	7111	2103	8074	1827	4781	86692	15275	11673525	369343	12042868
VMT/1000	376572	778	16084	6028	1128	4998	188	12278	288	595	224	864	64	164	988	168	395536	25873	421409
Reactive Organic Gas Emissions																			
Run Exh	11.07	0.01	0.23	0.46	0.02	0.46	0.06	2.47	0.01	0.09	0.11	0.38	0.01	0.04	0.01	0.02	11.52	3.92	15.45
Idle Exh	0.00	0.00	0.21	0.02	0.03	0.02	0.00	1.32	0.02	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.25	1.39	1.64
Start Ex	7.28	0.00	1.67	0.00	0.27	0.00	0.03	0.00	0.14	0.00	0.03	0.00	0.01	0.00	0.00	0.00	9.43	0.00	9.43
Total Ex	18.35	0.01	2.11	0.48	0.32	0.48	0.09	3.78	0.16	0.12	0.14	0.38	0.02	0.05	0.01	0.02	21.20	5.31	26.51
Diurnal	3.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	3.87	0.00	3.87
Hot Soak	7.49	0.00	0.46	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.99	0.00	7.99
Running	22.30	0.00	2.50	0.00	0.18	0.00	0.01	0.00	0.12	0.00	0.03	0.00	0.01	0.00	0.01	0.00	25.16	0.00	25.16
Resting	3.67	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.68	0.00	3.68
Total	55.67	0.01	5.07	0.49	0.54	0.48	0.10	3.78	0.29	0.12	0.17	0.38	0.04	0.05	0.03	0.02	61.90	5.32	67.22
Carbon Monoxide Emissions																			
Run Exh	343.43	0.06	5.39	3.93	0.54	2.03	5.85	14.46	0.13	0.44	1.60	1.68	0.22	0.13	0.24	0.08	357.40	22.84	380.24
Idle Exh	0.00	0.00	1.29	0.14	0.32	0.22	0.00	7.43	0.09	0.17	0.00	0.00	0.00	0.05	0.00	0.00	1.70	8.03	9.73
Start Ex	96.12	0.00	21.05	0.00	4.39	0.00	1.61	0.00	2.30	0.00	0.34	0.00	0.13	0.00	0.05	0.00	125.98	0.00	125.98
Total Ex	439.55	0.06	27.72	4.08	5.25	2.26	7.46	21.90	2.52	0.62	1.94	1.68	0.34	0.19	0.29	0.08	485.08	30.87	515.95
Oxides of Nitrogen Emissions																			
Run Exh	32.51	0.21	3.11	9.67	0.27	5.31	0.94	28.70	0.07	0.98	0.54	8.47	0.05	1.10	0.19	0.72	37.69	55.17	92.86
Idle Exh	0.00	0.00	0.01	0.42	0.00	0.35	0.00	7.13	0.00	0.17	0.00	0.00	0.00	0.18	0.00	0.00	0.02	8.24	8.26
Start Ex	6.48	0.00	8.13	0.00	0.53	0.00	0.11	0.00	0.33	0.00	0.05	0.00	0.01	0.00	0.01	0.00	15.64	0.00	15.64
Total Ex	39.00	0.21	11.26	10.09	0.80	5.65	1.05	35.83	0.40	1.15	0.59	8.47	0.06	1.28	0.19	0.72	53.35	63.41	116.76
PM2.5 Emissions																			
Run Exh	0.91	0.00	0.01	0.11	0.00	0.21	0.00	1.16	0.00	0.04	0.00	0.15	0.00	0.01	0.00	0.01	0.92	1.69	2.61
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Start Ex	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.34
Total Ex	1.26	0.00	0.01	0.11	0.00	0.21	0.00	1.18	0.00	0.04	0.00	0.15	0.00	0.01	0.00	0.01	1.26	1.71	2.97
TireWear	0.83	0.00	0.04	0.02	0.00	0.02	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.16	1.03
BrakeWear	6.54	0.01	0.28	0.23	0.02	0.31	0.00	0.36	0.01	0.04	0.01	0.34	0.00	0.06	0.02	0.01	6.87	1.36	8.23
Total	8.63	0.02	0.32	0.36	0.02	0.53	0.00	1.66	0.01	0.07	0.01	0.49	0.00	0.07	0.02	0.02	9.00	3.22	12.23
Fuel Consumption (1000 gallons) and SO2																			
Fuel	19965.07	25.14	1211.40	312.85	85.15	555.88	14.91	2221.78	23.08	86.53	20.26	203.27	5.89	23.11	69.59	19.14	21395.36	3447.68	24843.04
SOx	1.87	0.00	0.11	0.03	0.01	0.06	0.00	0.24	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.00	2.01	0.36	2.37

*Emissions reflect SCAG's 2012 RTP activities and EMFAC2011 emission factors. Emission adjustments beyond the EMFAC2011 are not included.

Table D-10

2030 Summer Planning Emissions (tons per day) in the South Coast Air Basin

	Light Gas	and Medium Diesel	Light Gas	Heavy Diesel	Medium Gas	Heavy Diesel	Heavy Gas	Heavy Diesel	Other Gas	Buses Diesel	Urban Gas	Buses Diesel	School Gas	Buses Diesel	Motor Gas	Homes Diesel	All Gas	Vehicles Diesel	Grand Total
vehicles	11173991	25023	375645	146558	24022	82513	1506	80008	7739	7111	2103	8074	1827	4781	86692	15275	11673525	369343	12042868
VMT/1000	376572	778	16084	6028	1128	4998	188	12278	288	595	224	864	64	164	988	168	395536	25873	421409
Reactive Organic Gas Emissions																			
Run Exh	11.40	0.01	0.23	0.46	0.02	0.46	0.06	2.47	0.01	0.09	0.11	0.38	0.01	0.04	0.01	0.02	11.86	3.92	15.78
Idle Exh	0.00	0.00	0.21	0.02	0.03	0.02	0.00	1.24	0.02	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.25	1.31	1.56
Start Ex	6.22	0.00	1.49	0.00	0.24	0.00	0.03	0.00	0.13	0.00	0.02	0.00	0.01	0.00	0.00	0.00	8.14	0.00	8.14
Total Ex	17.62	0.01	1.93	0.48	0.29	0.47	0.09	3.71	0.15	0.12	0.14	0.38	0.02	0.05	0.01	0.02	20.24	5.23	25.48
Diurnal	6.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	6.27	0.00	6.28
Hot Soak	7.86	0.00	0.48	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.39	0.00	8.39
Running	21.03	0.00	2.43	0.00	0.18	0.00	0.01	0.00	0.12	0.00	0.03	0.00	0.01	0.00	0.01	0.00	23.81	0.00	23.81
Resting	5.52	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	5.54	0.00	5.54
Total	58.29	0.01	4.86	0.49	0.50	0.47	0.10	3.71	0.27	0.12	0.16	0.38	0.04	0.05	0.03	0.02	64.25	5.24	69.49
Carbon Monoxide Emissions																			
Run Exh	375.26	0.06	5.50	3.93	0.55	2.03	5.99	14.46	0.13	0.44	1.64	1.68	0.22	0.13	0.25	0.08	389.53	22.84	412.37
Idle Exh	0.00	0.00	1.29	0.14	0.23	0.16	0.00	5.40	0.09	0.13	0.00	0.00	0.00	0.04	0.00	0.00	1.61	5.87	7.49
Start Ex	75.87	0.00	17.16	0.00	3.57	0.00	1.31	0.00	1.87	0.00	0.29	0.00	0.11	0.00	0.04	0.00	100.20	0.00	100.20
Total Ex	451.13	0.06	23.94	4.08	4.36	2.20	7.30	19.86	2.09	0.57	1.92	1.68	0.33	0.17	0.28	0.08	491.34	28.71	520.05
Oxides of Nitrogen Emissions																			
Run Exh	28.65	0.20	2.74	9.16	0.24	5.03	0.82	27.18	0.06	0.93	0.48	8.01	0.04	1.03	0.17	0.68	33.19	52.22	85.41
Idle Exh	0.00	0.00	0.01	0.42	0.00	0.36	0.00	7.36	0.00	0.17	0.00	0.00	0.00	0.19	0.00	0.00	0.02	8.49	8.51
Start Ex	6.03	0.00	7.83	0.00	0.51	0.00	0.10	0.00	0.31	0.00	0.05	0.00	0.01	0.00	0.01	0.00	14.84	0.00	14.84
Total Ex	34.67	0.20	10.57	9.57	0.75	5.39	0.92	34.53	0.38	1.11	0.52	8.01	0.05	1.22	0.17	0.68	48.04	60.72	108.76
PM2.5 Emissions																			
Run Exh	0.91	0.00	0.01	0.11	0.00	0.21	0.00	1.16	0.00	0.04	0.00	0.15	0.00	0.01	0.00	0.01	0.92	1.69	2.61
Idle Exh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Start Ex	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.34
Total Ex	1.26	0.00	0.01	0.11	0.00	0.21	0.00	1.18	0.00	0.04	0.00	0.15	0.00	0.01	0.00	0.01	1.26	1.71	2.97
TireWear	0.83	0.00	0.04	0.02	0.00	0.02	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.16	1.03
BrakeWear	6.54	0.01	0.28	0.23	0.02	0.31	0.00	0.36	0.01	0.04	0.01	0.34	0.00	0.06	0.02	0.01	6.87	1.36	8.23
Total	8.63	0.02	0.32	0.36	0.02	0.53	0.00	1.66	0.01	0.07	0.01	0.49	0.00	0.07	0.02	0.02	9.00	3.22	12.22
Fuel Consumption (1000 gallons) and SO2																			
Fuel	20992.20	25.14	1210.70	312.85	85.03	556.24	14.88	2228.56	23.00	86.70	20.26	203.27	5.89	23.22	69.59	19.14	22421.56	3455.10	25876.66
SOx	1.97	0.00	0.11	0.03	0.01	0.06	0.00	0.24	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.00	2.10	0.37	2.47

*Emissions reflect SCAG's 2012 RTP activities and EMFAC2011 emission factors. Emission adjustments beyond the EMFAC2011 are not included.

ATTACHMENT E

DRAFT FINAL 2012 AQMP APPENDIX III

**EMISSIONS FROM
DIESEL COMBUSTION
BY MAJOR SOURCE CATEGORY**

**TABLE E-1
2008 Baseline Diesel Emissions (Tons/Day)
in South Coast Air Basin**

MSC Code	Major Source Category (MSC)	Annual Average Inventory									Summer Planning	
		TOG	VOC	NOX	CO	SOX	TSP	PM10	PM2.5	NH3	VOC	NOX
010	Electric Utilities	0.150	0.125	0.001	0.342	0.024	0.112	0.112	0.108	0.010	0.125	0.001
030	Oil and Gas Production (Combustion)	0.011	0.010	0.007	0.027	0.000	0.014	0.014	0.013	0.000	0.010	0.007
050	Manufacturing and Industrial	0.081	0.068	0.279	0.184	0.005	0.059	0.059	0.057	0.002	0.071	0.322
052	Food and Agricultural Processing	0.006	0.004	0.044	0.015	0.000	0.002	0.002	0.002	0.004	0.005	0.058
060	Service and Commercial	0.149	0.125	1.328	0.351	0.027	0.113	0.113	0.109	0.009	0.130	1.371
099	Other (Fuel Combustion)	0.257	0.183	3.126	0.983	0.004	0.062	0.048	0.035	0.001	0.185	3.149
110	Sewage Treatment	0.003	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.001
130	Incinerators	0.067	0.011	0.050	0.025	0.005	0.001	0.001	0.001	0.000	0.011	0.050
310	Oil and Gas Production	0.007	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000
320	Petroleum Refining	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
330	Petroleum Marketing	0.011	0.010	0.001	0.000	0.009	0.000	0.000	0.000	0.000	0.011	0.001
610	Residential Fuel Combustion	0.000	0.000	0.080	0.011	0.001	0.009	0.009	0.008	0.000	0.000	0.080
710	Light Duty Passenger	0.105	0.088	0.688	0.414	0.002	0.071	0.071	0.065	0.002	0.088	0.647
722	Light Duty Trucks-1 (up to 3750 lb.)	0.006	0.005	0.036	0.024	0.000	0.004	0.004	0.004	0.000	0.005	0.035
723	Light Duty Trucks-2 (3751 to 5750 lb.)	0.005	0.004	0.041	0.023	0.000	0.004	0.004	0.004	0.000	0.004	0.038
724	Medium Duty Trucks (5751-8500 lb.)	0.004	0.003	0.035	0.023	0.000	0.003	0.003	0.003	0.000	0.003	0.033
742	Light Heavy Duty Diesel Trucks-1 (8501-10000 lb.)	0.761	0.637	24.570	3.242	0.020	0.170	0.170	0.156	0.012	0.637	23.300
743	Light Heavy Duty Diesel Trucks-2 (10001-14000 lb.)	0.260	0.218	8.133	1.101	0.007	0.060	0.060	0.055	0.004	0.218	7.707
744	Medium Heavy Duty Diesel Trucks (14001-33000 lb.)	2.011	1.683	41.761	6.329	0.051	1.538	1.538	1.415	0.127	1.682	39.493
746	Heavy Heavy Duty Diesel Trucks (>33001 lb.)	10.696	8.953	160.606	37.971	0.164	6.504	6.504	5.984	0.255	8.922	152.392
760	Heavy Duty Diesel Urban Buses	0.618	0.517	14.047	2.519	0.020	0.232	0.232	0.213	0.022	0.517	13.281
772	School Buses - Diesel	0.229	0.192	2.783	0.671	0.003	0.127	0.126	0.121	0.006	0.191	2.655
779	All Other Buses - Diesel	0.361	0.302	6.135	1.278	0.006	0.216	0.215	0.206	0.012	0.301	5.830
780	Motor Homes	0.021	0.018	0.954	0.071	0.001	0.026	0.026	0.024	0.000	0.018	0.900
820	Trains	2.568	2.150	26.069	6.120	0.121	0.753	0.753	0.693	0.000	2.150	26.069
833	Ocean Going Vessels	2.161	1.928	40.727	3.745	36.772	4.121	4.011	3.869	0.030	1.930	40.741
835	Commercial Harbor Craft	1.517	1.275	18.543	5.501	0.010	0.856	0.856	0.791	0.000	1.275	18.546
840	Recreational Boats	0.304	0.255	0.543	0.210	0.000	0.019	0.019	0.018	0.000	0.439	0.782
860	Commercial/Industrial Mobile Equipment	10.028	8.411	67.174	36.064	0.051	3.930	3.930	3.616	0.023	8.632	68.449
870	Farm Equipment	1.206	1.009	6.530	3.164	0.006	0.390	0.390	0.358	0.004	1.231	7.962
	RECLAIM			0.989		0.114						1.016
	Total Diesel	33.605	28.190	425.279	110.408	37.422	19.395	19.269	17.927	0.523	28.800	414.914

Note:

- (1) Emission from line items (AQMP/Set-Aside) not included.
- (2) Ships and Commercial Boats included Residual Oil.

TABLE E-2
2014 Baseline Diesel Emissions (Tons/Day)
in South Coast Air Basin

MSC Code	Major Source Category (MSC)	Annual Average Inventory									Summer Planning	
		TOG	VOC	NOX	CO	SOX	TSP	PM10	PM2.5	NH3	VOC	NOX
010	Electric Utilities	0.132	0.111	0.001	0.302	0.021	0.099	0.099	0.095	0.009	0.111	0.001
030	Oil and Gas Production (Combustion)	0.011	0.010	0.007	0.027	0.000	0.014	0.014	0.013	0.000	0.010	0.007
050	Manufacturing and Industrial	0.081	0.067	0.277	0.184	0.004	0.060	0.060	0.057	0.002	0.071	0.318
052	Food and Agricultural Processing	0.004	0.002	0.031	0.011	0.000	0.001	0.001	0.001	0.004	0.003	0.039
060	Service and Commercial	0.158	0.133	1.403	0.376	0.029	0.121	0.121	0.117	0.009	0.139	1.446
099	Other (Fuel Combustion)	0.236	0.168	2.935	0.903	0.004	0.055	0.043	0.032	0.001	0.169	2.956
110	Sewage Treatment	0.003	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.001
130	Incinerators	0.068	0.011	0.054	0.026	0.005	0.001	0.001	0.001	0.000	0.011	0.054
310	Oil and Gas Production	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000
320	Petroleum Refining	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
330	Petroleum Marketing	0.012	0.011	0.001	0.000	0.009	0.000	0.000	0.000	0.000	0.012	0.001
610	Residential Fuel Combustion	0.000	0.000	0.083	0.012	0.001	0.009	0.009	0.009	0.000	0.000	0.083
710	Light Duty Passenger	0.041	0.035	0.392	0.199	0.002	0.030	0.030	0.027	0.002	0.035	0.371
722	Light Duty Trucks-1 (up to 3750 lb.)	0.003	0.002	0.025	0.014	0.000	0.002	0.002	0.002	0.000	0.002	0.023
723	Light Duty Trucks-2 (3751 to 5750 lb.)	0.002	0.002	0.024	0.012	0.000	0.001	0.001	0.001	0.000	0.002	0.023
724	Medium Duty Trucks (5751-8500 lb.)	0.003	0.002	0.028	0.014	0.000	0.001	0.001	0.001	0.000	0.002	0.026
742	Light Heavy Duty Diesel Trucks-1 (8501-10000 lb.)	0.675	0.565	18.438	3.286	0.019	0.137	0.137	0.126	0.013	0.565	17.478
743	Light Heavy Duty Diesel Trucks-2 (10001-14000 lb.)	0.228	0.190	5.994	1.120	0.007	0.049	0.049	0.045	0.004	0.190	5.693
744	Medium Heavy Duty Diesel Trucks (14001-33000 lb.)	1.128	0.944	24.551	3.823	0.049	0.735	0.735	0.676	0.122	0.943	23.303
746	Heavy Heavy Duty Diesel Trucks (>33001 lb.)	3.974	3.326	80.389	17.843	0.159	1.651	1.651	1.519	0.245	3.295	76.434
760	Heavy Duty Diesel Urban Buses	0.603	0.505	13.404	2.414	0.021	0.223	0.223	0.205	0.023	0.505	12.675
772	School Buses - Diesel	0.051	0.043	2.251	0.155	0.003	0.021	0.021	0.020	0.005	0.043	2.150
779	All Other Buses - Diesel	0.156	0.131	4.420	0.588	0.007	0.079	0.079	0.075	0.013	0.130	4.208
780	Motor Homes	0.022	0.018	0.885	0.073	0.001	0.024	0.024	0.022	0.000	0.018	0.836
820	Trains	2.004	1.677	21.734	6.591	0.017	0.617	0.617	0.568	0.000	1.677	21.734
833	Ocean Going Vessels	2.331	2.081	35.127	3.857	2.701	0.852	0.852	0.818	0.031	2.082	35.138
835	Commercial Harbor Craft	1.285	1.080	11.893	6.271	0.010	0.526	0.526	0.486	0.000	1.080	11.895
840	Recreational Boats	0.329	0.275	0.601	0.247	0.000	0.014	0.014	0.013	0.000	0.489	0.868
860	Commercial/Industrial Mobile Equipment	6.189	5.191	48.565	30.898	0.051	2.424	2.424	2.229	0.025	5.347	49.542
870	Farm Equipment	0.768	0.642	4.522	2.724	0.006	0.256	0.256	0.235	0.004	0.783	5.514
	RECLAIM			1.033		0.109						1.061
	Total Diesel	20.503	17.230	279.067	81.968	3.234	8.001	7.988	7.394	0.512	17.720	273.875

Note:

- (1) Emission from line items (AQMP/Set-Aside) not included.
- (2) Ships and Commercial Boats included Residual Oil.

**TABLE E-3
2017 Baseline Diesel Emissions (Tons/Day)
in South Coast Air Basin**

MSC Code	Major Source Category (MSC)	Annual Average Inventory									Summer Planning	
		TOG	VOC	NOX	CO	SOX	TSP	PM10	PM2.5	NH3	VOC	NOX
010	Electric Utilities	0.131	0.110	0.001	0.300	0.021	0.098	0.098	0.095	0.009	0.110	0.001
030	Oil and Gas Production (Combustion)	0.013	0.011	0.008	0.031	0.000	0.016	0.015	0.015	0.000	0.011	0.008
050	Manufacturing and Industrial	0.083	0.070	0.297	0.190	0.005	0.061	0.061	0.059	0.002	0.073	0.343
052	Food and Agricultural Processing	0.004	0.003	0.022	0.011	0.000	0.002	0.002	0.002	0.004	0.003	0.027
060	Service and Commercial	0.164	0.137	1.453	0.389	0.030	0.125	0.125	0.121	0.010	0.144	1.499
099	Other (Fuel Combustion)	0.179	0.128	2.412	0.723	0.004	0.044	0.036	0.027	0.001	0.130	2.435
110	Sewage Treatment	0.003	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.001
130	Incinerators	0.071	0.012	0.058	0.027	0.005	0.002	0.001	0.001	0.000	0.012	0.058
310	Oil and Gas Production	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000
320	Petroleum Refining	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
330	Petroleum Marketing	0.013	0.012	0.001	0.000	0.010	0.000	0.000	0.000	0.000	0.013	0.001
610	Residential Fuel Combustion	0.000	0.000	0.086	0.012	0.001	0.009	0.009	0.009	0.000	0.000	0.086
710	Light Duty Passenger	0.027	0.023	0.310	0.143	0.002	0.018	0.018	0.017	0.002	0.023	0.293
722	Light Duty Trucks-1 (up to 3750 lb.)	0.002	0.001	0.020	0.011	0.000	0.001	0.001	0.001	0.000	0.001	0.019
723	Light Duty Trucks-2 (3751 to 5750 lb.)	0.001	0.001	0.018	0.009	0.000	0.000	0.000	0.000	0.000	0.001	0.018
724	Medium Duty Trucks (5751-8500 lb.)	0.002	0.001	0.024	0.011	0.000	0.001	0.001	0.001	0.000	0.001	0.021
742	Light Heavy Duty Diesel Trucks-1 (8501-10000 lb.)	0.597	0.500	15.655	3.162	0.019	0.115	0.115	0.105	0.013	0.500	14.849
743	Light Heavy Duty Diesel Trucks-2 (10001-14000 lb.)	0.204	0.171	5.123	1.136	0.008	0.043	0.043	0.040	0.004	0.171	4.855
744	Medium Heavy Duty Diesel Trucks (14001-33000 lb.)	0.829	0.694	17.350	3.038	0.051	0.504	0.504	0.464	0.129	0.692	16.441
746	Heavy Heavy Duty Diesel Trucks (>33001 lb.)	3.867	3.236	67.672	18.652	0.177	1.334	1.334	1.227	0.273	3.194	64.456
760	Heavy Duty Diesel Urban Buses	0.564	0.472	12.315	2.245	0.021	0.209	0.209	0.193	0.023	0.472	11.645
772	School Buses - Diesel	0.044	0.037	2.094	0.138	0.003	0.016	0.016	0.015	0.005	0.037	2.002
779	All Other Buses - Diesel	0.128	0.108	3.250	0.524	0.007	0.053	0.052	0.050	0.014	0.107	3.097
780	Motor Homes	0.021	0.017	0.832	0.073	0.001	0.022	0.022	0.020	0.000	0.017	0.786
820	Trains	1.808	1.513	23.522	7.428	0.019	0.583	0.583	0.536	0.000	1.513	23.522
833	Ocean Going Vessels	2.759	2.466	39.869	4.480	3.105	0.978	0.978	0.938	0.037	2.467	39.880
835	Commercial Harbor Craft	1.259	1.058	10.662	6.653	0.010	0.450	0.450	0.415	0.000	1.059	10.664
840	Recreational Boats	0.328	0.274	0.638	0.273	0.000	0.012	0.012	0.011	0.000	0.494	0.922
860	Commercial/Industrial Mobile Equipment	5.616	4.712	44.066	32.920	0.058	2.044	2.044	1.882	0.028	4.834	44.879
870	Farm Equipment	0.583	0.487	3.526	2.583	0.006	0.188	0.188	0.172	0.004	0.594	4.298
	RECLAIM			1.033		0.095						1.061
	Total Diesel	19.309	16.264	252.314	85.161	3.657	6.927	6.916	6.416	0.560	16.681	248.165

Note:

- (1) Emission from line items (AQMP/Set-Aside) not included.
- (2) Ships and Commercial Boats included Residual Oil.

TABLE E-4
2019 Baseline Diesel Emissions (Tons/Day)
in South Coast Air Basin

MSC Code	Major Source Category (MSC)	Annual Average Inventory									Summer Planning	
		TOG	VOC	NOX	CO	SOX	TSP	PM10	PM2.5	NH3	VOC	NOX
010	Electric Utilities	0.130	0.108	0.001	0.296	0.021	0.097	0.097	0.094	0.008	0.108	0.001
030	Oil and Gas Production (Combustion)	0.014	0.012	0.009	0.033	0.000	0.017	0.016	0.016	0.000	0.012	0.009
050	Manufacturing and Industrial	0.084	0.071	0.309	0.193	0.005	0.063	0.063	0.060	0.002	0.075	0.357
052	Food and Agricultural Processing	0.003	0.003	0.020	0.011	0.000	0.002	0.002	0.002	0.005	0.003	0.025
060	Service and Commercial	0.167	0.140	1.476	0.396	0.030	0.127	0.127	0.123	0.010	0.146	1.522
099	Other (Fuel Combustion)	0.179	0.128	2.418	0.725	0.004	0.045	0.036	0.027	0.001	0.130	2.443
110	Sewage Treatment	0.003	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.001
130	Incinerators	0.073	0.012	0.060	0.028	0.005	0.002	0.002	0.002	0.000	0.012	0.060
310	Oil and Gas Production	0.008	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000
320	Petroleum Refining	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
330	Petroleum Marketing	0.014	0.013	0.001	0.000	0.010	0.000	0.000	0.000	0.000	0.013	0.001
610	Residential Fuel Combustion	0.000	0.000	0.087	0.012	0.001	0.009	0.009	0.009	0.000	0.000	0.087
710	Light Duty Passenger	0.018	0.015	0.251	0.105	0.002	0.011	0.011	0.010	0.002	0.015	0.238
722	Light Duty Trucks-1 (up to 3750 lb.)	0.001	0.001	0.017	0.009	0.000	0.001	0.001	0.001	0.000	0.001	0.016
723	Light Duty Trucks-2 (3751 to 5750 lb.)	0.001	0.001	0.015	0.006	0.000	0.000	0.000	0.000	0.000	0.001	0.015
724	Medium Duty Trucks (5751-8500 lb.)	0.001	0.001	0.021	0.009	0.000	0.001	0.001	0.001	0.000	0.001	0.019
742	Light Heavy Duty Diesel Trucks-1 (8501-10000 lb.)	0.549	0.460	13.712	3.201	0.019	0.098	0.098	0.090	0.014	0.460	13.012
743	Light Heavy Duty Diesel Trucks-2 (10001-14000 lb.)	0.192	0.160	4.499	1.217	0.008	0.038	0.038	0.035	0.004	0.160	4.256
744	Medium Heavy Duty Diesel Trucks (14001-33000 lb.)	0.629	0.526	12.549	2.514	0.053	0.350	0.350	0.322	0.134	0.526	11.867
746	Heavy Heavy Duty Diesel Trucks (>33001 lb.)	3.795	3.177	59.194	19.191	0.189	1.122	1.122	1.032	0.292	3.126	56.470
760	Heavy Duty Diesel Urban Buses	0.538	0.450	11.589	2.132	0.021	0.200	0.200	0.184	0.023	0.450	10.958
772	School Buses - Diesel	0.040	0.034	1.989	0.127	0.003	0.012	0.012	0.011	0.005	0.033	1.903
779	All Other Buses - Diesel	0.110	0.092	2.470	0.482	0.008	0.035	0.035	0.033	0.015	0.091	2.356
780	Motor Homes	0.020	0.017	0.796	0.073	0.001	0.020	0.020	0.018	0.000	0.017	0.752
820	Trains	1.667	1.395	23.040	7.803	0.020	0.549	0.549	0.505	0.000	1.395	23.040
833	Ocean Going Vessels	3.004	2.687	36.087	4.820	3.325	1.044	1.044	1.001	0.041	2.688	36.097
835	Commercial Harbor Craft	1.240	1.042	9.691	7.081	0.010	0.378	0.378	0.350	0.000	1.042	9.692
840	Recreational Boats	0.325	0.272	0.664	0.290	0.000	0.011	0.011	0.010	0.000	0.493	0.961
860	Commercial/Industrial Mobile Equipment	5.003	4.198	38.387	33.857	0.062	1.651	1.651	1.518	0.031	4.302	39.109
870	Farm Equipment	0.475	0.397	2.943	2.506	0.006	0.146	0.146	0.135	0.004	0.484	3.588
	RECLAIM			1.033		0.084						1.061
	Total Diesel	18.284	15.419	223.326	87.116	3.887	6.028	6.018	5.589	0.592	15.793	219.916

Note:

- (1) Emission from line items (AQMP/Set-Aside) not included.
- (2) Ships and Commercial Boats included Residual Oil.

TABLE E-5
2023 Baseline Diesel Emissions (Tons/Day)
in South Coast Air Basin

MSC Code	Major Source Category (MSC)	Annual Average Inventory									Summer Planning	
		TOG	VOC	NOX	CO	SOX	TSP	PM10	PM2.5	NH3	VOC	NOX
010	Electric Utilities	0.129	0.108	0.001	0.294	0.020	0.096	0.096	0.093	0.008	0.108	0.001
030	Oil and Gas Production (Combustion)	0.015	0.012	0.009	0.035	0.000	0.018	0.017	0.017	0.000	0.012	0.009
050	Manufacturing and Industrial	0.086	0.072	0.321	0.197	0.005	0.064	0.064	0.062	0.002	0.077	0.374
052	Food and Agricultural Processing	0.003	0.002	0.019	0.010	0.000	0.002	0.002	0.002	0.005	0.003	0.023
060	Service and Commercial	0.174	0.146	1.540	0.412	0.031	0.132	0.132	0.127	0.010	0.152	1.587
099	Other (Fuel Combustion)	0.140	0.101	2.042	0.615	0.004	0.034	0.028	0.023	0.002	0.103	2.069
110	Sewage Treatment	0.003	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.001
130	Incinerators	0.076	0.012	0.064	0.030	0.005	0.002	0.002	0.002	0.000	0.012	0.064
310	Oil and Gas Production	0.008	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000
320	Petroleum Refining	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
330	Petroleum Marketing	0.015	0.014	0.001	0.000	0.011	0.000	0.000	0.000	0.000	0.014	0.001
610	Residential Fuel Combustion	0.000	0.000	0.091	0.013	0.001	0.010	0.010	0.009	0.000	0.000	0.091
710	Light Duty Passenger	0.010	0.009	0.173	0.069	0.002	0.006	0.006	0.005	0.002	0.009	0.164
722	Light Duty Trucks-1 (up to 3750 lb.)	0.001	0.001	0.015	0.007	0.000	0.001	0.001	0.001	0.000	0.001	0.015
723	Light Duty Trucks-2 (3751 to 5750 lb.)	0.000	0.000	0.013	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.012
724	Medium Duty Trucks (5751-8500 lb.)	0.001	0.001	0.017	0.007	0.000	0.000	0.000	0.000	0.000	0.001	0.017
742	Light Heavy Duty Diesel Trucks-1 (8501-10000 lb.)	0.465	0.389	10.236	3.359	0.021	0.072	0.072	0.066	0.014	0.389	9.741
743	Light Heavy Duty Diesel Trucks-2 (10001-14000 lb.)	0.169	0.141	3.356	1.435	0.010	0.027	0.027	0.025	0.005	0.141	3.192
744	Medium Heavy Duty Diesel Trucks (14001-33000 lb.)	0.477	0.399	5.239	2.052	0.054	0.211	0.211	0.194	0.137	0.398	4.993
746	Heavy Heavy Duty Diesel Trucks (>33001 lb.)	3.731	3.123	32.631	19.295	0.199	1.176	1.176	1.082	0.310	3.060	31.387
760	Heavy Duty Diesel Urban Buses	0.516	0.432	11.028	2.085	0.021	0.192	0.192	0.177	0.024	0.432	10.427
772	School Buses - Diesel	0.042	0.035	1.812	0.138	0.003	0.011	0.011	0.011	0.005	0.035	1.734
779	All Other Buses - Diesel	0.120	0.101	0.985	0.537	0.008	0.034	0.034	0.032	0.016	0.099	0.944
780	Motor Homes	0.021	0.018	0.754	0.075	0.002	0.018	0.018	0.017	0.001	0.018	0.712
820	Trains	1.540	1.289	22.229	8.604	0.022	0.506	0.506	0.465	0.000	1.289	22.229
833	Ocean Going Vessels	3.642	3.258	32.037	5.758	3.855	1.231	1.231	1.180	0.049	3.259	32.045
835	Commercial Harbor Craft	1.254	1.054	9.205	7.392	0.009	0.351	0.351	0.324	0.000	1.054	9.206
840	Recreational Boats	0.309	0.259	0.733	0.322	0.000	0.009	0.009	0.008	0.000	0.477	1.063
860	Commercial/Industrial Mobile Equipment	4.267	3.578	29.505	36.665	0.071	1.073	1.073	0.986	0.035	3.662	30.099
870	Farm Equipment	0.346	0.289	2.049	2.401	0.006	0.087	0.087	0.080	0.004	0.353	2.499
	RECLAIM			1.033		0.082						1.061
	Total Diesel	17.558	14.850	167.139	91.811	4.443	5.361	5.354	4.987	0.630	15.166	165.760

Note:

- (1) Emission from line items (AQMP/Set-Aside) not included.
- (2) Ships and Commercial Boats included Residual Oil.

**TABLE E-6
2030 Baseline Diesel Emissions (Tons/Day)
in South Coast Air Basin**

MSC Code	Major Source Category (MSC)	Annual Average Inventory									Summer Planning	
		TOG	VOC	NOX	CO	SOX	TSP	PM10	PM2.5	NH3	VOC	NOX
010	Electric Utilities	0.129	0.108	0.001	0.294	0.020	0.096	0.096	0.093	0.008	0.108	0.001
030	Oil and Gas Production (Combustion)	0.015	0.013	0.009	0.036	0.000	0.018	0.018	0.018	0.000	0.013	0.009
050	Manufacturing and Industrial	0.088	0.074	0.341	0.203	0.006	0.066	0.066	0.064	0.002	0.079	0.396
052	Food and Agricultural Processing	0.003	0.002	0.017	0.010	0.000	0.002	0.002	0.002	0.006	0.003	0.020
060	Service and Commercial	0.188	0.157	1.658	0.443	0.033	0.142	0.142	0.137	0.011	0.164	1.707
099	Other (Fuel Combustion)	0.141	0.102	2.056	0.618	0.005	0.035	0.029	0.023	0.002	0.104	2.084
110	Sewage Treatment	0.004	0.001	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.002
130	Incinerators	0.080	0.013	0.072	0.032	0.005	0.002	0.002	0.002	0.000	0.013	0.072
310	Oil and Gas Production	0.008	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000
320	Petroleum Refining	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
330	Petroleum Marketing	0.016	0.015	0.001	0.000	0.012	0.000	0.000	0.000	0.000	0.016	0.001
610	Residential Fuel Combustion	0.000	0.000	0.096	0.013	0.001	0.010	0.010	0.010	0.000	0.000	0.096
710	Light Duty Passenger	0.004	0.004	0.095	0.037	0.002	0.003	0.003	0.002	0.002	0.004	0.090
722	Light Duty Trucks-1 (up to 3750 lb.)	0.000	0.000	0.009	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.008
723	Light Duty Trucks-2 (3751 to 5750 lb.)	0.000	0.000	0.008	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.008
724	Medium Duty Trucks (5751-8500 lb.)	0.000	0.000	0.014	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.013
742	Light Heavy Duty Diesel Trucks-1 (8501-10000 lb.)	0.364	0.304	5.803	3.879	0.024	0.045	0.045	0.042	0.016	0.304	5.502
743	Light Heavy Duty Diesel Trucks-2 (10001-14000 lb.)	0.148	0.124	1.898	1.884	0.013	0.018	0.018	0.016	0.005	0.124	1.807
744	Medium Heavy Duty Diesel Trucks (14001-33000 lb.)	0.540	0.452	5.653	2.258	0.059	0.229	0.229	0.211	0.149	0.451	5.389
746	Heavy Heavy Duty Diesel Trucks (>33001 lb.)	4.335	3.628	35.831	21.899	0.235	1.287	1.287	1.184	0.365	3.557	34.534
760	Heavy Duty Diesel Urban Buses	0.429	0.359	8.470	1.685	0.022	0.161	0.161	0.148	0.026	0.359	8.009
772	School Buses - Diesel	0.056	0.047	1.275	0.186	0.002	0.010	0.010	0.010	0.005	0.047	1.220
779	All Other Buses - Diesel	0.140	0.117	1.152	0.615	0.009	0.039	0.039	0.037	0.018	0.116	1.105
780	Motor Homes	0.022	0.018	0.724	0.081	0.002	0.013	0.013	0.012	0.001	0.018	0.683
820	Trains	1.275	1.067	19.031	10.391	0.027	0.405	0.405	0.373	0.000	1.067	19.031
833	Ocean Going Vessels	5.298	4.742	28.554	8.238	5.232	1.734	1.734	1.661	0.071	4.743	28.559
835	Commercial Harbor Craft	1.256	1.056	8.993	7.490	0.009	0.343	0.343	0.317	0.000	1.056	8.995
840	Recreational Boats	0.257	0.215	0.806	0.365	0.000	0.006	0.006	0.005	0.000	0.401	1.170
860	Commercial/Industrial Mobile Equipment	3.885	3.259	22.406	42.415	0.085	0.605	0.605	0.557	0.047	3.329	22.886
870	Farm Equipment	0.228	0.190	1.186	2.279	0.006	0.031	0.031	0.029	0.004	0.232	1.446
	RECLAIM			1.033		0.082						1.061
	Total Diesel	18.909	16.075	147.193	105.362	5.891	5.300	5.293	4.952	0.738	16.316	145.903

Note:

- (1) Emission from line items (AQMP/Set-Aside) not included.
- (2) Ships and Commercial Boats included Residual Oil.

ATTACHMENT F

DRAFT FINAL 2012 AQMP APPENDIX III

2008 BASE YEAR

**GREENHOUSE GAS EMISSION INVENTORY
METHODOLOGY**

AND

BY MAJOR SOURCE CATEGORY

Table F
2008 Baseline GHG Emissions for SCAB

CODE	Source Category	Emission (TPD)			Emission (TPY)			MMTONS
		CO2	N2O	CH4	CO2	N2O	CH4	CO2e
Fuel Combustion								
10	Electric Utilities	34,302.91	0.08	0.71	12,520,561.73	28.99	258.47	11.37
20	Cogeneration	872.16	0.00	0.02	318,340.22	0.60	6.00	0.29
30	Oil and Gas Production (combustion)	2,908.14	0.01	0.08	1,061,469.85	4.71	29.54	0.96
40	Petroleum Refining (Combustion)	44,654.15	0.06	0.57	16,298,765.74	20.71	207.09	14.80
50	Manufacturing and Industrial	22,181.91	0.06	0.48	8,096,396.32	20.91	174.29	7.35
52	Food and Agricultural Processing	927.44	0.00	0.02	338,516.28	0.84	7.16	0.31
60	Service and Commercial	21,888.81	0.08	0.59	7,989,416.32	30.76	214.96	7.26
99	Other (Fuel Combustion)	2,241.25	0.02	0.16	818,056.85	8.58	58.23	0.75
Total Fuel Combustion		129,976.78	0.32	2.62	47,441,523.29	116.10	955.74	43.09
Waste Disposal								
110	Sewage Treatment	26.45	0.00	0.00	9,653.42	0.12	1.50	0.01
120	Landfills	3,165.78	0.04	505.35	1,155,509.15	13.98	184,451.33	4.57
130	Incineration	580.02	0.00	0.02	211,707.66	0.81	5.48	0.19
199	Other (Waste Disposal)			2.25	0.00	0.00	820.00	0.02
Total Waste Disposal		3,772.25	0.04	507.61	1,376,870.22	14.91	185,278.31	4.78
Cleaning and Surface Coatings								
210	Laundrying							
220	Degreasing							
230	Coatings and Related Processes	27.09	0.00	0.21	9,889.59	0.02	78.00	0.01
240	Printing			0.00	0.00	0.00	0.00	0.00
250	Adhesives and Sealants			0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	2,621.20	0.00	0.12	956,738.61	1.20	43.90	0.87
Total Cleaning and Surface Coatings		2,648.30	0.00	0.33	966,628.19	1.22	121.90	0.88
Petroleum Production and Marketing								
310	Oil and Gas Production	92.07	0.00	0.92	33,604.54	0.06	336.40	0.04
320	Petroleum Refining	769.68	0.00	1.65	280,931.54	0.36	602.70	0.27
330	Petroleum Marketing			83.83	0.00	0.00	30,598.00	0.58
399	Other (Petroleum Production and Marketing)			0.00	0.00	0.00	0.30	0.00
Total Petroleum Production and Marketing		861.74	0.00	86.40	314,536.07	0.42	31,537.40	0.89
Industrial Processes								
410	Chemical			0.92	0.00	0.00	336.50	0.01
420	Food and Agriculture			0.02	0.00	0.00	7.10	0.00
430	Mineral Processes	278.92	0.00	0.05	101,804.41	0.19	17.30	0.09
440	Metal Processes			0.02	0.00	0.00	9.10	0.00
450	Wood and Paper			0.00	0.00	0.00	0.00	0.00
460	Glass and Related Products			0.00	0.00	0.00	0.90	0.00
470	Electronics			0.00	0.00	0.00	0.00	0.00
499	Other (Industrial Processes)	0.08	0.00	0.47	27.70	0.00	171.60	0.00
Total Industrial Processes		278.99	0.00	1.49	101,832.11	0.19	542.50	0.10

Table F (Continued)
2008 Baseline GHG Emissions for SCAB

CODE	Source Category	Emission (TPD)			Emission (TPY)			MMTONS
		CO2	N2O	CH4	CO2	N2O	CH4	CO2e
Solvent Evaporation								
510	Consumer Products			0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent			0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers			0.00	0.00	0.00	0.00	0.00
540	Asphalt Paving/Roofing			0.07	0.00	0.00	24.20	0.00
Total Solvent Evaporation		0.00	0.00	0.07	0.00	0.00	24.20	0.00
Miscellaneous Processes								
610	Residential Fuel Combustion	38,850.21	0.12	0.95	14,180,326.28	45.28	347.02	12.88
620	Farming Operations			25.63	0.00	0.00	9,354.20	0.18
630	Construction and Demolition			0.00	0.00	0.00	0.00	0.00
640	Paved Road Dust			0.00	0.00	0.00	0.00	0.00
645	Unpaved Road Dust			0.00	0.00	0.00	0.00	0.00
650	Fugitive Windblown Dust			0.00	0.00	0.00	0.00	0.00
660	Fires			0.08	0.00	0.00	30.90	0.00
670	Waste Burning and Disposal			0.58	0.00	0.00	212.20	0.00
680	Utility Equipment				0.00	0.00		0.00
690	Cooking			0.64	0.00	0.00	234.80	0.00
699	Other (Miscellaneous Processes)			0.00	0.00	0.00	0.00	0.00
Total Miscellaneous Processes		38,850.21	0.12	27.89	14,180,326.28	45.28	10,179.12	13.07
On-Road Motor Vehicles								
710	Light Duty Passenger Auto (LDA)	84,679.34	2.72	3.62	30,907,957.40	992.80	1,321.30	28.34
722	Light Duty Trucks 1 (T1 : up to 3750 lb.)	22,318.69	0.72	0.96	8,146,320.83	262.80	350.40	7.47
723	Light Duty Trucks 2 (T2 : 3751-5750 lb.)	33,494.85	1.08	1.43	12,225,619.17	392.38	523.05	11.21
724	Medium Duty Trucks (T3 : 5751-8500 lb.)	29,414.54	0.94	1.25	10,736,308.78	343.10	456.25	9.85
732	Light Heavy Duty Gas Trucks 1 (T4 : 8501-10000 lb.)	8,194.68	0.16	0.21	2,991,059.41	57.31	76.65	2.73
733	Light Heavy Duty Gas Trucks 2 (T5 : 10001-14000 lb.)	1,115.55	0.05	0.07	407,174.20	18.98	25.55	0.38
734	Medium Heavy Duty Gas Trucks (T6 : 14001-33000 lb.)	727.41	0.02	0.20	265,505.77	5.48	73.00	0.24
736	Heavy Heavy Duty Gas Trucks (HHHGT > 33000 lb.)	101.91	0.01	0.01	37,197.65	2.19	2.56	0.03
742	Light Heavy Duty Diesel Trucks 1 (T4 : 8501-10000 lb.)	2,166.03	0.02	0.02	790,599.63	6.94	7.30	0.72
743	Light Heavy Duty Diesel Trucks 2 (T5 : 10001-14000 lb.)	735.38	0.01	0.01	268,413.46	2.56	2.92	0.24
744	Medium Heavy Duty Diesel Truck (T6 : 14001-33000 lb.)	5,421.85	0.02	0.02	1,978,974.22	8.40	8.76	1.80
746	Heavy Heavy Duty Diesel Trucks (HHDDT > 33000 lb.)	17,017.12	0.05	0.05	6,211,247.31	17.52	16.43	5.64
750	Motorcycles (MCY)	7,958.66	0.26	0.34	2,904,909.79	94.90	124.10	2.66
760	Diesel Urban Buses (UB)	2,135.31	0.00	0.00	779,389.27	1.46	1.46	0.71
762	Gas Urban Buses (UB)	166.17	0.02	0.02	60,653.73	8.40	6.94	0.06
770	School Buses (SB)	336.97	0.00	0.00	122,995.47	1.46	1.46	0.11
776	Other Buses (OB)	927.21	0.00	0.00	338,430.49	0.73	0.73	0.31
780	Motor Homes (MH)	568.30	0.03	0.04	207,430.96	10.95	14.60	0.19
Total On-Road Motor Vehicles		217,479.97	6.11	8.26	79,380,187.52	155.49	187.25	72.70

Table F (Concluded)
2008 Baseline GHG Emissions for SCAB

CODE	Source Category	Emission (TPD)			Emission (TPY)			MMTONS
		CO2	N2O	CH4	CO2	N2O	CH4	CO2e
Other Mobile Sources								
810	Aircraft	37,454.60	0.10	0.09	13,670,930.38	36.46	31.75	12.41
820	Trains	585.85	0.00	0.00	213,835.18	0.45	1.38	0.19
830	Ships and Commercial Boats	3,451.85	0.01	0.02	1,259,926.70	2.64	8.13	1.14
	Other Offroad Sources (construction equipment, airport equipment, oil and gas drilling equipment)	16,080	1.72	8.84	5,869,123.45	628.00	3,226.28	5.56
Total Other Mobile Sources		57,572.10	1.83	8.95	21,013,815.71	667.55	3,267.55	19.31
Total Stationary and Area Sources		176,388.26	0.49	626.41	64,381,716.17	178.12	228,639.16	62.81
Total On-Road Vehicles		217,479.97	6.11	8.26	79,380,187.52	155.49	187.25	72.70
Total Other Mobile*		57,572.10	1.83	8.95	21,013,815.71	667.55	3,267.55	19.31

**DRAFT FINAL 2012 AQMP
APPENDIX IV-A**

**DISTRICT'S STATIONARY SOURCE
CONTROL MEASURES**

NOVEMBER 2012

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD**

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Section 1

Stationary Source Control Measures

INTRODUCTION

This Appendix describes the South Coast Air Quality Management District (District) staff's proposed stationary and indirect source control measures to be included in the Draft Final 2012 AQMP. Control measures presented in this appendix are short-term PM_{2.5} control measures and 8-hour ozone measures designed to reduce the reliance on long-term CAA Section 182(e)(5) emissions reductions in the 2007 AQMP. The proposed 8-hour ozone measures are designed to further implement the 8-hour ozone plan, but also will help to reduce PM_{2.5} levels and aid attainment with current and future PM_{2.5} NAAQS. The measures are based on a variety of incentive programs and control strategies that are likely commercially available and/or technologically feasible in the next several years.

SHORT-TERM PM_{2.5} CONTROL MEASURES

The Draft Final 2012 AQMP includes eight short-term control measures (including five stationary source, one indirect source, and one education and outreach measure) developed by the District staff that are to be adopted and implemented prior to 2014. Table IV-A-1 provides the expected adoption date, implementation date and expected emission reductions achieved. There are four measures that were carried over from the 2007 AQMP and denoted with "formerly" under the new control measure number. The remaining 3 control measures are newer ideas or strengthening of existing rules.

TABLE IV-A-1

Short-Term PM_{2.5} Control Measures

NUMBER	TITLE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
CMB-01	Further NO _x Reductions from RECLAIM [NO _x] –Phase I	2013	2014	2-3 ^a
BCM-01	Further Reductions from Residential Wood Burning Devices [PM _{2.5}]	2013	2013-2014	7.1 ^b
BCM-02	Further Reductions from Open Burning [PM _{2.5}]	2013	2013-2014	4.6 ^c
BCM-03 (formerly BCM-05)	Emission Reductions from Under-Fired Charbroilers [PM _{2.5}]	Phase I – 2013 (Tech Assessment) Phase II - TBD	TBD	1 ^d
BCM-04	Further Ammonia Reductions from Livestock Waste [NH ₃]	Phase I – 2013-2014 (Tech Assessment) Phase II - TBD	TBD	TBD ^e

TABLE IV-A-1 (concluded)

Short-Term PM2.5 Control Measures

NUMBER	TITLE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
IND -01 <i>(formerly MOB-03)</i>	Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources [NOx, SOx, PM2.5]	2013	12 months after trigger	N/A ^f
EDU-01 <i>(formerly MCS-02, MCS-03)</i>	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]	Ongoing	Ongoing	N/A ^f
MCS-01 <i>(formerly MCS-07)</i>	Application of All Feasible Measures Assessment [All Pollutants]	Ongoing	Ongoing	TBD ^e

- a. Emission reductions are included in the SIP as a contingency measure.
- b. Winter average day reductions based on episodic conditions and 75 percent compliance rate.
- c. Reduction based on episodic day conditions.
- d. Will submit into SIP once technically feasible and cost effective options are confirmed.
- e. TBD are reductions to be determined once the technical assessment is complete, and inventory and control approach are identified.
- f. N/A are reductions that cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs) or if the measure is designed to ensure reductions that have been assumed to occur will in fact occur.

It should be noted that the emission reduction targets for the proposed control measures (those with quantified reductions) are established based on available or anticipated control methods or technologies. However, emission reductions associated with implementation of these and other control measures or rules in excess of the AQMP’s projected reductions can be credited toward the overall emission reduction targets for the proposed control measures in this appendix.

Emission reductions associated with the District’s SIP commitment to adopt and implement emission reductions from sources under the District’s jurisdiction are being proposed. Once the SIP commitment is accepted, should there be emission reduction shortfalls in any given year, the District would identify and adopt other measures to make up the shortfall. Similarly, if excess emission reductions are achieved in a year, they can be used in that year or carried over to subsequent years if necessary to meet reduction goals. More detailed discussion on the District’s SIP commitment is included in Chapter 4 of the Draft Final 2012 AQMP.

The following sections provide a brief overview of the specific source category types targeted by short-term PM2.5 control measures.

Combustion Sources

This category includes one control measure that seeks further NOx emission reductions from RECLAIM sources.

PM Sources

This source category has four control measures being considered to reduce the PM_{2.5} emissions. The first two measures are designed to address those areas with high PM_{2.5} ambient concentrations by use of episodic controls to reduce emissions from residential wood combustion and open burning. One measure considers Basin-wide curtailment of wood burning devices (wood stoves and wood burning fireplaces) and the other open burning (i.e., prescribed or agricultural burning) when areas of historically high PM_{2.5} concentration are forecast to exceed the PM_{2.5} 24-hour standard. One measure would seek further reductions from restaurant charbroiling operations and another measure would also reduce ammonia emissions from livestock waste, specifically dairies. These latter two measures require a phased approach with a technological feasibility assessment as the first phase.

Multiple Component Systems

The measure reduces emissions by applying all feasible control measures to the various source categories, should any new control measure become available prior to the next AQMP revision.

Indirect Sources

This measure will be designed to ensure emissions at the ports and port-related sources are meeting the targets projected in the 2012 AQMP for the PM_{2.5} attainment demonstration.

Educational Programs

A proposed educational control measure seeks to provide outreach and incentives for consumers to contribute to clean air efforts. Examples include the usage of energy efficient products, new lighting technology, “super compliant” coatings, tree planting, and the use of lighter colored roofing and paving materials which reduce energy demand by lowering the ambient temperature. In addition, this proposed measure intends to increase the effectiveness of energy conservation programs through public education and awareness as to the environmental effects and benefits from conservation. Finally, educational and incentive tools to be used include social comparison of energy usage and efficiency, social media, public/private partnerships. Detailed descriptions of each measure can be found in Section 2 of this appendix.

8-HOUR OZONE MEASURES

There are 16 stationary source 8-hour ozone measures with the majority anticipated to be adopted in the next 2 – 3 years and implemented after 2015, thus assisting in further implementation of the 8-hour ozone plan by 2024. These measures include two incentive programs and one educational measure. Section 182(e)(5) of the Clean Air Act allows “extreme” ozone areas to include measures in their Plan that rely on the

development of new technology or advancement of existing technology. These are commonly referred to as “black box” measures. The 8-hour ozone measures in the 2012 AQMP specify current opportunities for emissions reductions and thus are designed to reduce the reliance on the “black box” commitments in the 2007 AQMP.

There are two measures that were continued from the 2007 AQMP. The remaining 14 control measures are new ideas or revised previous measures (e.g., further reductions from an existing rule). Table IV-A-2 provides the expected adoption date, implementation date and expected emission reduction achieved.

TABLE IV-A-2
8-hour Ozone Measures

NUMBER	TITLE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
CTS-01	Further VOC Reductions from Architectural Coatings (R1113) [VOC]	2015 – 2016	2018 - 2020	2-4
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]	2013 – 2016	2015 - 2018	1-2
CTS-03	Further VOC Reductions from Mold Release Products [VOC]	2014	2016	0.8 – 2
CTS-04	Further VOC Reductions from Consumer Products [VOC]	2013 – 2015	2018	N/A ^a
CMB-01	Further NOx Reductions from RECLAIM [NOx] – <i>Phase II</i>	2015	2020	1-2 ^b
CMB-02	NOx Reductions from Biogas Flares [NOx]	2015	Beginning 2017	Pending ^c
CMB-03	Reductions from Commercial Space Heating [NOx]	Phase I – 2014 (Tech Assessment) Phase II - 2016	Beginning 2018	0.18 by 2023 0.6 (total)
FUG-01	VOC Reductions from Vacuum Trucks [VOC]	2014	2016	1 ^d
FUG-02	Emission Reduction from LPG Transfer and Dispensing [VOC] – <i>Phase II</i>	2015	2017	1-2
FUG-03	Further Reductions from Fugitive VOC Emissions [VOC]	2015 -2016	2017-2018	1-2
MCS-01 <i>(formerly MCS-07)</i>	Application of All Feasible Measures Assessment [All Pollutants]	Ongoing	Ongoing	TBD ^e
MCS-02	Further Emission Reductions from Greenwaste Processing (Chipping and Grinding Operations not associated with composting) [VOC]	2015	2016	1 ^d

TABLE IV-A-2 (concluded)

8-hour Ozone Measures

NUMBER	TITLE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
MCS-03 <i>(formerly MCS-06)</i>	Improved Start-up, Shutdown and Turnaround Procedures [All Pollutants]	Phase I – 2012 <i>(Tech Assessment)</i> Phase II – TBD	Phase I – 2013 <i>(Tech Assessment)</i> Phase II - TBD	TBD ^e
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx]	2014	Within 12 months after funding availability	TBD ^e
INC-02	Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies [All Pollutants]	2014-2015	Beginning 2015	N/A ^a
EDU-01 <i>(formerly MCS-02, MCS-03)</i>	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]	Ongoing	Ongoing	N/A ^a

- N/A are reductions that cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs) or if the measure is designed to ensure reductions that have been assumed to occur will in fact occur.
- If Control Measure CMB-01, RECLAIM Phase I, contingency measure emission reductions are not triggered and implemented, Phase II will target a cumulative 3-5 TPD of NOx emission reductions.
- Pending because emission reductions will be provided prior to the Final Draft.
- Reductions submitted in SIP once emission inventories are included in the SIP.
- TBD are reductions to be determined once the inventory and control approach are identified.

The following sections provide a brief overview of the specific source category types for the 8-hour ozone measures. Detailed descriptions of each measure can be found in Section 3 of this appendix.

Coating and Solvents

The category of coatings and solvents is primarily targeted at reducing VOC emissions from VOC-containing products such as coatings and solvents. This category includes one control measure that seeks further VOC emission reductions from architectural coatings and another from mold release products. The third control measure would further reduce VOC emissions from a number of existing rules that regulate miscellaneous coatings, adhesives, solvents and lubricants.

Combustion Sources

This category includes three measures targeting stationary combustion equipment. There is one control measure that seeks further NOx emission reductions from RECLAIM sources. In addition, there is one new control measure that reduces NOx emissions from landfill and wastewater treatment flares. The last measure seeks to reduce NOx emissions from commercial space heaters.

Petroleum Operations and Fugitive VOC Emissions

This category pertains primarily to operations and materials associated with the petroleum, chemical, and other industries. Within this category, there is one control measure targeting fugitive VOC emissions with improved leak detection and repair. Other measures include reductions from vacuum truck venting and LPG transfer and dispensing.

Multiple Component Sources

There are a total of three 8-hour ozone measures in this category. One measure will achieve further VOC emission reductions from greenwaste processing such as chipping and grinding operations not associated with composting. Another control measure seeks to minimize emissions during equipment start up and shut down and the last measure reduces emissions by applying all feasible control measures to a variety of source categories.

Incentive Programs

This category includes two control measures that incentivize early reductions and advancement of zero and near-zero technologies. One measure promotes and encourages the installation of cleaner, more efficient combustion equipment through economic incentive programs, subject to the availability of public funding. Incentives may include grants for new purchases of equipment as well as loan programs in areas where long-term cost savings from increased efficiency are achieved. Another measure is aimed at providing incentives for companies to manufacture zero and near-zero emission technologies locally, thus populating the market, potentially lowering the purchase cost, and increasing demand. With availability and usage of such technologies, air quality benefits will be achieved. This proposed measure focuses on two elements: 1) process the required air permit(s) in an expedited manner; and 2) assistance in the preparation of the applicable CEQA document. A stakeholder process will be initiated to design the program and collaborate with other existing AQMD or local programs.

Educational Programs

A proposed educational control measure seeks to provide outreach and incentives for consumers to contribute to clean air efforts. Examples include the usage of energy efficient products, new lighting technology, “super compliant” coatings, tree planting, and the use of lighter colored roofing and paving materials which reduce energy demand by lowering the ambient temperature. In addition, this proposed measure intends to increase the effectiveness of energy conservation programs through public education and awareness as to the environmental effects and benefits from conservation. Finally, educational and incentive tools to be used include social comparison of energy usage and efficiency, social media, public/private partnerships.

District’s Mobile Source Control Measures

The District is proposing control measures for mobile sources that can be found in Appendix IV (B).

RULE EFFECTIVENESS

The 1990 federal Clean Air Act requires that emissions inventories be adjusted to reflect the rule effectiveness. As defined by EPA, rule effectiveness reflects how emission reductions, due to implementation of a regulatory program, are estimated. It describes a method to account for the reality that not all facilities covered by a rule are in compliance with the rule 100 percent of the time. In 1992, EPA suggested a default value of 80 percent¹ if emission reductions are estimated based on projected control device efficiencies. If a higher rule effectiveness value is used, the District needs to demonstrate how these emission reductions will be achieved. In 2005, EPA revised its policy² in recognition that rule effectiveness can vary widely between different types of industry. So, instead of assuming a broad 80 percent default value for rule effectiveness, a list of factors should be considered that are most likely to affect rule effectiveness when developing emission inventories and attainment demonstrations. According to the EPA³, it is not necessary to adjust the rule effectiveness when emissions can be calculated by means of a direct determination because the emissions estimate is not contingent on the effectiveness of controls. A direct determination is the one in which emissions are calculated directly (e.g., based on explicit records of coating or solvent types used) rather than from estimates of uncontrolled emissions and level of control. In a recent EPA response⁴ to a comment on this issue, requiring stringent compliance

¹ “Guidelines for Estimating and Applying Rule Effectiveness for Ozone/CP State Implementation Plan Base Year Inventories.” EPA-452/R-92-010, November 1992

² “Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations,” EPA-454/R-05-001, August 2005, Appendix B

³ “Rule Effectiveness Guidance: Integration of Inventory, Compliance and Assessment Applications,” EPA 452/R-94-001, January 2004

⁴ “Approval of Air Quality Implementation Plans; California; South Coast; Attainment Plan for 1997 8-Hour Ozone Standards,” EPA-R09-OAR-2011-0622, Final Rule, March 1, 2012

monitoring and reporting requirements also supports the use of the highest range of rule effectiveness factors in projecting emissions.

As described below under Rule Compliance and Test Methods, the compliance demonstration for each proposed control measure, where the District accounted for emission reductions, identifies the compliance mechanisms such as recordkeeping, inspection and maintenance activities, etc., and test methods such as District, ARB, and EPA approved test methods. In some cases, such as emission reductions from architectural coatings, the emissions are calculated by means of direct determination. The District's ongoing source testing and on-site inspection programs also strengthen the status of compliance verification. In addition, the District conducts workshops, and compliance education programs to inform facility operators on rule requirements and assist them in performing recordkeeping and self inspections. These compliance tools are designed to ensure rule compliance would be achieved on a continued basis. As a result, the majority of control measures proposed in this appendix with quantifiable emission reductions are based on a rule effectiveness of 100 percent. With respect to implementation of existing rules, emissions reported through the District's AER program are based on actual emissions, substantiated by source testing or manufactured data. Otherwise, more conservative default emission factors are used. Any upset conditions or emissions under variance were also included in the AER. Where there was known non-compliance, emissions were adjusted to reflect the conditions. For example, only 75 percent compliance rate is assumed for gas stations (Rule 461) and metal coating applications (Rule 1107).

FORMAT OF CONTROL MEASURES

Included in each control measure description is a title, summary table, description of source category (including background and regulatory history), proposed method of control, estimated emission reductions, rule compliance, test methods, cost effectiveness, and references. The type of information that can be found under each of these subheadings is described below.

Control Measure Number

Each control measure is identified by a control measure number such as "CM #CTS-01" located at the upper right hand corner of every page. "CM #" is the abbreviation for the "control measure number" and is immediately followed by the three-letter designation, "CTS" represents the abbreviation for a source category or specific programs. For example "CTS" is an abbreviation for "Coatings and Solvents." The following provides a description of the abbreviations for each of the measures.

- BCM Best Available Control Measures for Fugitive Dust Sources
- CMB Combustion Sources

- CTS Coatings and Solvents
- FUG Fugitive VOC Emissions
- MCS Multiple Component Sources
- IND Indirect Sources
- INC Incentive Programs
- EDU Educational Programs

If the measure is based on a control measure from the 2007 AQMP, the former control measure number appears in parentheses after the 2012 AQMP number. For example, 2012 AQMP Control Measure CM #BCM-03 – Emission Reductions from Under-Fired Charbroilers would also have the designation (*formerly BCM-05*).

Title

The title contains the control measure name and the major pollutant(s) controlled by the measure. Titles that state “Control of Emissions from...” indicate that the measure is regulating a new source category, not presently regulated by an existing source- specific District rule. Titles that state “Further Emission Reductions of” imply that the measure would result in an amendment to an existing District rule.

Summary Table

Each measure contains a table that summarizes the measure and is designed to identify the key components of the control measure. The table contains a brief explanation of the source category, control method, baseline emissions, emission reductions, control costs, and implementing agency.

Description of Source Category

This section provides an overall description of the source category and the intent of the control measure. The source category is presented in two sections, background and regulatory history. The background has basic information about the control measure such as the number of sources in the Basin, description of emission sources, and pollutants.

The regulatory history contains information regarding existing regulatory control of the source category such as applicable District rules or regulations and whether the source category was identified in prior AQMPs.

Proposed Method of Control

The purpose of this section is to identify potential control options an emission source can use to achieve emission reductions. If an expected performance level for a control option is provided, it is intended for informational purposes only and should not be interpreted as the targeted overall control efficiency for the proposed control measure. To the extent feasible, the overall control efficiency for a control measure should take into account achievable controls in the field by various subcategories within the control measure. A more detailed type of this analysis is typically conducted during rulemaking, not in the planning stage. It has been the District's long standing policy not to exclude any control technology and to intentionally identify as many control options as possible to spur further technology development.

In addition to the proposed control methods discussed in each control measure, affected sources may have the option of partially satisfying the emission reduction requirements of each control measure with incentive programs that will become available in the future from the implementation of control measure CM #INC-01. Examples of incentive programs currently available and future enhancements to those incentive programs would be described in this section.

Emissions Reduction

The emission reductions are estimates based on the baseline inventories prepared for the 2012 AQMP and are provided in the Control Measure Summary Table. For PM_{2.5} measures, the emissions data are based on the annual average inventory. For the ozone strategy, the summer planning inventory is used. The emissions section of the summary table includes the 2008, 2014, 2019 and 2023 inventory. The 2014, 2019 and 2023 emission projections reflect implementation of existing adopted rules. Based on the expected reductions associated with implementing the control measure, emission data are calculated for 2019 and 2023 assuming the implementation of the control measure in the absence of other competing control measures.

The emission reductions listed in the summary table represent the current best estimates, which are subject to change during rule development. As demonstrated in previous rulemaking, the District is always seeking maximum emission reductions when proven technically feasible and cost-effective. For emission accounting purposes, a weighted average control efficiency is calculated based on the targeted controls. The concept of weighted average acknowledges the fact that a control measure or rule may consist of several subcategories, and the emission reduction potential for each subcategory is a function of proposed emission limitation and the associated emission inventory. Therefore, the use of control efficiency to estimate emission reductions does not represent a commitment by the District to require emission reductions uniformly across source categories. In addition, due to the current structure of emission inventory reporting system, a control measure may partially affect an inventory source category (e.g., certain size of equipment or certain level material usage). In this case, an impact

factor is incorporated into the calculation of a control efficiency to account for the fraction of inventory affected. During the rule development, the most current inventory will be used. However, for tracking rate-of-progress on the SIP emission reduction commitment, the approved AQMP inventory will be used. More specifically, emission reductions due to mandatory or voluntary, but enforceable, actions will be credited under SIP obligations.

Rule Compliance

This section was designed to satisfy requirements in the 1990 Clean Air Act in which EPA has indicated that it is necessary to have a discussion of rule compliance with each control measure. This section discusses the recordkeeping and monitoring requirements envisioned for the control measure. In general the District would continue to verify rule compliance through site inspections, recordkeeping, and submittal of compliance plans (when applicable).

Test Methods

In addition to requiring recordkeeping and monitoring requirements, EPA has stated that “An enforceable regulation must also contain test procedures in order to determine whether sources are in compliance.” This section of the control measure write-up identifies appropriate approved District, ARB, and EPA source test methods.

Cost-Effectiveness

The Discounted Cash Flow (DCF) method is a Governing Board approved cost-effectiveness method used to calculate the cost-effectiveness of each control measure. This method was approved by the District and has been consistently used over the past decades. It provides an effective tool to compare with past regulatory actions. As control measures undergo the rule making process, more detailed control costs will be developed.

The cost effectiveness values contained herein represent the best available information at this time. As additional information on technology improvement over time, more accurate numbers of affected facilities, and existing processes become available, the cost effectiveness will be revised and analyzed during actual rulemaking.

Implementing Agency

This section identifies the agency(ies) responsible for implementing the control measure. Also included in this section is a description of any jurisdictional issues that may affect the control measure’s implementation.

References

This section identifies directly cited references, or those references used for general background information.

Section 2

Short-Term PM_{2.5} Control Measures

CMB-01: FURTHER NO_x REDUCTIONS FROM RECLAIM - PHASE I [NO_x]

CONTROL MEASURE SUMMARY			
SOURCE CATEGORY:		VARIOUS RECLAIM NO _x SOURCES	
CONTROL METHODS:		VARIOUS CONTROL TECHNOLOGIES AND METHODS	
EMISSIONS (TONS/DAY):			
ANNUAL AVERAGE	2008	2014	2023
NO _x INVENTORY	23.05	26.48	26.48
NO _x REDUCTION – PHASE I		2*-3	2* - 3
NO_x REMAINING		24.48 – 23.48	24.48 – 23.48
CONTROL COST:		\$7,950 PER TON NO _x REDUCED	
IMPLEMENTING AGENCY:		SCAQMD	

*The lower end of the emission reduction range will be committed in the SIP as a contingency measure.

DESCRIPTION OF SOURCE CATEGORY

There were approximately 284 facilities in the Regional Clean Air Incentives Market (RECLAIM) program, as of July 1, 2010. The RECLAIM program includes facilities with NO_x or SO_x emissions greater than or equal to four tons per year in 1990 or any subsequent year. A wide range of equipment such as fluid catalytic cracking units, boilers, heaters, furnaces, ovens, kilns, coke calciner, internal combustion engines, and turbines are major sources of NO_x or SO_x emissions at the RECLAIM facilities. This control measure identifies a series of control approaches that can be implemented to further reduce NO_x emissions at the RECLAIM facilities.

Background

The RECLAIM program was first adopted in 1993 to further reduce emissions from the largest NO_x and SO_x emitting stationary sources by providing an alternative regulatory mechanism to the command and control regulatory structure. Under this program, facilities are issued NO_x and SO_x allocations, also known as RECLAIM Trading Credits (RTCs) or facility emission caps, which are declined annually. To meet the declining annual facility caps, RECLAIM facilities have the option of installing pollution control equipment, changing operations, or purchasing RTCs from the RECLAIM market.

The RECLAIM program is subject to several legal mandates. The Health and Safety Code requires the District to monitor the advancement in Best Available Control Retrofit Technology (BARCT), and if BARCT advances, the District is required to periodically re-

assess the overall facility caps, and reduce the RTC holdings, as if the equipment located at the facilities would be subject to applicable equivalent command-and-control BARCT levels. The emission reductions resulting from the programmatic RTC reductions will help the basin attain the National Ambient Air Quality Standards (NAAQS) for ozone and PM_{2.5} as expeditiously as practicable. The BARCT evaluation must include an evaluation of the maximum degree of reduction achievable with advanced control technologies taking into account the environmental, energy, and economic impacts for each class or category of source.

A review of the emissions profile of the RECLAIM universe shows that the NO_x emissions are not evenly distributed among the RECLAIM facilities: the top 10% of the universe (24 facilities) comprised mainly of refineries, power plants, cement, glass, and steel manufacturing, emitted about 80% of the NO_x emissions.

Regulatory History

On October 15, 1993, the AQMD's Governing Board adopted Regulation XX – RECLAIM. The RECLAIM program at its inception included 392 NO_x facilities. RECLAIM Regulation XX includes 11 rules that specify the applicability, definitions, allocations, trading and operational requirements, as well as monitoring, reporting, and recordkeeping requirements. The NO_x RECLAIM regulation has been revised several times, and one significant amendment (2005) reflected a BARCT re-assessment. The January 2005 amendment resulted in a NO_x RTC reduction of 7.7 tons per day (tpd), approximately 22.5% reduction of the RTC holdings, which was implemented in 5 phases: 4 tpd by 2007 and an additional 0.925 tpd in each of the following 4 years.

PROPOSED METHOD OF CONTROL

The proposed Phase I reductions are designed to serve as a contingency measure. It will be implemented if the Basin does not attain the 24-hr PM_{2.5} standard by 2014. Currently there are approximately 8 tpd of excess RTC in the market. A shave of 2 tpd of NO_x RTCs should not cause a significant impact to the market. RTCs were traded on average of \$4 a pound for compliance year 2011. In an effort to further minimize the impact on the majority of the RECLAIM universe, staff will work with stakeholders to evaluate various shaving methodologies (e.g., sector-specific or across-the-board).

EMISSIONS REDUCTION

Phase I reductions target a range of 2-3 TPD NO_x. During the rule development phase, staff may refine the emission reductions to include growth and other unforeseen issues. Phase I is expected to be adopted in 2013 and the shave will be implemented/triggered for compliance year 2015, if the attainment of 24-hr PM_{2.5} standard is not met by 2014.

According to the RECLAIM Annual Audit Reports, NO_x emissions were reduced from 2008 to 2010, and the vast majority of the RECLAIM facilities complied with their RTC allocations. The audited annual NO_x emissions for the entire RECLAIM universe were reported as 22.9, 20, and 19.5 tpd for compliance year 2008, 2009, and 2010, respectively.

The NO_x RTCs allocated for the universe were reported as 29.4, 28.4, and 27.5 tpd for compliance year 2008, 2009, and 2010, respectively. Data in the audit reports reflected an excess of 6.5, 8.4, and 8.0 tpd of RTCs holdings for compliance year 2008, 2009, and 2010, respectively, or approximately a 22–30% excess in RTC holdings in the most recent three years. Being cognizant that the 2008 emission profile may reflect a period of the economic downturn, the RTC reduction range of 2-3 tpd estimated by staff (approximately 25 - 38 percent of the unused RTC holdings) appears to be achievable.

RULE COMPLIANCE AND TEST METHODS

Compliance with the provisions of this control measure would be based on monitoring, recordkeeping, and reporting requirements that have been established in either the RECLAIM program or existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

It is expected that the cost effectiveness for this control measure would be in the neighborhood of \$7950 per ton for Phase I based on the most recent RTC trading prices.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from RECLAIM facilities.

REFERENCES

AQMD, 2008. Rule 1146 – Emissions of Oxides of Nitrogen from Industrial and Commercial Boilers, Steam Generators, and Process Heaters, Amended September 5, 2008.

AQMD, 2010. Rule 1110.2 – Emission Reductions from Gaseous and Liquid Fueled Engines, Amended July 9, 2010.

AQMD, 2010-12. Annual RECLAIM Audit Report for 2008 Compliance Year, March 5, 2010; Annual RECLAIM Audit Report for 2009 Compliance Year, March 5, 2010; and Annual RECLAIM Audit Report for 2010 Compliance Year, March 2, 2012.

AQMD, 2012. Stationary Source Committee, Item #4, Twelve-month Rolling Price of 2010 and 2011 Compliance Years RTCs, April 20, 2012

Bay Area, 2006. Regulation 9, Rule 9 – NO_x from Stationary Gas Turbines, Amended December 6, 2006.

EPA, Menu of Control Measures - Control Options for Reducing NO_x from Point and Area Sources, September 3, 2010.

EPA, Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from the Petroleum Refining Industry, October 2010.

LBL, 2005. Energy Efficiency Improvement and Cost Saving Opportunities for Petroleum Refineries, Sponsored by the U.S. EPA, Ernest Orlando Lawrence Berkeley National Lab, February 2005.

SJVUAPCD, 2007. Rule 4703 – Stationary Gas Turbines, Amended September 20, 2007.

SJVUAPCD, 2008. Rule 4320 – Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater Than 5 MMBTU/hr, Adopted October 16, 2008.

SJVUAPCD, 2011. Rule 4354 – Glass Melting Furnaces, Amended May 19, 2011.

SJVUAPCD, 2011. Rule 4702 – Internal Combustion Engines, Amended August 18, 2011.

**BCM-01: FURTHER REDUCTIONS FROM RESIDENTIAL
WOOD BURNING DEVICES
[PM2.5]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		RESIDENTIAL WOOD COMBUSTION		
CONTROL METHODS:		BASIN-WIDE EPISODIC MANDATORY CURTAILMENT		
EMISSIONS (TONS/DAY):				
WINTER AVERAGE DAY	2008	2014	2019	2023
PM2.5 INVENTORY	10.6	9.4	9.4	9.4
PM2.5 REDUCTION*		7.1	7.1	7.1
PM2.5 REMAINING		2.3	2.3	2.3
CONTROL COST:		NOT DETERMINED		
IMPLEMENTING AGENCY:		SCAQMD		

* Winter average day reduction based on episodic conditions and on 75% rule effectiveness.

DESCRIPTION OF SOURCE CATEGORY

The purpose of this measure would be to seek further particulate matter (PM) emissions reductions from residential wood burning fireplaces and wood stoves whenever key areas in the South Coast Air Basin are forecast to approach the federal 24-hour PM2.5 standard.

Background

The types of devices used to burn wood in a typical residence are fireplaces and wood heaters (e.g., fireplace inserts and free-standing wood stoves). Since fireplaces are very inefficient heat sources, they are used primarily for aesthetic purposes. Fireplace inserts and wood stoves are much more efficient and in some residences, are used as the primary source of heating (U.S. EPA, 1996).

Pollutant emissions from residential wood burning devices are caused primarily by incomplete combustion and include PM, CO, NO_x, SO_x, and VOC. Particulate emissions, however, have been the focus of most state and local control programs for wood smoke. Studies indicate that the vast majority of particulate emissions from residential wood combustion are in the fine (2.5 micrometers or less) fraction (Naeher, 2007). Additionally, incomplete combustion of wood produces polycyclic organic matter (POM), a group of compounds classified as hazardous air pollutants under Title III of the federal Clean Air Act.

In 2011, the California Air Resources Board (CARB) conducted a Statewide evaluation of emissions from residential wood combustion based on the most recent emission factors, activity data, and data (where available) from the American Housing Survey, U.S. Census Bureau (CARB, 2011). The results of the updated residential wood combustion emissions inventory,

including reductions from existing control programs (i.e., construction restrictions and curtailments), are factored into the baseline inventory provided in the summary table above.

Regulatory History

Control Measure #MSC-06 (Emission Reductions from Wood-Burning Fireplaces and Stoves) from the 2007 AQMP was implemented in March 2008 through adoption of AQMD Rule 445 - Wood Burning Devices (AQMD, 2008). Under the Rule provisions, only gaseous-fueled hearth devices are allowed in new developments. For existing residential and commercial developments, Rule 445 requires wood burning devices sold or installed in the Basin to be U.S. EPA Phase II-certified or equivalent. Rule 445 prohibits the burning of any product not intended for use as a fuel (e.g., trash) in a wood burning device and requires commercial firewood facilities to only sell seasoned firewood (20% or less moisture content) from July through February. Rule 445 also establishes a mandatory wood burning curtailment program that extends from November 1 through the end of February each winter season. During a wood burning curtailment period, the public is required to refrain from both indoor and outdoor solid fuel burning in specific areas where PM_{2.5} air quality is forecast to exceed 35 µg/m³ (federal 24-hour standard).

In conjunction with the implementation of Rule 445, the District has conducted an incentive program for a discount off of the purchase and installation of a gaseous-fueled device to encourage non-wood burning alternatives. To date the program has resulted in nearly 10,000 installations throughout the Basin and is an ongoing program. In addition, the District is exploring a potential wood stove change-out incentive program whereby certain residences will be offered an incentive to replace their older non-EPA certified wood stove or other non-certified wood burning appliance with an EPA certified wood stove. This will aid in emission reductions by providing a cleaner burning option to those who burn wood as their primary source of heat or otherwise do not have natural gas service for a centralized heating system. These residences are currently exempt from the AQMD Rule 445 residential wood burning curtailment.

PROPOSED METHOD OF CONTROL

Wood smoke reduction programs have been implemented in other jurisdictions for many years. The stringency of each air district's program depends on the region's PM air quality and the relative contribution of wood smoke to ambient fine particulate. While it is acknowledged the overall contribution of residential wood smoke to regional particulate pollution is relatively small (<10%) in the South Coast Basin, its significance can be greater on an episodic basis in the winter months. The severity of the region's PM air quality problem has necessitated a review of wood smoke reduction programs to determine if additional, cost-effective emissions reductions can be achieved.

A review of other California air district regulations and modeling sensitivity analyses have indicated that further reductions in residential wood burning during high PM_{2.5} days would be an effective way to achieve attainment early. It is recommended that the current mandatory wood burning curtailment threshold be lowered from 35 µg/m³ to a more conservative 30 µg/m³. This threshold is used in two other California air districts' wood smoke reduction programs (Sacramento Metropolitan AQMD, 2009; San Joaquin Valley APCD, 2008), and

would provide for a margin of safety given the uncertainties in the air quality forecasts. In addition to the existing sub-regional curtailment program of Rule 445 (based on areas forecast to exceed the existing PM_{2.5} standard), this measure would implement a curtailment that would apply Basin-wide whenever a PM_{2.5} level of greater than 30 µg/m³ is forecast at any monitoring station which has recorded violations of the design value for the current PM_{2.5} 24-hour standard of 35 µg/m³ for either of the two previous three-year design value periods. The design value is the 3-year average of the annual 98th percentile of the 24-hour average values of monitored ambient PM_{2.5} data. For example, for a 2014 implementation year, the three-year average design value would be based on the average of the 98th percentile of ambient PM_{2.5} monitoring for years 2011 through 2013. Therefore, in 2014 under this criteria, either the 2014 (2011-2013) or a 2013 (2010-2012) design value above 35 µg/m³ at any monitoring station would lead to Basin-wide curtailment if a 30 µg/m³ or greater is forecast there. Mira Loma is the only monitoring station that is projected to trigger this Basin-wide curtailment. Current exemptions (e.g., high elevation, sole source of heat, etc.) in Rule 445 will be maintained under this measure. Based on current air quality data, it is expected that there could be up to 20 such curtailment days. It should be noted that, as with the current mandatory program, the Basin-wide curtailment criteria will apply for the entire winter season, which is November through February. Under this measure, consideration will also be given to expanding the defined winter season to potentially include October and/or March.

Key to the success of the control measure is a high level of rule compliance, including consideration of the exemptions provided in Rule 445, such as low-income households, wood burning as the sole source of heat, and a lack of natural gas service. During development of Rule 445 in 2008 AQMD staff reviewed the emissions reduction methodologies for existing wood burning curtailment programs in the San Joaquin Valley and for Sacramento Metropolitan AQMD. The San Joaquin Valley methodology presumed an 80 percent compliance rate while Sacramento Metropolitan presumed a 78 percent compliance rate. Recognizing that the Rule 445 curtailment program contained similar exemptions (e.g., sole source of heat) as the other air district's regulations, a compliance rate of 75 percent was assumed for Rule 445 emissions reductions. Subsequent to adoption of AQMD Rule 445, survey work has been conducted to evaluate the public's knowledge of mandatory wood burning curtailment programs in other California air districts. For the San Joaquin Valley a 2010 survey indicated 83 percent of respondents were aware of the mandatory wood burning curtailment program and a 2009 Sacramento survey documented 92 percent respondent awareness. In the Bay Area, a 2012 survey showed that 75 percent of residents support the no-burn policy and 89 percent stated that they would not burn wood even if a no-burn day was not forecasted for a holiday. Given this information and the fact that the Rule 445 mandatory curtailment notification system is at least equivalent to programs throughout the State, AQMD staff believes that the 75 percent rule effectiveness assumption for this control measure continues to be reasonable.

In order to complement this measure, staff will seek continuation and enhancement of the District's gas log buy-down incentive program

EMISSIONS REDUCTION

Based on historical data from 2009 to 2011, it is estimated that decreasing the existing Rule 445 curtailment threshold from 35 to 30 µg/m³ could result in an approximate 50% increase in the

number of no-burn days (approximately 20 days total) during the November through February winter season. Lowering the wood burning curtailment threshold and applying the curtailment to the entire Basin when triggered could potentially reduce Basin-wide ambient PM_{2.5} concentrations on these episodic no-burn days by about 7.1 tons per winter day (assuming 75% rule effectiveness).

It should be noted that while controlling emissions from residential wood burning is primarily intended to reduce PM_{2.5} emissions, there is an added benefit of also reducing emissions of CO, VOC, NO_x, SO_x, and hazardous air pollutants.

RULE COMPLIANCE AND TEST METHODS

Rule compliance is monitored by AQMD compliance staff on no-burn days in the affected areas. A compliance program has been developed for existing Rule 445, including outreach and education, enhanced surveillance and a progressive warning and fine scheme for violators. Lowering the wood-burning curtailment threshold would represent an increase in no-burn days that are currently monitored by AQMD compliance staff under the current Rule 445 “Check Before You Burn” program. As the program would be expanded to Basin-wide, additional compliance resources may need to be reallocated during no-burn days. A 75% rule effectiveness for this source category is assumed, which accounts for both rule exemptions (i.e. if wood combustion is used as the primary heating source) and expected rule compliance rates.

COST EFFECTIVENESS

The cost effectiveness of this control measure has not been determined. Increasing the number of curtailment days would result in relatively few cost increases to the impacted community. The costs for the district to implement outreach and potentially an incentive program would be approximately \$500,000 beyond current Rule 445 implementation. The District will continue to analyze the potential cost impact associated with implementing this control measure and will provide cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from residential wood combustion sources.

REFERENCES

AQMD, 2008. South Coast Air Quality Management District; AQMD Governing Board Item 37: Draft Final Staff Report for Proposed Rule 445 – Wood Burning Devices; March 7, 2008. <http://www.aqmd.gov/hb/2008/March/080337a.html>

CARB, 2011. California Air Resources Board; Area Source Methodology, Section 7.1 Residential Wood Combustion; March 2011.

Naeher, 2007. Woodsmoke Health Effects: A Review, Journal of Inhalation Toxicology, 19:67-107, 2007

Sacramento Metropolitan AQMD, 2009. Sacramento Metropolitan Air Quality Management District; Rule 421 – Mandatory Episodic Curtailment of Wood and Other Solid Fuel Burning; September 2009. <http://airquality.org/rules/rule421.pdf>

San Joaquin Valley APCD, 2008. San Joaquin Valley Air Pollution Control District Rule 4901 – Wood Burning Fireplaces and Wood Burning Heaters; October, 2008. <http://www.valleyair.org/rules/currnrules/r4901.pdf>

U.S. EPA, 1996. U.S. Environmental Protection Agency AP-42, Section 1.9, Residential Fireplaces; October 1996.

U.S. EPA, 1996. U.S. Environmental Protection Agency AP-42, Section 1.10, Residential Wood Stoves; October 1996.

BCM-02: FURTHER REDUCTIONS FROM OPEN BURNING [PM2.5]

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		OPEN BURNING		
CONTROL METHODS:		BASIN-WIDE EPISODIC RESTRICTIONS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023
PM2.5 INVENTORY	2.2	4.6	4.6	4.6
PM2.5 REDUCTION*		4.6	4.6	4.6
PM2.5 REMAINING		0	0	0
CONTROL COST:		TBD		
IMPLEMENTING AGENCY:		SCAQMD		

** Reduction based on episodic implementation. Overall annual average emissions will remain unchanged as open burning will shift to non-episodic days.*

DESCRIPTION OF SOURCE CATEGORY

Rule 444 outlines the criteria and guidelines for agricultural and prescribed burning, as well as training burns to minimize PM emissions and smoke in a manner that is consistent with state and federal laws. Agricultural burning is open burning of vegetative materials produced from the growing and harvesting of crops, as well as fields preparation in agricultural operations. Prescribed burning is a planned open burning of vegetative materials, usually conducted by a fire protection agency and/or department of forestry, to promote a healthier habitat for plants and animals, and to prevent plant disease and pest, as well as fire episodes and destruction. Training burns are hands-on trainings conducted by fire protection agencies on methods of preventing and/or suppressing fire.

Background

Currently, Rule 444 allows open burning on permissive burn days, provided that permit and event authorization are obtained, and that such burning events are not prohibited by a fire protection agency. A permissive burn day is declared by the District when certain meteorological conditions are met in one or more of the defined source/receptor areas. Rule 444 also includes general requirements (i.e., burning time window and ignition device) for open burning, as well as particular requirements, such as moisture level and firing methods for agricultural burning, and a Smoke Management Plan for prescribed burning. In addition, Rule 444 sets District-wide maximum daily burn acreage for agricultural and prescribed burning, but is lenient toward training burns if the duration is less than 30 minutes and clean fuel is utilized.

The rule establishes administration and compliance streamlining of the burn program, as well as additional and/or alternative controls to further reduce PM emissions and smoke from open burning.

Regulatory History

Rule 444 – Open Burning, (previously Open Fires) was adopted October 1976. It has been amended three times, first in 1981. The rule was amended in 1987 to incorporate provisions of California Code of Regulations, Title 17 addressing wildland vegetative management burns. The rule was amended in 2001 to incorporate the Smoke Management Guideline requirement of the amended Title 17 and implement 1999 AQMP Control Measure WST-03. It was again amended in November 2008 to implement 2007 AQMP Control Measure BCM-04.

PROPOSED METHOD OF CONTROL

The restriction for no burn days is based on a PM_{2.5} daily forecast. Rule 444 currently contains requirements that a no-burn day may be called under a combination of geographical, meteorological, and air quality conditions. This control measure would potentially increase the number of no-burn days by lowering the air quality forecast threshold. This measure would implement a curtailment that would apply Basin-wide whenever a PM_{2.5} level of greater than 30 $\mu\text{g}/\text{m}^3$ is forecast at any monitoring station which has recorded violations of the design value for the current PM_{2.5} 24-hour standard of 35 $\mu\text{g}/\text{m}^3$ for either of the two previous three-year design value periods. The design value is the 3-year average of the annual 98th percentile of the 24-hour average values of monitored data ambient PM_{2.5} data. For example, for a 2014 implementation year, the three-year average design value would be based on the average of the 98th percentile of ambient PM_{2.5} monitoring for years 2011 through 2013. Therefore, in 2014 under this criteria, either the 2014 (2011-2013) or a 2013 (2010-2012) design value above 35 $\mu\text{g}/\text{m}^3$ at a monitoring station would lead to Basin-wide curtailment if a 30 $\mu\text{g}/\text{m}^3$ or greater is forecast there. As with Control Measure BCM-01, the burn restriction criteria will apply for the entire winter season, which is November through February. Consideration will also be given to expanding the defined winter season to potentially include October and/or March.

For this measure, the rule effectiveness is assumed to be 100% as the open burning activities will be shifted to other permissible burn days, and the full participation of effected entities under the current Rule 444 curtailment program. This measure will also seek to determine economically and technologically feasible alternatives to burning.

EMISSIONS REDUCTION

Enhancing the open burning restrictions with this revised threshold criteria and applying a curtailment to the entire Basin could potentially reduce Basin-wide ambient PM_{2.5} concentrations on these episodic no-burn days by about 4.6 tons per winter day. Since the burning would likely be shifted to other days, the total annual emissions would remain the same, but would not occur on days where high PM_{2.5} levels are forecast.

RULE COMPLIANCE

The measure will be implemented through the existing burn authorization process and field inspectors to ensure rule compliance.

COST EFFECTIVENESS

The cost effectiveness of this control measure has not been determined. Increasing the number of curtailment days would result in changes in operations. The District will continue to analyze the potential cost impacts associated with this measure during rulemaking.

IMPLEMENTING AGENCY

The District has the authority to implement this measure.

REFERENCES

- Rule 444 – Open Burning California Code of Regulations, Title 17 – Agricultural Burning Guidelines
- Rule 444 – Open Burning, Governing Board package, Amended November 2008.

**BCM-03: FURTHER PM REDUCTIONS FROM UNDER-FIRED
CHARBROILERS
[PM2.5]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		UNDER-FIRED CHARBOILERS		
CONTROL METHODS:		ADD-ON CONTROL EQUIPMENT WITH VENTILATION HOOD REQUIREMENTS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023
PM2.5 INVENTORY	9.06	9.15	9.69	10.05
PM2.5 REDUCTION			1.0*	1.0*
PM2.5 REMAINING		9.15	8.69	9.05
CONTROL COST:		\$15,000 PER TON REDUCED		
IMPLEMENTING AGENCY:		SCAQMD		

* Reductions will be submitted into the SIP once feasible controls are identified.

DESCRIPTION OF SOURCE CATEGORY

This control measure is carried over from the 2007 AQMP/SIP. Restaurant operations emit PM and VOCs. Both of these pollutants contribute to the region's exceedances of State and federal PM2.5 and ozone air quality standards.

Background

Restaurant operations include charbroilers (chain-driven and under-fired), griddles, deep fat fryers, ovens, and other equipment. Based on information from the 2007 AQMP, under-fired charbroilers are responsible for 84 percent of the PM emissions from this source category (2007, AQMD). The emissions summary table above presents PM2.5 emissions from under-fired charbroilers. The emission profile at the Mira Loma station showed a high concentration of organic carbon and cooking ranks as the top source category for directly emitted PM2.5 emissions.

Regulatory History

The 1997 AQMP included Control Measure PRC-03 - Emission Reductions from Restaurant Operations. AQMD Rule 1138, adopted in November 1997, implemented Phase I of this control measure, reducing 0.5 tons per day of PM10 emissions from chain-driven charbroilers.

The 1999 Amendment to the 1997 Ozone State Implementation Plan for the South Coast Air Basin included control measure PRC-03 – Emission Reductions from Restaurant Operations – Phase II, with a goal of reducing 0.9 tons per day VOC and 7.0 tons per day of PM10 (AQMD, 1999).

In August 2000, staff reported that cost-effective controls for under-fired charbroilers were limited and recommended substituting the remaining 0.9 tons/day of VOC emissions reductions assigned to this source category with reductions from another control measure (AQMD, 2000). However, because of the significant contribution of PM emissions from under-fired charbroilers the 2003 AQMP included Control Measure PRC-03 – Emission Reductions from Restaurant Operation to reduce PM10 emissions by 1 ton per day by 2010. This represented a conservative reduction from a baseline of approximately 10 tons per day as cost-effective controls for the majority of under-fired charbroilers had not yet been developed.

A report to the Board was made in December 2004 recommending findings of infeasibility be made for control measure PRC-03, and substitute emission reductions from other adopted rules, as required by the 2003 AQMP (AQMD, 2004). AQMD staff also recommended funding for demonstration projects. In December 2004, the Board authorized up to \$200,000 from mitigation fees collected pursuant to Rule 1309.1 – Priority Reserve, to fund six to eight new or retrofit demonstration sites on large restaurants. However, no applications were received for this project.

The 2007 AQMP carried over a control measure intended to reduce emissions from under-fired charbroilers (AQMD, 2007). The 2007 control measure (#BCM-05) described Bay Area AQMD rule development efforts that identified use of electrostatic precipitators (ESP), high-efficiency particulate arresting (HEPA) filters, wet scrubbers, and thermal oxidizers at high-volume restaurants with under-fired charbroilers.

In 2008-2009, staff reinitiated rule development for restaurants with under-fired charbroilers and held a series of working group meetings and a Public Workshop (AQMD, 2009). Due to lack of demonstrable cost-effective and affordable control technologies: however, AQMD staff determined rule adoption at that time was not feasible.

Control Technology Research

In 2011, AQMD staff requested an amendment to an existing University of California at Riverside – Center for Environmental Research and Technology (CE-CERT) contract to re-establish a test kitchen and test potential under-fired charbroiler control devices (AQMD, 2011). In October 2011, the Board approved an additional \$216,000 for control device testing and authorized release of a Program Opportunity Notice (PON) to solicit proposals from control device vendors. As described in the PON, the District proposed to fund screening tests for up to three devices per manufacturer. Recognizing that any feasible control device must be affordable to the restaurant operator, one focus of the testing program was to evaluate potential control devices that have a capital and installation cost below \$30,000 and annual operating costs below \$10,000. It is intended that any control installation will not affect the cooking process; therefore the focus is for in-hood or rooftop/duct work placement of the device so as not to impact the taste or appearance of the charbroiled meat. Equipment showing promise in achieving desirable emission reduction rates during the screening tests would be tested using the full AQMD Test Protocol for Determining PM Emissions from Under-fired Charbroilers paid for by the District. An additional action was approved by the AQMD Governing Board in 2011 to develop a sole-source contract with CE-CERT, not to exceed \$150,000, to provide a detailed speciation and toxicity analysis of emissions from under-fired charbroilers.

Five manufacturers responded to the PON with control technologies that include a catalytic oxidation device, filtration systems (one with activated charcoal), and a centrifuge system with an aerosol mist nebulizer. Under the PON process all submittals were subsequently reviewed by a technical evaluation panel comprised of AQMD staff and representatives from CE-CERT, Bay Area AQMD, and San Joaquin Valley APCD. The panel determined that all PON applications had technical merit and recommended that each manufacturer participate in the screening evaluations which began in May of 2012. Screening tests for other control devices are ongoing and full AQMD protocol testing will be initiated on control device technologies that pass the screening test.

PROPOSED METHOD OF CONTROL

Restaurant operations continue to be a significant contributor to the PM_{2.5} emission inventory. To date, a variety of control device technologies have been proposed for testing under the PON process. Results from these evaluations will guide future Rule development efforts. The following paragraph describes an under-fired charbroiler control program implemented by another California air district.

In 2007, the Bay Area AQMD adopted Regulation 6, Rule 2 for commercial cooking equipment (Bay Area AQMD, 2007). While this regulation mirrors the District's Rule 1138 requirements for chain driven charbroilers, it also contains control requirements for new and existing under-fired charbroilers with a facility-wide cooking surface of greater than or equal to 10 square feet. The rule exempts those operations cooking less than 800 lbs of beef per week. The regulation identifies a list of feasible control technologies available to reach an emissions limit of 1.9 pounds of PM₁₀ per 1,000 pounds of meat cooked. Control options include ESPs, HEPA filters, wet scrubbers, and thermal oxidizers. The rule also requires ventilation hoods on new installations to meet standards of the Underwriters Laboratory (UL). There are currently several restaurants operating under-fired charbroilers which will be required to comply with the Bay Area AQMD's Rule in 2013. AQMD staff continues to evaluate the Bay Area AQMD's technical assessment and is monitoring rule implementation.

This control measure will be implemented in two phases. Phase I will be the completion of the technical assessment at CE-CERT, including considerations for compatibility with existing restaurants and all applicable building and safety codes (e.g. fire suppression). Evaluation of cost and affordability associated with the purchase, installation, and operation and maintenance (e.g., cleaning and/or replacing filters) of the equipment will also be assessed.

The findings from the control technology research currently being conducted will be the basis for potential future control requirements. Phase II will be the final technical and economic feasibility analysis in conjunction with potential rule development to establish requirements for under-fired charbroilers, if Phase I results suggest the feasibility of controls.

EMISSIONS REDUCTION

Control measure #BCM 05 - PM Emission Reductions from Under-Fired Charbroilers estimated that requiring large volume restaurants to install either ESP or HEPA control devices with at least 85 percent control could achieve a PM_{2.5} reduction of 1.1 tons per day from this source category (AQMD, 2007).

A subsequent review of potential emissions reductions was developed during preparation of the 2009 Proposed Amended Rule 1138 Preliminary Draft Staff Report (AQMD, 2009). This analysis was based on restaurant counts and activity data from a locally-developed survey (Rogozen, 1999) and PM emissions factors from a cooking device test report (CE-CERT, 1997). The Preliminary Draft Staff Report indicated potential emission reductions of filterable/condensable PM_{2.5} of 1.8 to 2.1 tons per day, based on an overall control efficiency of 85 percent, for restaurants cooking 1,250 pounds of hamburger per week. These potential emissions reductions, however, were determined to be infeasible due to a lack of affordable control technologies. Currently, several new control technologies are beginning to be demonstrated. If any of them turn out to be feasible, this measure will require emission reductions equivalent to the use of such technologies.

Emissions reductions specific to this control measure are unknown at this time, however, preliminary evaluation of control technologies indicates the potential to reduce PM_{2.5} emissions by approximately one ton per day from larger under-fired charbroiler operations. Any future rulemaking efforts would be based on technical and economic feasibility analysis as derived from the ongoing CE-CERT/AQMD research effort.

RULE COMPLIANCE AND TEST METHODS

Compliance requirements for this control measure would depend on the control strategy implemented. In conjunction with the rule development process for Rule 1138 and associated source testing, the document “Protocol – Determination of Particulate and Volatile Organic Compound Emissions from Restaurant Operations” was published November 14, 1997. These test methods are currently being used for testing and potential certification of charbroiler control devices. The test methods are used by qualified labs to certify the emissions level of specific control systems but have not been employed to test emissions at individual restaurants.

COST EFFECTIVENESS

The cost-effectiveness estimate associated with control measure implementation is preliminary at \$15,000 per ton PM_{2.5} reduced and is based on the control technologies currently under evaluation. The District would analyze industry cost impacts as part of potential future Rule development.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from restaurant operations.

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**BCM-04: FURTHER AMMONIA REDUCTIONS FROM
LIVESTOCK WASTE
[NH₃]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		FRESH LIVESTOCK WASTE		
CONTROL METHODS:		EPISODIC APPLICATION OF ACIDIFICATION OF MANURE TO REDUCE AMMONIA EMISSIONS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023
NH ₃ INVENTORY	12.4	11.0	7.7	5.7
NH ₃ REDUCTION		TBD*	TBD*	TBD*
<i>POLLUTANT REMAINING</i>		TBD	TBD	TBD
CONTROL COST:		TBD		
IMPLEMENTING AGENCY:		SCAQMD		

* TBD are reductions to be determined once the technical assessment is complete and the control approach are identified.

DESCRIPTION OF SOURCE CATEGORY

The purpose of the control measure is to reduce ammonia emissions from livestock operations with emphasis on dairies.

Background

The SCAB is exceeding both State and federal health-based air quality standards for PM_{2.5} and is currently designated by the U.S. EPA as non-attainment area for PM_{2.5}. The AQMD is required to attain the 24-hour PM_{2.5} standards by 2014-2019. Ammonia contributes to formation of PM_{2.5} and mixes with transport emissions, particularly to form aerosol ammonium nitrate and ammonium sulfate. Livestock waste produces appreciable amounts of ammonia emissions.

In 2008/2009, there were approximately 208,000 dairy cattle, 7.9 million poultry, and 5,500 swine in the South Coast Air Basin. In general, with existing regulatory (i.e., Proposition 2 – known as cage-free proposition that passed in 2008), economic, and product demand climate, the livestock industry in the South Coast jurisdiction is not considered a growth industry into the future. However, with findings from recent research that freshly excreted manure in the animal housing areas is the major source of ammonia emissions and each cow produces approximately 60 kg of manure daily, selection of effective measures to minimize ammonia emissions from fresh manure is the focus of this control measure.

Regulatory History

Rule 1133.2 – Emission Reductions from Co-Composting Operations which was adopted in 2003 requires existing and new co-composting (including manure composting) facilities to comply with proper composting and control in order to achieve a minimum of 70% and 80% VOC reductions, respectively, and similar reductions for ammonia.

The 2007 AQMP Control Measure MCS-05 - Emission Reductions from Livestock Waste sought additional emission reductions from confined animal facilities (CAFs), beyond those achieved by current Rules 223 and 1127. Control Measure MCS-05 suggested adding control requirements for swine operations to meet the objectives of California Senate Bill (SB) 700 – Agriculture & Air Quality Summary and Implementation. The control measure aimed to require more stringent controls (Class Two Mitigation Measures) for large CAFs, including core measures across the board, and lesser controls (Class One Mitigation Measures) for smaller CAFs not currently subject to Rule 223 by bringing them into the District permit system. The control measure also aimed to further expand the scope of Rule 1127 and its Best Management Practices based on anticipated results of on-going and future scientific research regarding manure management. Overall, MCS-05 estimated 20% emissions reduction from each of the dairy, poultry, and swine categories.

Currently, Rule 223 – Emission Reduction Permits for Large Confined Animal Facilities requires a written Permit to Operate for all large CAFs, which are defined as facilities with (1): 1,000 or more milking cows; or 3,500 or more beef cattle; or 7,500 or more calves, heifers, or other cattle; or (2): 650,000 or more laying hens; or (3): 3,000 or more swine. In addition, the rule also requires these large facilities to submit and implement an emission mitigation plan which can be developed based on different classes of mitigation measures to mainly minimize VOC emissions from housing, feed operations, and manure handling.

Rule 1127 – Emission Reductions from Livestock Waste requires best management practices for dairies and specific requirements regarding manure removal, handling, and composting; however, the rule does not focus on fresh manure, which is one of the largest dairy sources of ammonia emissions.

In 2011, staff conducted the Technology Assessment that included a revised emissions inventory for all pollutants, including ammonia, to reflect new emission factors as well as current and future livestock animal headcounts which were higher than anticipated in the 2007 AQMP. Based on the revised emissions inventory, industry-level projections (i.e., mostly negative growth), and current regulatory requirements, staff recommended that Rule 1127 amendments not be pursued at that time. Staff also recommended that the 2014 VOC emission reduction shortfall be made up with excess VOC emission reductions generated from the implementation of Rule 1143 – Consumer Paint Thinners and Multi-Purpose Solvents. However, this category remains a significant source of ammonia emissions.

Emission Control Research

The acidifier sodium bisulfate (SBS) has been used to reduce pH and therefore bacterial level in dairy bedding, as well as to prevent environmental mastitis (a potentially fatal mammary gland infection) and calf respiratory stress. In California, SBS has been used by dairies in Tulare,

Fresno, Merced, Stanislaus, San Joaquin, Kings, Kern, San Bernardino, Riverside, San Benito, and Sacramento, mainly to prevent cow lameness and nuisance flies. It has also been used by dairies in Walla Walla, Columbia, and Whitman (Washington), Wallowa (Oregon), and Wisconsin.

SBS is a hygroscopic acid salt and is an effective ammonia-reducing agent for fresh manure. SBS dissociates into Na^+ , H^+ , and SO_4^{2-} upon application to the manure, bedding, or dry lot surface. H^+ reduces the pH and protonates ammonia, converting it to ammonium. The ammonium is then bound by sulfate to form ammonium sulfate, which is retained in the manure in its solid form. Theoretically, 100 lbs of SBS would bind 14 lbs NH_3 .

Research indicates that most ammonia reduction from dairy slurry (up to 84%) occurred during the first day of SBS application and that ammonia emissions decreased with increasing levels of SBS application. However, after 24 hrs, the reduction rates decreased and by day 3, the reduction rates were no longer different between dosages. On the average, SBS application was able to achieve a 60% ammonia emissions reduction with a 0.375 kg/m^2 ($76.8 \text{ lb/1,000 ft}^2$) SBS application rate. Other findings reveal that SBS most effectively reduced ammonia emissions from dairy corrals at either an application rate of 50 lbs/1,000 ft^2 , 3 times/week, or 75 lbs/1,000 ft^2 , 2 times/week.

Recent research findings also indicate the effectiveness of SBS in alcohol control (up to 61% methanol reduction and 58% ethanol reduction), as well as fly control (up to 99% reduction) and bacteria reduction (68%) in dairies, depending on the application rates.

Currently, there is no research regarding the effects of SBS on odors at dairies; however, since pH reduction inhibits bacterial decomposition of nitrogenous compounds in the manure, it is believed that odors would also be reduced.

There is no research on the effects of topical application of SBS on cow milk production. Currently, there is one publication indicating a 5% to 15% increase in milk yield (depending on the lactation stages) for cows on the SBS-treated silage (as silage additive) with no adverse effects on the cows' blood biochemistry.

SBS is safe to be used for water treatment. According to the published findings by EPA, SBS can be used as a disinfectant to prevent damage of the membrane used in reverse osmosis. SBS is certified by the NSF/ANSI for treating drinking water (chlorine removal, corrosion & scale control, and pH adjustment) and has been used in California, Pennsylvania, and Oregon. It has also been used to remediate high pH soil at a construction site in California. Although the Chino area has an on-going desalting project, as with other salt-containing products, the use of SBS should be carefully considered in areas that are sensitive to salts and/or with existing high salt loading in soil. Application at high rates could form nitrous oxide. In addition, SBS must be applied at 50 to 75 lbs/1,000 ft^2 , 2 times per week to manure to maintain constant emission reductions as the substance loses its effectiveness over time.

PROPOSED METHOD OF CONTROL

Reducing pH level in manure through the application of acidulant additives (acidifier) is one of the potential mitigations for ammonia. SBS is being considered for use in animal housing areas where high concentrations of fresh manure are located. Research indicates best results with the use of SBS on “hot spots”. SBS can also be applied to manure stock piles and at fencelines, and upon scraping manure to reduce ammonia spiking from the leftover remnants of manure and urine. SBS application may be required seasonally or episodically during times when high ambient PM2.5 levels are of concern.

This control measure will be implemented in two phases. Phase I will be to conduct a technical assessment of the aforementioned method of control. The technical assessment will evaluate the application of SBS at local dairies so as to evaluate the direct technical and economic feasibility of application, including episodic application only. The technical assessment will also examine potential impacts to animal and worker health and safety associated with uses of SBS. Staff intends to work with stakeholders at the Regional Water Quality Control Board relative to potential ground water impacts from the land spreading of manure treated with SBS.

If deemed feasible and effective, Phase II would implement the measure as needed to address future PM2.5 standards. Rule requirements would be specific to dairies in the AQMD jurisdiction and may be unique to localized operations only. As such, the requirements may not be applicable to dairies elsewhere where a site-specific assessment would need to be made relative to those particular conditions. Each air district will likely need to conduct their own assessment as to the feasibility of SBS application in their jurisdiction.

EMISSIONS REDUCTION

The emission reductions associated with SBS application are unknown at this time. Based on historical data, application may only be required for 8 weeks out of the year. Research indicates emission reduction potential in the range of 60%; however, SBS application timing and manure coverage variables require further consideration. Existing information regarding SBS application at dairies in the South Coast Air Basin, and indicates an overall emission reduction potential of about 50%. Current use of SBS and application coverage volume and rates, along with cost, will be examined in conjunction with the above referenced Phase I pilot program and assessment.

RULE COMPLIANCE AND TEST METHODS

TBD

COST EFFECTIVENESS

SBS can be applied by hand application or by tractor-driven fertilizer spreader; therefore, the operating costs would be minimal.

For dairies, SBS application at 50 to 75 lbs/1,000 ft², 2 times per week would cost \$33 to \$49.50/1,000 ft²/week. For treatment of heavy-traffic areas only, the estimated cost would be \$2.48 to \$3.71/cow/week (assuming 4 cows/1,000 ft²).

Costs to livestock facilities could be less when accounting for the fact that many dairies may already be using SBS for other purposes. If dairy operators already have the application equipment and only need to increase the amount and/or frequency of SBS application, they may already be seeing some potential co-benefits of increased milk yield and healthier animals. As discussed under Emission Reductions above, due to the unknown frequency of episodic applications, exact cost per facility or cost-effectiveness will vary by year.

IMPLEMENTING AGENCY

The District has the authority to regulate ammonia emissions from livestock waste.

REFERENCES

Rule 1133.2 – Emission Reductions from Co-Composting Operations, AQMD, January 2003

Rule 1127 – Emission Reductions from Livestock Waste, AQMD, August 2004

Rule 223 – Emission Reduction Permits for Large Confined Animal Facilities, AQMD, June 2006

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Contact with Mr. Chris O'Brien of Jones-Hamilton Co.

Contact with Mr. Edward Kashak of California Regional Water Quality Control Board, Santa Ana Region

**IND-01: BACKSTOP MEASURE FOR INDIRECT SOURCES OF EMISSIONS
FROM PORTS AND PORT-RELATED FACILITIES
[NO_x, SO_x, PM_{2.5}]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		PORTS AND PORT-RELATED SOURCES (E.G., MARINE VESSELS, LOCOMOTIVES, TRUCKS, CARGO HANDLING EQUIPMENT, HARBOR CRAFT AND STATIONARY EQUIPMENT)		
CONTROL METHODS:		PORT AND PORT FACILITY EMISSION CONTROL PLANS, CONTRACTUAL REQUIREMENTS, RULES, TARIFFS AND INCENTIVES/DISINCENTIVES TO IMPLEMENT MEASURES		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023
NO _x INVENTORY*	78.6	51.2	47.2	39.2
NO _x REDUCTION*		N/A	N/A	N/A
NO _x REMAINING*		51.2	47.2	39.2
SO _x INVENTORY*	25.5	1.8	2.3	2.7
SO _x REDUCTION*		N/A	N/A	N/A
SO _x REMAINING*		1.8	2.3	2.7
PM _{2.5} INVENTORY*	3.7	1.0	1.0	1.1
PM _{2.5} REDUCTION*		N/A	N/A	N/A
PM _{2.5} REMAINING*		1.0	1.0	1.1
CONTROL COST:	TBD			
IMPLEMENTING AGENCY:	SCAQMD			

* The purpose of this control measure is to ensure the emissions from port-related sources are at or below the AQMP baseline inventories for PM_{2.5} attainment demonstration. The emissions presented herein were used for attainment demonstration of the 24-hr PM 2.5 standard by 2014.

DESCRIPTION OF SOURCE CATEGORY

This control measure is carried over from the 2007 AQMP/SIP.

Background

The ports of Los Angeles and Long Beach are the largest in the nation in terms of container throughput, and collectively are the single largest fixed sources of air pollution in Southern California. Emissions from port-related sources, such as marine vessels, locomotives, trucks, harbor craft and cargo handling equipment, adversely affect air quality in the local port area as well as regionally. Without substantial control of emissions from port-related sources, it will not be possible for this region to attain federal ambient air quality standards for ozone or PM_{2.5}. Port sources also contribute to cancer risks.

In 2006 the Ports of Los Angeles and Long Beach, with the participation and cooperation of the staff of the SCAQMD, CARB, and U.S. EPA, adopted the San Pedro Bay Ports Clean Air Action Plan (CAAP). The CAAP was further amended in 2010, updating many of the goals and implementation strategies to reduce air emissions and health risks associated with port operations while allowing port development to continue. In addition to addressing health risks from port-related sources, the CAAP sought the reduction of criteria pollutant emissions to the levels that assure port-related sources decrease their “fair share” of regional emissions to enable the Basin to attain state and federal ambient air quality standards.

The CAAP focuses primarily on reducing diesel particulate matter (DPM), along with NO_x and SO_x. The CAAP includes proposed strategies on port-related sources that are implemented through new leases or Port-wide tariffs, Memoranda of Understanding (MOU), voluntary action, grants or incentive programs.

The goals set forth in the CAAP include:

- Health Risk Reduction Standard: 85% reduction in population-weighted cancer risk by 2020
- Emission Reduction Standards:
 - By 2014, reduce emissions by 72% for DPM, 22% for NO_x, and 93% for SO_x
 - By 2023, reduce emissions by 77% for DPM, 59% for NO_x, and 93% for SO_x

In addition to the CAAP, the Ports have completed annual inventories of port-related sources since 2005. These inventories have been completed in conjunction with a technical working group composed of the SCAQMD, CARB, and U.S. EPA. Based on the latest inventories, it is estimated that the emissions from port-related sources will meet the 2012 AQMP emission targets necessary for meeting the 24-hr PM_{2.5} ambient air quality standard.

While many of the emission reduction targets in the CAAP result from implementation of federal and state regulations, some are contingent upon the Ports taking further actions which are voluntary in nature. These voluntary actions include the Expanded Vessel Speed Reduction Incentive Program, Green Flag Program, Clean Truck Program, Oceangoing Vessel Low Sulfur Fuel Program, and the Shore-side power and Auxiliary Marine Power Program. This control

measure is designed to provide an “insurance policy” that provides a “backstop” to the Ports’ actions, and ensures that the emission targets from port-related sources are met in a timely manner.

Regulatory History

The CAAP sets out the emission control programs and plans that will help mitigate air quality impacts from port-related sources. The CAAP relies on a combination of regulatory requirements and voluntary control strategies which go beyond U.S. EPA or CARB requirements, or are implemented faster than regulatory rules. The regulations which the CAAP relies on include international, federal and state requirements controlling port-related sources such as marine vessels, harbor craft, cargo handling equipment, locomotives, and trucks.

The International Maritime Organization (IMO) MARPOL Annex VI, which came into force in May 2005, set new international NO_x emission limits on Category 3 (>30 liters per cylinder displacement) marine engines installed on new vessels retroactive to the year 2000. In October 2008, the IMO adopted an amendment which places a global limit on marine fuel sulfur content of 0.1 percent by 2015 for specific areas known as Emission Control Areas (ECA). The South Coast District waters of the California coast are included in an ECA and ships calling at the Port of Los Angeles and Long Beach have to meet this new fuel standard. In addition, the 2008 IMO amendment required new ships built after January 1, 2016 which will be used in an Emission Control Area (ECA) to meet a Tier III NO_x emission standard which is 80 percent lower than the original emission standard.

To reduce emissions from switch and line-haul locomotives, the U.S. EPA in 2008 established a series of increasingly strict emission standards for new or remanufactured locomotive engines. The emission standards are implemented by “Tier” with Tier 0 as the least stringent and Tier 4 being the most stringent. U.S. EPA also established remanufacture standards for both line haul and switch engines. For Tiers 0, 1, and 2, the remanufacture standards are more stringent than the new manufacture standards for those engines for some pollutants.

To reduce emissions from on-road, heavy-duty diesel trucks, U.S. EPA established a series of cleaner emission standards for new engines, starting in 1988. The U.S. EPA promulgated the final and cleanest standards with the 2007 Heavy Duty Highway Rule. Starting with model year 2010, all new heavy-duty trucks have to meet the final emission standards specified in the rule.

On December 8, 2005, CARB approved the Regulation for Mobile Cargo-Handling Equipment (CHE) at Ports and Intermodal Rail Yards (Title 13, CCR, Section 2479), which is designed to use best available control technology (BACT) to reduce diesel PM and NO_x emissions from mobile cargo-handling equipment at ports and intermodal rail yards. The regulation became effective December 31, 2006. Since January 1, 2007, the regulation imposes emission performance standards on new and in-use terminal equipment that vary by equipment type.

In 1998, the railroads and CARB entered into an MOU to accelerate the introduction of Tier 2 locomotives into the SCAB. The MOU includes provisions for a fleet average in the SCAB, equivalent to U.S. EPA's Tier 2 locomotive standard by 2010. The MOU addressed NO_x emissions from locomotives. Under the MOU, NO_x levels from locomotives are reduced by 67 percent.

On June 30, 2005, Union Pacific Railroad (UP) and Burlington Northern Santa Fe Railroad (BNSF) entered into a Statewide Rail Yard Agreement to Reduce Diesel PM at California Rail Yards with the CARB. The railroads committed to implementing certain actions from rail operations throughout the state. In addition, the railroads prepared equipment inventories and conducted dispersion modeling for Diesel PM.

In December 2007, CARB adopted a regulation which applies to heavy-duty diesel trucks operating at California ports and intermodal rail yards. This regulation eventually will require all drayage trucks to meet 2007 on-road emission standards by 2014.

Areas where the CAAP went beyond existing regulatory requirements or accelerated the implementation of current IMO, U.S. EPA, or CARB rules include emissions reductions from ocean-going vessels through lowering vessel speeds, accelerating the introduction of 2007/2010 on-road heavy-duty drayage trucks, maximizing the use of shore-side power for ocean-going vessels while at berth, early use of low-sulfur fuel in ocean-going vessels, and the restriction of high-emitting locomotives on port property. Each of these strategies is highlighted below.

HDVI – Performance Standards for On-Road Heavy Duty Vehicles (Clean Truck Program)

This control measure requires that all on-road trucks entering the ports comply with the Clean Truck Program. Several milestones occurred early in the program implementation, but the current requirement bans all trucks not meeting the 2007 on-road heavy-duty truck emission standards from port property. This program has the effect of accelerating the introduction of clean trucks sooner than would have occurred under the state-wide drayage truck regulation framework.

OGVI – Vessel Speed Reduction Program (VSRP): Under this voluntary program, the Port requested that ships coming into the Ports reduce their speed to 12 knots or less within 20nm of the Point Fermin Lighthouse. The program started in May 2001. The Ports expanded the program out to 40 nm from the Point Fermin Lighthouse in 2010.

OGV3/OGV4 – Low Sulfur Fuel for Auxiliary and Main Engines and Auxiliary Boilers: OGV3 reduces emissions for auxiliary engines and auxiliary boilers of OGVs during their approach and departure from the ports, including hoteling, by switching to MGO or MDO with a fuel sulfur content of 0.2 percent or less within 40 nm from Point Fermin. OGV4 Control measure reduces emissions from main engines during their approach and departure from the ports. OGV3 and OVV4 are implemented as terminal leases are renewed.

RL-3 – New and Redeveloped Near-Dock Rail Yards: The Ports have committed to support the goal of accelerating the natural turnover of line-haul locomotive fleet to at least 95 percent Tier 4 by 2020. In addition, this control measure establishes the minimum standard goal that the Class 1 (UP and BNSF) locomotive fleet associated with new and redeveloped near-dock rail yards use 15-minute idle restrictors and ULSD or alternative fuels, and as part of the environmental review process for upcoming rail projects, 40% of line-haul locomotives accessing port property will meet a Tier 3 emission standard and 50% will meet Tier 4.

PROPOSED METHOD OF CONTROL

The goal of this measure is to ensure that NO_x, SO_x and PM_{2.5} emissions reductions from port-related sources are sufficient to attain the 24-hr federal PM_{2.5} ambient air quality standard. Based on current and future emission inventory projections, anticipated emission reductions from port-related sources will be sufficient to achieve attainment of the 24-hr federal PM_{2.5} ambient air quality standard. This measure is divided into two phases. The Phase I requirements are triggered if emission levels projected to result from the current regulatory requirements and voluntary reduction strategies that are assumed and relied upon in the 2012 AQMP are not realized. Once triggered, the ports will be required to develop and implement a plan to reduce emissions from their sources to meet the emission targets. This control measure is designed to ensure that the necessary emission reductions from port-related sources projected in the 2012 AQMP milestone years are achieved. The Phase II is designed to reduce emissions if it is later determined through a SIP amendment that additional region-wide reductions are needed due to the change in Basin-wide carrying capacity for PM_{2.5} attainment. In this case, the ports will be required to develop and implement a plan to further reduce their emissions on a “fair-share” basis.

This control measure will be implemented through a District rule. This control measure applies to the Port of Los Angeles and the Port of Long Beach, acting through their respective Boards of Harbor Commissioners. The ports may have the option to comply separately or jointly with provisions of the “backstop” rule.

Elements of Backstop Rule

Summary: This control measure will establish enforceable nonattainment pollutant emission reduction goals for the ports in order to ensure attainment of the 24-hr PM_{2.5} attainment strategy in the 2012 AQMP. The “backstop” rule will be implemented if aggregate emissions from port-related sources exceed specified emissions targets. If emissions do not exceed such targets, the ports will have no control obligations under this control measure.

Emissions Targets: The emissions inventories projected for the port-related sources in the 2012 AQMP are an integral part of the 24-hr PM_{2.5} attainment demonstration by 2014 and its maintenance in 2019. These emissions serve as emission targets for meeting the 24-hr PM_{2.5} standard. Future targets will be developed for the ozone standards in future SIP revisions.

Scope of Emissions Included: Emissions from all sources associated with each port, including equipment on port property, marine vessels traveling to and from the port while in California Coastal Waters, locomotives and trucks traveling to and from port-owned property while within the South Coast Air Basin. This analysis will make use of the Port’s annual emission inventory, either jointly or individually, as the basis for the emission targets. The inventory methodology to estimate these emissions is consistent with the CAAP methodology.

Trigger Causing Backstop Rule Regulatory Requirements to Come Into Effect: The Phase 1 of the “backstop” requirements will be triggered if the reported emissions for 2014 for port-related sources exceed the 2014 target milestone. The Phase II requirements will be triggered after a

two-step evaluation. First, the Basin fails to meet the 24-hr PM_{2.5} standard as demonstrated in the 2012 AQMP and there is a change in Basin-wide carrying capacity, in which case a new reduction target for each pollutant will be established. The second step will evaluate the feasibility of further emission reductions from port-related sources using a “fair-share” methodology. District staff will work with the ports, other stakeholders, CARB and U.S. EPA to perform such a feasibility analysis and present it to the the Governing Board at a regularly scheduled public meeting.

Requirements if Backstop Triggered: If the “backstop” rule is triggered, the Ports would submit an Emission Control Plan to the District. The plan should include measures sufficient to bring the Ports back into compliance with the 2014 emission targets (Phase I) and to further reduce their emissions to the new target based on their contribution to the total inventories, necessary in meeting the 24-hr PM_{2.5} standard through a SIP amendment (Phase II). The Ports may choose any number of implementation tools that can achieve the necessary reduction. These may include environmental lease conditions, port rules, tariffs or incentives. Failure to implement the plan would be a violation of this control measure.

RULE COMPLIANCE AND TEST METHODS

Compliance with this control measure will depend on the type of control strategy implemented. Compliance will be verified through compliance plans, and enforced through submittal and review of records, reports, and emission inventories.

COST EFFECTIVENESS

The cost effectiveness will be determined based on the control option selected. A maximum cost-effectiveness threshold will be established for each pollutant during rule development. The rule will not require any additional control strategy to be implemented which exceeds the threshold.

IMPLEMENTING AGENCY

The District has authority to adopt regulations to reduce or mitigate emissions from indirect sources, i.e. facilities such as ports that attract on- and off-road mobile sources, and has certain authorities to control emissions from off-road mobile sources themselves. These authorities include the following:

Indirect Source Controls. State law provides the District authority to adopt rules to control emissions from “indirect sources.” The Clean Air Act defines an indirect source as a “facility, building, structure, installation, real property, road or highway which attracts, or may attract, mobile sources of pollution.” 42 U.S.C. § 7410(a)(5)(C); CAA § 110(a)(5)(C). Districts are authorized to adopt rules to “reduce or mitigate emissions from indirect sources” of pollution. (Health & Safety Code § 40716(a)(1)). The South Coast District is also required to adopt indirect source rules for areas where there are “high-level, localized concentrations of pollutants or with respect to any new source that will have a significant impact on air quality in the South Coast Air Basin.” (Health & Safety Code § 40440(b)(3)). The federal Court of Appeals has

held that an indirect source rule is not a preempted “emission standard.” *National Association of Home Builders v. San Joaquin Valley Unified Air Pollution Control District*, 627 F.3d. 730 (9th Cir. 2010)

Nonvehicular (Off-Road) Source Emissions Standards. Under California law “local and regional authorities,” including the ports and the District, have primary responsibility for the control of air pollution from all sources other than motor vehicles. (Health & Safety Code § 40000). Such “nonvehicular” sources include marine vessels, locomotives and other non-road equipment. CARB has concurrent authority under state law to regulate these sources. The federal Clean Air Act preempts states and local governments from adopting emission standards and other requirements for new locomotives (Clean Air Act § 209(e); 42 U.S.C. § 7543(e)), but California may establish and enforce standards for other non-road sources upon receiving authorization from EPA (*Id.*). No such federal authorization is required for state or local fuel, operational, or mass emission limits for marine vessels, locomotives or other non-road equipment. (40 CFR Pt. 89, Subpt. A, App.A; *Engine Manufacturers Assn. v. Environmental Protection Agency*, 88 F.3d. 1075 (DC Cir. 1996)).

Fuel Sulfur Limits. With respect to non-road engines, including marine vessels and locomotives, the District and CARB have concurrent authority to establish fuel limits, such as those on sulfur content. As was noted above, fuel regulations for non-road equipment are not preempted by the Clean Air Act and do not require EPA authorization.

Operational Limits. The District has authority under state law to establish operational limits for nonvehicular sources such as marine vessels, locomotives, and cargo handling equipment (to the extent cargo handling equipment is “nonvehicular”). As was discussed above, operational limits for non-road equipment are not preempted by the Clean Air Act. In addition, the District may adopt operational limits for motor vehicles such as indirect source controls and transportation controls without receiving an authorization or waiver from U.S. EPA.

REFERENCES

San Pedro Bay Ports Clean Air Action Plan, 2010 Update, October 2010

Southern California International Gateway Project Draft Environmental Impact Report, Port of Los Angeles, September 2011

SCAQMD, 2007 Air Quality Management Plan, Appendix IV-A, June 2007

**EDU-01: FURTHER CRITERIA POLLUTANT REDUCTIONS FROM
EDUCATION, OUTREACH, AND INCENTIVES
[ALL POLLUTANTS]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:	RESIDENTIAL, COMMERCIAL, INDUSTRIAL, AND TRANSPORTATION SOURCES			
CONTROL METHODS:	INCREASED AWARENESS, INCENTIVE PROGRAMS, AND TECHNICAL ASSISTANCE IN MAKING LOW EMITTING PURCHASES, IMPLEMENTING EFFICIENCY PROJECTS, AND CONSERVATION TECHNIQUES.			
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE*	2008	2014	2019	2023
<i>POLLUTANT INVENTORY</i>	N/A	N/A	N/A	N/A
<i>POLLUTANT REDUCTION</i>		N/A	N/A	N/A
<i>POLLUTANT REMAINING</i>		N/A	N/A	N/A
CONTROL COST:	NOT DETERMINED			
IMPLEMENTING AGENCY:	SCAQMD			

* Emissions inventory and reductions cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs).

DESCRIPTION OF SOURCE CATEGORY

This control measure is carried over from the 2007 AQMP/SIP.

Background

Energy efficiency and conservation have been included in the District's Air Quality Management Plans since 1991. The District continues to implement incentive and education programs to help promote clean air purchases, efficiency projects, and conservation techniques that provide criteria pollutant emissions benefits. The District has since adopted policies such as the Air Quality Related Energy Policy, Climate Change Policy, and Green Policy that help further define the District's efforts in these areas.

This measure seeks to increase awareness of the benefits of purchasing low emitting products and promote further implementation of efficiency and conservation projects. When making purchases such as new cars, yard equipment, or household products, there are several factors consumers consider, but emissions and health benefits are typically not considerations. To help make emissions an important factor in purchasers' decision-making process, the District has several existing outreach and education programs in place such as Clean Air Connections, Clean Air Choices, Air Quality Institute, educational materials, conferences, and outreach to specific communities throughout the District. Providing additional outreach and education regarding clean air choices will help consumers consider the emission benefits of their purchases. In some

instances, these purchases include efficiency gains that will decrease longer term operating costs, and thus provide a built-in financial incentive. Providing specific outreach and education on these potential cost savings will help increase penetration of such low emitting technologies and practices.

Furthermore, there are several existing incentive programs to help promote higher efficiency and lower emitting technologies such as the utility administered rebate programs for purchases of high efficiency appliances. Some of these existing programs are established for reasons other than emissions benefits. For instance, the electric utility rebate program was established to reduce electricity demand to help decrease the need for additional generation plants. However, this program also provides emission benefits that might be implemented faster with further education and outreach by the District.

The outreach and education regarding these existing programs will include information on co-benefits such as emission reductions and cost savings to promote accelerated implementation of these existing programs. The District will also offer additional incentive programs to complement existing programs or promote specific efficient low emitting technologies. For instance, the District's Lawn Mower Exchange program provides a good example of the significant impacts incentive programs can have. Over the past nine years over 43,000 gasoline lawnmowers have been exchanged for electric mowers.

The District will also help to promote potential efficiency benefits for existing equipment and structures. There are several reasons why many efficiency projects are not undertaken. In many instances tools, incentive programs, and loan programs for efficiency upgrades are not adequately described, advertised, or consolidated. Certain projects require high initial capital costs, despite relatively fast payback periods, which serves as a barrier to implementation. In addition, technical barriers prevent many system operators, home owners, and building maintenance crews from utilizing existing tools and implementing efficiency projects. The District will help develop technical outreach to residents and businesses to help implement projects that have emission benefits and short payback periods. The District may also examine ways to provide assistance through additional incentive programs and/or loan products to defray or amortize capital costs on certain efficiency projects.

Regulatory History

As this measure is not a regulatory item that will be implemented via rulemaking, there is no relevant regulatory history in this area. However, as mentioned above, the District has developed and implemented a wide array of education, outreach, technical assistance, and incentive programs designed to achieve emission reductions on a voluntary basis.

PROPOSED METHOD OF CONTROL

This control measure is a voluntary program that provides education and outreach to consumers, business owners, and residences regarding the benefits of making clean air choices in purchases, conducting efficiency upgrades, installing clean energy sources, and approaches to conservation. These efforts will be complemented with helping implement currently available incentive programs and developing additional incentive programs. Lastly the District may develop

programs to offer technical assistance to help implement efficiency measures and other low emission technologies.

EMISSIONS REDUCTION

Predicting emission reductions from these activities is not possible at this time. Outreach and education components will have benefits on emissions that can perhaps be quantified later based on program evaluation, technology penetration, and other assessment and inventory methods. Implementing additional incentive programs will provide a means to quantify these benefits as they are developed. Emission reductions achieved from these activities will be incorporated into the subsequent SIP revisions once projects are implemented.

RULE COMPLIANCE AND TEST METHODS

Not applicable.

COST EFFECTIVENESS

The cost effectiveness of this measure cannot be determined, given the variety of programs and projects that will be developed. The District will continually analyze costs associated for with education and outreach, and where possible quantify resulting emissions reductions. The cost effectiveness for specific incentive programs can be determined as they are developed and implemented by the District.

IMPLEMENTING AGENCY

The implementing agency will be the District, in cooperation with other local governments, agencies, technology manufacturers and distributors, and utility service providers.

REFERENCES

South Coast Air Quality Management District, AQMD Air Quality Related Energy Policy, Sept. 2011.

South Coast Air Quality Management District, AQMD Climate Change Policy, Sept. 2008.

South Coast Air Quality Management District, AQMD Green Policy, Oct, 2009.

National Academy of Sciences, Real Prospects for Energy Efficiency in the United States, 2010.

American Council for an Energy-Efficient Economy (ACEE), Energy-Efficiency: The Slip Switch to a New Track Toward Compliance with Federal Air Regulations, January 2012, Report # E122.

McKinsey and Co., Unlocking Energy Efficiency in the U.S. Economy, July 2009.

MCS-01: APPLICATION OF ALL FEASIBLE MEASURES ASSESSMENT [ALL POLLUTANTS]

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		ALL SOURCE CATEGORIES		
CONTROL METHODS:		ALL AVAILABLE CONTROL METHODS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE*	2008	2014	2019	2023
<i>POLLUTANT INVENTORY</i>	TBD	TBD	TBD	TBD
<i>POLLUTANT REDUCTION</i>		TBD	TBD	TBD
<i>POLLUTANT REMAINING</i>		TBD	TBD	TBD
CONTROL COST*:		NOT DETERMINED		
IMPLEMENTING AGENCY:		SCAQMD		

* *Emission reductions and cost-effectiveness will be determined after a source category and feasible controls are identified.*

DESCRIPTION OF SOURCE CATEGORY

Background

This control measure serves as a placeholder for any future control measures that may become feasible, prior to subsequent SIP revisions, through technology advances and/or cost decreases. The District continually monitors evolving control technologies, pricing changes, and the actions of other air quality agencies to determine the feasibility of implementing additional controls to achieve emissions reductions.

Regulatory History

The California Clean Air Act (CCAA) requires districts to achieve and maintain state standards by the earliest practicable date and for extreme non-attainment areas, to include all feasible measures Health and Safety (H&S) Code (H&S §§40913, 40914, and 40920.5). While this statute is not applicable to PM, the District believes it is appropriate and necessary to seek all feasible reductions from PM as well. The term “feasible” is defined in the 14 California Code of Regulations, section 15364, as a measure “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.” CARB guidance states that this definition, found in the CEQA Guidelines, applies to the requirements under air pollution laws. The required use of best available retrofit control technology (BARCT) for existing stationary sources is one of the specified feasible measures. H&S Code §40440 (b)(1) requires the District to adopt rules requiring best available retrofit control technology for existing sources. H&S Code §40406 specifically defines BARCT as “...best available retrofit technology means an emission

limitation that is based on the maximum degree of reduction achievable taking into account environmental, energy, and economic impacts by each class or category of source.”

Existing rules and regulations on VOC coatings and solvents as well as regulations for pollutants such as NO_x, SO_x and PM reflect current BARCT. However, BARCT is ever evolving as new BARCT becomes available that is feasible and cost-effective. Through this control measure, the District commits to the adoption and implementation of new retrofit control technology standards as technology develops.

PROPOSED METHOD OF CONTROL

The District will continue to review new emission limits introduced through federal, state or other local regulations to determine if District regulations remain equivalent or more stringent than other regions. If not, a rulemaking process will be initiated to perform a BARCT analysis with potential rule amendments if deemed feasible. In addition, the District will adopt and implement new retrofit technology control standards, based on research & development and other information, that are feasible and cost-effective as new BARCT standards become available in the future.

EMISSIONS REDUCTION

Further emission reductions would be sought from the amendment of existing rules and regulations to reflect new BARCT standards that may become available in the future prior to subsequent Plan revisions.

RULE COMPLIANCE AND TEST METHODS

Compliance with this measure would be based on monitoring, recordkeeping, and reporting requirements that have been established in existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

Cost-effectives for this control measure cannot be determined because the future set of “all feasible” measures are not known. However, the most cost-effective control strategy using the newest control technologies would be sought. The District will continue to analyze the potential cost impact associated with implementing this control measure, conduct research on the newest control technologies, and provide cost effectiveness information as it becomes available.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from stationary sources.

REFERENCES

Health and Safety (H&S) Code: Sections 40913, 40914, 40920.5, 40406, and 40440 (b)(1)
14 California Code of Regulations, Section 15364

Section 3

8-hour Ozone Measures

**CTS-01: FURTHER VOC REDUCTIONS FROM ARCHITECTURAL
COATINGS (RULE 1113)
[VOC]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		ARCHITECTURAL COATINGS		
CONTROL METHODS:		REDUCE THE VOC LIMITS FOR CERTAIN COATINGS TO 25 G/L, REMOVE OR FURTHER RESTRICT SMALL CONTAINER EXEMPTION, &/OR INCLUDE TRANSFER EFFICIENCY REQUIREMENTS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023 (2023-2007 SIP)*
VOC INVENTORY	21.9	15.8	17.5	19.3 (23.7)
VOC REDUCTION			2 - 4	2.2 -4.4 (3.1- 6.2)
VOC REMAINING			13.5 - 15.5	14.9 – 17.1 (17.5 - 20.6)
CONTROL COST:		\$10,000 TO \$20,000 PER TON VOC REDUCED		
IMPLEMENTING AGENCY:		SCAQMD		

* Emission reductions provided are based on the 2012 AQMP emissions inventory. Values provide in parenthesis are based on the 2007 SIP inventory projections for 2023.

DESCRIPTION OF SOURCE CATEGORY

The proposed control measure seeks to reduce the VOC emissions from large volume coating categories such as flat, non-flat and primer sealer undercoaters (PSU) and/or from the use of high-VOC architectural coatings sold in one liter containers or smaller. Additional emission reductions could be achieved from the application of architectural coatings by use of application techniques with greater transfer efficiency.

Background

Rule 1113 - Architectural Coatings, was originally adopted by the AQMD on September 2, 1977, to regulate the Volatile Organic Compound (VOC) emissions from the application of architectural coatings, and has since undergone numerous amendments. The last amendment, which was adopted on June 3, 2011, achieves 4.4 tons per day (tpd) emissions reduction by 2015.

Regulatory History

VOC Reductions

There have been several amendments to Rule 1113 which reduced the VOC limits for the high volume coating categories.

- November 8, 1996 – Flats Coatings were reduced from 250 g/L to an interim limit of 100 g/L effective July 1, 2001 and finally down to the current 50 g/L limit effective July 1, 2008.
- December 6, 2002
 - Non-Flat Coatings were reduced from 250 g/L to an interim limit of 150g/L effective January 1, 2003 and finally down to the current 50 g/L limit effective July 1, 2006.
 - PSU were reduced from 350 g/L to an interim limit of 200 g/L effective January 1, 2003 and finally down to the current 100g/L limit effective July 1, 2006.

Staff conducted technical assessments prior to each VOC limit reduction which demonstrated that the lower-VOC coatings performed as well as or better than the higher-VOC counterparts.

Small Container Exemption

The Small Container Exemption was adopted during the September 6, 1991 Rule 1113 amendment and allows manufacturers to sell coatings over the VOC limits in liter containers or smaller, provided they report those sales to the AQMD. Staff has been monitoring the use of the exemption.

Transfer Efficiency

Architectural coatings can be applied by brush, roller, sponge or trowel, that all achieve transfer efficiency greater than 90%. However, Rule 1113 – Architectural Coatings currently does not have a provision for transfer efficiency for spray application, as found in other coating rules focused on facility use. Another method used to reduce emissions from applying coatings is to improve the technique of the coating applicator. While HVLP and electrostatic paint spray application equipment can improve transfer efficiency up to a minimum of 65% when used properly, many painters hold the spray gun too close or too far away which also decreases transfer efficiency. A laser paint targeting system has been shown to improve transfer efficiency on average by 30% over equipment not using a targeting system, depending on the size, shape and configuration of the substrate (Iowa, 2010). Other retrofit technology is also available to increase transfer efficiency.

PROPOSED METHOD OF CONTROL

VOC Reductions

Staff will evaluate further reducing the VOC emissions from large volume coating categories such as flat, non-flat and primer sealer undercoaters (PSU), with consideration for appropriate implementation dates and potential creation of new subcategories (e.g., primers for metals) that retain current VOC limits. This approach may require inclusion of alternative test methods and approaches for measuring VOCs.

Small Container Exemption

Staff will evaluate the potential for a complete phase out of the small container exemption currently embedded in Rule 1113.

Transfer Efficiency

Staff will evaluate the feasibility of a two-phase approach to achieve greater transfer efficiency from application of architectural coatings. The first phase will be to incorporate (retrofit by a certain date and incorporate into the design by a certain date) laser paint targeting or other available technology into spray guns. The second phase will be the inclusion of transfer efficiency provisions requiring that architectural coatings be applied by hand applications such as brush, roller, sponge, or trowel; or by High-Volume, Low-Pressure (HVLP) Spray or other technology capable of achieving a transfer efficiency equivalent or better to HVLP spray.

EMISSIONS REDUCTION

VOC Reductions

Staff estimated the VOC reduction based on the data that manufacturers reported under Rule 314 – Fees for Architectural Coatings for the 2008 calendar year, which does not include volume of coatings sold under the averaging compliance option, sell through or under the small container exemption. From the large volume categories, staff estimates baseline emissions and potential reductions to be 4.5 and up to 1.7 tpd, respectively.

Small Container Exemption

Depending on the approach implemented, there is the potential for reducing VOC emissions up to 1.9 tpd.

Transfer Efficiency

The first phase would incorporate the laser targeted technology, commercially proven to reduce coating usage by 30%. The second phase of incorporating transfer efficiency requirement of 65% may potentially reduce coating usage by up to an additional 30%. The emission reductions will primarily come from professional paint contractors who account for an estimated 65% of coating application and could result in VOC reductions up to 1 tpd.

RULE COMPLIANCE AND TEST METHODS

VOC Reductions

Rule compliance would be achieved by amending Rule 1113. In order to enforce the 25g/L VOC limit, Rule 1113 would have to include alternative VOC test methods to EPA Reference Method 24 for measuring VOCs in a reproducible and repeatable manner, especially for coatings with very low-VOC content. SCAQMD Method 313 *Determination of Volatile Organic Compounds (VOC) by Gas Chromatography* and/or ASTM Method D6886 *Standard Test Method for Speciation of the Volatile Organic Compounds (VOCs) in Low VOC Content Waterborne Air-Dry Coatings by Gas Chromatography* are two alternatives currently available for inclusion into Rule 1113. These methods directly measure the VOC content of a coating yielding better precision for waterborne coatings than currently used methods.

In addition to the change in the test method, staff would also propose changing the metric that is used to regulate architectural coatings. The formula for the regulatory VOC, also referred to as the VOC of coating, removes the water and any exempt solvents in the VOC calculation. This calculation was hypothesized to prevent manufacturers from simply adding water to a coating to meet the VOC limit; therefore, requiring additional coats of paint to achieve the same coverage. Unfortunately, the calculation of the regulatory VOC magnifies any error in the VOC analysis, making the value unreliable especially for high-water, low-VOC coatings. Regulating coatings based on either the actual VOC, also referred to as the VOC of material, or the weight percent VOC would eliminate this source of error and allow for VOC limits less than 50g/L in the coatings rules. Further, staff does not believe that diluting waterborne coatings in order to achieve VOC compliance is a valid concern. Consumers have come to expect the type of coverage that today's coatings achieve; the marketplace will not accept coatings with poor coverage.

Small Container Exemption

Rule compliance would be achieved by amending Rule 1113.

Transfer Efficiency

Rule compliance would be achieved by amending Rule 1113 to require transfer efficiency requirements for spray applications.

COST EFFECTIVENESS

The cost-effectiveness of this control measure is estimated to be up to \$20,000 per ton of VOC reduced. The District will continue to analyze the potential cost impacts associated with implementing this control measure and will provide specific cost-effectiveness as it becomes available.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from area sources.

REFERENCES

<http://www.aqmd.gov/permit/spraytransferefficiency.html>

<http://iowaenviroassist.org/default/index.cfm/products/laserpaint/>

<http://www.gardco.com/pages/application/sq/laserpaint.cfm>

**CTS-02: FURTHER EMISSION REDUCTION FROM MISCELLANEOUS
COATINGS, ADHESIVES, SOLVENTS AND LUBRICANTS
[VOC]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		MISCELLANEOUS COATINGS, ADHESIVES, SOLVENTS AND LUBRICANTS		
CONTROL METHODS:		REDUCE THE ALLOWABLE VOC CONTENT IN PRODUCT FORMULATIONS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023 (2023 – 2007 SIP)*
VOC INVENTORY	14.1	11.5	13.5	14.5 (10.8)
VOC REDUCTION			1 - 2	1.1 – 2.2 (0.9 - 1.8)
VOC REMAINING	14.1	11.5	11.5 – 12.5	12.3 – 13.4 (9 - 9.9)
CONTROL COST:		\$8,000 TO \$12,000 PER TON VOC REDUCED		
IMPLEMENTING AGENCY:		SCAQMD		

* Emission reductions provided are based on the 2012 AQMP emissions inventory. Values provide in parenthesis are based on the 2007 SIP inventory projections for 2023.

DESCRIPTION OF SOURCE CATEGORY

The proposed control measure seeks to reduce the VOC emissions from miscellaneous coatings, adhesive, solvent and lubricant categories by lowering certain product VOC limits. Examples of the miscellaneous categories to be considered include, but are not limited to, coatings used in aerospace; adhesives used in a variety of sealing applications; solvents for cleaning and preservation cleaning or graffiti abatement activities; fountain solutions for printing operations; and lubricants used as metalworking fluids to reduce heat and friction to prolong life of the tool, improve product quality and carry away debris.

Background

Over the years, the AQMD has developed numerous rules to reduce the Volatile Organic Compound (VOC) emissions from the use of coatings, adhesives, solvents and lubricants in commercial and industrial applications. Subsequent amendments to these rules achieved further VOC emission reductions primarily through product reformulations using low-VOC technologies including alternative resin chemistries, aqueous and bio-based products, and exempt solvents.

Regulatory History

The VOC rules that may be affected by this control measure are as follows:

- Rule 1124 – Aerospace Assembly and Component Manufacturing Operations
- Rule 1144 - Metalworking Fluids and Direct-Contact Lubricants
- Rule 1168 - Adhesive and Sealant Applications
- Rule 1171 - Solvent Cleaning Operations

PROPOSED METHOD OF CONTROL

Reductions would be achieved by lowering the VOC content of select few categories within the above-mentioned source-specific rules rather than relying on across the board lowering of VOC limits. For solvents, reductions could be achieved with the use of alternative low-VOC products or non-VOC product/equipment at industrial facilities. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule.

EMISSIONS REDUCTION

Current estimates are that there is a potential VOC emission reduction of about 1.0-2.0 tons per day.

RULE COMPLIANCE AND TEST METHODS

Rule compliance would be achieved by amending AQMD rules on coatings, adhesives, solvents and lubricants.

COST EFFECTIVENESS

The cost-effectiveness of this control measure is estimated at \$8,000 to \$12,000 per ton of VOC reduced.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from area sources and stationary point sources.

REFERENCES

Staff Reports

Material Safety Data Sheets

Product and Technical Data Sheets

CTS-03: FURTHER VOC REDUCTIONS FROM MOLD RELEASE PRODUCTS [VOC]

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:	FACILITIES/PROCESSES USING MOLDS (EXCLUDING AEROSPACE)			
CONTROL METHODS:	LIMITATION OF VOC CONTENT FOR MOLD RELEASE PRODUCTS			
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023 (2023-2007 SIP)*
VOC INVENTORY	2.3 - 3.6	2.4 - 3.8	2.7 - 4.2	3.0 - 4.7 (2.4)
VOC REDUCTION			0.6 - 2.0	0.8 - 2.2 (0.7)
VOC REMAINING			1.9 - 2.2	2.4 - 2.5 (1.7)
CONTROL COST:	\$4,000 TO \$8,000 PER TON VOC REDUCED			
IMPLEMENTING AGENCY:	SCAQMD			

* Emission reductions provided are based on the 2012 AQMP emissions inventory. Values provide in parenthesis are based on the 2007 SIP inventory projections for 2023.

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to reduce VOC emissions associated with the use of mold release products used in composite, fiberglass, metal and plastic manufacturing operations.

Background

Thousands of companies in the U.S. and California make metal, fiberglass, composite and plastic products. These products are often manufactured using molds which form the part into a particular configuration. Mold release agents are used to ensure that the parts, as they are made, can be released easily and quickly from the molds. Mold release agents are also used for concrete stamping operations to keep the mold from adhering to the fresh concrete. Mold release agents often contain waxes, silicone and lubricant compounds and many of them are blended with solvent carriers. The solvents used in the formulations are generally petroleum or other volatile organic compound (VOC) solvents and may also contain toxic components such as toluene and xylene. Mold cleaners may contain chlorinated solvents like trichloroethylene (TCE), petroleum solvents, n-methyl pyrrolidone (NMP) and hexane.

Regulatory History

Mold release agents and cleaners are extensively used by a variety of different industrial sources. Residential and commercial concrete stamping is a rapidly growing industry, and overall VOC emissions are estimated to be significant. In some cases, particularly for mold

release agents used in fiberglass, non-aerospace composite manufacturing and concrete stamping, there are currently no regulations on the VOC content of these products. Aside from general facility toxicity restrictions, such as Rule 1402, there are no limits on the toxic components that can be used in these products. The few applications of these products that are regulated are often subject to outdated, high-VOC limitations that do not reflect the state of the technology. As a result, most of the current mold release agent product formulations are high-VOC, upwards of 600 g/L. However, alternative low-VOC formulations are available. The District regulates mold release agents in architectural coatings, specifically form release compounds. Those products have a current VOC limit of 250 g/L with the limit being lowered to 100 g/L effective in 2014. Similar water-based, bio-based and powder formulations are available for industrial applications, often at competitive pricing. The California Air Resources Board (CARB) currently surveys consumer product mold release sales volume, but does not regulate mold release coatings.

PROPOSED METHOD OF CONTROL

This control measure seeks to reduce emissions from mold release products on metal, fiberglass, composite and plastic products, as well as concrete stamping operations, by requiring the use of low-VOC mold release products that are currently available in the market.

EMISSIONS REDUCTION

The emissions inventory is estimated at 2.3 to 3.6 tons per day based on the 2011 Annual Emission Report data for fiberglass facilities and estimates for the concrete stamping industry. Requiring the use of low-VOC mold release products is estimated to result in emission reductions in the range of 0.8 to 2.0 tons per day.

RULE COMPLIANCE AND TEST METHODS

Compliance with this control measure would be achieved by similar compliance requirements under the existing Regulation XI rules.

COST EFFECTIVENESS

Based on data from similar types of aqueous and bio-based technologies, the cost effectiveness of this control measure is approximately \$4,000 to \$8,000 per ton of VOC reduced.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from stationary and area sources.

REFERENCES

South Coast Air Quality Management District, "Final Staff Report For Proposed Amended Rule 1113 – Architectural Coatings," June, 2011 <http://www.aqmd.gov/hb/attachments/2011-2015/2011Jun/2011-Jun3-024.pdf>

CTS-04: FURTHER VOC REDUCTIONS FROM CONSUMER PRODUCTS [VOC]

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		CONSUMER PRODUCTS		
CONTROL METHODS:		REVISE THE EXEMPTION FOR LOW VAPOR PRESSURE SOLVENTS IN CONSUMER PRODUCTS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023
VOC INVENTORY	98	85	87	89
VOC REDUCTION*			TBD	TBD
VOC REMAINING			TBD	TBD
CONTROL COST:		LESS THAN \$10,000 PER TON VOC REDUCED DEPENDING ON CONSUMER PRODUCT CATEGORY		
IMPLEMENTING AGENCY:		CARB/SCAQMD		

* Reductions cannot be quantified due to the nature of the measure (e.g., multi-phase approach to reduce VOCs from consumer products).

DESCRIPTION OF SOURCE CATEGORY

According to California Air Resources Board (CARB) 2009 Almanac, consumer products will be the largest emission category for VOC by 2020. Consumer products are products used by institutional and household consumers and include such products as general purpose cleaners and degreasers, cosmetics, lawn and garden care products, detergents, adhesives, multipurpose lubricants, paint thinners and multipurpose solvents.

Background

The CARB Consumer Product Regulation exempts low vapor pressure volatile organic compounds (LVP-VOC) from counting towards the compliance obligation for consumer product VOC limits. LVP-VOCs are defined as products with a vapor pressure less than 0.1 mm Hg, a chemical compound with more than 12 carbon atoms, or having a boiling point greater than 216° C. The exemption was designed to specify the types of VOC compounds not subject to VOC limits (for example, surfactants, resins, and waxes). Certain solvents have also been introduced that qualify for the exemption. Recent testing conducted by the District on institutional cleaners found that traditionally formulated consumer products may contain significant amounts of LVP-VOC solvents. In some cases, such as certain multipurpose solvents, the products were 100 percent LVP-VOC solvents. Further testing indicated that some LVP-VOC solvents evaporate nearly as quickly as the traditional solvents they were meant to replace and have Maximum Incremental Reactivity (MIR) values well above the threshold considered to be non-reactive, currently based on ethane. The study also shows that some LVP-VOCs are non-volatile and, for those that are non-volatile, an exemption is appropriate. Reformulation of products by substituting fast-evaporating LVP-VOC solvents for other solvents considered to be VOCs may

not achieve the ozone reduction benefits anticipated by reducing the VOC content limits in the Consumer Product Regulation. In some categories, data suggest that use of LVP-VOC solvents has increased over time. Therefore, an evaluation of the continued need for use of LVP-VOC solvents in certain categories is warranted. District staff will work with CARB staff to identify categories where it may be appropriate to revise the LVP-VOC exemption. Staff will also work with CARB staff to review emission inventory data to ensure that the total organic emissions reflected in the inventory, in addition to VOC emissions, accurately capture VOC-exempt solvents and LVP-VOC emissions as well.

Regulatory History

CARB has the authority to regulate consumer products under Section 41712 of the Health and Safety Code (HSC). The District may regulate consumer products which CARB has not regulated.

PROPOSED METHOD OF CONTROL

Recent testing has shown that at ambient temperatures some LVP-VOC solvents readily evaporate. This subset of LVP-VOCs may be available to contribute to ozone formation. These findings indicate that further evaluation of consumer products formulated with LVP-VOCs is needed. Further research may be needed including identification of alternatives to LVP-VOCs and environmental chamber testing.

This measure will be developed in phases and begin with products that have greatest emission impacts, such as multi-purpose solvents, paint thinning products and institutional cleaners. Data are available for these products that indicate alternative formulations that do not rely on use of volatile or semi-volatile LVP-VOC are available.

In a subsequent phase, the control approach would revise the LVP-VOC exemption if speciated LVP-VOC survey data and research results show an opportunity to further reduce emissions from consumer products. Any proposed amendments to the Consumer Products Regulations to revise the LVP-VOC exemption would be vetted through a full public process.

EMISSIONS REDUCTION

Consumer products are expected to contribute over 89 tons per day of VOC emissions in the South Coast Basin by 2023. This inventory can be further refined by re-evaluating the TOG:VOC ratio included in the 2010 CARB inventory for Consumer Products for future ozone modeling purposes to better reflect ozone impacts from the use of consumer products. Further, as a part of the emissions inventory re-evaluation, current data are needed on sales and formulations of consumer products to determine the types and extent of LVP-VOC use and to identify categories where the LVP-VOC exemption may need revision..

RULE COMPLIANCE AND TEST METHODS

Revise the LVP-VOC exemption included in the CARB Consumer Product Regulation.

COST EFFECTIVENESS

Revisions to the LVP-VOC exemption would result in reformulation and other research and development costs for those manufacturers that have used LVP-VOC solvents to comply. However, most environmentally preferred consumer products contain little or no LVP-VOC solvents so no significant increase in cost is expected from this control measure. The estimated cost effectiveness figures are conservative estimates and likely overstate the actual costs. As an example, the City of Santa Monica reported spending 5% less on its cleaning products costs when it switched from conventional cleaners to less-toxic brands a decade ago.

IMPLEMENTING AGENCY

CARB has the authority to regulate emissions from consumer products and the District has the authority to regulate them where CARB has not done so.

REFERENCES

California Air Resources Board, CEPAM: External Adjustment Reporting Tool – Emission Projection by Summary Category, Accessed September 2012.

California Air Resources Board – Regulation for Reducing Emissions from Consumer Products, November 2010.

Vo, U. U., and Morris, M. “Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds”, August 2012.

US Environmental Protection Agency, Environmentally Preferable Purchasing Program, The City of Santa Monica’s Environmental Purchasing: A Case Study, EPA742-R-98-001, March 1998.

Green Seal, GS-37 Cleaning Products for Industrial and Institutional Use, <http://www.greenseal.org/GreenBusiness/Standards.aspx?vid=ViewStandardDetail&cid=2&sid=23>, accessed September 2012.

EcoLogo, CCD 146: Hard Surface Cleaners, <http://www.ecologo.org/common/assets/criterias/ccd-146hardsurfacecleanersnov2010.pdf>, accessed September 2012.

Fitz, D., Evaluation of Protocols for Measuring Mass Emissions from Cleaning of Application Equipment and Surfaces with Solvents, May 2011.

CMB-01: FURTHER NO_x REDUCTIONS FROM RECLAIM – PHASE II [NO_x]

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		VARIOUS RECLAIM NO _x SOURCES		
CONTROL METHODS:		VARIOUS CONTROL TECHNOLOGIES AND METHODS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023 (2023-2007 SIP)**
NO _x INVENTORY	23.2	26.5	26.5	26.5 (26.5)
NO _x REDUCTION PHASE I*		2* - 3	2* - 3	2* - 3 (2* - 3)
NO _x REDUCTION PHASE II				1 - 2 (1 - 2)
NO_x REMAINING		24.48 – 23.48	24.48 – 23.48	23.48 – 20.48 (21.5 -23.5)
CONTROL COST:		\$ 16,000 PER TON NO _x REDUCED		
IMPLEMENTING AGENCY:		SCAQMD		

**Phase I is proposed as a contingency measure and if not triggered, the total targeted reductions targeted in Phase II will be a cumulative 3-5 tpd of NO_x with the lower end of the emission reduction range to be committed in the SIP.*

*** Emission reductions provided are based on the 2012 AQMP emissions inventory. Values provided in parenthesis are based on the 2007 SIP emissions inventory projects for 2023. Emission reductions reflect RTC values and no adjustment between 2007 AQMP and 2012 AQMP is necessary.*

DESCRIPTION OF SOURCE CATEGORY

There were approximately 284 facilities in the Regional Clean Air Incentives Market (RECLAIM) program, as of July 1, 2010. The RECLAIM program includes facilities with NO_x or SO_x emissions greater than or equal to four tons per year in 1990 or any subsequent year. A wide range of equipment such as fluid catalytic cracking units, boilers, heaters, furnaces, ovens, kilns, coke calciner, internal combustion engines, and turbines are major sources of NO_x or SO_x emissions at the RECLAIM facilities. This control measure identifies a series of control approaches that can be implemented to further reduce NO_x emissions at the RECLAIM facilities.

Background

The RECLAIM program was first adopted in 1993 to further reduce emissions from the largest NO_x and SO_x emitting stationary sources by providing an alternative regulatory mechanism to the command and control regulatory structure. Under this program, facilities are issued NO_x and SO_x allocations, also known as RECLAIM Trading Credits (RTCs) or facility emission caps, which are declined annually. To meet the declining annual facility

caps, RECLAIM facilities have the option of installing pollution control equipment, changing operations, or purchasing RTCs in the RECLAIM market.

The RECLAIM program is subject to several legal mandates. The Health and Safety code requires the District to monitor the advancement in Best Available Control Retrofit Technology (BARCT), and if BARCT advances, the District is required to periodically re-assess the overall facility caps, and reduce the RTC holdings, as if the equipment located at the facilities would be subject to applicable equivalent command-and-control BARCT levels. The emission reductions resulting from the programmatic RTC reductions will help the basin attain the National Ambient Air Quality Standards (NAAQS) for ozone and PM_{2.5} as expeditiously as practicable. The BARCT evaluation must include an evaluation of the maximum degree of reduction achievable with advanced control technologies taking into account the environmental, energy, and economic impacts for each class or category of source.

A review of the emissions profile of the RECLAIM universe shows that the NO_x emissions are not evenly distributed among the RECLAIM facilities: the top 10% of the universe (24 facilities) comprised mainly of refineries, power plants, cement, glass, and steel manufacturing, emitted about 80% of the NO_x emissions.

Regulatory History

On October 15, 1993, the AQMD's Governing Board adopted Regulation XX – RECLAIM. The RECLAIM program at its inception included 392 NO_x facilities. RECLAIM Regulation XX includes 11 rules that specify the applicability, definitions, allocations, trading and operational requirements, as well as monitoring, reporting, and recordkeeping requirements. The NO_x RECLAIM regulation has been revised several times, and one significant amendment (2005) reflected a BARCT re-assessment. The January 2005 amendment resulted in a NO_x RTC reduction of 7.7 tons per day (tpd), approximately 22.5% reduction of the RTC holdings, which was implemented in 5 phases: 4 tpd by 2007 and an additional 0.925 tpd in each of the following 4 years.

PROPOSED METHOD OF CONTROL

Phase II of reductions will focus on periodic BARCT evaluation as required under the state law. A review of recently adopted control measures and air regulations in other air pollution control districts, as well as command-and-control rules adopted for non-RECLAIM facilities in the District, show that advancements in control technologies are available and can be applied to the top emitting sources. Such control technologies include but are not limited to selective catalytic reduction, low NO_x burners, NO_x reducing catalysts, oxy-fuel furnaces, and non-selective catalytic reduction. Several BARCT levels assessed at the inception of the program in 1993 for top emitting sources such as cement kilns, glass furnaces, and gas turbines were not subject to reduction in the 2005 RECLAIM rule amendment. These sources will be examined for further reductions in this control measure and potential rule making.

During the rulemaking process, staff may also incorporate the concepts of facility modernization, as well as include other feasible control measures such as increased energy efficiency and zero and near-zero emission technologies.

EMISSIONS REDUCTION

Staff's initial analysis shows that approximately 1-2 tpd additional NO_x RTC reductions are feasible for the second phase from the RECLAIM universe (from the overall 3-5 tpd NO_x RTC reductions discussed in the first phase). During the rule development phase, staff may refine the emission reductions to include growth and other unforeseen issues at this stage. Phase II is expected to be adopted by 2015 for implementation beginning in 2020. It should be noted that since there are substantial NO_x reductions needed by 2023, if additional reductions are feasible and cost effective, they will be evaluated during rulemaking.

According to the RECLAIM Annual Audit Reports, NO_x emissions were reduced from 2008 to 2010, and the vast majority of the RECLAIM facilities complied with their RTC allocations. The audited annual NO_x emissions for the entire RECLAIM universe were reported as 22.9, 20, and 19.5 tpd for compliance year 2008, 2009, and 2010, respectively. The NO_x RTCs allocated for the universe were reported as 29.4, 28.4, and 27.5 tpd for compliance year 2008, 2009, and 2010, respectively. Data in the audit reports reflected an excess of 6.5, 8.4, and 8.0 tpd of RTCs holdings for compliance year 2008, 2009, and 2010, respectively, or approximately a 22–30% excess in RTC holdings in the most recent three years. Being cognizant that the 2008 emission profile may reflect a period of the economic downturn, staff's estimated target of a 3-5 tpd RTC allocation reduction (approximately 38 - 63 percent of the unused RTC holdings) for both phases combined appears to be achievable.

RULE COMPLIANCE AND TEST METHODS

Compliance with the provisions of this control measure would be based on monitoring, recordkeeping, and reporting requirements that have been established in either the RECLAIM program or existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

It is expected that the cost effectiveness for this control measure would be in the neighborhood of \$16,000 per ton NO_x reduced. It is based on the cost effectiveness developed for non-RECLAIM facilities or other command-and-control rules in other air pollution control districts. It should be noted that since RECLAIM facilities have the ability to trade RTCs, it tends to lower the actual cost of compliance. Staff will refine the cost effectiveness during the rule development phase.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from RECLAIM facilities.

REFERENCES

AQMD, 2008. Rule 1146 – Emissions of Oxides of Nitrogen from Industrial and Commercial Boilers, Steam Generators, and Process Heaters, Amended September 5, 2008.

AQMD, 2010. Rule 1110.2 – Emission Reductions from Gaseous and Liquid Fueled Engines, Amended July 9, 2010.

AQMD, 2010-12. Annual RECLAIM Audit Report for 2008 Compliance Year, March 5, 2010; Annual RECLAIM Audit Report for 2009 Compliance Year, March 5, 2010; and Annual RECLAIM Audit Report for 2010 Compliance Year, March 2, 2012.

AQMD, 2012. Stationary Source Committee, Item #4, Twelve-month Rolling Price of 2010 and 2011 Compliance Years RTCs, April 20, 2012

Bay Area, 2006. Regulation 9, Rule 9 – NOx from Stationary Gas Turbines, Amended December 6, 2006.

EPA, Menu of Control Measures - Control Options for Reducing NOx from Point and Area Sources, September 3, 2010.

EPA, Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from the Petroleum Refining Industry, October 2010.

LBL, 2005. Energy Efficiency Improvement and Cost Saving Opportunities for Petroleum Refineries, Sponsored by the U.S. EPA, Ernest Orlando Lawrence Berkeley National Lab, February 2005.

SJVUAPCD, 2007. Rule 4703 – Stationary Gas Turbines, Amended September 20, 2007.

SJVUAPCD, 2008. Rule 4320 – Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater Than 5 MMBTU/hr, Adopted October 16, 2008.

SJVUAPCD, 2011. Rule 4354 – Glass Melting Furnaces, Amended May 19, 2011.

SJVUAPCD, 2011. Rule 4702 – Internal Combustion Engines, Amended August 18, 2011.

**CMB-02: NOX REDUCTIONS FROM BIOGAS FLARES
[NOX]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		LANDFILLS AND DIGESTERS		
CONTROL METHODS:		NOX REDUCTIONS FROM BIOGAS FLARES		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE*	2008	2014	2019	2023
NOX INVENTORY	PENDING	PENDING	PENDING	PENDING
NOX REDUCTION			PENDING	PENDING
NOX REMAINING			PENDING	PENDING
CONTROL COST:		\$20,000 PER TON NO _x REDUCED		
IMPLEMENTING AGENCY:		SCAQMD		

* Pending because emission reductions will be provided prior to the Final Draft.

DESCRIPTION OF SOURCE CATEGORY

Background

Only hydrocarbon and toxic air contaminant emissions from landfills and waste treatment plants are regulated by AQMD rules 1150.1, 1150.2 and 1179. There are no source specific rules regulating NO_x emissions from biogas flares. Flare NO_x emissions are regulated through new source review and BACT. A survey of permits for landfill and waste treatment plant flares indicates NO_x emissions range from 0.12 to 0.025 pound per million BTU of biogas (BACT since 2006) depending on the age of the flare. This control measure proposes that, consistent with the all feasible control measures, all biogas and non-refinery flares meet current BACT and/or implement flaring minimizations strategies.

Regulatory History

There are no source specific rules regulating NO_x emissions from biogas flares.

PROPOSED METHOD OF CONTROL

This control measure proposes that, consistent with the all feasible measures control measure, all biogas and non-refinery flares meet current BACT. Most stringent current BACT (since 2006) for biogas flares is 0.025 pound of NO_x per million BTU of biogas. As an alternative control option, staff will also explore opportunities to minimize flaring at landfills and waste water treatment and other non-refinery facilities.

EMISSIONS REDUCTION

Based on facility reported emissions (2010), the annual average emissions for biogas flares are about 0.1 tons per day of NO_x. The average emission factor for biogas flares at facilities in the AQMD is 0.056 pounds per million BTU (unweighted average). However, the most stringent current BACT for biogas flares would generate NO_x emissions is 0.025 pound per million BTU of biogas. Emissions vary by season and are affected by other operations at landfills and treatment plants. Staff estimates an average emission reduction of about 50% is achievable if all flares meet the most stringent current BACT limit of 0.025 pound NO_x per million BTU of biogas.

RULE COMPLIANCE AND TEST METHODS

SCAQMD Method 100.1

COST EFFECTIVENESS

Based on cost information used for the 2006 AQMD BACT determination for biogas flares, the average cost effectiveness for meeting an emission limit of 0.025 pound per million BTU of biogas is less than \$20,000 per ton of NO_x reduced.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from these stationary sources.

REFERENCES

CMB-03: REDUCTIONS FROM COMMERCIAL SPACE HEATING [NOX]

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		COMMERCIAL SPACE HEATERS		
CONTROL METHODS:		NOX EMISSION REDUCTIONS FROM COMMERCIAL SPACE HEATING		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023 (2023-2007 SIP)**
NOX INVENTORY	2.2	2.2	2.2	2.2 (0.7)
NOX REDUCTION		0	0.06*	0.18* (0.1)
NOX REMAINING		2.2	2.2	2.02 (0.6)
CONTROL COST:		\$20,000 PER TON NO _x REDUCED (0.6 TPD)		
IMPLEMENTING AGENCY:		SCAQMD		

* Partial Implementation (starting in 2018 with full implementation over 20 years)

** Emission reductions provided are based on the 2012 AQMP emissions inventory. Values provide in parenthesis are based on the 2007 SIP inventory projections for 2023.

DESCRIPTION OF SOURCE CATEGORY

Background

Currently the AQMD regulates boilers and small residential and commercial central furnaces used for space heating. Boilers, depending on size, are subject to Rule 1146, 1146.1 or 1146.2. Residential and small commercial fan-type central furnaces are regulated by AQMD Rule 1111. Large commercial furnaces are not currently regulated by the AQMD unless they have a heat input rating of more than 2 million BTU per hour. Units with a rating of more than 2 million BTU per hour require an AQMD permit and are subject to a NO_x BACT limit of 30 ppm (at a reference level of 3% oxygen). This control measure seeks emission reductions from unregulated commercial fan-type central furnaces used for space heating. This control measure will apply to manufacturers, distributors, sellers, installers and purchasers of commercial fan-type central furnaces used for space heating.

Regulatory History

Large commercial furnaces are not currently regulated by the AQMD unless they have a heat input rating of more than 2 million BTU per hour. Units with a rating of more than 2 million BTU per hour require an AQMD permit and are subject to new source review and a NO_x BACT limit of 30 ppm (at a reference level of 3% oxygen).

PROPOSED METHOD OF CONTROL

This control measure seeks NO_x emission reductions of about 0.12 tpd by 2023 and ultimately at least 0.6 tons/day from unregulated commercial fan-type central furnaces used for space heating. This control measure will apply to manufacturers, distributors, sellers, installers and purchasers of commercial fan-type central furnaces used for space heating.

The technology to reduce emissions from commercial space heating equipment is transferrable from residential space heating furnaces and other heating and drying equipment. Currently commercial space heaters are unregulated and have NO_x emissions in the range of 90 to 110 ppm. The AQMD has required residential space heaters to meet a limit of 40 ng/J of heat output (55 ppm) since 1984 and the future limit, starting in 2014, for residential space heaters is 14 ng/J (20 ppm). Low NO_x burners are also available for a variety of commercial and industrial heating and drying applications and achieve NO_x emission levels of 10 to 30 ppm. Assuming a future NO_x emission limit of between 20 ppm to 30 ppm, emissions from a commercial heating unit can be reduced by 60 to 80%. This measure will be implemented in two phases, beginning with a technical assessment to be completed by 2014 and Phase II rule development by 2016.

EMISSIONS REDUCTION

The commercial space heating inventory must be refined in order to identify the amount of natural gas used by fan-type space heaters versus hydronic (boiler-based) space heating. However, based on national estimates of floor space for different types of buildings and uses, staff estimates that 45 to 60% of all commercial, light manufacturing, warehouse, office, school and government building floorspace is heated by commercial forced air units. Assuming an emission reduction of between 60 to 80% and a 2008 baseline commercial heating inventory of 2.2 tons of NO_x per day (uncontrolled), the measure would reduce NO_x emissions by between 0.6 tons per day (2.2 tons/day X 45% of floor space X 60% reduction) and 1 ton per day (2.2 tons/day X 0.6 X 0.80). Growth and energy efficiency programs will affect the anticipated reduction from this control measure. Energy efficiency programs will reduce the benefit of this control measure, but together they will result in greater reductions from this source category.

RULE COMPLIANCE AND TEST METHODS

SCAQMD Method 100.1

COST EFFECTIVENESS

Based on the cost effectiveness of rules for other heating equipment (Rules 1111, 1121, 1146.2 and 1147), staff estimates the cost effectiveness at \$20,000 per ton.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from these stationary sources.

REFERENCES

U.S. Department of Energy (April 2012). INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2010, Table 3.2.2 – Principal Commercial Building Types, as of 2003 (Percent of Total Floorspace)

FUG-01: VOC REDUCTIONS FROM VACUUM TRUCKS [VOC]

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		VOC EMISSIONS FROM VACUUM TRUCKS		
CONTROL METHODS:		VOC CONTROL DEVICES		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023
VOC INVENTORY	1.50	1.50	1.50	1.50
VOC REDUCTION			1.05	1.05
VOC REMAINING			0.45	0.45
CONTROL COST:		\$3,000 PER TON VOC REDUCED		
IMPLEMENTING AGENCY:		SCAQMD		

DESCRIPTION OF SOURCE CATEGORY

This control measure addresses the attainment of emission reductions from vacuum trucks through the use of traditional control devices and technologies, including carbon adsorption systems, positive displacement pumps, internal combustion engines, thermal oxidizers, refrigerated condensers and liquid scrubbers.

Background

Vacuum truck services are used by a variety of industries, including petroleum refineries, marine terminals, industrial wharfs, gasoline dispensing facilities, gasoline bulk terminals, gasoline bulk plants, gasoline cargo tanks, gas well and oil well fields and pipelines. In the petroleum industry they are used to remove materials from storage tanks, vessels, sumps, boxes and pipelines. They are also used to transport materials from one location to another. The applicability of this control measure will be further studied during rule development taking into consideration the control availability and costs.

Regulatory History

Currently Vacuum Truck emissions are only controlled by Rule 1149, Storage Tank and Pipeline Cleaning and Degassing, when used as part of tank or pipeline degassing control devices. In refineries, the same vacuum trucks are used to remove hydrocarbon liquids from various types of equipment and are currently uncontrolled in these areas.

PROPOSED METHOD OF CONTROL

This measure will primarily focus on high-emitting vacuum truck operations, such as those found in petro-chemical industries, and other operations that include the transfer of volatile liquids, such as gasoline. There are a variety of technologies that are available to limit organic emissions from vacuum truck operations. Most of them can achieve capture and control efficiencies of 95%. Technologies include carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers, liquid scrubbers and positive displacement (PD) pumps. Sometimes control technologies can be combined. For example, an internal combustion engine can be combined with a chiller, or carbon adsorption can be combined with a scrubber. While some controls can be integrated into vacuum trucks, most vacuum trucks are not commonly equipped with on-board control equipment. However, vacuum truck operations do use outboard carbon adsorption systems, thermal oxidation, or internal combustion engine technologies. Such control technologies are typically connected as a “skid-mount” or “portable trailer unit.” Control equipment has generally been used for safety reasons, to control odors, or to comply with requirements in the Code of Federal Regulations.

EMISSIONS REDUCTION

Organic emissions from affected vacuum truck operations are estimated at 1.50 tpd. These emission estimates include throughput that is already controlled or minimized through use of external abatement equipment, positive displacement pumps, or gravity feed. Based on studies done in the Bay Area at similar facilities, staff estimates that 50% of vacuum truck operations can be controlled with external control equipment such as carbon adsorption or thermal oxidization. These devices have an efficiency of at least 95%. The other half of affected vacuum truck operations can be minimized by the use of positive displacement pumps or gravity feed. For these operations, staff estimates control efficiency of 75%. VOC emission reductions are estimated to be approximately 1.05 tpd, which represents an 85% reduction in emissions from regulated materials and staff estimates a 70% reduction potential of overall organic emissions from vacuum truck operations along with a high concurrent reductions in toxic air contaminants such as benzene, toluene, xylene, hexane, and possibly greenhouse gas emissions.

RULE COMPLIANCE AND TEST METHODS

Compliance would be based on field inspection and possible recordkeeping requirements that will be established in a rule or regulation requiring control technology installation and usage.

COST EFFECTIVENESS

The proposed controls would be structured to focus on cost effectiveness. Highly volatile liquids, such as gasoline, emit high rates of organic emissions when moved into vacuum trucks. However, source testing has found that many materials moved by vacuum trucks in petroleum refineries, such as wastewater, emit at a very low rate and are thus not cost effective to control. Therefore, only those materials that source tests have shown to have high emissions and that are cost-effective to control would be likely included in the scope of this effort.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from non-vehicular sources. The proposed control measure targets equipment that is not part of the propulsion engine.

REFERENCES

Staff Report - Bay Area Air Quality Management District, Proposed Regulation 8, Rule 53: Vacuum Truck Operations, and Amendments to Regulation 2, Rule 1: Permits.

**FUG-02: EMISSION REDUCTIONS FROM LPG TRANSFER AND
DISPENSING
[VOC]**

CONTROL MEASURE SUMMARY

SOURCE CATEGORY:	LPG TRANSFER AND DISPENSING
CONTROL METHODS:	<p>PHASE I: RETROFITTING STATIONARY STORAGE TANKS AND CYLINDERS WITH LOW EMISSION FIXED LIQUID LEVEL GAUGES AND USE OF LPG LOW EMISSION CONNECTORS FOR TRANSFER AND DISPENSING (<i>Already adopted</i>)</p> <p>PHASE II: EXPAND RULE APPLICABILITY TO INCLUDE LPG TRANSFER AND DISPENSING AT OTHER FACILITIES, INCLUDING CURRENTLY EXEMPTED FACILITIES</p>
EMISSIONS (TONS/DAY):	

ANNUAL AVERAGE	2008	2014	2019	2023*
VOC INVENTORY	9.5	6.8	3.9	4.1
VOC REDUCTION			1 - 2	1 - 2
VOC REMAINING			1.9 - 2.9	2.1 - 3.1

CONTROL COST: \$4,000 - 10,000/TON VOC REDUCED

IMPLEMENTING AGENCY: SCAQMD

* New emissions source category. No corresponding emissions in 2007 AQMP.

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to reduce VOC emissions associated with the transfer and dispensing of Liquefied Petroleum Gas (LPG).

Background

In 1992, the California Air Resources Board (CARB) made the first attempt to quantify LPG transfer and dispensing emissions by conducting a study to determine the usage patterns of LPG and to estimate emissions resulting from these operations for the entire state of California. The study concluded that LPG fugitive emissions from transfer and dispensing operations result from three main areas: volatilization of entrapped product during disconnection of LPG supply and transfer lines, leaks in the equipment used for transfer and dispensing, and venting through

fixed liquid level gauges (FLLGs) used as a safety device to ensure that pressurized receiving containers, including cylinders and tanks are not overfilled.

Regulatory History

In August 2010 the District initiated rule development and adopted Rule 1177 on June 1, 2012, which required the use of low emission FLLGs and LPG low emission connectors. Upon full implementation in July 2017, Rule 1177 will achieve 6.1 tpd VOC reductions from the estimated 8.6 tpd baseline inventory for the regulated facilities.

Rule 1177 evaluated fugitive VOC emissions from the venting of FLLGs during filling and from the disconnection of LPG supply and transfer lines to determine baseline VOC emissions and the associated reductions. However, although leaks in the equipment used for transfer and dispensing were not evaluated or quantified due to the lack of data, Rule 1177 will implement a Leak Detection and Repair (LDAR) program for transfer and dispensing facilities that offer LPG for sale to end users.

Currently, Rule 1177 includes an exemption for facilities that are subject to the requirements of Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants. These facilities include refineries, marine terminals, natural gas processing plants and pipeline transfer stations, as well as facilities that conduct fill-by-weight techniques.

PROPOSED METHOD OF CONTROL

The development and adoption of Rule 1177 constitutes Phase I of this control measure. Under Phase II, the proposed control measure will expand the applicability of Rule 1177 to include VOC emissions associated with LPG transfer and dispensing activities at previously exempted facilities and evaluate the potential for further reductions in VOC emissions.

EMISSIONS REDUCTION

The emission reductions from Phase II of the control measure are anticipated to be 1 – 2 tpd in addition to the 6.1 tpd achieved under Phase I adopted June 2012.

RULE COMPLIANCE

Compliance with the provisions of this control measure would be based on monitoring, vapor collection, and inspection requirements. In addition, compliance will be verified through recordkeeping and reporting that will be used to track requirements.

COST EFFECTIVENESS

For Phase 1 of this control measure, the cost-effectiveness is estimated to be approximately \$1,700 per ton of VOC emissions reduction. Staff will continue to evaluate technology and

costs associated with the broadened applicability and estimate a cost-effectiveness of between \$4,000 and \$10,000 per ton of VOC emissions.

IMPLEMENTING AGENCY

The District has authority to adopt and enforce rules and regulations applicable to non-vehicular sources. The control measure will not affect propulsion engines (Health and Safety Code, Section 40001).

REFERENCES

South Coast Air Quality Management District, "Draft Staff Report For Proposed Rule 1177 – Liquefied Petroleum Gas Transfer and Dispensing," May, 2012.

Life Cycle Associates, LLC (2011), "Inventory of Fugitive Emissions from LPG Transfers in California, prepared for Western Propane Gas Association," June 2011 (CONFIDENTIAL).

CARB (1992) "Determination of Usage Patterns and Emissions for Propane /LPG in California," May 1992.

FUG-03: FURTHER REDUCTIONS OF FUGITIVE VOC EMISSIONS [VOC]

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		FUGITIVE EMISSIONS SOURCES		
CONTROL METHODS:		IMPROVED/EXPANDED LEAK DETECTION PROGRAMS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023 (2023-2007 SIP)*
VOC INVENTORY	3.8	3.8	3.8	3.8 (1.6)
VOC REDUCTION			1 - 2	1 -2 (0.4 - 0.8)
VOC REMAINING			1.8 - 2.8	1.8 - 2.8 (0.8 - 1.2)
CONTROL COST:		\$11,000/TON VOC REDUCED		
IMPLEMENTING AGENCY:		SCAQMD		

* Emission reductions provided are based on the 2012 AQMP emissions inventory. Values provide in parenthesis are based on the 2007 SIP inventory projections for 2023.

DESCRIPTION OF SOURCE CATEGORY

This control measure targets a variety of fugitive emissions sources including, but not limited to, oil and gas production facilities, petroleum and chemical products processing, storage and transfer facilities, marine terminals, and other sources. Most of these facilities are required under District and federal rules to maintain Inspection/Maintenance or leak detection and repair (LDAR) programs that involve individual screening of all of their piping components.

The scope of this control measure is to enhance the effectiveness of existing Inspection/Maintenance and LDAR programs that identify and repair leaks from equipment components by upgrading Inspection/maintenance programs to LDAR and enhancing current LDAR Programs, where feasible. This control measure will apply LDAR programs to areas currently not covered by existing rules such as harbor vessels and oil drilling operations. For this purpose, the proposed control measure relies on recently developed technology, called optical gas imaging, to detect leaks. There are two types of optical gas imaging instruments: active and passive. The active type uses a laser beam that is reflected by the background and the attenuation of the beam traversing through a hydrocarbon cloud provides the optical image. The passive type uses the ambient illumination to detect the difference in heat radiance of the hydrocarbon cloud. For either type, the instrument displays an image of the hydrocarbon plume.

Background

Fugitive VOC leaks have been the subject of control measures in previous AQMPs since they are ozone precursors and contribute to formation of smog. Several District rules that affect petroleum and chemical-related industries, such as oil refineries, oil and gas production fields, natural gas processing plants, pipeline transfer stations and chemical plants have some kind of

requirement involving the periodic inspection of piping components and the detection and repair of leaks.

Fugitive leaks are detected with an organic vapor analyzer (OVA) that measures the leak rate for each component, using U.S. EPA Reference Method 21. In the early 1970s, U.S. EPA initiated the Petroleum Refinery Assessment Study, which developed average emission factors for each type of piping component (valve, flange, pump, etc) and concluded that mass emission rates are dependent on the phase of the process stream (gas/vapor, light liquid and heavy liquid) and the relative volatility of the liquid stream. Mass emissions from fugitive leaks can be calculated based on correlation equations developed by the U.S. EPA based on data from the 1994 Refinery Equipment Leak Report, which is specific for each type of component, such as valve, flange, pump, compressor, etc. The current LDAR program has been successful in significantly reducing fugitive VOC emissions from a variety of sources. However, the latest technology provides opportunities for further improvements in the efficiency of the conventional LDAR program and for further reductions.

Regulatory History

Fugitive emissions are currently regulated under various District rules that range from a simple inspection/maintenance program, to self-inspection programs or an LDAR program. The following rules address fugitive emissions in this manner: Rules 462 – Organic Liquid Loading, 463 – Storage of Organic Liquids, 1142 – Marine Vessel Tank Operations, 1148.1 Oil Well Enhanced Drilling, 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum and Chemical Plants, 1176 – Sumps and Wastewater Separators, and 1178 - Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities.

PROPOSED METHOD OF CONTROL

There are numerous EPA air pollution standards as well as AQMD Rules that require specific work practices for equipment leak detection and repair (LDAR). The current work practice requires the use of a monitor which meets required performance specifications. This work practice is based on 25-year-old technology. While such work practices have been extremely successful in reducing fugitive emissions, recent developments in optical gas imaging provide opportunities for further improvements.

This control measure will pursue two goals: First, as described below, to upgrade inspection/maintenance rules to at least a self-inspection program, or to an optical gas imaging-assisted LDAR program where feasible. Second, to explore the use of new technologies to detect and verify VOC fugitive emissions in order to supplement existing programs in achieving additional emission reductions.

Rule 462 – Organic Liquid Loading, Rule 1142 - Marine Vessel Tank Operations and Rule - 1148.1 Oil Well Enhanced Drilling are rules that require owner/operators to inspect and to repair and maintain equipment in good operating order when the equipment is operating. Under this control measure, the work practices for these rules would be upgraded to a self-inspection program that requires repairs and maintenance to be documented with records and, where

appropriate, reported. Some of these same programs could be enhanced by adding some of if not all of the requirements of an LDAR program.

Rule 463 - Storage of Organic Liquids and 1178 - Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities are two rules that utilize a self-inspection program. Rules 1173 - Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum and Chemical Plants and Rule 1176 - Sumps and Wastewater Separators incorporate an LDAR program. Under this control measure, these rules would be candidates for further improvements in current work practices through the use of new detection technology.

For new detection technology this control measure will be implemented in two phases: Phase I will be a pilot LDAR program to demonstrate feasibility with the new technology and to establish implementation protocols. The completion of phase I will result in the identification of facilities/industries currently subject to LDAR programs and identification of those where the new technology is not yet ready to be utilized. Based on the results of Phase I, fugitive VOC rules will be amended as appropriate under the subsequent phase (Phase II) to enhance their applicability and effectiveness, and to further achieve emissions reductions.

EMISSIONS REDUCTION

The emission reductions from this control measure have not been determined. However, implementing an LDAR program to source categories that are currently not subject to such programs and/or augmenting current and new LDAR programs with the optical gas imaging capabilities would further reduce fugitive emissions by improving operators' ability to detect leaking components and accelerate repairs. Emission reductions are estimated at 1 – 2 tons per day.

RULE COMPLIANCE

Rule compliance would be similar to compliance requirements under existing Rules 462, 463, 1142, 1148.1 1173, 1176, and 1178. Recordkeeping and monitoring requirements would be similar to Rule 109.

TEST METHODS

Test methods include the following:

U.S. EPA Reference Method 21 - Determination of Volatile Organic Compounds Leaks.

Federal Register Vol. 71, No. 66 April 6, 2006 - Alternative Work Practice to Detect Leaks from Equipment.

COST EFFECTIVENESS

Emission reductions associated with this control measure has been determined to be approximately \$11,000 per ton VOC reduced.

IMPLEMENTING AGENCY

The District has authority to regulate fugitive VOC emissions sources from non-vehicular sources.

REFERENCES

U.S. EPA – Protocol for Equipment Leak Emission Estimates, November 1995.

Federal Register /Vol. 71, No. 66/April 6, 2006, Alternative Work Practice to Detect Leaks from Equipment.

**MCS-01: APPLICATION OF ALL FEASIBLE MEASURES ASSESSMENT
[ALL POLLUTANTS]**

As this measure is a continued implementation from the short-term PM2.5 measures, the reader is referred back to MCS-01 in Section 2 of this appendix.

**MCS-02: FURTHER EMISSION REDUCTIONS FROM GREENWASTE
PROCESSING (CHIPPING AND GRINDING OPERATIONS NOT
ASSOCIATED WITH COMPOSTING)
[VOC]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		GREENWASTE MATERIAL HANDLING OPERATIONS		
CONTROL METHODS:		ALL FEASIBLE MITIGATION MEASURES		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023
VOC INVENTORY*	1.67	1.67	1.67	1.67
VOC REDUCTION		1.0 - 1.34	1.0 - 1.34	1.0 - 1.34
VOC REMAINING		0.33 - 0.67	0.33 - 0.67	0.33 - 0.67
CONTROL COST:		NOT DETERMINED		
IMPLEMENTING AGENCY:		SCAQMD		

* Preliminary estimates only – not in current inventory, therefore reductions are not included in the SIP commitment.

DESCRIPTION OF SOURCE CATEGORY

Chipping and grinding is a process to mechanically reduce the size of greenwaste and woodwaste materials. Chipped or ground greenwaste can be utilized in related operations as feedstock for composting, bulking agent for co-composting, land-application for erosion control or soil reclamation, or alternative daily cover at landfills.

Background

California Integrated Waste Management Act of 1989 (AB 939) established a new direction for waste management in the state of California and set up a new mandate for local jurisdiction to meet diversion goals to conserve resources and extend landfill capacity. AB 939 mandated local jurisdictions to meet solid waste diversion goal of 25% by 1995 and 50% by 2000. California's statewide estimated diversion rate has been steadily increased and the rate for 2006 is 54%, 2% points higher than the 2005 estimate. Compostable organic materials comprise of approximately 25% of California's waste stream. Compostable material handling operations are currently regulated by CalRecycle in accordance with the California Code of Regulations, Title 14, Division 7, Chapter 3.1 that was promulgated in 2003. In 2007, the former California Integrated Waste Management Board (currently CalRecycle) adopted Strategic Directive 6.1, which in addition to the diversion goals outlined in AB 939, seeks an additional 50% diversion of organics from landfills, thereby increasing diversion from 50 to 75%, by 2020 in support of the California Global Warming Solutions Act of 2006. Along with the adoption of SB 1016 in 2008, the 50% diversion rate is now measured in terms of per-capita disposal expressed as pounds of solid waste disposed per person per day, to help determine each jurisdiction's progress toward achieving AB 939 diversion goals. Cities and local jurisdictions are also

seeking to improve on diversion efforts through alternative uses for foodwaste, either from unused food at restaurants or expired grocery store food products. Efforts also include limited residential foodwaste pilot programs. There has been some success in California relative to foodwaste composting and future statewide requirements are possible.

District rules currently establish Best Management Practices (BMPs) for greenwaste composting and related operations under Rule 1133.1 – Chipping and Grinding Activities, and Rule 1133.3 – Greenwaste Composting Operations. Rule 1133.1 established maximum stockpile holding times at chipping and grinding facilities consistent with the greenwaste material processing requirements in the Title 14, Division 7, Chapter 3.1, Section 17852 (a)(10)(A)(2) of the California Code of Regulations (CCR). Rule 1133.3 established BMPs and VOC emissions reduction requirements for greenwaste composting operations that process greenwaste only or a greenwaste mixture with manure or foodwaste. During rule development, stakeholders suggested the need to develop a more holistic approach, identifying and accounting for emissions from all greenwaste streams, and reducing potential emissions from greenwaste material handling operations at chipping and grinding facilities and other related facilities, not just those associated with composting operations.

Greenwaste material generated from commercial and non-commercial properties are typically transported to material recovery facilities (MRFs), transfer stations, or processing (i.e., chipping and grinding) facilities. Processed greenwaste is further utilized as feedstock for composting, used as fuel, used as an alternative daily cover at landfills, or directly applied to land for erosion control or soil reclamation. However, it is also possible that processed or unprocessed greenwaste is stockpiled for long periods of time without appropriate handling. It is possible that some processed greenwaste may be directly applied to land without a specific purpose, or even illegally dumped. In either case, unwanted VOC emissions may occur from the greenwaste piles. There is currently a lack of information on the greenwaste streams that are generated, processed, and utilized or disposed of in the District.

Regulatory History

Currently, there are approximately 70 chipping and grinding facilities in the District's jurisdiction that are covered by Rule 1133.1. These chipping and grinding facilities are required to remove stockpile from the site within 48 hours of receipt to conform to the state green material holding time requirements. San Joaquin Valley APCD developed daily VOC emission factors for greenwaste stockpile during their organic waste composting rule development process.

There is a lack of data on VOC emissions from chipping and/or grinding itself, not associated with composting operations, as well as from chipped or ground greenwaste. The existing database of chip and grind operations does not necessarily include landscape and tree trimming operations that use chippers to reduce trimmings for transport. Some operations hold materials for 4 to 7 days prior to actual disposal and it is unknown what the end use of the material is. Such operations are not necessarily in the CalRecycle database or regulated by the local enforcement agency. Key to this measure is to determine where all green material comes from and what is its end use, if not for composting, and at what point is the material most emissive, whereby control strategies can be focused. End uses include dumping and spreading material on open land, landfill disposal for daily cover, drying chips for ground cover (such as

freeway interchanges), and taking the material through the pathogen reductions process and selling as a soil amendment.

PROPOSED METHOD OF CONTROL

The greenwaste streams in the District would need to be re-evaluated in order to better understand the greenwaste material handling operations including generation processing, and final destination. This control measure would seek to establish additional BMPs for handling processed or unprocessed greenwaste material by processors, haulers, and operators who handle or stockpile material or directly apply the material to land.

According to a study of biogenic VOC emissions from leaf mulch, VOC emissions peak immediately after leaves were mulched. The emission rates declined with time after chipping and ceased after approximately 30 hours. Another study found that wounded plants have the potential to produce and emit VOCs as a wound defense mechanism. In the latter study, emissions of wound-induced VOCs occurred immediately following excising the leaf, were dependent on the degree of wounding, and were oxygen-dependent. Drying of a cut leaf also resulted in the formation of wound-induced VOCs. Such VOC emissions from chipped greenwaste are likely to be associated with the biological mechanisms of the plant's response to mechanical trauma, rather than with microbial consumption of nutrients. The biological mechanisms driving these emissions are only partially understood.

Based on these initial findings, the following control methods would be proposed.

- Cover chipped or ground greenwaste material as early as operationally possible after chipping and grinding. An impermeable tarp may be considered as a cover material. Finished compost or compost overs would be a good cover material because of a VOC adsorption effect; however, finished compost or compost overs would not be readily available at chipping and grinding facilities, but also may deteriorate the qualitative value of chipped or ground greenwaste material for further use (compost overs are defined as the oversized woody materials that do not decompose in a typical composting cycle and are screened out of finished product at the end of composting).
- Chipped or ground greenwaste material would remain covered until it is removed from the site within 48 hours, as required in the current stockpile holding time requirement pursuant to Rule 1133.1. The cover duration may be adjusted to 12 hours or 24 hours after chipping or grinding since the VOC emissions are short-lived and the emission rates decrease exponentially with time.
- Seasonal covering of the chipped or ground greenwaste material may also be considered for the summer months when ozone and secondary particulate formation potential is greatest.
- In addition, greenwaste material streams need to be understood from generation to destination. Actual throughput of the processed and produced feedstock would be better understood by strengthening the requirements of reporting in Rule 1133 Registration/Annual Update and the requirements of Rule 1133.1 Recordkeeping. Updated feedstock inventory would be used to refine emissions and reduction potentials, as well as to develop cost-effective BMPs or controls.

There are some uncertainties for this proposed control measure. According to the above studies, VOC emissions occur immediately after branches and leaves are being cut. By the time cut greenwaste material arrives at a processing facility, VOCs from the first cutting may already have been released to the air. Although the study reported that the subsequent cutting of the cut leaf still emitted VOCs, it is uncertain how much VOCs would continue to be emitted from chipping and grinding of greenwaste upon receipt at the processing facility.

This proposed control measure would be implemented in two phases:

- Phase 1 – The existing database would be reviewed to refine the greenwaste material inventory, including the Rule 1133 Registration database and any study results on greenwaste processing infrastructure conducted by public or private entities, as available. Recent regulatory development activities by CalRecycle and other air districts, including San Joaquin Valley APCD, as applicable, would be reviewed to seek potential emission mitigation measures where feasible. Recent studies on emission factors and BMPs would also be reviewed to assess reduction potential. Emission source tests may be warranted to determine VOC emissions from processed greenwaste material. Staff will work with counties and cities relative to green material handling practices in light of the aforementioned state diversion requirements and goals in order to determine green material end use and minimize any potential adverse impacts associated with implementing this measure. A survey of greenwaste processors, haulers and operators may be implemented to better comprehend the greenwaste streams and utilization.
- Phase 2 – A rule would potentially be developed to incorporate technically feasible and cost-effective BMPs or controls. The District will convene its working group involving all stakeholders to develop cost-effective and workable solutions for this source category.

EMISSIONS REDUCTION

In review of research on emissions potential from greenwaste operations commissioned by San Joaquin Valley APCD, District staff derived an emission factor of 0.196 pounds of VOC per wet ton per day for greenwaste feedstock storage and processing. For 17,000 tons of maximum permitted greenwaste throughput per day that were preliminarily estimated from 55 chipping and grinding facilities in the CalRecycle's SWISS database (accessed in 2010), about 1.67 tons of VOCs per day are estimated to be emitted from greenwaste stockpile using the District staff's daily VOCs emission factor. Note that this emission factor was initially derived from greenwaste feedstock at varying ages before it was formed into a windrow at composting facilities. Actual VOC emission factors from chipped or ground greenwaste at a processing facility may be different. New source testing is possibly warranted to derive better emission factors. An updated and comprehensive emissions inventory and facility identification is also needed to better quantify potential emissions reductions.

According to Fedele et al.'s study, VOC concentrations decreased from about 37 ppmC at 1 hour after chipping leaves to 5 ppmC at 12 hours and to about 2 ppmC at 24–30 hours. The emissions reduction potential can be calculated at about 60-80% control with proposed covering of chipped or ground greenwaste.

RULE COMPLIANCE AND TEST METHODS

A District regulation or other enforceable instrument will be considered to ensure emission reductions. The most effective regulatory tool will be selected based on the BMP options. Implementation of this control measure will not conflict with efforts under AB939. District staff will work with CalRecycle to develop appropriate test methods, based on BMPs.

COST EFFECTIVENESS

Cost-effectiveness for BMPs or controls will be determined during rule development process based on findings from Phase I.

IMPLEMENTING AGENCY

The District has the authority to regulate emissions from non-vehicular sources.

REFERENCES

Final Staff Report for Proposed Amended Rule 1133.1 and Proposed Rule 1133.3, AQMD, July 2011.

Compost VOC Emission Factors, SJVUAPCD, September 15, 2010.

Fedele, R., Galbally, I.E., Porter, N., Weeks, I.A., 2007, Biogenic VOC emissions from fresh leaf mulch and wood chips of *Grevillea robusta* (Australian Silky Oak), Atmospheric Environment 41, 8736–8746.

Ray, F., Karl, T., Hansel, A., Jordan, A., Lindinger, W., 1999, Volatile organic compounds emitted after leaf wounding: On-line analysis by proton-transfer-reaction mass spectrometry, Journal of Geophysical Research 104 (D13), 15963–15974.

**MCS-03: IMPROVED START-UP, SHUTDOWN AND
TURNAROUND PROCEDURES
[ALL POLLUTANTS]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		ALL SOURCE CATEGORIES		
CONTROL METHODS:		OPERATIONAL PROCEDURES		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE*	2008	2014	2019	2023
<i>POLLUTANT INVENTORY</i>	TBD	TBD	TBD	TBD
<i>POLLUTANT REDUCTION</i>		TBD	TBD	TBD
<i>POLLUTANT REMAINING</i>		TBD	TBD	TBD
CONTROL COST:		NOT DETERMINED		
IMPLEMENTING AGENCY:		SCAQMD		

* TBD are reductions to be determined once the inventory and control approach are identified.

DESCRIPTION OF SOURCE CATEGORY

This control measure is carried over from the 2007 AQMP/SIP.

Background

Equipment start-up, shutdown and turnaround are typically associated with significantly higher emission rates compared to the emission rates observed from the same equipment operating under steady state or normal operating conditions. The higher emission rates observed during start-up, shutdown and turnaround are in part due to the higher loads equipment is subjected to during these transient operating conditions compared to the normal operating conditions as well as the lead times necessary for the conditioning of certain control technologies. The emission rates observed during start-up, shutdown and turnaround, in addition to the equipment design, are influenced by the speed with which particular equipment is fired to reach normal operating conditions or is taken out of service. Start-up, shutdown or turnaround often adversely impact the emission rates from pieces of equipment that are interconnected, either upstream or downstream, to the equipment undergoing start-up/shutdown. This is a phenomenon commonly observed in refinery operations and chemical plants that rely on interconnected equipment and processes. Refinery operations predominantly rely on flares to minimize the emissions impact resulting from start-up, shutdown and turnarounds. However, there are adverse environmental impacts associated with the use of flares as well.

Regulatory History

On November 4, 2005 the District's Governing Board adopted an amendment to Rule 1118 - Control of Emissions from Refinery Flares. In an effort to minimize flaring and associated emissions, the amendment established declining emission targets over time that each refinery

had to meet. The amendment eliminated the flaring of vent gases except for those resulting from emergencies, shutdowns and startups, turnarounds and essential operational needs. The amendment also established operational requirements of diagnostic practices to minimize flaring.

Reducing flaring and associated emissions continued to be an area of intense interest by the community, regulators as well as industry. The Rule 1118 staff report listed several possible alternatives of minimizing flare emissions that could be incorporated further explored:

Optimization of turnaround schedules

Coordination of turnaround schedules for different units can result in minimizing emissions associated with these periodic maintenance activities.

Developing startup and shutdown procedures that do not increase emissions

For certain units, it is possible to develop procedures that avoid flaring during shutdown and startup, such as using reduced loads, recycling feeds, better decontamination procedures, etc. Sometimes more time is necessary for a startup or shutdown, or physical modifications are needed to achieve this purpose.

Several of these approaches are also applicable to other types of industries in minimizing emissions from these types of operations. For example, the installation of redundant equipment to increase reliability and the promotion of operator training for environmental awareness could help a particular facility in minimizing the number of start-ups and shutdowns within a given operational cycle.

PROPOSED METHOD OF CONTROL

This measure will be implemented in two phases, beginning with a technical assessment to be completed in the 2012/2013 timeframe. Under Phase I, effort will include establishing procedures that better quantify emission impacts from start-up, shutdown or turnarounds. Under Phase II, analyses will be conducted to identify improved operating procedures that minimize emissions from such processes and develop rule amendments that could seek implementation of best management practices and/or additional hardware

EMISSIONS REDUCTION

Implementation of the control measure is expected to result in emission reductions. The magnitude of these reductions cannot be readily quantified at this time.

RULE COMPLIANCE AND TEST METHODS

Compliance would be based on monitoring, recordkeeping, and reporting requirements that have been established in existing source specific rules and regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

The Phase I of the study may cost up to \$300,000 and the cost of Phase II will be assessed based on findings from Phase I.

IMPLEMENTING AGENCY

The District has authority to regulate non-vehicular sources, including to establish procedures for the purpose of minimizing or eliminating emissions during equipment start-up, shutdown and turnaround.

REFERENCES

Final Staff Report, Proposed Amended Rule 1118 – Control of Emissions from Refinery Flares, October 2005

**INC-01: ECONOMIC INCENTIVE PROGRAMS TO ADOPT ZERO AND
NEAR-ZERO TECHNOLOGIES
[NO_x]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		ALL COMBUSTION CATEGORIES		
CONTROL METHODS:		ALL AVAILABLE CONTROL METHODS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE*	2008	2014	2019	2023
NO _x INVENTORY	TBD	TBD	TBD	TBD
NO _x REDUCTION		TBD	TBD	TBD
NO _x REMAINING		TBD	TBD	TBD
CONTROL COST:		TBD		
IMPLEMENTING AGENCY:		SCAQMD		

* TBD are reductions to be determined once the inventory and control approach are identified.

DESCRIPTION OF SOURCE CATEGORY

There is a need for significant NO_x reductions. The primary objective of this measure is to develop a program that promotes and encourages adoption and installation of cleaner, more efficient stationary combustion equipment with a focus on zero and near-zero emission technologies, such as boilers, ovens, furnaces, internal combustion engines, water heaters and commercial space heating, through economic incentive programs subject to the availability of public funding. Currently, there are approximately 20,000 pieces of permitted combustion equipment within the South Coast Air Basin. Incentives may include grants for new purchases of equipment as well as loan programs in areas where long-term cost savings from increased efficiency can be achieved. Projects or programs that demonstrate emission reductions also serve to protect public health by reducing the public's exposure to air pollutants.

This control measure would provide funds to reduce emissions by encouraging energy efficiency improvements and expanding renewable energy sources, so as to potentially create and retain jobs, and promote economic growth and competitiveness.

Background

In the past, the SCAQMD has adopted a series of programs that incorporate a variety of different incentive approaches, such as emissions trading programs, mitigation fee programs, Air Quality Investment Program (AQIP), and averaging. These programs were developed to promote the commercialization of advanced pollution control technologies while encouraging economic growth and providing compliance flexibility.

The District continues to implement incentive programs to help promote efficient clean equipment purchases, efficiency projects, and conservation techniques that provide toxic and criteria pollutant emissions benefits, as well as greenhouse gas emission reductions.

Currently, there are several existing incentive programs which help promote higher efficiency and lower emitting technologies such as: Coachella Valley Emission Reduction Projects; Lawn Mower and Leaf Blower Exchanges; SOON Program; Carl Moyer Memorial Air Quality Standards Attainment Program; MSRC & Area Source Credit Programs; and Voucher Incentive Program.

Regulatory History

AQMD offers a number of funding /grant resources to encourage the immediate use of commercially available, low-emission mobile and stationary technologies. The incentive programs, which include incremental funding or subsidies, are designed to promote voluntary introduction of new technologies on an accelerated schedule. These programs may also provide manufacturers with incentives to accelerate the deployment of the cleaner combustion technologies.

As this measure is not a regulatory item that will be implemented via rulemaking, there is no relevant regulatory history in this area. However, as mentioned above, the District has developed and implemented a wide array of incentive programs designed to achieve emission reductions on a voluntary basis.

PROPOSED METHOD OF CONTROL

This control measure is intended to result in the accelerated turnover of older high-polluting combustion equipment with newer, low-emission equipment providing real emission reductions above those that would otherwise occur through normal equipment turnover. This is a stationary source Moyer-type program in that the economic incentives provide additional funds for businesses to adopt cleaner, more efficient combustion equipment than currently required by the District and help meet 2023 and 2032 ozone standards.

The District in conjunction with other entities would fund cost effective projects that meet certain technical criteria in combination with implementing best management practices through various incentive programs and competitive grants. These funds would help accelerate turnover of older, energy inefficient and higher polluting equipment. The incentives would cover some or all of the cost difference associated with purchasing newer cleaner combustion equipment, add-on control equipment, and / or rebuilding the existing equipment. This could be of great benefit to companies that do not have the financial means to modernize their facilities to become more energy efficient and less polluting. Projects funded under this program must achieve emission reductions in excess of requirements under local, state or federal regulations.

Priority could be given to the projects that qualify for the use of available funds that provide: Maximum environmental and energy co-benefits such as criteria and toxic pollutant reductions as well as greenhouse gas emission reductions; energy security and efficiency; advanced technology; and demonstrate local job creation.

EMISSIONS REDUCTION

Estimates for criteria pollutant emission reduction from these technologies can potentially result in 65 percent or greater reduction in emission from today's regulatory requirements. Implementation and evaluation of additional incentive programs will provide a means to quantify emission reduction benefits as they are developed. Emission reductions achieved from these activities will be in excess of reductions achieved by current regulatory programs and will be used for SIP purposes.

RULE COMPLIANCE AND TEST METHODS

Combustion equipment and control of combustion equipment require a permit under existing District rules and regulations. Making a modification with the combustion equipment or control of emissions will require a permit modification or surrender of existing permit ensuring the cleaner equipment remains in the jurisdiction, along with the emission benefits. If there are any remaining combustion emissions, the permit conditions would ensure its limitation and compliance.

COST EFFECTIVENESS

The cost effectiveness of this measure cannot yet be determined, given the variety of incentive programs and projects that will be developed. The District will continually analyze costs associated with incentive programs and, where possible, quantify resulting emissions reductions. The cost effectiveness for specific incentive programs can be determined as they are developed and implemented by the District.

IMPLEMENTING AGENCY

The District in cooperation with other local governments, agencies, technology manufacturers and distributors will seek funding sources and provide incentives to encourage adoption of cleaner, more efficient combustion equipment.

REFERENCES

South Coast Air Quality Management District, "Surplus Off-Road Opt-In for NO_x (SOON) Program," (<http://www.aqmd.gov/tao/Implementation/SOONProgram.htm>), May 2012.

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South Coast Air Quality Management District, "Coachella Valley Emission Reduction Projects," (<http://www.aqmd.gov/prdas/CVRFP-AB1318/Coachella.htm>), February 2012.

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South Coast Air Quality Management District, “Air Quality Investment Program - AQIP,” (<http://www.aqmd.gov/trans/aqip.html>), June 2010.

South Coast Air Quality Management District, “Voucher Incentive Program,” (<http://www.aqmd.gov/tao/Implementation/VIP.htm>), April 2012.

South Coast Air Quality Management District, “Lawn Mower and Leaf Blower Exchanges,” (<http://www.aqmd.gov/tao/lawnmower.html>), April 2012.

**INC-02: EXPEDITED PERMITTING AND CEQA PREPARATION
FACILITATING THE MANUFACTURING OF
ZERO AND NEAR-ZERO TECHNOLOGIES
[ALL POLLUTANTS]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		ALL SOURCE CATEGORIES		
CONTROL METHODS:		VOLUNTARY INCENTIVES		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE*	2008	2014	2019	2023
<i>POLLUTANT INVENTORY</i>	N/A	N/A	N/A	N/A
<i>POLLUTANT REDUCTION</i>		N/A	N/A	N/A
<i>POLLUTANT REMAINING</i>		N/A	N/A	N/A
CONTROL COST:		None		
IMPLEMENTING AGENCY:		SCAQMD		

* N/A are reductions that cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs).

DESCRIPTION OF SOURCE CATEGORY

This proposed measure is aimed at providing incentives for companies to manufacture zero and near-zero emission technologies locally, thus populating the market, potentially lowering the purchase cost, increasing demand, and creating local manufacturing jobs. With availability and usage of such technologies, air quality benefits will be achieved. This proposed measure focuses on two elements: 1) process the required air permit(s) in an expedited procedure; and 2) facilitate the preparation of the applicable CEQA document. A stakeholder process will be initiated to design the program and leverage other existing SCAQMD or local programs.

Background

In the past, the SCAQMD has adopted a series of programs developed to promote the commercialization of advanced pollution control technologies while encouraging economic growth and providing compliance flexibility by offering expedited permitting and CEQA preparation. Such programs include “Green Carpet” Priority Permitting Service, Business Clean Air Partnership, Regulatory Reform Initiative, and Environmental Justice Enhancement III-2 (“Super Clean Air Actions”). The manufacturing and deployment of zero and near-zero emission technologies will help reduce criteria pollutant emissions in the region, accelerate removal of equipment that can last for many decades, and advance economic development and job opportunities in the region.

Regulatory History

The SCAQMD has permitting authority over stationary sources that emit air pollutants and the controls designed to limit air pollution. The process of obtaining an air quality permit includes a thorough review to ensure compliance with all applicable rules and regulations, such as source specific standards, new source review, air toxic risk, and best available control technology.

Under Title 14 of the California Code of Regulations, Chapter 3, Article 1, Section 15002(e), “a government agency is required to comply with California Environmental Quality Act (CEQA) procedures when the agency proposes to carry out or approve the activity.” Further, under Section 15002(f), “CEQA applies in situations where a governmental agency can use its judgment in deciding whether and how to carry out or approve a project.” As a discretionary authority to approving a project through the required air quality permit, the SCAQMD has a legal obligation to ensure compliance with CEQA requirements before issuing an air quality permit.

PROPOSED METHOD OF CONTROL

This measure would seek to promote zero and near-zero emission technologies by offering the incentive of an expedited permitting and assistance in CEQA document preparation for manufacturing or distribution of such technologies. By agreeing to manufacture and distribute zero and near-zero emission technologies, a proponent would be rewarded with a streamlined administrative review by the SCAQMD while providing significant emission reduction benefits to the region. The expedited permitting and review program would only accelerate the processing of applications, which would still need to comply with all applicable rules, regulations, and guidelines.

To implement this measure, a stakeholder working group will be established to discuss and propose program designs that will provide meaningful incentives to manufacturers of zero and near zero technologies to be sited locally.

Examples of zero and near-zero emission technologies will be further developed during program development. They include, but are not limited to, the manufacturing of fuel cells, electric batteries for any stationary or mobile applications, and other zero- and near-zero technologies.

Under this measure, the SCAQMD will also evaluate potential permit system modifications that would incentivize use of zero and near zero emission technologies, and would adopt such measures that are determined to be feasible.

EMISSIONS REDUCTION

Due to the voluntary nature of this control measure, potential emission reductions associated with the implementation of this control measure cannot be quantified. The benefit of this measure is to facilitate the deployment of zero and near zero technologies that are needed to achieve the air quality standards and to create local manufacturing jobs.

RULE COMPLIANCE AND TEST METHODS

Not applicable.

COST EFFECTIVENESS

Savings, since this is a voluntary incentive program.

IMPLEMENTING AGENCY

The District has the authority to provide incentives to encourage the manufacturing of zero and near-zero technologies, and to prioritize permit applications and review processes as needed.

REFERENCES

South Coast Air Quality Management District. "Environmental Justice Enhancement III-2 ("Super Clean Air Actions")." July 2003.

South Coast Air Quality Management District. "Green Carpet" Priority Permitting Service. April 1996.

South Coast Air Quality Management District. "Business Clean Air Partnership." April 1995.

South Coast Air Quality Management District. "Regulatory Reform Initiative." March 1996.

**EDU-01: FURTHER CRITERIA POLLUTANT REDUCTIONS FROM
EDUCATION, OUTREACH, AND INCENTIVES
[ALL POLLUTANTS]**

As this measure is a continued implementation from the short-term PM2.5 measures, the reader is referred back to EDU-01 in Section 2 of this appendix.

DRAFT FINAL
2012 AQMP: APPENDIX IV-B

PROPOSED 8-HOUR OZONE MEASURES

NOVEMBER 2012

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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SECTION 1

INTRODUCTION

INTRODUCTION

The 2007 State Implementation Plan (SIP) for the 8-hour national ambient air quality standard (NAAQS) contains commitments for emission reductions from mobile sources that rely on advancement of technologies, as authorized under Section 182(e)(5) of the federal Clean Air Act. These measures, which have come to be known as the “black box,” account for a substantial portion of the NO_x emission reductions needed to attain the federal ozone standards – over 200 tons/day. The deadlines to reduce ozone concentrations in the region are 2023 (to attain the 80 ppb NAAQS) and 2032 (to attain 75 ppb NAAQS)¹. Attaining these standards will require reductions in emissions of nitrogen oxides (NO_x) well beyond reductions resulting from current rules, programs and commercially-available technologies.

Mobile sources emit over 80 percent of regional NO_x and therefore must be the largest part of the solution. On-road truck categories are projected to comprise the single largest contributor to regional NO_x in 2023. Other equipment involved in goods movement, such as marine vessels, locomotives and aircraft, are also substantial NO_x sources.

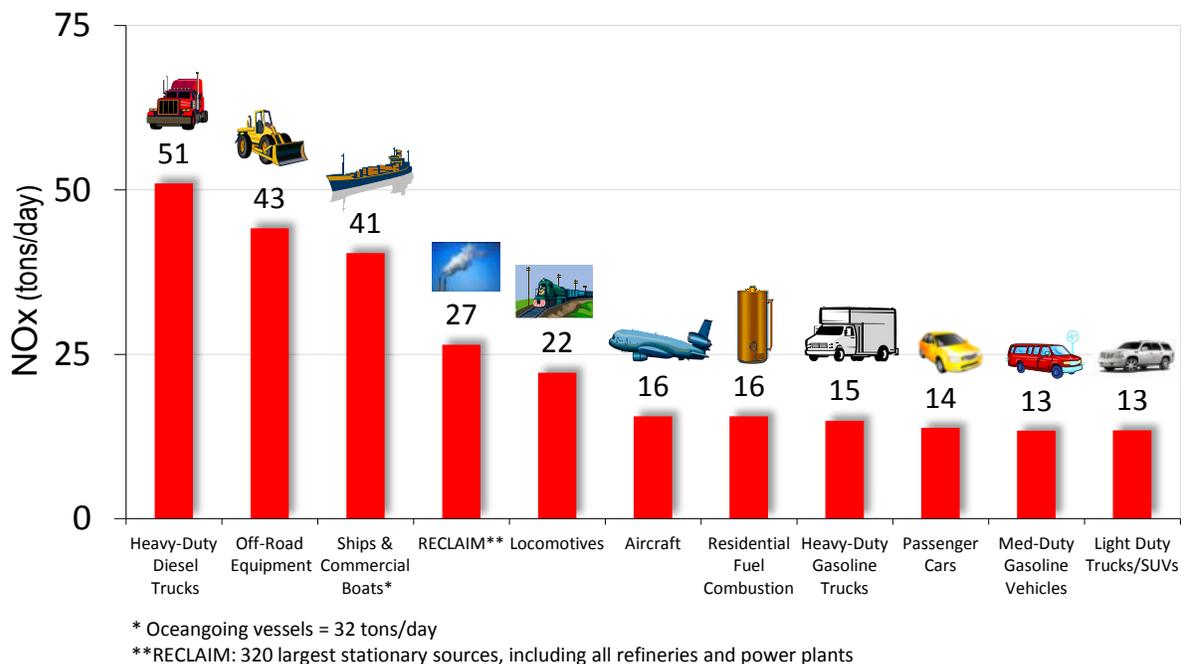


FIGURE IV-B-1

Top NO_x Emissions Categories in 2023 in the South Coast Air Basin, Annual Average (tpd)

¹ The attainment deadline for the 75 ppb standard (adopted in 2008) has been established by U.S. EPA for extreme nonattainment areas by December 31, 2032.

Preliminary District staff projections indicate that **the region must reduce regional NOx emissions by about 65 percent by 2023, and 75 percent by 2032, to attain the national ozone standards as required by federal law.**

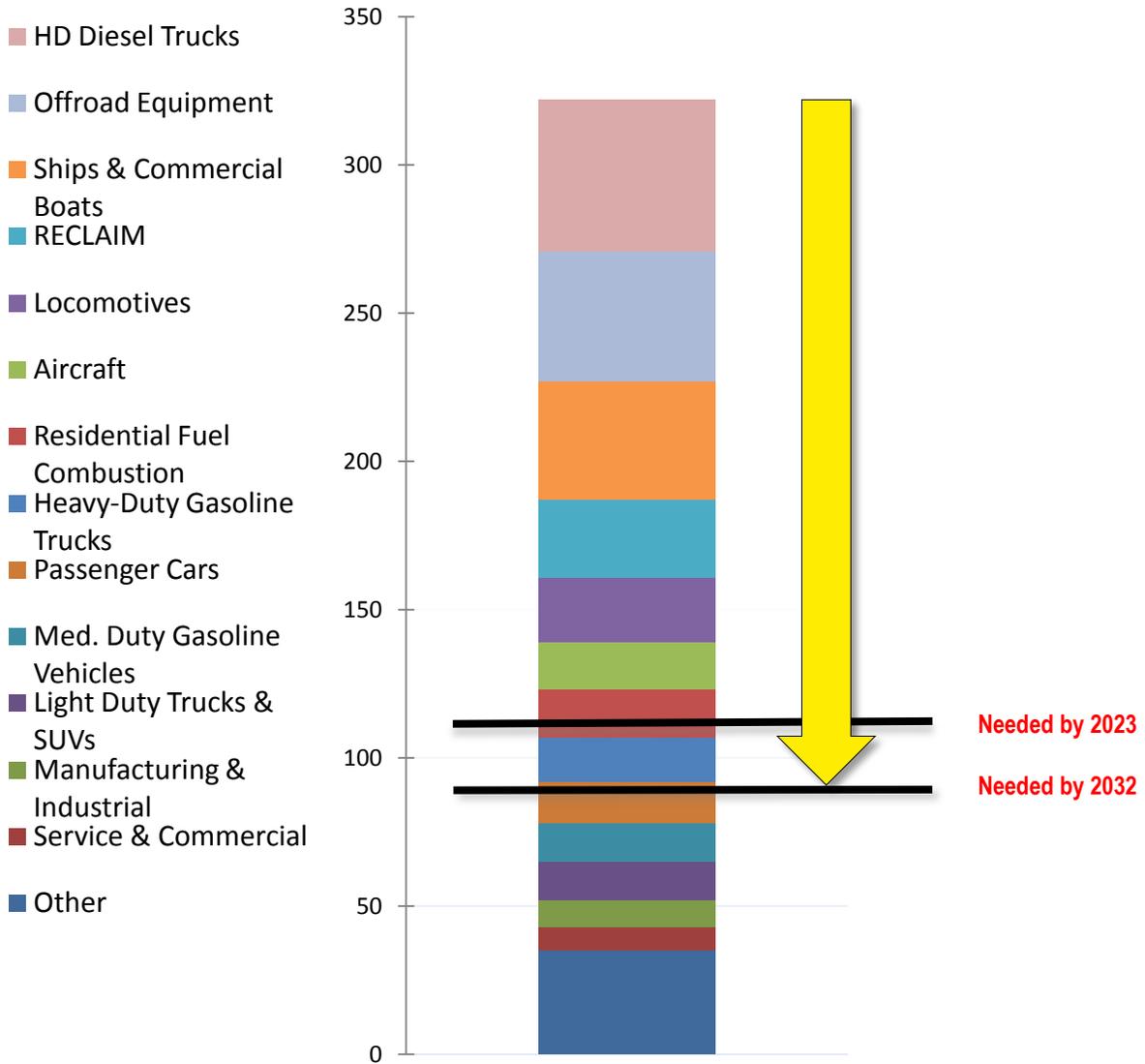


FIGURE IV-B-2

Needed NOx Emission Reductions to Achieve Federal 8-Hour Ozone Ambient Air Quality Standards

Since NO_x emissions from most significant sources are already controlled by over 90%, **attainment of the ozone standards will require broad deployment of zero and near zero² emission technologies in the 2023 to 2032 timeframe.** On-land transportation sources such as trucks, locomotives and cargo handling equipment have technological potential to achieve zero- and near-zero emission levels. Current and potential technologies include hybrid-electric, hybrid with all electric range, battery-electric, and hydrogen fuel cell on-road vehicle technologies. New types of hybrids could also serve long-term needs while providing additional fuel diversity. These could include, for example, natural gas-electric hybrid technologies for on-road and other applications, particularly if coupled with improved aftertreatment technologies. Equipment powered solely by alternative fuels such as natural gas may also play a long-term role in some applications, if those applications are found to pose technological barriers to achieving zero or near-zero emissions. Even in such applications, however, substantial additional emission reductions will be needed through development of new, advanced aftertreatment technologies. In addition, alternative fuels will likely play a transitional near-term role. Alternative fuels such as natural gas have historically helped the region make progress toward attaining air quality standards, and -- while not achieving zero or near-zero NO_x emission levels -- they are generally cleaner than conventional fuels. Given the region's need to attain air quality standards in a few short years, alternative fueled engines will continue to play a role. Finally, we emphasize that air quality regulatory agencies have traditionally set policies and requirements that are performance based and technology and fuel neutral -- a policy that the District intends to continue. In short, all technologies and fuels should be able to compete on equal footing to meet environmental needs.

While there has been much progress in developing and deploying transportation technologies with zero- and near-zero emissions (particularly for light duty vehicles and passenger transit), additional technology development, demonstration and commercialization will be required prior to broad deployment in freight and other applications. This Appendix describes a path to evaluate, develop, demonstrate, fund and deploy such technologies for land-based transportation sources. It also proposes

² The term "near zero emissions" refers to emissions approaching zero and will be delineated for individual source categories through the process of developing the Air Quality Management Plan/State Implementation Plan. Based on current analyses, on-land transportation sources will need to achieve zero emissions where possible, and otherwise will need to be substantially below adopted emission standards — including standards with future effective dates. Near zero emissions technologies can help meet this need, particularly if they support a path toward zero emissions (e.g. electric/fossil fuel hybrids with all- electric range).

near-term measures to accelerate fleet turnover to the lowest emission units, and require deployment of zero-emission technologies where most feasible.

The District staff believes that a combination of regulatory actions and public funding is the most effective means of achieving emission these reductions. Voluntary incentive programs such as the Carl Moyer Program can help to accelerate turnover to the cleanest commercially available equipment. A majority of the on-road and off-road measures proposed are based on existing funding programs implemented by the District or the California Air Resources Board. However, several of the existing funding programs will sunset in the 2014 – 2015 timeframe. Continued funding beyond 2015 will be needed to reduce the emissions associated with the black box. Developing, demonstrating and deploying new technologies will require public/private partnerships and, in some cases, regulatory actions.

The measures described in this appendix are relatively small down payments on the total emission reductions needed to attain the current National Ambient Air Quality Standards (NAAQS) for ozone. The measures in this section are feasible steps that must be commenced in the near term to establish a path toward broader transition to the technologies that will be needed to attain federal air quality standards. Between now and 2015, the district will flesh out in greater detail the additional measures needed to attain the ozone NAAQS. The federal Clean Air Act requires the state to submit an ozone attainment plan for the 75 ppb ozone NAAQS by 2015. In addition, with the 2023 attainment deadline for the 80 ppb ozone NAAQS approaching, the district needs to specify plan measures to timely attain that standard, something which the district intends to also adopt as part of the 2015 plan update. Given the magnitude of needed emission reductions, and the time remaining until attainment deadlines, **it is important that progress and momentum to identify, develop and deploy needed technologies be sustained and accelerated.**

The District staff recognizes these are very difficult policy choices the Basin is facing. Transitioning over the next 10 to 20 years to cleaner transportation technologies will involve major costs and effects on the economy. However, adopting sufficient plan measures to attain the ozone air quality standard by 2024 is required by federal law, and failing to do so is, therefore, not an acceptable public policy. Such failure would also risk adverse health consequences highlighted in recent health studies, not to mention the potential adverse economic impacts on the region due to potential federal sanctions. The following sections further describe the measures to help reduce the emissions associated with the black box.

SECTION 2

PROPOSED 8-HOUR OZONE MEASURES

INTRODUCTION

District staff analyzed the need to accelerate the penetration of cleaner engine technologies in various mobile source sectors. This Section describes the District staff’s proposals for additional mobile source emission reductions towards achieving the 8-hour ozone ambient air quality standard by 2023 to be included in the 2012 Draft Final AQMP. The early action measures presented in this appendix are based upon a variety of control technologies that are commercially available and/or technologically feasible to implement in the next several years. The focus of these measures includes accelerated retrofits or replacement of existing vehicles or equipment, acceleration of vehicle turnover through voluntary vehicle retirement programs, and greater use of cleaner fuels in the near-term. In the longer-term, in order to attain the federal ozone ambient air quality standard, there is a need to increase the penetration and deployment of near-zero and zero-emission vehicles such as plug-in hybrids, battery-electric, and fuel cells, further the use of cleaner fuels (either alternative fuels or new formulations of gasoline and diesel fuels), and obtain additional emission reductions from aircraft engines.

PROPOSED MEASURES

Ten early action measures are proposed by the District staff for mobile sources and seven additional early action measures are proposed to accelerate near-zero and zero-emission technologies for goods movement related sources. The early action mobile source measures call for greater emission reductions through significant increase in the turnover of older vehicles to the cleanest vehicles currently available with an emphasis on zero-emission vehicles. In addition, actions are identified for earlier deployment of near-zero and zero-emission technologies in the goods movement sector. A summary of the 17 measures is provided in Table 1.

TABLE IV-B-1

Proposed Mobile Source Implementation Measures

ON-ROAD MOBILE SOURCE MEASURES	
Number	Title
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles [VOC, NOx, CO]
ONRD-02	Accelerated Retirement of Older Light- and Medium-Duty Vehicles [VOC, NOx, CO]
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Light-Heavy- and Medium-Heavy-Duty Vehicles [NOx, PM]
ONRD-04	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]

TABLE IV-B-1 (concluded)

Proposed Mobile Source Implementation Measures

ON-ROAD MOBILE SOURCE MEASURES	
Number	Title
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NOx, PM]
OFF-ROAD MOBILE SOURCE MEASURES	
Number	Title
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment [NOx]
OFFRD-02	Further Emission Reductions from Freight Locomotives [NOx, PM]
OFFRD-03	Further Emission Reductions from Passenger Locomotives [NOx, PM]
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels While at Berth [All Pollutants]
OFFRD-05	Emission Reductions from Ocean-Going Marine Vessels [NOx, PM]
ACTIONS TO DEPLOY ADVANCED CONTROL TECHNOLOGIES	
Number	Title
ADV-01	Actions for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles [NOx, PM]
ADV-02	Actions for the Deployment of Zero-Emission and Near-Zero Emission Locomotives [NOx, PM]
ADV-03	Actions for the Deployment of Zero- Emission and Near-Zero Emission Cargo Handling Equipment [NOx, PM]
ADV-04	Actions for the Deployment of Cleaner Commercial Harbor Craft [NOx, PM]
ADV-05	Actions for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx, PM]
ADV-06	Actions for the Deployment of Cleaner Off-Road Equipment [NOx, PM]
ADV-07	Actions for the Deployment of Cleaner Aircraft Engines [NOx, PM]

On-Road Mobile Source Measures

The District staff is proposing five on-road mobile source control measures. The focus of the first two measures is on-road light- and medium-duty vehicles operating in the South Coast Air Basin. By 2023, it is estimated that about 12 million vehicles will be operating in the Basin. The first measure would implement programs to accelerate the penetration and deployment of partial zero-emission and zero-emission vehicles in the light- and medium-duty vehicles categories. The second control measure would seek to accelerate retirement of older gasoline and diesel powered vehicles up to 8,500 gross

vehicle weight (GVW). These vehicles include passenger cars, sports utility vehicles, vans, and light-duty pick-up trucks.

The remaining three measures focus on heavy-duty vehicles. The first of these measures seeks additional emission reductions from the early deployment of partial zero-emission and zero-emission light- and medium-heavy-duty vehicles with gross vehicle weights between 8,501 pounds to 26,000 pounds. The fourth control measure for heavy-duty vehicles seeks additional emissions reductions from older, pre-2010 heavy-duty vehicles beyond the emission reductions targeted in CARB's Truck and Bus Regulation. Additional emission reductions could be achieved if an additional percentage of the oldest, pre-2010 heavy duty vehicles not subject to the Truck and Bus Regulation are targeted. The fifth on-road measure seeks emission reductions at near-dock railyards through the deployment of zero-emission heavy-duty vehicles.

Off-Road Mobile Source Measures

The District staff is proposing five control measures that seek further emission reductions from off-road mobile sources and industrial equipment. Transportation sources such as aircraft, locomotives, and marine vessels are associated with anticipated economic growth not only in the Basin, but also nationwide. These sources are principally regulated by federal and state agencies. Certain local actions can result in emission reductions beyond the emissions standard setting authority of the state and U.S. EPA. The first measure calls for the continuation of the Surplus Off-Road Opt-In for NO_x (SOON) provision of the statewide In-Use Off-Road Diesel-Fueled Fleets Regulation beyond 2014. The SOON provision implemented to-date has realized additional NO_x reductions beyond the statewide regulation. The second and third measures call for additional emission reductions from freight and passenger locomotives. The fourth measure seeks additional emission reductions from ocean-going vessels while at berth. The fifth early action measure recognizes the efforts that the Ports of Los Angeles and Long Beach are implementing to incentivize cleaner Tier 2 and Tier 3 ocean-going vessels to call at the ports.

Actions to Deploy Advanced Control Technologies

The District staff is proposing seven additional measures to deploy the cleanest control technologies as early as possible and the development and deployment of near-zero and zero-emission technologies. Many of these actions have already begun. However, additional research and development will be needed that will lead to commercial deployment of control technologies that achieve emission levels below current adopted

emission standards. Other near-zero and zero-emission technologies that are commercially available will require infrastructure development to facilitate their deployment.

The term “near-zero” technology is not defined in these actions. The term’s specific meaning could depend on the source category and feasible technologies. The actions needed to deploy zero-emission technologies, “near-zero” emission technologies, and the next generation of cleaner combustion engines will be discussed in the development of the proposed control measures in future AQMPs. To initiate the development of cleaner engines (either through in-cylinder or aftertreatment controls or in combination with hybrid systems that lead to further criteria pollutant emission reductions), District staff is proposing that optional NO_x standards be adopted. Having such optional standards will facilitate the early development of cleaner technologies and to deploy these technologies as soon as possible. Several of the technologies to achieve emission levels lower than current standards, or zero-emission levels, are currently available and are potentially transferrable to various vehicle vocations and in-use applications. However, further research and demonstration of many of these technologies is needed to evaluate their performance prior to commercialization.

The District staff, U.S. Department of Energy, U.S. Environmental Protection Agency, Federal Aviation Administration, California Air Resources Board, California Energy Commission, engine manufacturers, advanced engine control developers, and electric hybrid system developers have been discussing potential technologies to further reduce engine exhaust emissions or eliminate exhaust emissions entirely. Public forums such as technology symposiums will be used to solicit public input on technology development as part of the proposed actions.

FORMAT OF IMPLEMENTATION MEASURES

Included in each control measure description is a title, summary table, description of source category (including background and regulatory history), proposed method of control, estimated emission reductions, discussion of rule compliance, identification of test methods, estimated cost effectiveness, and references. The type of information that can be found under each of these subheadings is described below.

Implementation Measure Number

Each measure is identified by a measure number such as “CM #ONRD-04” located at the upper right hand corner of every page. “CM #” is the abbreviation for the “control measure number” and is immediately followed by the year of the AQMP revision.

The next three- to five-letter designation represents the abbreviation for a source category or specific programs. For example, “ONRD” is an abbreviation for “On-Road Mobile Sources.” The following provides a description of the abbreviations for each of the measures.

- ONRD On-Road Mobile Sources for the South Coast Air Basin
- OFFRD Off-Road Mobile Sources for the South Coast Air Basin
- ADV Actions to Deploy Advanced Control Technologies

Summary Table

Each measure contains a table that summarizes the measure and is designed to identify the key components of the measure. The table contains a brief explanation of the source category, control method, emission reductions, control costs, and implementing agency.

Description of Source Category

This section provides an overall description of the source category and the intent of the early action measure. The source category is presented in two sections, background and regulatory history. The background has basic information about the control measure such as the number of sources in the Basin, description of emission sources, and targeted pollutants.

The regulatory history contains information regarding existing regulatory control of the source category such as applicable state or federal rules or regulations and whether the source category was identified in the 2007 or prior AQMPs.

Proposed Method of Control

The purpose of this section is to describe the actions over the next several years and beyond. Relative to the “ADV” measures, this section reflects actions to be taken to further develop zero- and near-zero emission technologies or advanced control technologies that will lead to further emissions reductions.

Emissions Reduction

The emission reductions are estimated based on the baseline inventories prepared for the 2012 AQMP and are provided in the Control Measure Summary Table. The emissions data are based on the annual average inventory for all five criteria pollutants. The planning inventory adjusts the emissions by taking into consideration a source category’s

seasonal variations. The emissions affecting ozone concentration (i.e., VOC and NO_x) are presented under the Summer Planning Inventory. The emissions section of the summary table includes the 2008 and 2023 inventories. The 2023 emission projections reflect implementation of adopted rules. Based on the expected reductions associated with implementing the measure, emission data are calculated for 2023 assuming the implementation of the early actions in the absence of other competing measures.

The emission reductions listed in the summary table represent the current best estimates, which are subject to change as the actions are implemented. For three of the measures, ONRD-05, OFFRD-01, and OFFRD-02, emissions reductions are also reported based on the projected 2023 emissions inventory provided in the 2007 SIP since the reductions are associated with the Section 182(e)(5) emission reduction commitments in the 2007 SIP.

Rule Compliance

This section was designed to satisfy requirements in the 1990 Clean Air Act in which EPA has indicated that it is necessary to have a discussion of rule compliance with each control measure. This section discusses the recordkeeping and monitoring requirements envisioned for the control measure. In general, the District would continue to verify rule compliance through site inspections and submittal of compliance plans.

Test Methods

In addition to requiring recordkeeping and monitoring requirements, U.S. EPA has stated that “An enforceable regulation must also contain test procedures in order to determine whether sources are in compliance.” This section of the measure write-up identifies appropriate approved District, ARB, and EPA source test methods, where currently available.

Cost Effectiveness

The Discounted Cash Flow (DCF) method is used to calculate the cost-effectiveness of each measure. As measures undergo the rule making process, more detailed control costs will be developed.

The cost effectiveness values contained herein may overestimate actual levels because of a number of factors. As additional information on costs and more accurate numbers of affected entities becomes available, the cost effectiveness will be revised and analyzed in the socioeconomic assessment report of the 2012 AQMP.

Implementing Agency

This section identifies the agency(ies) responsible for implementing the measure or may have an ability to implement the measure. Also included in this section is a description of any jurisdictional issues that may affect the measure's implementation. Relative to the "ADV" measures, entities identified in this section are envisioned to work collaboratively to advance the development and commercialization of zero- and near-zero emission technologies or advanced engine control technologies that will lead to further emissions reductions. For measures that involve voluntary incentives programs, agency(ies) identified have historically implemented such programs or may be recipients of funds to implement such programs. It is envisioned that the same agencies will implement the measure if funds are available to the implementing agency.

References

This section identifies directly cited references, or those references used for general background information.

GROUP 1

ON-ROAD MOBILE SOURCES

**ONRD-01: ACCELERATED PENETRATION OF
PARTIAL ZERO-EMISSION AND ZERO EMISSION VEHICLES
[VOC, NOX, CO]**

CONTROL MEASURE SUMMARY		
SOURCE CATEGORY:	GASOLINE- AND DIESEL-POWERED ON-ROAD VEHICLES WITH GROSS VEHICLE WEIGHT RATING UP TO 8,500 LBS	
CONTROL METHODS:	INCENTIVES FOR PARTIAL ZERO EMISSIONS VEHICLES AND ZERO EMISSIONS VEHICLES	
EMISSIONS (TONS/DAY):		
ANNUAL AVERAGE	2008	2023
VOC INVENTORY	165.9	49.0
VOC REDUCTION		<u>TBD*</u>
VOC REMAINING		TBD
NOX INVENTORY	167.8	40.7
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
CO INVENTORY	1,641.9	462.6
CO REDUCTION		<u>TBD*</u>
CO REMAINING		TBD
PLANNING INVENTORY (SUMMER FOR VOC AND NOX; WINTER FOR CO)	2008	2023
VOC INVENTORY	169.9	51.1
VOC REDUCTION		<u>TBD*</u>
VOC REMAINING		TBD
NOX INVENTORY	149.4	36.3
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
CO INVENTORY	1,621.0	454.2
CO REDUCTION		<u>TBD*</u>
CO REMAINING		TBD
CONTROL COST:	TBD. MINIMUM INCENTIVES FUNDING - \$5,000,000/YEAR	
IMPLEMENTING AGENCY:	CARB, SCAQMD	

* Emission reductions will be determined after projects are identified and implemented.

DESCRIPTION OF SOURCE CATEGORY

The purpose of this early action measure is to seek emission reductions from existing passenger cars, sports utility vehicles, and other light- and medium-duty vehicles through the increased use

of partial zero-emission and zero-emission vehicles that would provide substantial improvements in emissions performance beyond current conventional gasoline and diesel vehicle technologies. This measure would continue the use of voluntary incentive programs that would facilitate the commercial deployment of plug-in hybrid-electric, battery electric, and fuel cell vehicles.

Background

Emissions from passenger vehicles continue to represent a significant portion of the emissions inventory in the South Coast Air Basin, adversely affecting regional air quality. The intent of this measure is to specifically mitigate impacts associated with passenger car emissions through early deployment of partial-zero- and zero-emission vehicles that are currently available commercially or expected to be offered commercially in the next two to three years.

Regulatory History

To address California's acute air quality problems, the federal Clean Air Act provides California the authority to adopt and enforce rules to control mobile source emissions within California. The California Air Resources Board (CARB) is the responsible agency to adopt emissions standards that are as stringent or more stringent than federal requirements.

Significant strides have been made in reducing emissions from motor vehicles through CARB's mobile source regulations that apply predominately to new vehicles. As a result, a "new" vehicle today is approximately 99% less polluting compared to a vehicle manufactured a couple of decades ago. However, on-road and off-road mobile sources account for about 70 percent of ozone precursor emissions in the State. Because of the large emissions contribution, requiring the use of advanced technology such as plug-in hybrid electric vehicle technology capable of zero-emission transportation is essential if clean air standards are to be realized, especially for in-use vehicles. In January 2012, the CARB adopted amendments to the Low Emission Vehicle (LEV) program and the Zero-Emission Vehicle (ZEV) regulation.

In addition, CARB implements a "Clean Vehicle Rebate Project" (CVRP) that provides individual vehicle incentives of up to \$2,500 for full zero-emission vehicles, \$1,500 for plug-in hybrid vehicles, \$900 for neighborhood electric vehicles, and \$900 for zero-emission motorcycles. For the 2011/2012 fiscal year, a total of \$15 million was allocated statewide.

PROPOSED METHOD OF CONTROL

This measure proposes to continue the CVRP through 2023 with a minimum number of 1,000 vehicles per year to be incentivized through the CVRP. The proposed incentives would be up to \$5,000 per vehicle. As part of this action, additional funding opportunities will be sought.

EMISSIONS REDUCTION

Emission reductions are not estimated at this time and will depend on the actual number of vehicles participating in the program.

RULE COMPLIANCE AND TEST METHODS

Not applicable.

COST EFFECTIVENESS

This proposed control measure will affect light- and medium-duty vehicles with gross vehicle weight ratings up to 8,500 lbs. The estimated funding level is \$5 million per year to incentivize a minimum of 1,000 vehicles per year.

The cost effectiveness of this control measure has not been estimated at this time. The cost effectiveness will be affected by any changes to the per vehicle incentive levels or if total funding levels are not realized.

IMPLEMENTING AGENCY

CARB is currently implementing the AB118 CVRP. This early action measure would continue the implementation of the CVRP.

REFERENCES

CARB (2012). Advanced Clean Cars Program Adoption.

CARB (2011). Grant Proposal Solicitation Air Quality Improvement Program (AQIP) Clean Vehicle Rebate Project.

**ONRD-02: ACCELERATED RETIREMENT OF OLDER
LIGHT-DUTY AND MEDIUM-DUTY VEHICLES
[VOC, NOX, CO]**

CONTROL MEASURE SUMMARY		
SOURCE CATEGORY:	GASOLINE- AND DIESEL-POWERED LIGHT- AND MEDIUM-DUTY VEHICLES UP TO 8,500 LBS GROSS VEHICLE WEIGHT	
CONTROL METHODS:	INCENTIVES PROGRAM FOR THE VOLUNTARY EARLY RETIREMENT OF OLDER LIGHT- AND MEDIUM-DUTY VEHICLES	
EMISSIONS (TONS/DAY):		
ANNUAL AVERAGE	2008	2023
VOC INVENTORY	165.9	49.0
VOC REDUCTION		<u>TBD*</u>
VOC REMAINING		TBD
NOX INVENTORY	167.8	40.7
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
CO INVENTORY	1,641.9	462.6
CO REDUCTION		<u>TBD*</u>
CO REMAINING		TBD
SUMMER PLANNING INVENTORY	2008	2023
VOC INVENTORY	169.9	51.1
VOC REDUCTION		<u>TBD*</u>
VOC REMAINING		TBD
NOX INVENTORY	149.4	36.3
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
CO INVENTORY	1,621.0	454.2
CO REDUCTION		<u>TBD*</u>
CO REMAINING		TBD
CONTROL COST:	UP TO \$2,500 PER VEHICLE RETIRED INCLUDING INCENTIVE REPLACEMENT VOUCHER. ESTIMATED PUBLIC FUNDING – \$5,000,000/YEAR	
IMPLEMENTING AGENCY:	CARB, BUREAU OF AUTOMOTIVE REPAIR, SCAQMD	

* Emission reductions will be determined after projects are identified and implemented.

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to implement a strategy to accelerate retirement of older gasoline- and diesel-powered vehicles up to 8,500 lbs. gross vehicle weight (GVW). These vehicles include passenger cars, sports utility vehicles, vans, and light-duty pick-up trucks.

Background

Light-duty vehicles are major contributors of air pollutants in the South Coast Air Basin. While vehicle miles traveled increased more than 50 percent over the last 20 years, vehicle emissions have dropped by a factor of almost three due to increasingly stringent vehicle emission standards. Yet, the light- and medium-duty vehicle fleet continues to contribute more than a third of the Basin's total emissions of ozone and particulate matter forming pollutants in part due to high emitting vehicles.

Motor vehicle emissions progressively increase as vehicles age and accumulate mileage. The causes of these emissions increases are numerous, but can be broadly categorized in terms of normal deterioration of properly functioning on-board emission control system components, emission control system malfunctions due to design flaws and/or lack of proper maintenance, and tampering. In recognition that emission reductions could occur through regular emission testing of vehicles and repair of those vehicles with high in-use emissions, Smog Check programs have been established in an attempt to ensure that vehicles stay clean as they age, but room for improvements in such programs exist. In addition, through the Bureau of Automotive Repairs (BAR) High Emitter profile, certain model year vehicles are considered inherently high emitters despite passing Smog Check.

Regulatory History

On September 23, 2004, the Governor signed AB 923 (Firebaugh) which resulted in a significant increase in incentive funding for programs that achieve emission reductions from vehicular sources and off-road engines. The legislation identified and emphasized that in-use higher emitting vehicles are sources that need additional scrutiny and control in part because of their large contribution to the fleet's total emissions. To address this, the District is implementing, under the AB923 program, pilot programs to identify and retire high emitting on-road vehicles. In addition, based on cost effectiveness guidelines, model year 1992 and older vehicles would be considered for early retirement.

CARB adopted the Enhanced Fleet Modernization Program (EFMP) Regulation in June 2009. The regulation implements the voluntary vehicle scrap and replacement voucher provisions of AB 118 (Nunez). The legislation includes \$30 million annually statewide for an Enhanced Fleet Modernization Program (EFMP). The EFMP augments the State's existing voluntary accelerated vehicle retirement program, referred to as the Consumer Assistance Program (CAP). The focus of the EFMP is to augment existing retirement programs and provide funding through vehicle replacement vouchers to retire the highest polluting vehicles in the areas with the greatest air quality problems.

PROPOSED METHODS OF CONTROL

Currently, California vehicles less than 10,000 lbs. GVW are required to undergo Smog Check testing every two years or upon change of a vehicle's ownership. Recent studies have indicated that repairs performed in conjunction with the Smog Check Test Program do not last the entire biennial cycle and result in high emitting vehicles being driven on California roadways. The current Consumer Assistance Program (CAP) operated by BAR encourages vehicle retirement for on-cycle (those vehicles within three months of their smog check test due dates) vehicles that cannot pass the Smog Check Test. Vehicles identified as high emitters that are off-cycle to the smog check test are not eligible under the CAP program implemented by BAR and the State of California. This measure would give first priority to pre-1992 model year vehicles identified as high emitters and are off-cycle to California's Smog Check Program.

The early action is to retire at a minimum, 2,000 light- and medium-duty vehicles per year to 2023. The proposed incentives would be up to \$2,500 which could include a replacement voucher under the AB 118 EFMP program.

EMISSIONS REDUCTIONS

Emission reductions are not estimated at this time and will depend on the actual number of vehicles participating in the program.

COST EFFECTIVENESS

The Carl Moyer \$17,080 per ton threshold is used to calculate the cost-effectiveness of the vehicle retirement program. Because this program is solely reliant on a volunteer participation rate by the consumers, the exact cost effectiveness of the program is difficult to assess prior to the program implementation.

IMPLEMENTING AGENCY

The implementing agencies would be the South Coast Air Quality Management District under AB 923 and guidelines set forth by CARB for the Light-Duty Vehicle Program. In addition, the EFMP would be implemented by CARB and BAR with the District's administration of the replacement voucher provisions of the EFMP regulation.

REFERENCES

CARB (2009). AB118 Enhanced Fleet Modernization Program Regulation (Car Scrap).

CARB/BAR (2010). Evaluation of the California Smog Check Program Using Random Roadside Data.

**ONRD-03: ACCELERATED PENETRATION OF
PARTIAL ZERO-EMISSION AND ZERO-EMISSION
LIGHT-HEAVY- AND MEDIUM-HEAVY-DUTY VEHICLES
[NOX, PM]**

SOURCE CATEGORY:	ON-ROAD LIGHT-HEAVY- AND MEDIUM-HEAVY-DUTY VEHICLES (8,501 LBS TO 26,001 GVWR)	
CONTROL METHODS:	ACCELERATED PENETRATION OF PARTIAL ZERO-EMISSION AND ZERO-EMISSION LIGHT-HEAVY- AND MEDIUM-HEAVY-DUTY VEHICLES	
EMISSIONS (TONS/DAY):		
ANNUAL AVERAGE	2008	2023
NOX INVENTORY	87.1	30.9
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
PM10 INVENTORY	1.3	0.30
PM10 REDUCTION		<u>TBD*</u>
PM10 REMAINING		TBD
PM2.5 INVENTORY	1.2	0.25
PM2.5 REDUCTION		<u>TBD*</u>
PM2.5 REMAINING		TBD
SUMMER PLANNING	2008	2023
INVENTORY		
NOX INVENTORY	81.6	29.1
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
CONTROL COST:	TBD. ESTIMATED PUBLIC FUNDING – \$25 MILLION PER YEAR	
IMPLEMENTING AGENCY:	CARB AND SCAQMD	

* Emission reductions will be determined after projects are identified and implemented.

DESCRIPTION OF SOURCE CATEGORY

Background

Emissions from heavy-duty diesel mobile sources continue to represent a significant and increasing portion of the emissions inventory in the South Coast Air Basin, adversely affecting regional air quality. The two primary pollutants resulting from diesel fuel combustion are particulate matter (PM) and oxides of nitrogen (NOx). PM typically constitutes the visible emissions from diesel engine exhaust, and it contains over 40 known cancer-causing substances. In 1998, California identified diesel PM as a toxic air contaminant based on its potential to cause cancer. In March 2005, the District released a report titled, “The Multiple Air Toxic

Exposure Study in the South Coast Air Basin.” This report concluded that about 85 percent of the carcinogenic risk associated with breathing ambient air can be attributed to diesel particulate emissions. Diesel engines also emit significant quantities of NO_x, which is a precursor to ozone and secondary particulate matter formation. Additional control on diesel engine emissions is essential for attainment of ozone and PM ambient air quality standards, as well as mitigating its toxic air quality impact.

The intent of this measure is to seek greater emission reduction benefits through the early deployment of partial zero-emission and zero-emission light-heavy- and medium-heavy-duty vehicles with gross vehicle weight ratings (GVWR) from 8,501 lbs to 26,000 lbs.

Regulatory History

The regulation of emissions from heavy-duty diesel mobile emission sources is the responsibility of CARB and U.S. EPA. Specifically, heavy-duty vehicle engines are subject to specific emission standards pursuant to state and/or federal requirements. Emission standards for new diesel engines powering heavy-duty vehicles were first established for the 1973 model-year and have gradually increased in stringency over time. The current most stringent set of heavy-duty engine emission standards has been established by CARB and U.S. EPA for 2010 and subsequent model-years, which includes a 0.2 g/bhp-hr NO_x emission standard.

In December 2008, CARB adopted the Truck and Bus Regulation which applies to a significant number of heavy-duty vehicles with gross vehicle weight ratings of 14,001 lbs and greater. Heavier trucks (26,001 lbs and greater) must meet regulatory requirements beginning January 1, 2012. Lighter trucks (14,001 lbs to 26,000 lbs) must meet regulatory requirements beginning January 1, 2015.

Currently, heavy-duty diesel engine manufacturers are introducing electric-hybrid systems in medium-heavy-duty on-road vehicle applications. Such systems in conjunction with a 2010-compliant conventionally-fueled or alternative-fueled engine can potentially result in additional NO_x emissions benefits. Many of the hybrid systems introduced to-date are for lighter vehicles with gross vehicle weight ratings from 8,501 to 26,000 lbs.

PROPOSED METHOD OF CONTROL

This measure seeks additional emission reductions through the early introduction of electric hybrid vehicles. The proposed actions would continue the state hybrid truck and bus voucher incentive project (HVIP) which accelerates the deployment of hybrid and zero-emission medium-heavy-duty vehicles in the South Coast Air Basin.

Incentives of up to \$25,000 per vehicle are proposed with a minimum target of 1,000 hybrid and zero-emission vehicles funded each year to 2023. The proposed funding would place the highest priority towards zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode.

EMISSIONS REDUCTION

Emission reductions are not estimated at this time and will depend on the actual number of vehicles participating in the program.

RULE COMPLIANCE AND TEST METHODS

Not Applicable.

COST EFFECTIVENESS

This proposed control measure will affect heavy-duty engine manufacturers, heavy-duty diesel truck owners, and heavy-duty diesel fleet operators. Costs of replacement engines vary depending on the specific model and vehicle application, and an evaluation would need to be conducted to determine the specific types of trucks and engine models that would be primarily affected by this measure, as well as prioritizing vehicle applications on a cost-effectiveness basis for engine or vehicle replacement. The proposed incentives of \$25,000 per vehicle will help offset the capital cost of the vehicles.

IMPLEMENTING AGENCY

CARB, SCAQMD or U.S. EPA could jointly or separately implement incentive programs that would help offset the costs associated with new hybrid or zero-emission truck purchase, engine repower, and/or retrofit kit installation.

REFERENCES

SCAQMD (2005). Multiple Air Toxic Exposure Study, MATES-III.

CARB (2009). Air Quality Improvement Program - Hybrid Truck and Bus Voucher Incentive Program.

**ONRD-04: ACCELERATED RETIREMENT OF
OLDER ON-ROAD HEAVY-DUTY VEHICLES
[NOX, PM]**

SOURCE CATEGORY:	ON-ROAD HEAVY-DUTY DIESEL VEHICLES (26,001 LBS AND GREATER GVWR)	
CONTROL METHODS:	ACCELERATED REPLACEMENT OF EXISTING HEAVY-DUTY VEHICLES WITH VEHICLES MEETING 2010 STANDARDS AND RETROFITTING/REPOWERING EXISTING HEAVY-DUTY VEHICLES TO ACHIEVE LOWER EMISSION LEVELS	
EMISSIONS (TONS/DAY):		
ANNUAL AVERAGE	2008	2023
NOX INVENTORY	166.7	22.4
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
PM10 INVENTORY	6.2	0.60
PM10 REDUCTION		<u>TBD*</u>
PM10 REMAINING		TBD
PM2.5 INVENTORY	5.7	0.50
PM2.5 REDUCTION		<u>TBD*</u>
PM2.5 REMAINING		TBD
SUMMER PLANNING INVENTORY	2008	2023
NOX INVENTORY	158.1	20.9
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
CONTROL COST:	TBD. ESTIMATED PUBLIC FUNDING – \$50 MILLION PER YEAR	
IMPLEMENTING AGENCY:	CARB AND SCAQMD	

* Emission reductions will be determined after projects are identified and implemented.

DESCRIPTION OF SOURCE CATEGORY

Background

Emissions from heavy-duty diesel mobile sources continue to represent a significant portion of the emissions inventory in the South Coast Air Basin, adversely affecting regional air quality. The two primary pollutants resulting from diesel fuel combustion are particulate matter (PM) and oxides of nitrogen (NOx). PM typically constitutes the visible emissions from diesel engine exhaust, and it contains over 40 known cancer-causing substances. In 1998, California identified diesel PM as a toxic air contaminant based on its potential to cause cancer. In March 2005, the District released a report titled, “The Multiple Air Toxic Exposure Study in the South

Coast Air Basin.” This report concluded that about 85 percent of the carcinogenic risk associated with breathing ambient air can be attributed to diesel particulate emissions. Diesel engines also emit significant quantities of NO_x, which is a precursor to ozone and secondary particulate matter formation. Additional control of diesel engine emissions is essential for attainment of ozone and PM ambient air quality standards, as well as mitigating its toxic air quality impact.

Over the past decade, warehouse and distribution centers have been steadily increasing in size and number throughout the region. The greatest growth in warehouses/distribution centers has been in the Riverside and San Bernardino areas. Based on the Southern California Association of Governments, by 2035 over 1 billion square feet of warehousing will be needed in the Southern California area to support goods movement activities (SCAG, 2010).

Distribution centers and/or warehouses are facilities that serve as a distribution point for the transfer of goods. Such facilities include cold storage warehouses, goods transfer facilities, and transloading facilities, where imported goods are sorted, tagged, repackaged and prepared for retail distributions. These operations involve trucks, trailers, shipping containers, and other equipment with diesel engines. A warehouse/distribution center can be comprised of multiple centers or warehouse/distribution centers within an area. The size can range from 100,000 square feet to well over a million square feet. Depending on the size and type, a warehouse/distribution center may have hundreds of diesel trucks a day that deliver, load, and/or unload goods, generally operating seven days a week. To the extent that these trucks are transporting perishable goods, they are equipped with diesel-powered transport refrigeration units (TRUs) or TRU generator sets. The activities associated with delivering, storing, and loading freight produces NO_x and PM emissions, including diesel particulate matter (DPM).

The intent of this control measure is to seek additional emission reductions from existing heavy-duty vehicles with gross vehicle weight ratings (GVWR) greater than 26,000 lbs through an accelerated vehicle replacement program with new 2010 and later model year engines. In addition, for heavy-duty vehicles not replaced with new models, existing vehicle engines would be repowered with commercially available engines meeting 2010 emission standards or modified with retrofit kits to achieve lowest possible emission levels. Given the exceedences of the federal 24-hour fine particulate (PM_{2.5}) ambient air quality standard in the Mira Loma area, the proposed measure will place priority to replace older heavy-duty vehicles serving warehouse and distribution centers located within a 10 mile radius of the District’s Mira Loma air monitoring station.

Regulatory History

The regulation of emissions from heavy-duty diesel mobile emission sources is the responsibility of CARB and U.S. EPA. Specifically, heavy-duty vehicle engines are subject to specific emission standards pursuant to state and/or federal requirements. Emission standards for new diesel engines powering heavy-duty vehicles were first established for the 1973 model-year and have gradually increased in stringency over time. The current most stringent set of heavy-duty engine emission standards has been established by CARB and U.S. EPA for 2010 and subsequent model-years, which includes a 0.2 g/bhp-hr NO_x emission standard.

In December 2008, CARB adopted the Truck and Bus Regulation which applies to a significant number of heavy-duty vehicles with gross vehicle weight ratings of 14,001 lbs and greater. Heavier trucks (26,001 lbs and greater) must meet regulatory requirements beginning January 1, 2012. Lighter heavy-duty trucks (14,001 lbs to 26,000 lbs) must meet regulatory requirements beginning January 1, 2015.

The Carl Moyer Memorial Air Quality Standards Attainment Program is in its 13th year. The Carl Moyer Program was placed into state law and is the enabling mechanism to fund the cleanup of older diesel vehicles and equipment. At its initial inception, the Carl Moyer Program was funded annually through a state budget line item that must be approved by the state legislature. In 2004, the state legislature approved Senate Bill (SB) 1107, which allowed for the funding of the Carl Moyer Program. In addition, the state legislature passed Assembly Bill (AB) 923, which provides funding until 2015 and allowed California local air districts to opt into a local Moyer Program.

The SB1107 funds are generated from new vehicle sales. In lieu of having Smog Check inspections in the first four years, new vehicles are now subject to their first Smog Check inspection after six years. A fee of \$48 is assessed at the time of vehicle purchase, which is typically less expensive than the Smog Check inspection and certificate. Half of the \$48 is directed to CARB, who distributes the funds among local air districts for implementation of the Carl Moyer Program.

The AB923 program has two components. One is a tire disposal fee which generates about \$10 million a year and is distributed by CARB among the local air districts. The other is a \$2 Department of Motor Vehicle registration fee that each local air district's Board has the authority to approve independently and generate funds from vehicles registered within their respective district boundaries. Fees generated are used for both the Carl Moyer and the School Bus Programs.

In 2006, California voters approved a bond measure called Proposition 1B. The bond measure would generate \$19 billion of which \$2 billion would go towards improving California's freight transportation infrastructure, \$1 billion towards the cleaning up older diesel vehicles, and \$200 million to school bus retrofits. The funding is predicated on bond sales. To-date, close to 2,000 older diesel trucks have been replaced with either newer diesel trucks or alternative fuel trucks.

PROPOSED METHOD OF CONTROL

This measure seeks additional emission reductions from older, pre-2010 heavy-duty vehicles beyond the emission reductions targeted in CARB's Truck and Bus Regulation. In addition, the proposed action is to direct a portion of available public funding to assist in replacing older diesel trucks serving warehouse and distribution centers to a truck with an engine meeting on-road heavy-duty exhaust emission standards and replacing older cargo handling equipment with equipment meeting Tier 4 off-road exhaust emission standards by 2015. The incentive programs will place the highest priority on on-road vehicles that provide at least 75% of their service to warehouse and distribution centers in the Mira Loma region and have gross vehicle weight ratings of 26,001 lbs or greater.

A significant number of heavy-duty trucks have been replaced through Proposition 1B Goods Movement Emission Reduction Program funding, the Carl Moyer Program, and other local incentives programs. This measure would continue these programs through 2023. In addition, this measure would seek a provision from the State for the District to implement a SOON-like (Surplus Off-Road Option for NOx) provision for the largest on-road truck fleets operating in the South Coast Air Basin.

While the Truck and Bus Regulation will ultimately require a majority of the heavy-duty trucks to meet 2010 heavy-duty exhaust emission standards by 2023, funding programs, which partially offset the costs, are typically made available to fleets with 10 or less trucks. However, many of these smaller fleets are not able to provide the remaining capital necessary to purchase a 2010-compliant truck and thus, cannot take advantage of funding opportunities. As such, the District staff believes a SOON-like program for the largest on-road truck fleets can lead to greater emission reductions earlier and complement traditional funding programs.

Examples of SOON-like programs include the San Pedro Bay Ports Clean Truck Program where the Ports adopted programs to incentivize the use of 2007 or cleaner trucks entering the Ports. Revenues from the Clean Truck Program are used to help fund cleaner trucks. A SOON-like program implemented regionwide would require the largest on-road truck fleets to access incentives funding to replace older model trucks earlier than required or to replace older model trucks which would otherwise be exempt from the regulation.

EMISSIONS REDUCTION

Emission reductions are not estimated at this time and will depend on the actual number of vehicles participating in the program.

RULE COMPLIANCE AND TEST METHODS

CARB, subject to existing and future waiver decisions by U.S. EPA, has the authority to establish emission standards and certification requirements, and verify compliance with these requirements, for on-road vehicles and engines sold in California. In addition, CARB has the authority to establish requirements for the verification of retrofit kits that would be used to modify heavy-duty diesel engines. Compliance with requirements of an incentive program(s) used to offset the costs of new heavy-duty vehicles, engines, or retrofit kits could be jointly or separately administered by SCAQMD or CARB.

COST EFFECTIVENESS

The cost effectiveness of the proposed action is not estimated. Recent funding for goods movement related vehicles under the Proposition 1B Air Quality Improvement Funds provided at least \$35,000 per truck replaced.

IMPLEMENTING AGENCY

CARB, SCAQMD or U.S. EPA could jointly or separately implement incentive programs that would help offset the costs associated with new truck purchase, engine repower, and/or retrofit kit installation. In particular, there is a need to incentivize emission reductions from interstate trucks registered outside of California, but operating substantially within California.

REFERENCES

CARB (2010). Amendments to the On-Road Truck and Bus Regulation.

CARB (2010). Proposition 1B Goods Movement Emissions Reduction Program: Final Guidelines for Implementation.

**ONRD-05: FURTHER EMISSION REDUCTIONS FROM
HEAVY-DUTY VEHICLES SERVING NEAR-DOCK RAILYARDS
[NOX, PM]**

SOURCE CATEGORY: ON-ROAD HEAVY-DUTY DIESEL VEHICLES (26,001 LBS AND GREATER GVWR) TRANSPORTING CONTAINERS BETWEEN MARINE PORTS AND NEAR-DOCK RAILYARDS		
CONTROL METHODS: ACCELERATED REPLACEMENT OF UP TO 1,000 EXISTING HEAVY-DUTY VEHICLES WITH ZERO-EMISSION VEHICLES OR ZERO-EMISSION CONTAINER MOVEMENT SYSTEMS		
EMISSIONS (TONS/DAY):		
ANNUAL AVERAGE	2008	2023 (2023 – 2007 SIP)*
NOX INVENTORY	3.17	0.75 (0.88)
NOX REDUCTION		<u>0.75 (0.88)</u>
NOX REMAINING		0.00 (0.00)
PM10 INVENTORY	0.13	0.027 (0.03)
PM10 REDUCTION		<u>0.027 (0.03)</u>
PM10 REMAINING		0.00 (0.00)
PM2.5 INVENTORY	0.12	0.025 (0.03)
PM2.5 REDUCTION		<u>0.025 (0.03)</u>
PM2.5 REMAINING		0.00 (0.00)
SUMMER PLANNING INVENTORY	2008	2023
NOX INVENTORY	3.01	0.72 (0.89)
NOX REDUCTION		<u>0.72 (0.89)</u>
NOX REMAINING		0.00 (0.00)
CONTROL COST:	TBD	
IMPLEMENTING AGENCY:	CARB, SAN PEDRO BAY PORTS, SCAQMD	

* Emission reductions provided are based on the 2012 AQMP emissions inventory. Values provided in parentheses are based on the 2007 SIP emissions inventory projections for 2023.

DESCRIPTION OF SOURCE CATEGORY

Background

Intermodal container movement is the movement of containers directly between the marine ports and a railyard. There are three types of railyards used for intermodal: on-dock railyards, near-dock railyards, and off-dock railyards. On-dock railyards are located on marine terminals, near-dock railyards are less than five miles from marine terminals, and off-dock railyards are more than five miles from marine terminals. Heavy-duty diesel trucks are currently used to transport containers from marine terminals to near- and off-dock railyards. These trucks are a significant source of NOx and PM emissions.

The Intermodal Container Transfer Facility (ICTF) operated by Union Pacific (UP) is presently the only near-dock railyard. ICTF serves both the Ports of Los Angeles and Long Beach. In January 2009, the Ports of Los Angeles and Long Beach released a California Environmental Quality Act (CEQA) Notice of Preparation to double the throughput at ICTF. In addition, Burlington Northern Santa Fe (BNSF) Railway is proposing to build the Southern California International Gateway (SCIG) facility that will be a near-dock railyard directly south of the ICTF. ICTF and the proposed SCIG facility are located less than five miles from the Ports of Los Angeles and Long Beach.

Regulatory History

In December 2007, the California Air Resources Board (ARB) adopted a regulation to reduce emissions from drayage trucks operating at California's ports and intermodal railyards. This regulation was amended in 2010. The drayage truck regulation applies to diesel-fueled drayage trucks having a gross vehicle weight rating greater than 26,000 pounds operating at specified California ports, intermodal railyards, or both. The regulation sets two compliance deadlines that affect all drayage trucks operating specifically at California's ports and intermodal railyards:

- Phase 1: By December 31, 2009, all pre-1994 model year (MY) engines are to be retired or replaced with 1994 and newer MY engines. Furthermore, all drayage trucks with 1994 – 2003 MY engines are required to achieve an 85 percent PM emission reduction through the use of an approved Level 3 verified diesel emission control strategy (VDECS).
- Phase 2: By December 31, 2013, all trucks would be required to further reduce emissions to meet the 2007 MY California or federal heavy-duty diesel-fueled on-road emission standards.

CARB's On-Road Heavy-Duty Diesel Truck and Bus Rule incorporates the Drayage Truck Regulation and will further require that trucks operating at the Ports meet 2010 federal on-road standards by 2021.

In 2006, the Ports of Los Angeles and Long Beach adopted the San Pedro Bay Ports Clean Air Action Plan (CAAP), a planning and policy document that sets goals and implementation strategies to reduce air emissions and health risks associated with Port operations. One measure contained in the CAAP reduces emissions from on-road heavy-duty trucks used to dray goods to and from the Ports. CAAP Control Measure HDV-1: Performance Standards for On-Road Heavy Duty Vehicles (Clean Truck Program) requires all on-road trucks entering the Ports comply with the following:

- October 1, 2008: All pre-1989 trucks are banned from entering the Port.
- January 1, 2010: 1989-1993 trucks will be banned, in addition to 1994-2003 trucks that have not been retrofitted to achieve 85 percent DPM reduction and 25 percent NOx reduction through use of a CARB approved Level 3 VDECS.

- January 1, 2012: All trucks that do not meet the 2007 federal on-road standards will be banned from the Ports starting in 2012; CARB's Drayage Truck Regulation aligns with the Clean Truck Program.

When fully implemented, this CAAP measure and the statewide Drayage Truck Regulation will reduce emissions from drayage trucks accessing current and future near-dock railyards, such as the ICTF and SCIG railyards. However, due to the large number of trucks trips to the ICTF and potential future near-dock railyards, additional emission reductions are needed from trucks.

PROPOSED METHOD OF CONTROL

This control measure calls for CARB to adopt a regulation or through other enforceable mechanisms, which further reduces emissions from near-dock railyard drayage trucks. The regulation would require by 2020, all containers transported between the marine ports and the near-dock railyards to use zero-emission technologies that do not create tailpipe emissions from the vehicle or systems that transport containers by regulating truck emissions and potentially allowing alternative technologies. Zero-emission technologies are well suited for transporting containers to near-dock railyards because of their short distance to and from marine terminals. In-lieu of a regulation or to complement a regulation, other enforceable mechanisms may achieve the objectives of the control measures. The Ports of Los Angeles and Long Beach have successfully implemented the Clean Truck Program as mentioned above. A second phase of such a program could be implemented to bring zero-emission trucks or hybrid trucks with sufficient all electric range to serve the near-dock railyards. In addition, incentives funding programs will encourage the deployment of such zero-emission trucks.

Any of several types of zero-emission container movement systems could be used to implement this measure. Zero-emission container movement systems include, but are not limited to, on-road technologies such as battery-electric trucks, fuel cell trucks, hybrid-electric trucks with all-electric range (AER) and zero-emission hybrid or battery-electric trucks with "wayside" power (such as electricity from overhead wires). The measure could also be implemented with the deployment of zero-emission fixed guideway systems such as electric, maglev or linear synchronous motor propulsion or any other technologies that result in zero-emission track miles.

Such systems are not currently in use for full-scale port to railyard operations and, depending on the technology, may require different levels of additional development and optimization. However, a variety of these technologies are being demonstrated, and there is substantial evidence that they can be made commercially available prior to 2020, particularly if regulations create a positive signal to technology developers by requiring the use of zero-emission technologies.

In addition, many of these zero-emission technologies are expected to be operationally feasible to serve the ports. For example, electric trucks with adequate zero-emission range, power and reliability – such as are being developed and demonstrated at the Ports could fit into current operating procedures as a replacement for fossil fuel-powered trucks. Drayage service to and from near-dock railyards is particularly conducive to implementation of zero-emission trucking technologies because of the relatively short distance involved (less than five miles) and because

near-dock railyards could be served by a relatively limited number of trucks compared to the total number serving the ports and region.

Zero-emission trucks can be powered by grid electricity stored in a battery, by electricity produced onboard the vehicle through a fuel cell, or by “wayside” electricity from outside sources such as overhead catenary wires, as is currently used for transit buses and heavy mining trucks. All technologies eliminate fuel combustion and utilize electric drive as the means to achieve zero-emission and higher system efficiency compared to conventional fossil fuel combustion technology. Hybrid-electric trucks with all electric range can provide zero emission in certain corridors and flexibility to travel extended distances (e.g. outside the region) powered by alternative fuels, conventional fuels, or fuel cells.

EMISSIONS REDUCTION

The proposed control measure would require zero-emission technologies to replace up to 1,000 heavy-duty trucks that serve the San Pedro Bay Ports and the near-dock railyards. Implementation of this control measure is expected to result in 0.75 and 0.025 tons/day of NOx and PM emission reductions.

RULE COMPLIANCE AND TEST METHODS

Compliance would be based on monitoring, recordkeeping, and reporting requirements that have been established in existing regulations. In addition, compliance would be verified through inspections and other recordkeeping and reporting requirements.

COST EFFECTIVENESS

Not determined.

IMPLEMENTING AGENCY

CARB would adopt a new regulation or amend the existing Drayage Truck Regulation to require zero-emission on-road technologies or fixed guideway systems, if feasible. This control measure should be adopted by CARB no later than 2015, with full implementation by 2020.

REFERENCES

SCAQMD (2012). Comment letter on Port of Los Angeles Draft Environmental Impact Report for the Southern California International Gateway (SCIG) Project.

GROUP 2

OFF-ROAD MOBILE SOURCES

**OFFRD-01: EXTENSION OF THE SOON PROVISION FOR
CONSTRUCTION/INDUSTRIAL EQUIPMENT
[NO_x]**

CONTROL MEASURE SUMMARY		
SOURCE CATEGORY:	OFF-ROAD DIESEL-FUELED CONSTRUCTION, INDUSTRIAL EQUIPMENT, AIRPORT GROUND SUPPORT EQUIPMENT, AND DRILLING EQUIPMENT	
CONTROL METHODS:	ACCELERATED TURNOVER OR RETROFIT OF OLDER EQUIPMENT AND ENGINES	
EMISSIONS (TONS/DAY):		
ANNUAL AVERAGE	2008	2023*
NOX INVENTORY	37.1	15.91
NOX REDUCTION		<u>7.47</u>
NOX REMAINING		8.44
SUMMER PLANNING INVENTORY	2008	2023
NOX INVENTORY	37.1	15.91
NOX REDUCTION		<u>7.47</u>
NOX REMAINING		8.44
CONTROL COST:	TBD. FUNDING FROM SOON – UP TO \$30 MILLION PER YEAR	
IMPLEMENTING AGENCY:	SCAQMD	

* Emission reductions provided are based on the 2012 AQMP emissions inventory. The emissions inventory in the 2007 SIP was updated as part of the Final Approval of the 2007 SIP for the 1997 8-Hour Ozone Standards (77 FR 12674) and is the same inventory used for the 2012 AQMP.

DESCRIPTION OF SOURCE CATEGORY

The purpose of this measure is to promote faster turnover of older in-use construction and industrial diesel engines.

Background

In 2023, off-road equipment is the second largest source category of NO_x emissions and accounts for 14 percent of the total NO_x emissions in the South Coast Air Basin. Heavy-duty construction, industrial, airport ground support (GSE), and drilling equipment are eligible for participation in the District's Surplus Off-road Opt-in for NO_x (SOON) program and represent almost 40 percent of the off-road equipment category NO_x emissions. In 2007, CARB adopted the In-Use Off-Road Diesel-Fueled Fleets Regulation that reduces primarily PM and secondarily NO_x emissions through retrofit controls, engine repowers, equipment replacement and fleet reduction. NO_x emissions reduction of about 17 percent is expected to be achieved with full implementation of the regulation by 2023.

Regulatory History

The Federal Clean Air Act prohibits states from regulating emissions from new engines used in construction and farming equipment less than 175 horsepower. Diesel engines greater than 175 horsepower are regulated by CARB. In September 1996, CARB, U.S. EPA, and the diesel engine manufacturers signed a statement of principles, which called for a cooperative effort to reduce NO_x, VOC, and PM emissions by more than 60 percent. In August 1998, U.S. EPA adopted new emission standards pertaining to off-road diesel engines. Subsequently, in January 2000 and in December 2004, CARB adopted amendments to existing California emission standards to harmonize with the federal requirement. These amendments included a tiered approach starting from 1996 for Tier 1 and concluding in 2015 with all engines required to meet Tier 4 standards.

In order to accelerate the introduction of new low emission equipment, CARB adopted the In-Use Off-Road Diesel-Fueled Fleets Regulation (Off-Road rule) in 2007. The rule applies to diesel fueled construction, mining, industrial, airport ground support equipment, and mobile oil drilling equipment and established annual fleet average emission targets. Fleets that do not meet the fleet average in any year are required to “turnover,” (i.e., retire, replace, retrofit, or repower) a specified percentage of their horsepower. The Off-Road rule was amended in 2011 which relaxed the target emission reductions and set the initial date for vehicle compliance to 2014.

As part of the statewide regulation, CARB adopted the SOON provision that allows air districts to opt-in to additional NO_x emissions reductions from the largest off-road fleets subject to the regulation. The District has been implementing the SOON provision since 2008. The District Governing Board set aside up to \$30 million per year to implement the SOON provision.

PROPOSED METHOD OF CONTROL

New off-road diesel engines are now required to meet Tier 4 emission standards. Tier 4 includes optional phase-in provisions (Interim Tier 4 standards) with relaxed standards from 2008 to 2014, depending on horsepower category. By 2015, all new off-road diesel engines between 75 hp and 750 hp, which represent most off-road construction equipment, will be required to meet exhaust emissions standards of 0.3 g/bhp-hr NO_x and 0.015 g/bhp-hr PM. To comply with these standards, advanced fuel injection, air induction, and after-treatment technologies are required. The emission reductions from Tier 4 engines compared to Tier 0 engines is at least 95 percent for NO_x and PM.

The long life of off-road equipment means that older, high emitting engines will remain in the off-road equipment population beyond 2020. District staff believes that using incentive programs, such as the Carl Moyer Program and the SOON Provision of the Off-Road rule, significant emission reductions could be realized by accelerating fleet turnover through equipment replacement and engine repowers.

During the last four years, the SOON program has funded close to 500 engine repowers at an average cost effectiveness of approximately \$11,000/ton NO_x reduction. The District Governing Board has allocated up to \$30,000,000 per year for the program. This measure proposes to extend the current SOON Program beyond 2014 to 2023.

EMISSIONS REDUCTION

While the NO_x emissions from the off-road category are projected to be around 44 tpd in 2023, emissions from vehicles eligible to participate in the SOON program are 15.91 tpd. Reductions from this proposed measure are estimated to be 7.47 tpd for NO_x.

COST EFFECTIVENESS

The SOON program has funded approximately 500 engine repowers during the last four years at an average cost effectiveness of approximately \$11,000/ton NO_x reduced. While the cost of Tier 4i and Tier 4 engine repowers are expected to be higher, the cost effectiveness is expected to remain the same because of the lower NO_x emission standards of the Tier 4 engines. This measure proposes to extend the SOON program with proposed funding of up to \$30,000,000 per year and is expected to repower at least 1,200 Tier 0 engines to Tier 4 by 2023 resulting in 7.47 tpd of NO_x reductions.

IMPLEMENTING AGENCY AND ISSUES

The District would implement the SOON provision of the In-Use Off-Road Diesel-Fueled Fleets Regulation.

REFERENCES

- CARB (2010). Emissions Inventory Model for Baseline and Final Proposal (Access database) – OSM vehicle scenario table; total population adjusted for 2012 Growth Factor of 1.046. Database available at http://www.arb.ca.gov/msprog/ordiesel/offroad_1085.htm
- CARB (2010). Initial Statement of Reasons – Proposed Amendments to the Regulation for In-Use Off-road Diesel Fueled Fleets.
- CARB (2011). Final Regulation Order Dec 2011- Regulation for In-Use Off-Road Diesel-Fueled Fleets.

**OFFRD-02: FURTHER EMISSION REDUCTIONS
FROM FREIGHT LOCOMOTIVES*
[NOX, PM]**

CONTROL MEASURE SUMMARY		
SOURCE CATEGORY:	LOCOMOTIVE ENGINES (ALL CLASSES EXCEPT PASSENGER)	
CONTROL METHODS:	ACCELERATED REPLACEMENT OF EXISTING LOCOMOTIVE ENGINES MEETING TIER 4 OR CLEANER EXHAUST STANDARDS	
EMISSIONS (TONS/DAY)*:		
ANNUAL AVERAGE	2008	2023 (2023 – 2007 SIP)*
NOX INVENTORY	22.12	17.8 (22.6)
NOX REDUCTION		<u>12.7 (16.6)</u>
NOX REMAINING		5.1 (6.0)
PM10 INVENTORY	0.67	0.41 (0.83)
PM10 REDUCTION		<u>0.34 (0.67)</u>
PM10 REMAINING		0.07 (0.16)
PM2.5 INVENTORY	0.62	0.38 (0.76)
PM2.5 REDUCTION		<u>0.32 (0.62)</u>
PM2.5 REMAINING		0.06 (0.14)
SUMMER PLANNING		
INVENTORY	2008	2023
NOX INVENTORY	22.12	17.8 (22.6)
NOX REDUCTION		<u>12.7 (16.6)</u>
NOX REMAINING		5.1 (6.0)
CONTROL COST:	TBD	
IMPLEMENTING AGENCY:	CARB, U.S. EPA, AND SAN PEDRO BAY PORTS	

* Emission reductions provided are based on the 2012 AQMP emissions inventory. Values provided in parentheses are based on the 2007 SIP emissions inventory projections for 2023. The reductions will not be resubmitted as part of the 2012 AQMP SIP since the commitment is already contained in the approved 2007 SIP for the 8-hour ozone ambient air quality standard.

DESCRIPTION OF SOURCE CATEGORY

Background

Diesel-electric locomotives have a large diesel engine (main traction engine) for generating electric power which in turn drives electric motors in each axle. Locomotives can be grouped into three major categories: switch or yard locomotives, medium horsepower (MHP) locomotives, and interstate line haul locomotives. Switch or yard locomotives range in sizes from 1,006 to 2,300 horsepower (hp), and are generally used within railyards to assemble

railcars to form a train. They are also, in limited cases, used in short local haul services. MHP locomotives range from 2,300 to 3,800 hp, and are used in passenger and various local and intrastate freight line haul locomotive operations. The small-size MHP locomotives ranging in sizes from 2,301 to 2,999 hp are used in local service and as large switch locomotives. The mid-size MHP locomotives (3,000 to 3,300 hp) perform local and regional short line-haul services, or provide additional power to assist trains over steep grades. The large-size MHP locomotives (3,301 to 3,800 hp) are generally used for intrastate or regional line haul locomotive operations. Interstate line haul locomotives are high power locomotives with over 4,000 hp, and are used to move freight over long distances and many states.

CARB estimates that about 139 switchers, 150 MHP, and 200 interstate line haul locomotives operate within the South Coast Air Basin at any given time. Locomotives contributed approximately 22.1 tons per day of NO_x and 0.62 ton per day of PM_{2.5} emissions to the South Coast Air Basin emissions inventory in 2008. The U.S. EPA locomotive regulations, CARB diesel fuel regulation, and the 1998 Memorandum of Understanding (MOU) between CARB, Union Pacific Railroad Company (UP), and Burlington Northern Santa Fe Railway Company (BNSF) have collectively produced reductions in locomotives emissions from 2000 to 2010. CARB projected freight locomotives to contribute 17.8 tons per day in 2023 to the South Coast Air Basin's annual average NO_x emissions inventory.

Regulatory History

In December 1997, the U.S. EPA published emission standards for diesel locomotives. These standards included Tier 0 standards for 1973-2001 uncontrolled locomotives upon rebuilding of their diesel engines; more stringent Tier 1 standards for new 2002-2004 locomotives; and modestly stringent Tier 2 standards for 2005 and newer locomotives. In 2008, the U.S. EPA adopted a three-part regulation to further reduce emissions from existing locomotive engines, reduce idling emissions, and introduce new generations of clean locomotives. First, locomotives originally manufactured after 1972 and powered by Tier 0, Tier 1, and Tier 2 engines are required to meet new emissions standards when the locomotives are remanufactured. Second, newly-built line-haul and switch locomotives are subject to a different set of stringent near-term (Tier 3) and longer-term (Tier 4) emissions standards. Tier 3 standards are already effective, and Tier 4 standards will be effective beginning in 2015. Lastly, newly-built and remanufactured locomotives are also required to be equipped with an Automatic Engine Stop/Start System capable of shutting-down a locomotive after idling for no more than 30 minutes continuously. This three-part regulatory approach is expected to achieve up to 22 percent NO_x and 63 percent PM reductions from remanufactured locomotives, compared to their corresponding current standards. Additionally, locomotives powered by Tier 3 or Tier 4 engines will achieve up to 83 percent NO_x and 87 percent PM reductions, compared to engines meeting the current Tier 2 standards

Besides the federal emission requirements for locomotives, CARB has signed two memorandum of understandings (MOU) with the two Class 1 freight railroads operating in California, Burlington Northern Santa Fe Railway (BNSF) and Union Pacific Railroad (UP). The first agreement, the South Coast MOU, was signed in 1998. Among other features, it commits the two Class 1 railroads to meeting Tier 2 NO_x standards, on average, starting in 2010 with their locomotives operating in the South Coast Air Basin. The second CARB agreement, the Rail

Yard Agreement, was signed in 2005. It calls upon the two Class 1 railroads to reduce diesel emissions in and around railyards in California including a statewide locomotive idling limitation program, increase use of low-sulfur diesel for locomotives fueled in California, and a visible emissions detection and repair program.

In 2010, the Ports of Los Angeles and Long Beach updated the San Pedro Bay Ports Clean Air Action Plan that includes a measure calling nearly all locomotives entering the Ports and nearby intermodal yards to meet an emissions goal of Tier 4 by 2020.

PROPOSED METHOD OF CONTROL

The proposed measure carries forward the freight locomotive control measures from the 2007 SIP. The measure calls for replacing existing locomotive engines with Tier 4 engines beginning 2015 such that by 2023, there will be at least 95% Tier 4 locomotives operating in the South Coast Air Basin. CARB would seek further emission reductions from freight locomotives through enforceable mechanisms within its authority. In addition, the Ports as landlords of the property which the near-dock railyards operate have the ability to negotiate (either through lease agreements or environmental mitigation measures) the use of Tier 4 locomotives to achieve the emission reductions provided in this measure. As part of the proposed efforts, the District and CARB will work with U.S. EPA to develop additional enforceable mechanisms to ensure that the proposed control measure is fully implemented by 2023.

EMISSIONS REDUCTION

It is estimated that by 2023, this measure would reduce NO_x by 70 percent and direct PM_{2.5} by about 75 percent. Full implementation of the proposed control measure would result in a 12.7 tons/day reduction in NO_x and 0.32 tons/day reduction in PM_{2.5} emissions by 2023.

COST EFFECTIVENESS

The cost-effectiveness will be determined after further discussion with CARB and railroads.

IMPLEMENTING AGENCY

U.S. EPA has the legal authority to adopt emission standards for locomotives. CARB has developed voluntary agreements with the Class I railroads for further emissions reductions. In addition, the Ports of Los Angeles and Long Beach have the ability as landlords to negotiate certain conditions on leases and other contractual arrangements, potentially including port-wide conditions.

REFERENCES

CARB (2009). Technical Options to Achieve Additional Emissions and Risk Reductions from California Locomotives and Railyards.

U.S. Environmental Protection Agency (2008). Control of Emissions of Air Pollution From Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 liters per Cylinder: Republication; Final Rule, 40 CFR Parts 9, 85, et. al.

Port of Los Angeles and Long Beach (2010). San Pedro Bay Ports Clean Air Action Plan, 2010 Update.

**OFFRD-03: FURTHER EMISSION REDUCTIONS
FROM PASSENGER LOCOMOTIVES
[NOX, PM]**

CONTROL MEASURE SUMMARY		
SOURCE CATEGORY:	LOCOMOTIVE ENGINES (PASSENGER)	
CONTROL METHODS:	ACCELERATED REPLACEMENT OF EXISTING LOCOMOTIVE ENGINES MEETING TIER 4 OR CLEANER EXHAUST STANDARDS	
EMISSIONS (TONS/DAY):		
ANNUAL AVERAGE	2008	2023
NOX INVENTORY	3.94	4.46
NOX REDUCTION		<u>2.96</u>
NOX REMAINING		1.50
PM10 INVENTORY	0.083	0.094
PM10 REDUCTION		<u>0.088</u>
PM10 REMAINING		0.006
PM2.5 INVENTORY	0.076	0.086
PM2.5 REDUCTION		<u>0.062</u>
PM2.5 REMAINING		0.024
SUMMER PLANNING INVENTORY	2008	2023
NOX INVENTORY	3.94	4.46
NOX REDUCTION		<u>2.96</u>
NOX REMAINING		1.50
CONTROL COST:	THE COST-EFFECTIVENESS OF THIS MEASURE WILL VARY DEPENDING ON THE TYPE OF CONTROL EQUIPMENT. THE AVERAGE COST-EFFECTIVENESS IS ESTIMATED TO BE AROUND \$5,000/TON.	
IMPLEMENTING AGENCY:	SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY (METROLINK)	

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to promote earlier and cleaner replacement or upgrade of existing passenger locomotives to meet Tier 4 locomotive emission standards.

Background

Diesel-electric locomotives have a large diesel engine (main traction engine) for generating electric power which in turn drives electric motors in each axle. Passenger locomotives have engines with about 3,800 horsepower and four drive axles. U.S. EPA emission standards affect 1973-2001 locomotives upon engine rebuild and new 2002 and later locomotives. Locomotives remain in commercial service from 25 to 40 years.

Two passenger railroads, Metrolink and Amtrak, operate passenger train service in the South Coast Air Basin. Metrolink operates seven service lines, 55 stations, and moves approximately 40,000 passengers daily over a 512 track-mile network located almost exclusively within the South Coast Air Basin. Amtrak operates three interstate routes and one intrastate route that travel through the Basin. Metrolink locomotives contribute approximately 77 percent of the emissions of NO_x and PM_{2.5}, with Amtrak locomotives responsible for the remainder. Metrolink's fleet consists of approximately 60 percent older Tier 0 locomotives with the remainder being locomotives that meet the Tier 2 emissions standards. Metrolink plans to upgrade their fleet so that all locomotives will meet the cleanest (Tier 4) emission standards from 2014 through 2016 which will result in a fleet with at least 85 percent lower emissions. Amtrak's fleet that travels in the South Coast Air Basin is almost exclusively locomotives meeting the Tier 0 emission standards and plans are being made to upgrade them to Tier 0+ emission standards.

Regulatory History

U.S. EPA promulgated regulations for the control of emission from locomotives in 1998 and 2008. The regulations require locomotives to meet increasingly more stringent emission levels (Tier 0 thru Tier 4) when they are manufactured and in some cases additional emissions improvements when they are remanufactured at the end of their useful life. For newly manufactured passenger locomotives the cleanest emission standard (Tier 4) is required beginning in 2015 and will result in emissions that are over 90 percent cleaner than those from unregulated locomotive engines. For passenger locomotives manufactured before 2012 (i.e., meeting Tier 0, 1 or 2 emission standards), modest emissions improvements (referred to as "plus" standards) are required at the date of remanufacture which usually occurs seven to 10 years after the new locomotive is put into service.

Locomotives by design remain in operation for a long time (typically over 30 years). As such, emission reductions from natural turnover of the passenger locomotive fleet will take many years to be realized. Additionally, as most of the passenger locomotives operating in the Basin meet the Tier 0 or Tier 2 standards, they are only required to meet the more modest Tier 0 plus and Tier 2 plus standards on remanufacture unless they are replaced with new locomotives.

PROPOSED METHOD OF CONTROL

Metrolink's Board (Southern California Regional Rail Authority) has adopted a locomotive replacement plan which includes the procurement of Tier 4 locomotive engines to replace its 30 Tier 0 locomotives over a three-year period. In addition, the replacement plans calls for repowering the existing Tier 2 locomotives to Tier 4 emissions levels. These actions will result in 100% Tier 4 passenger locomotives by 2023.

In addition, the District will encourage Amtrak to replace or repower their Tier 0 locomotives to meet Tier 4 locomotive emission standards starting in 2015 rather than remanufacturing these engines.

EMISSIONS REDUCTION

Emission reductions are estimated to be 2.96 tons/day for NO_x and 0.06 tons/day PM_{2.5} in 2023.

COST EFFECTIVENESS

Metrolink staff estimates that upgrading their oldest locomotives will cost approximately \$3.4 million per locomotive, and for their newer locomotives, approximately \$2.4 million each. Total cost to upgrade the fleet will be approximately \$150 million. Assuming a 20 year locomotive life, the cost effectiveness of the upgrades will be in the range of \$5,000 per ton of emissions reduced.

IMPLEMENTING AGENCY

The Southern California Regional Rail Authority will be considering the procurement of Tier 4 locomotive engines.

REFERENCES

Southern California Regional Rail Authority (2012). Adoption of Locomotive and Equipment Fleet Plan.

**OFFRD-04: FURTHER EMISSION REDUCTIONS FROM
OCEAN-GOING MARINE VESSELS WHILE AT BERTH
[ALL POLLUTANTS]**

CONTROL MEASURE SUMMARY		
SOURCE CATEGORY:	AUXILIARY ENGINES AND BOILERS ON OCEAN-GOING MARINE VESSELS	
CONTROL METHODS:	USE OF SHORE-SIDE ELECTRICAL POWER OR OTHER EQUIVALENT CLEAN TECHNOLOGIES	
EMISSIONS (TONS/DAY):		
ANNUAL AVERAGE	2008	2023
VOC INVENTORY	0.52	0.47
VOC REDUCTION		<u>TBD*</u>
VOC REMAINING		TBD
NOX INVENTORY	13.7	7.06
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
SOX INVENTORY	16.8	2.11
SOX REDUCTION		<u>TBD*</u>
SOX REMAINING		TBD
PM10 INVENTORY	1.42	0.33
PM10 REDUCTION		<u>TBD*</u>
PM10 REMAINING		TBD
PM2.5 INVENTORY	1.38	0.33
PM2.5 REDUCTION		<u>TBD*</u>
PM2.5 REMAINING		TBD
SUMMER PLANNING INVENTORY	2008	2023
VOC INVENTORY	0.53	0.47
VOC REDUCTION		<u>TBD*</u>
VOC REMAINING		TBD
NOX INVENTORY	13.7	7.06
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
CONTROL COST:	TO BE DETERMINED	
IMPLEMENTING AGENCY:	SAN PEDRO BAY PORTS, CARB, SCAQMD	

* Emission reductions will be determined after projects are identified and implemented.

DESCRIPTION OF SOURCE CATEGORY

The purpose of this control measure is to incentivize additional controls on auxiliary engines and boilers on ocean-going marine vessels while at berth.

Background

Ocean-going vessels (OGV) visit the Ports of Los Angeles and Long Beach over 4,500 times per year and can remain at berth for up to 48 hours or more loading and unloading cargo. While at berth (also called hotelling), ships use auxiliary engines to provide electricity and boilers to provide steam while the ship is in operation. Ships require electrical power while at berth for operation of lights, ventilation, and loading and unloading operations and steam is used for heating. Beginning August 2012 until January 1, 2014, auxiliary engines and boilers use diesel oil that can contain sulfur levels as high as 10,000 ppm (as compared to diesel used by other mobile vehicles at 15 ppm). These engines and boilers produce significant amounts of NO_x, SO_x, PM, and toxic air contaminant (TAC) emissions. A typical medium size cargo ship burns seven tons of diesel fuel a day while at the port, and generates as much as one ton of NO_x, 0.5 tons of SO_x and 60 pounds of PM10 daily. Overall, auxiliary engines produce upwards of 12.3 tpd of NO_x, 6.0 tpd of SO_x, and 0.88 tons per day of PM10 in the South Coast Air Basin each year with boilers contributing the remainder of the at-berth NO_x, SO_x, and PM10 emissions of 1.3, 10.6, 0.52 tpd respectively.

This early action measure focuses on having ocean-going vessels not subject to the statewide shorepower regulation to cold iron, which is a technology that is used to provide on-board power from the shore, while berthed at the Ports of Los Angeles and Long Beach. Other technologies that are currently being evaluated include a bonnet system to funnel ship exhaust emissions into filter and NO_x reduction systems, and are considered under this measure.

Regulatory History

The regulation of emissions from ocean-going vessels is primarily accomplished through CARB and U.S. EPA regulations. Cargo container, cruise lines, and refrigerated cargo (reefers) vessels are subject to CARB's shorepower regulation which requires fleets that have vessels that frequently visit California ports (for cargo container and reefers - 25 visits per year or more, and for cruise liners - five visits or more per year) to reduce emissions from their fleets by 50 percent beginning in 2014 and by 80 percent in 2020. Strategies to control emissions include shorepowering of vessels (utilizing grid based electrical power in lieu of auxiliary engines) and exhaust after-treatment by ducting exhaust gases from auxiliary engines and boilers to treatment systems.

PROPOSED METHOD OF CONTROL

Electrical power for hotelling operations can be provided to a ship via electrical cables using shorepower. Shorepower can be locally generated at the port or obtained from the grid. Shorepower can be locally generated using clean technologies such as fuel cells, gas turbines, microturbines, and combined cycle units. These stationary power generating systems can use alternative fuels such as natural gas, reducing emissions to very low levels. The in-Basin grid power generation NO_x emission factor is significantly lower than that of diesel-fueled engines

especially because most stationary power generating units have installed selective catalytic reduction (SCR) control technologies. The use of shorepower for hotelling operations is termed “cold ironing.”

Due to technical and operational (i.e., frequency of calls) reasons, however, cold ironing may not be a viable option for all types of ships. Also, ships require steam for hotelling operations. If all the electrical power for hotelling is supplied by cold ironing, steam must be provided from the ship’s boilers or the shore to the ships. Based on energy consumption, steam can account for as much as 30 percent of all energy used during hotelling.

This measure would seek at a minimum, an additional 25 percent of the calls not subject to the statewide shorepower regulation to deploy shorepower technologies or alternative forms of emission reductions as early as possible.

EMISSIONS REDUCTION

Emission reductions are not estimated at this time and will depend on the number of vessels participating and the type of technology utilized.

COST EFFECTIVENESS

CARB staff estimated the cost effectiveness of the regulation to range from \$11,000 to \$47,000 per ton of NO_x controlled as part of the adoption of the statewide Shorepower Regulation. TIAX under contract to the District evaluated the bonnet system that funnels the emissions to a shore-side treatment system. The cost effectiveness of this system range from \$15,000 to \$45,000 per ton of NO_x controlled. The expected cost effectiveness of this control measure should fall within the ranges of these two studies.

IMPLEMENTING AGENCY

San Pedro Bay Ports, CARB, SCAQMD.

REFERENCES

CARB (2007). Initial Statement of Reasons for the Proposed Rulemaking: Regulations to Reduce Emissions From Diesel Auxiliary Engines on Ocean-Going Vessels While At-berth at a California Port.

Ports of Los Angeles and Long Beach (2010). San Pedro Bay Ports Clean Air Action Plan, 2010 Update.

TIAX (2008). Evaluation of the Advanced Maritime Emission Control System (AMECS), Report to South Coast Air Quality Management District.

**OFFRD-05: EMISSION REDUCTIONS
FROM OCEAN-GOING MARINE VESSELS
[NOX, PM]**

CONTROL MEASURE SUMMARY		
SOURCE CATEGORY:	MARINE VESSELS (CATEGORY 3 ENGINES)	
CONTROL METHODS:	PORTS INCENTIVES FOR TIERS 2 AND 3 OCEAN-GOING VESSEL CALLS	
EMISSIONS (TONS/DAY):		
ANNUAL AVERAGE	2008	2023
NOX INVENTORY	25.7	24.1
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
PM10 INVENTORY	2.3	0.78
PM10 REDUCTION		<u>TBD*</u>
PM10 REMAINING		TBD
PM2.5 INVENTORY	2.2	0.74
PM2.5 REDUCTION		<u>TBD*</u>
PM2.5 REMAINING		TBD
SUMMER PLANNING		
INVENTORY	2008	2023
NOX INVENTORY	25.7	23.2
NOX REDUCTION		<u>TBD*</u>
NOX REMAINING		TBD
CONTROL COST:	THE CONTROL COSTS VARY WITH THE TYPE OF CONTROL TECHNOLOGY IMPLEMENTED	
IMPLEMENTING AGENCY:	SAN PEDRO BAY PORTS, CARB, U.S. EPA	

* Emission reductions will be determined after the vessel participation rates are reported.

DESCRIPTION OF SOURCE CATEGORY

The purpose of this measure is to incentivize the newest Tier 2 and Tier 3 vessels to call at the Ports of Los Angeles and Long Beach.

Background

Ocean-going vessels (OGV), because of their large relatively uncontrolled diesel engines, contribute a significant portion of NO_x, PM, greenhouse gas and toxic emissions particularly in coastal regions and in and around shipping ports. OGV engines can range in size from 1,000 to over 100,000 horsepower and can burn significant amounts of fuel a day. Beginning in 2016,

vessels built to operate in North American waters will be required to meet emission standards requiring exhaust emission controls that will be significantly cleaner than today's engines. However, because of OGV long lifetimes (on the order of 20 or more years), it will be many years before sufficient numbers of the cleanest vessels will call at marine ports in the region to significantly reduce emissions. Moreover, post-2015 vessels may not be routed to North American ports. It is essential that the cleanest vessels be incentivized to call at marine ports as expeditiously as possible to ensure progress toward meeting ambient air quality standards.

Regulatory History

The regulation of emissions from mobile port-related emission sources is traditionally the responsibility of CARB and U.S. EPA. Specifically, ships are each subject to specific emission standards pursuant to state, federal, and/or international requirements. The standards, primarily affecting new units, vary in stringency and compliance dates.

OGV main and auxiliary engines are subject to the International Maritime Organizations international emission standards as contained in Annex VI to the International Convention on the Prevention of Pollution from Ships (MARPOL Annex VI). U.S. flagged ships must meet similar U.S. EPA requirements, but most vessels must meet the IMO standards as they are not U.S. flagged ships. In October 2008, the IMO adopted new standards for engines and require vessels to meet increasingly more stringent NOx emission standards. The standards are designated by Tiers ranging from Tier 0 being uncontrolled or no emission controls to the most stringent Tier 3 standard. Tier 2 NOx emission standards are around 20% cleaner than Tier 0 standards and can be achieved through engine design changes. The Tier 3 NOx standard is significantly more stringent (better than 80 percent cleaner) and most likely can only be met using engine aftertreatment systems. Engines on vessels must meet the Tier 3 NOx standard if they are built after 2015 and must travel through designated Emission Control Areas (ECA). ECAs can be created by member states if approved by the IMO. On March 26, 2010, the IMO designated waters within 200 nautical miles of the United States and Canadian coasts as the North American ECA.

In addition to NOx emission requirements, IMO and CARB require vessels to use lower sulfur distillate fuels when the vessels travel within 200 nautical miles (as defined in the ECA) or 24 nautical miles of the California coastline (as defined in the CARB regulation). By 2015, all vessels will be required to use distillate fuels with sulfur contents less than 1,000 ppmw when they travel within the North American ECA.

PROPOSED METHOD OF CONTROL

As part of the San Pedro Bay Ports Clean Air Action Plan 2010 update, the Ports adopted incentive programs to maximize the early introduction and preferential deployment of vessels to the San Pedro Bay Ports with cleaner/newer engines meeting the new Tier 2 and Tier 3 IMO NOx standards. The Port of Long Beach is proposing to offer up to \$2,500 for each Tier 2 vessel call and up to \$6,000 for each Tier 3 vessel call. The Port of Los Angeles is proposing a scoring standard based on the "Environmental Ship Index" or ESI to establish the level of incentive funding. The Ports indicated that the program will be monitored annually regarding participation and if adjustments will be necessary to maximize Tier 2 and Tier 3 vessel calls.

This measure seeks to enhance the Ports' programs as necessary to maximize the number of Tier 3 vessels calling at the Ports. In addition, other mechanisms that could complement the Port program will be explored. Examples include discussions on the state and federal level on mechanisms to incentivize Tier 2 and Tier 3 vessel calls through the North American ECA and programs to retrofit or repower existing vessels to meet Tier 3 standards.

EMISSIONS REDUCTION

Based on the assumed penetration of new Tier 2 and Tier 3 vessels in the U.S. EPA rulemaking, this measure could achieve, at a minimum, NO_x, PM₁₀, and PM_{2.5} reductions of 2.8 tpd, 0.1 tpd, and 0.09 tpd, respectively by 2023. Emission reductions could be higher if the participation rate of the Ports programs and other potential programs are greater than anticipated.

COST EFFECTIVENESS

Not Determined.

IMPLEMENTING AGENCY

San Pedro Bay Ports relative to existing incentives programs. San Pedro Bay Ports, CARB, U.S. EPA, and the District relative to seeking additional mechanisms to incentivize Tier 3 vessel calls at the state and federal levels.

REFERENCES

Ports of Los Angeles and Long Beach (2010). San Pedro Bay Ports Clean Air Action Plan, 2010 Update.

GROUP 3

ACTIONS TO DEPLOY ADVANCED CONTROL TECHNOLOGIES

**ADV-01: ACTIONS FOR THE DEPLOYMENT OF ZERO
AND NEAR-ZERO EMISSION ON-ROAD HEAVY-DUTY VEHICLES
[NOX, PM]**

CONTROL MEASURE SUMMARY

SOURCE CATEGORY:	ON-ROAD HEAVY-DUTY VEHICLES (26,001 LBS AND GREATER)
CONTROL METHODS:	ADVANCED NEAR-ZERO AND ZERO-EMISSION TECHNOLOGIES
EMISSIONS (TONS/DAY):	NOT ESTIMATED
CONTROL COST:	THE CONTROL COSTS VARY WITH THE TYPE OF CONTROL TECHNOLOGY IMPLEMENTED
IMPLEMENTING AGENCY:	SCAQMD, SCAG, LOS ANGELES COUNTY TRANSPORTATION AUTHORITY, SAN PEDRO BAY PORTS, CARB, CALTRANS, U.S. EPA

DESCRIPTION OF SOURCE CATEGORY

The technology and infrastructure phases, combined with the agency implementation actions, focus on defining, developing, demonstrating and deploying transportation systems and technologies that will address mid- to long-term regional needs. These actions seek to develop coordinated solutions for mobility, economy, energy and the environment, so that single investments can provide multiple benefits. A key strategy is to deploy zero- and near-zero freight transport equipment powered by clean energy. This strategy has the potential to simultaneously address regional and local air quality problems, foster public support for needed freight infrastructure capacity enhancements, provide greater energy security and cost certainty, address climate change, and foster local jobs in logistics and clean technology.

Background

This measure describes the actions needed to commercialize advanced zero-emission and cleaner combustion emission technologies that could be deployed in the 2015 to 2035 timeframe. Such technologies include advanced engine controls to achieve at least 95 percent reduction in NO_x exhaust emissions beyond the current 2010 heavy-duty exhaust emissions standards or a combination of advanced engine controls deployed with electric hybrid systems and zero-emission technologies such as electric, battery-electric, and fuel cells. In addition, greater use of any alternative fuels and renewable fuels with relatively low NO_x emissions compared to conventional fuels, in conjunction with zero-emission technologies, are important over the next 10 to 20 years for any vehicle vocations where zero-emission technologies could not be applied in that timeframe.

Regulatory History

The establishment of emission standards for on-road heavy-duty diesel emission sources is the responsibility of CARB and U.S. EPA. Specifically, heavy-duty vehicle engines are subject to

specific emission standards pursuant to state and/or federal requirements. Emission standards for new diesel engines powering heavy-duty vehicles were first established for the 1973 model-year and have gradually increased in stringency over time. The current most stringent set of heavy-duty engine emission standards has been established by CARB and U.S. EPA for 2010 and subsequent model-years, which includes a 0.2 g/bhp-hr NO_x emission standard.

In December 2008, CARB adopted the Truck and Bus Regulation which applies to a significant number of heavy-duty vehicles with gross vehicle weight ratings of 14,001 lbs and greater. Heavier trucks (26,001 lbs and greater) must meet regulatory requirements beginning January 1, 2012. Lighter trucks (14,001 lbs to 26,000 lbs) must meet regulatory requirements beginning January 1, 2015.

In the South Coast Air Basin, the two national ozone standards established by U.S. EPA will require reductions in emissions of nitrogen oxides (NO_x) well beyond reductions resulting from current rules, programs and commercially available technologies. Because most significant emission sources are already controlled by over 90 percent, attainment of the ozone standards will require broad deployment of zero and near-zero emission technologies in the 2015 to 2035 timeframe.

PROPOSED METHOD OF CONTROL

Two separate sets of actions are proposed under this measure. The first is the establishment of an optional NO_x exhaust emissions standard that is at least 95 percent lower than the current 2010 on-road exhaust emissions standard (i.e., at or below 0.01 g/bhp-hr). The second set of actions is to develop zero-emission technologies for heavy-duty vehicles that can be deployed in the 2015 to 2035 timeframe.

Actions to Deploy Technologies to Achieve 95 Percent or Greater Reductions in NO_x

This proposed action seeks CARB to establish an optional NO_x exhaust emissions standard which represents a 95 percent reduction of the 2010 standard or 0.01 g/bhp-hr. The optional NO_x standard serves as a benchmark for heavy-duty engine manufacturers to develop the next generation of cleaner combustion engines. Such engines in combination with the ability to achieve a specific level of zero-emission miles are likely to be developed in the near-term to achieve the proposed optional NO_x exhaust emission standard. In addition, having optional NO_x emission standards provides certainty in funding incentives, by establishing a standard for engines to meet in order to receive incentives.

Actions to Deploy Zero-Emission Technologies for On-Road Heavy-Duty Vehicles

There has been much progress in developing on-road technologies with zero- and near-zero emissions, particularly for light-duty vehicles and passenger transit. In general, however, additional technology development, demonstration and commercialization will be required prior to broad deployment of zero-emission technologies for freight movement. The actions and schedules specified below describe a path to evaluate, develop, demonstrate, fund and deploy such technologies for on-road heavy-duty vehicles.

Infrastructure Planning Actions. Part of the actions and schedules specified below involve evaluations and determinations regarding infrastructure needed to support deployment of zero- and near-zero emission technologies. The key question is whether on-road trucks will be able to operate fully under their own power with zero-emission technologies, or whether that equipment will require some form of “wayside” electric or magnetic power built into the roadway infrastructure to boost the pulling capacity or range of the equipment.

This may include battery charging or fueling infrastructure, as well as transportation infrastructure such as dedicated truck lanes. Such lanes can provide opportunities to incentivize zero-emission vehicles (e.g. through discounts of any applicable tolls) as well as to provide wayside electric power to trucks, much as power is now provided to electric transit buses in San Francisco and other cities. Alternatively, if battery, fuel cell or other zero/near zero emission technologies progress sufficiently, the need for wayside power for rail or trucks may be diminished or eliminated.

There are multiple technologies under consideration, and each must be analyzed to assess utility and practicality, costs, benefits, and reliability. Some technologies are more developed than others; some may have a quicker ramp-up to commercialization than others. A path forward to development and deployment of a long-term freight system is set out below, including a schedule with milestones and key decision points.

Phase 1: Project Scoping and Existing Work

Continue to build on current regional research and technology testing efforts.

Southern California has long been a goods movement hub, and a significant amount of work has already been done to assess current and future goods movement volumes, to explore the range of technologies under consideration, to evaluate user needs and potential markets, to analyze current and projected transportation corridors and select the highest priority corridors, and to begin to develop and test some vehicle prototypes. That work has already been initiated, and constitutes Phase 1 of the effort to develop and implement a long-term freight system.

A high level summary of the work completed or underway in Southern California is provided below, along with the challenges that remain for successful commercialization and widespread deployment of zero- or near-zero emission truck technologies.

Existing Work

Over the last five years, studies have assessed the transportation corridors that currently carry high volumes of freight truck traffic and are likely to be heavily impacted in the future.³ The I-710 corridor was selected as high priority for introduction of zero-emission technology.⁴ The 2012 Regional Transportation Plan also designates a route along the 60 freeway as an east-west freight corridor.

³ Los Angeles County Metropolitan Transportation Authority, et al, *Multi-County Goods Movement Action Plan*. Prepared by Wilbur Smith Associates, April 30, 2008.

⁴ Los Angeles County Metropolitan Transportation Authority, *Alternative Goods Movement Technology Analysis-Initial Feasibility Study Report. Final Report. I-710 Corridor Project EIR/EIS*. Prepared by URS. January 6, 2009.

The truck technologies being assessed for a zero-emission freight transport system can be grouped into two categories: zero-emission trucks alone and zero-emission trucks combined with wayside power systems. Zero-emission trucks using their own motive power would have significantly smaller infrastructure needs but would be limited in their applicability by the technology. Integrating infrastructure, such as wayside power, with the truck technology would provide a system to power trucks while on the road and thereby significantly increase the utility and range of the trucks while operating in zero-emission mode.

Zero-emission truck technology includes full battery-electric trucks, fuel cell trucks, and dual-mode (hybrid) electric trucks with all-electric range. Battery-electric trucks are established in smaller trucks and in a variety of different vocations. Fuel cell trucks – either with a small battery pack or with the fuel cell as a range extender with a larger battery pack – have been demonstrated in other categories and are seeing significant progress in both light- and heavy-duty vehicle applications.

Dual-mode trucks would have sufficient battery power to operate in electric-only mode, but would also have a source of motive power (internal combustion engine running on diesel, natural gas, hydrogen, or other fuel) that provides flexibility for longer routes. The terminology of dual-mode is being used here to signify a truck with a distinct all-electric range as opposed to most current hybrids which use a battery and electric motor to augment an internal combustion engine.

Wayside power technologies include overhead catenary, in-road power such as third rail or linear synchronous motor (LSM), and fast charging. All three technologies must be integrated closely with the zero-emission trucks, and all have the potential to significantly increase the functionality and range of trucks utilizing batteries, including dual mode-hybrids. (It is unlikely that fuel cell trucks would need wayside power, due to their range and relatively quick refueling capability). In overhead catenary systems, power is delivered from the electrical grid through the overhead wire to a pantograph on the vehicle itself. Catenary systems are well-established and efficient in light-rail applications, trolley cars and buses, and even mining trucks.

For in-road power, the roadway itself provides power to the vehicles, which must be equipped with pick-up devices. In one technology, cables/wires embedded in the roadway carry electric power; in another technology, LSMs provide power by interacting with a permanent magnet on the vehicle. In-road power systems have advantages but the technology is currently less developed than catenary. Fast-charging is a high-power charging system used to quickly recharge the batteries in an electric vehicle at destination points, e.g., railyards or distribution centers. While technically not “wayside” power, fast charging is similarly grouped with other approaches that require infrastructure to be designed and built into the freight facilities and corridors.

Zero-emission truck prototype testing is underway with funding from the Port of Los Angeles, the Port of Long Beach, and the District. A demonstration of the Balqon lead-acid battery electric truck was initiated in 2007. The battery was upgraded to a lithium-ion battery, and testing of the upgraded system is underway. Additional testing is ongoing with units made specifically for drayage by Vision Motor Corporation, using a combination of lithium-ion batteries and fuel cells.

Phase 2: Evaluation, development, and prototype testing

Overview. The actions described below are directed at developing and demonstrating truck technologies for regional service, developing and demonstrating truck technologies for interstate transport, and evaluating the logistics impacts of a zero or near zero emission freight system.

Near-Term Major Infrastructure Project Approvals. In the near term, while the technology development and demonstration actions described below are being undertaken, it is anticipated that several major regional infrastructure projects will be considered for approval. These include the I-710 freight corridor project, the BNSF Southern California International Gateway railyard project, and the Union Pacific Intermodal Container Transfer Facility modernization and expansion project. These proposed projects will, if approved, comprise key portions of regional freight infrastructure for many decades to come. (Other major projects may also be considered for approval in this timeframe). The action to approve such projects will be a key opportunity to establish appropriate operating and environmental requirements for the infrastructure. In some cases, the project approval action may be the only opportunity to establish requirements. *It is therefore important that such project approvals be fashioned to assure that the projects participate in the technology development and demonstration activities for trucks described below, and that the project approvals ensure implementation of resulting technologies when determined to be feasible.*

Port to Near-Dock Railyard Transport. The case of container transport between the ports and the near-dock railyards is unique. Such transport presents fewer technical and other issues compared to regional transport due to the relatively short distances involved — about five miles. In addition, as described in the Roadmap for Moving Forward with Zero Emission Technologies at the Ports of Long Beach and Los Angeles,⁵ the ports have already done considerable work to evaluate and develop truck technologies for this service, and battery and fuel cell hybrid vehicles are now being actively demonstrated. It is also possible that zero-emission trucks for this relatively short corridor can be successfully deployed without wayside power (although, as noted below, this corridor would be a good location to initially demonstrate wayside power technology that ultimately could be deployed for longer range regional transport). Finally, the total number of trucks needed for this service is limited compared to the thousands of vehicles needed for regional service. The number required between the ports and near-dock railyards is likely approximately 500 per railyard.

The truck technologies being developed and demonstrated for container transport between the ports and near-dock railyards can form the basis of technologies used in the region as a whole. For example, development of trucks capable of operating on electric power, even for relatively short distances, can potentially be coupled with wayside power to extend zero-emission range farther through the region. Fuel cell hybrid truck technologies hold the promise of extended range without wayside power. The current effort to develop and demonstrate zero emission truck technologies for the port to near-dock railyard application thus should be viewed as an important initial part of the effort to develop regional zero-emission transport.

⁵

<http://www.cleanairactionplan.org/civica/filebank/blobdload.asp?BlobID=2527>

For these reasons, it is appropriate that the schedules for technology development and demonstration activities, and technology deployment, reflect the potential for earlier technology implementation between the ports and near-dock railyards than for the region as a whole. The schedules specified below for regional zero-emission truck technology deployment extend from 2015 to beyond 2021, depending on need for wayside power. *By contrast, the technology development, demonstration and deployment schedules for container transport between the ports and near-dock railyards target full deployment of zero-emission technologies as soon as practicable but no later than 2020.*

Phase 3: Initial deployment and operational demonstration

Truck Fleet Evaluation Testing. Develop, deploy and assess, with local fleet users, multiple vehicles with on-going data collection, analysis and sharing for rapid iterative design improvement.

Further Demonstrate Wayside Power. Demonstrate the ability to introduce and power multiple trucks on a test corridor.

Select Truck Corridor Technologies and Needed Infrastructure for Phase 4 Deployment. Assess whether viable truck technologies will require wayside power or other infrastructure. Incorporate needed infrastructure into constrained portion of RTP for corridors determined to be high priority based on potential truck volumes.

Phase 4: Full scale demonstrations, commercial deployment and infrastructure construction (if wayside power is needed)

Phases 1-3 are designed to bring truck technologies and needed infrastructure to the beginning of commercial deployment. This timing corresponds well with needed decisions for what technologies and infrastructure to include in the 2016 RTP, the next major SIP, and the I-710 corridor. The results of the first three phases will be used to determine the concrete commercialization steps needed in Phase 4, especially the regulatory and market mechanisms needed to launch and expand commercialization. In addition, it is necessary to continue expanding plans for any needed wayside power infrastructure to additional high priority corridors (e.g., priority East-West corridor route identified by SCAG). The timing for this step is highly dependent on the need for wayside power if needed, and the construction of such infrastructure.

Actions

- By 2013 – Demonstration: Develop and build trucks and wayside power infrastructure sufficient for demonstration within the transport corridor consisting of the Terminal Island Freeway and connecting routes to the Ports (or alternative routes serving the same locations); commence demonstration upon completion of trucks and infrastructure.
- By 2015 – Initial Operational Deployment: Build wayside power infrastructure sufficient for operation on the Terminal Island Freeway and connecting routes to the Ports (or alternative routes serving the same locations), and build maximum number of trucks for initial operational deployment allowed by available funding (with all feasible leveraging of

private resources), unless a zero-emission technology not utilizing wayside power is determined to be superior and can be implemented in a similar or earlier time frame. In the latter case, remaining funds allocated to this project will be applied to demonstration and deployment of zero-emission trucks not utilizing wayside power.

Major Agency Implementation Actions

YEAR(S)	AGENCY	AGENCY ACTION
2012	SCAG	<ul style="list-style-type: none"> • Incorporate “footprint” and planning for incorporation of wayside power into regional truck lanes in 2012 constrained RTP • Incorporate funding to support truck and wayside power evaluation and demonstration efforts described in this chapter into constrained portion of RTP • Implement plan of advocacy to secure action by federal or other governments where required to implement any related elements of the SIP or RTP; include evaluation of impacts of zero-emission technologies on national priorities, e.g. energy security, energy cost certainty, interstate transportation, climate protection.
2012-2014	District, CARB, and SCAG	<ul style="list-style-type: none"> • Evaluate and demonstrate potential truck technology implementation and funding mechanisms, including: <ul style="list-style-type: none"> ▪ Regulatory requirements; incentives (local, state, federal, interstate cooperative); differential tolls; public-private partnerships • Evaluate potential funding mechanisms for truck infrastructure (e.g. wayside power), including: <ul style="list-style-type: none"> ▪ federal, state, local government funding; tolling; public-private partnerships; electric utility funding of corridor construction

Major Agency Implementation Actions

YEAR(S)	AGENCY	AGENCY ACTION
2015	District, CARB, and SCAG	<ul style="list-style-type: none"> • Resolve need for wayside power infrastructure for trucks on I-710 and other corridors beyond near-dock railyards, including East-West corridor (based on expected range and functionality of technologies in zero-emission mode without wayside power in 2020-2030 timeframe) • If wayside power is needed, incorporate such technology description into RTP constrained plan and next major SIP • Develop recommendations regarding type of funding and implementation mechanisms for trucks and any needed infrastructure • Incorporate recommendations regarding type of funding and implementation mechanisms into RTP constrained plan and next major SIP, including: <ul style="list-style-type: none"> ▪ Strategy description and timeframe for any rules ▪ Strategy description, potential funding sources and timeframe for any incentives
2015-2016	District, CARB, SCAG	<p>Determine need for wayside power infrastructure for trucks on major freight movement corridors.</p> <p>Incorporate decisions regarding type of funding and implementation mechanisms into RTP constrained plan and SIP, including:</p> <ul style="list-style-type: none"> • Strategy description and timeframe for potential regulatory actions • Strategy description, potential funding sources and timeframe for needed incentives • Begin deployment of zero- and near-zero emission trucks for regional service.
2017+	District, CARB, SCAG	<ul style="list-style-type: none"> • Begin full deployment of appropriate zero- and near-zero emission trucks for substantially all regional transport. • 2020 – Target for full deployment of zero-emission trucks transporting containers between the ports and near-dock railyard facilities.

EMISSIONS REDUCTION

Not Determined

COST EFFECTIVENESS

Not Determined

IMPLEMENTING AGENCY

SCAQMD, SCAG, Los Angeles County Transportation Authority, San Pedro Bay Ports, SCAG, CARB, Caltrans, and U.S. EPA. In July 2011, the Los Angeles County Metropolitan Transportation Authority formed the Countywide Zero-Emission Trucks Collaborative, which includes the Ports of Los Angeles and Long Beach, Caltrans, SCAG, and the District, to address issues including, but not limited to, developing a common definition of “zero-emission trucks”, establishing performance standards, coordinating infrastructure policies/standards, and seeking funding for demonstration projects.

Potential Partners For Development, Testing, Funding, and Deployment of Landside Freight Transport Technology

Achieving zero- or near-zero emissions freight transport is an ambitious goal. But given the current volume of freight movement in Southern California, and the projected increases over the next two decades, accomplishing this goal is critical to economic and public health in the region. Success will require private companies and public agencies working together with a shared vision and a commitment to address the practical issues to ensure efficient operations.

Following is a partial list of entities that will be contacted to seek a contribution of expertise, in-kind services, equipment, space, and/or funding to support the effort.

Government:

California Department of Transportation
Southern California Association of Governments and its member agencies
Los Angeles County Metropolitan Transportation Authority
Alameda Corridor Transportation Authority

U.S. Environmental Protection Agency
California Air Resources Board and air quality agencies in other states
South Coast Air Quality Management District

U.S. Department of Energy
California Energy Commission

Port of Long Beach
Port of Los Angeles

Private:

Commercial Technology Developers and Manufacturers
Trucking
Rail
Shipping
Warehousing and Distribution Centers
Logistics Supply Chain Specialists
Beneficial Cargo Owners

Non-Profit and Academic:

CALSTART

Center for Environmental Research and Technology (CE-CERT)

Philanthropic Foundations in Coordination with Environmental Organizations

Academic Institutions with Specialized Knowledge in Logistics Field

REFERENCES

SCAG (2012) Regional Transportation Plan, Adopted

**ADV-02: ACTIONS FOR THE DEPLOYMENT OF
ZERO-EMISSION AND NEAR-ZERO LOCOMOTIVES
[NOX, PM]**

CONTROL MEASURE SUMMARY

SOURCE CATEGORY:	LOCOMOTIVES (ALL CLASSES)
CONTROL METHODS:	ADVANCED NEAR-ZERO AND ZERO-EMISSION TECHNOLOGIES BEYOND LOCOMOTIVE TIER 4 EMISSION STANDARDS
EMISSIONS (TONS/DAY):	TBD
CONTROL COST:	THE CONTROL COSTS VARY WITH THE TYPE OF CONTROL TECHNOLOGY IMPLEMENTED
IMPLEMENTING AGENCY:	SCAQMD, SAN PEDRO BAY PORTS, CARB, U.S. EPA

DESCRIPTION OF SOURCE CATEGORY

Background

This measure describes the actions needed to commercialize advanced zero-emission and near-zero emission technologies that could be deployed in the 2020 to 2030 timeframe. Such technologies include advanced engine controls or a combination of advanced engine controls with hybrid systems or external power source to power the electric motor to achieve greater reduction in NO_x exhaust emissions beyond the Tier 4 locomotive engine emissions standards and zero-emission technologies such as electric, battery-electric, and fuel cells. In addition, greater use of any alternative fuels and renewable fuels with relatively low NO_x emissions compared to conventional fuels, in conjunction with zero-emission technologies, are important over the next 10 to 20 years for any locomotive applications where zero-emission technologies could not be applied in that timeframe.

Regulatory History

U.S. EPA promulgated regulations for the control of emissions from locomotives in 1998 and 2008. The regulations require locomotive engines to meet increasingly stringent emission levels (Tier 0 through Tier 4) when they are manufactured and in some cases, additional emissions improvements when they are remanufactured at the end of their useful life. For newly manufactured locomotives the cleanest emission standard (Tier 4) is required in 2015 and will result in emissions that are over 90 percent cleaner than those from unregulated locomotive engines.

Beside the federal emission requirements for locomotives, CARB has signed two agreements with the two Class 1 railroads operating in California, Burlington Northern Santa Fe Railway (BNSF) and Union Pacific Railroad (UP). The first agreement, the South Coast Memorandum of Understanding (MOU), was signed in 1998. Among other features, it commits these railroads to meeting Tier 2 NO_x standards, on average, starting in 2010 with their locomotives operating

in the South Coast Air Basin. The second agreement, the Rail Yard Agreement signed in 2005, calls upon the Class I railroads to reduce diesel emissions in and around railyards in California including a statewide locomotive idling limitation program, increase use of low-sulfur diesel for locomotives fueled in California, and a visible-emissions detection and repair program.

In 2010, the Ports of Los Angeles and Long Beach updated the San Pedro Bay Ports Clean Air Action Plan that includes a measure calling for locomotives entering the Ports and nearby intermodal yards to meet a goal of using Tier 4 locomotives by 2020.

PROPOSED METHOD OF CONTROL

Actions for the deployment of near zero or zero emission locomotives would include four phases as outlined below:

Phase 1: Project Scoping and Existing Work

Southern California has long been a goods movement hub with locomotives playing a central role. Significant effort has gone into analyzing the options for a zero-emission rail system in the Basin. These include recent efforts by the Ports of Long Beach and Los Angeles in their *Roadmap* study⁶ and by SCAG in the freight rail electrification report⁷. Each of these efforts highlights the technical opportunities and the need to pursue a zero-emission freight transport system for the future. However, they also highlight the difficult challenges associated with this sector, especially with regard to operational needs, integration of the technologies into the national rail system, federal safety requirements, and cost.

At this time, several broad technology categories have gained the most focus and could be applied toward freight and passenger locomotives to achieve zero emissions track miles: overhead catenary (with electric or dual-mode locomotives), linear synchronous motor (LSM) technology, and battery-hybrid systems (either integrated into a new locomotive or as a tender car). Another technology with potential for zero emissions is fuel cells.

In addition, the use of alternative fuels such as liquefied natural gas (LNG) have a potential role in reducing emissions further prior to commercialization of battery-hybrid systems and as a primary fuel in conjunction with battery-hybrid technologies.

Of these technologies, catenary systems are the most extensively used today, although more commonly in passenger train and light-rail applications. LSM systems are less developed, but have potential in terms of being able to use existing rail beds and conventional rail cars, with modifications. Dual mode (i.e., combined diesel-electric and electric capable) locomotives with wayside power have the potential for zero-emission range capability within catenary system areas, and have the ability to minimize operational changes, but have not been developed or demonstrated in a freight application due to insufficient market case or regulatory impetus.

⁶ Port of Long Beach and Port of Los Angeles, Roadmap for Moving forward with Zero Emission Technologies at the Ports of Long Beach and Los Angeles, Technical Report, August 2011.

⁷ Southern California Association of Governments. *Task 8.2 Analysis of Freight Rail Electrification in the SCAG Region*, Technical Memorandum. Draft Version, Prepared by Cambridge Systematics, August 26, 2011.

General Electric (GE) indicated that Tier 4 diesel-electric locomotives could be augmented with advanced battery technology to allow periodic zero-emission operation. GE indicated that the goal would be for the batteries to be able to provide full power for a line-haul locomotive for up to 30 miles with no emissions from the locomotive engine, operate in the Tier 4 diesel-electric mode for up to 70 miles while also recharging the battery bank, and then return back to the battery mode for the next 30 miles. The fuel savings would allow a one-third downsizing of the fuel storage tank to be able to provide additional space for battery storage within a conventional length locomotive. This approach would allow the battery mode to be engaged up to twice while operating within the South Coast Air Basin. Under this scenario, the hybrid locomotive could provide up to a 60 percent reduction beyond Tier 4 emissions levels within the Basin.

Another option is the potential use of battery tender cars connected to locomotives to provide power within urban areas with air quality issues. Such a system could provide zero-emission operation with either new or existing locomotives, and would reduce or eliminate the need for wayside power. Tender cars could also potentially be designed to connect existing locomotives to wayside power. The operational impacts of tender car augmentations, the duty cycle and power demands of line haul locomotives, and the power, weight, and costs of battery tender cars – while operating within the South Coast Air Basin – would need to be studied further. However, the potential benefits can be significant since the battery tender car could potentially be used in any urban area and recharged as the train transits from the South Coast Air Basin to its destination. In addition, the use of tender cars addresses the concerns regarding sufficient space for the batteries if they are installed inside the locomotive and capacity and number of batteries needed will not be limited to the dimensions of the locomotive, but to the capacity and dimension of the rail car.

All of these systems and approaches (with the exception of traditional catenary-electric locomotives) will need additional study, research, design, proof of concept testing, and both small and full scale demonstration programs to advance the technology for freight and passenger applications within Southern California. All will need additional examination of means to address operational impacts and costs.

Phase 2: Evaluation, development, and prototype testing (2012 – 2014)

Actions needed to implement phase 2 include:

1. *Secure Funding.* Collaborate with public and private partners to secure funding commitments for the development of new technology locomotive prototypes and infrastructure demonstrations.
2. *Evaluate Practicability of Applying Existing Electrified Rail Technologies to Region.* Conduct an evaluation of the practicability of applying existing electrified rail technologies to the region. Electrified rail technologies are currently used in many countries to move passenger and freight. This evaluation would comprehensively assess the practicability of utilizing such existing technologies for rail service in the South Coast Air Basin.

3. *Develop Locomotive Prototypes and Wayside Power Infrastructure.* This phase involves the development and design validation, and initial proof of concept and prototype testing of several types of zero-emission locomotive technologies and supporting infrastructure. This includes improvements to currently available technologies as well as new technologies that may have cost or operational advantages. Basic performance requirements at this stage include, but not limited to, sufficient tractive power to haul double-stacked railcars, adequate braking capability and other parameters to support safe operation, and the ability to operate in zero-emission mode. This task should seek to further evaluate, develop, and test prototypes for the following technologies, at a minimum:
 - Overhead catenary electric system: Initiate development of an overhead catenary demonstration, with either an all-electric or dual-mode locomotive. The prototype locomotive must be built to provide comparable performance capabilities (e.g., tractive effort) as a U.S. diesel-electric freight locomotive. The prototype electric or dual mode electric locomotive would need to be tested with an existing electrical rail system (e.g., Amtrak passenger electric rail system for the Acela on the east coast) – assuming the electric rail system has the proper voltage and electrical connections/hardware for the prototype locomotive.
 - LSM technology: Set up a test track and demonstrate proof of concept for an LSM system in a freight locomotive application.
 - Dual-mode with battery-hybrid system: Initiate development of battery-hybrid locomotives with zero-emission range that would achieve up to 60 percent lower than Tier 4 emissions when operating within the South Coast Air Basin
 - Battery tender car: Develop a prototype designed for compatibility with existing U.S. diesel-electric or new Tier 4 locomotives. If the battery tender car is designed for use with catenary systems, similar to the electric or dual-mode locomotives, it would need to be tested within an existing electrical rail system.
 - Other technology options: CARB and the District are currently funding a study by UC Irvine to develop a design for a Solid Oxide Fuel Cell to power a locomotive. The fuel cell will need to be able to generate comparable horsepower as a current U.S. diesel-electric freight line haul locomotive, or about 4,500 gross horsepower. Union Pacific Railroad has agreed to participate in the construction of a prototype fuel cell locomotive upon successful completion.
4. *Select Locomotive Technologies for Phase 3 Demonstration.* Assess the development of the locomotive technologies and infrastructure from Phase 2 programs and select appropriate technologies to proceed with prototype development and testing programs.

Phase 3: Initial deployment and operational demonstration (2014-2016)

Actions needed to implement Phase 3 include:

1. *Conduct Advanced Technology Locomotive Demonstrations.* Evaluate zero-emission line-haul rail technologies with any needed wayside power source on test or operations track

with sufficient length, switches and grades to validate operational feasibility within the Basin. Move most promising technologies to initial demonstration in operational service, preferably within the Basin.

2. *Select Advanced Technology Locomotive Technologies for Phase 4 Deployment.* Assess the development of the locomotive technologies and infrastructure from Phase 3 testing and demonstration programs, and select technologies and infrastructure to proceed to initial deployment.

Phase 4: Full scale demonstrations, commercial deployment and infrastructure construction (if wayside power is needed) (2017-2023)

Actions to implement Phase 4 include:

At this stage, it is still expected that advanced rail technologies will require additional field demonstrations prior to full commercialization. Technology choices need to advance from small scale demonstration phase to full scale demonstration in operational service. New technology deployments must be coordinated with any needed infrastructure. The timing for this step is highly dependent on the need for wayside power (or not) and the construction of such infrastructure.

The actions needed to develop implementation mechanisms (e.g. funding and regulatory mechanisms) to deploy zero and near-zero emission rail technologies as part of a long-term freight system that meets the performance objectives described earlier are provided in the schedule below.

Major Agency Implementation Actions

YEAR(S)	AGENCY	AGENCY ACTION
2012-2013	SCAG	<ul style="list-style-type: none"> • Identify funding to support rail evaluation and demonstration efforts. • Implement plan of advocacy to secure action by federal or other governments where required to implement any related elements of the SIP or RTP; include evaluation of impacts of zero-emission technologies on national priorities, e.g. energy security, energy cost certainty, interstate transportation, climate protection Evaluate and determine practicability of applying existing electrified rail technologies to region • Evaluate potential funding and implementation mechanisms for zero- and near zero-emission locomotives, and wayside power, including: <ul style="list-style-type: none"> ▪ Private (railroads); federal, state, local government; public-private partnerships; electric utility

YEAR(S)	AGENCY	AGENCY ACTION
2012-2014	District, CARB	<ul style="list-style-type: none"> • Begin discussions on development and deployment of Tier 4 locomotives with footprint to hookup external power source • Evaluate and determine practicability of external sources of power such as battery tender cars • Initiate demonstration projects for identified technologies. • If demonstrations of battery tender cars or other zero- and near-zero emission technologies are determined feasible, begin discussions to deploy such technologies on a phase-in basis.
2015-2016	District, CARB, SCAG	<ul style="list-style-type: none"> • Identify technologies, infrastructure, and implementation mechanisms in RTP amendment and next major SIP. • If existing electrified rail technologies were determined to be practicable for the region, begin infrastructure planning, development and deployment of such technologies.
2017-2018	District, CARB, SCAG	<ul style="list-style-type: none"> • If new rail technologies are needed to achieve zero- or near-zero emission in the region, determine need for wayside power for new rail technologies (based on expected range of technologies in zero-emission mode without wayside power in 2020-2030 timeframe). • If wayside power is needed, incorporate “footprint” and planning for wayside power into rail lines into 2018 constrained RTP • Incorporate recommendations regarding type of funding and implementation mechanisms into constrained RTP and next major SIP, including: <ul style="list-style-type: none"> ▪ Strategy description and timeframe for any rules ▪ Strategy description, potential funding sources and timeframe for any incentives.
2018+		<ul style="list-style-type: none"> • If battery tender car or other external sources of electrical power are demonstrated, begin deployment such technologies. • Construct needed infrastructure for zero-emission technologies as needed.

EMISSIONS REDUCTION

Not Determined

COST EFFECTIVENESS

Not Determined

IMPLEMENTING AGENCY

SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA.

Potential Partners For Development, Testing, Funding, and Deployment of Landside Freight Transport Technology

Achieving zero- or near-zero emissions freight transport is an ambitious goal. But given the current volume of freight movement in Southern California, and the projected increases over the next two decades, accomplishing this goal is critical to economic and public health in the region. Success will require private companies and public agencies working together with a shared vision and a commitment to address the practical issues to ensure efficient operations.

Following is a partial list of entities that will be contacted to seek a contribution of expertise, in-kind services, equipment, space, and/or funding to support the effort.

Government:

California Department of Transportation
Southern California Association of Governments and its member agencies
Alameda Corridor Transportation Authority

U.S. Environmental Protection Agency
California Air Resources Board and air quality agencies in other states
South Coast Air Quality Management District

U.S. Department of Energy
California Energy Commission

Port of Long Beach
Port of Los Angeles

Private:

Commercial Technology Developers and Manufacturers
Trucking
Rail
Shipping
Warehousing and Distribution Centers
Logistics Supply Chain Specialists
Beneficial Cargo Owners

Non-Profit and Academic:

CALSTART
Center for Environmental Research and Technology (CE-CERT)
Philanthropic Foundations in Coordination with Environmental Organizations
Academic Institutions with Specialized Knowledge in Logistics Field

REFERENCES

- CARB (2009). Technical Options to Achieve Additional Emissions and Risk Reductions from California Locomotives and Railyard.
- U.S. Environmental Protection Agency (2008). Control of Emissions of Air Pollution From Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 liters per Cylinder: Republication; Final Rule, 40 CFR Parts 9, 85, et. al.
- Ports of Los Angeles and Long Beach (2010). San Pedro Bay Ports Clean Air Action Plan 2010 Update.
- Ports of Los Angeles and Long Beach (2011). Roadmap for Moving forward with Zero Emission Technologies at the Ports of Long Beach and Los Angeles, Technical Report.
- Southern California Association of Governments (2011). Task 8.2 Analysis of Freight Rail Electrification in the SCAG Region, Technical Memorandum, Draft Version, Prepared by Cambridge Systematics.
- Southern California Association of Governments (2012). 2012 Regional Transportation Plan.

**ADV-03: ACTIONS FOR THE DEPLOYMENT OF ZERO-EMISSION
AND NEAR-ZERO CARGO HANDLING EQUIPMENT
[NOX, PM]**

CONTROL MEASURE SUMMARY

SOURCE CATEGORY:	OFF-ROAD EQUIPMENT OPERATING USED TO MOVE FREIGHT CONTAINERS
CONTROL METHODS:	ADVANCED NEAR-ZERO AND ZERO-EMISSION TECHNOLOGIES
EMISSIONS (TONS/DAY):	TBD
CONTROL COST:	THE CONTROL COSTS VARY WITH THE TYPE OF CONTROL TECHNOLOGY IMPLEMENTED
IMPLEMENTING AGENCY:	SCAQMD, SAN PEDRO BAY PORTS, CARB, U.S. EPA

DESCRIPTION OF SOURCE CATEGORY

Background

Emissions from goods movement related mobile sources (e.g., ships, trains, trucks, and off-road equipment) continue to represent a significant and increasing portion of the emissions inventory in the South Coast Air Basin, adversely affecting not only the local port area, but also the regional air quality of the Basin. The purpose of this early action measure is to demonstrate and commercialize advanced zero-emission and near-zero emission technologies for cargo handling equipment operated at marine ports, intermodal freight facilities, and warehouse distribution centers that could be deployed in the 2020 to 2030 timeframe. Such technologies include advanced engine controls to achieve further reductions in NO_x exhaust emissions beyond the Tier 4 off-road exhaust emissions standards and zero-emission technologies such as electric, battery-electric, and fuel cells.

Regulatory History

The U.S. EPA and CARB's Tier 1, Tier 2, Tier 3, and Tier 4 emissions standards for non-road diesel engines require compliance with progressively more stringent standards for hydrocarbon, CO, NO_x, and PM. Tier 4 standards for non-road diesel powered equipment complement the latest 2007 and later on-road heavy-duty engine standards requiring 90 percent reduction in NO_x and PM when compared against the current level. To meet these standards, engine manufacturers will produce new engines with advanced emissions control technologies similar to those already expected for on-road heavy-duty diesel vehicles. These standards for new engines will be phased in starting with smaller engines in 2008 until all but the very largest diesel engines meet NO_x and PM standards in 2015.

In December 2005, CARB adopted a regulation to reduce emissions from cargo handling equipment (CHE) such as yard tractors and forklifts starting in 2007. The regulation calls for the replacement or retrofit of existing engines with engines that use Best Available Control

Technology (BACT). Beginning January 1, 2007, the regulation will require that newly purchased, leased, or rented CHE be equipped with either a 2007 or later on-road engine, a Tier 4 off-road engine or the cleanest verified diesel PM emissions control system which reduces PM by 90% and NOx by at least 70 percent for yard tractors. For non-yard tractors cargo handling equipment currently verified technologies reduce PM by 85 percent.

In November 2006, the Ports of Los Angeles and Long Beach adopted the San Pedro Bay Ports Clean Air Action Plan (CAAP). One of the control measures (CHE-1) provided in the CAAP calls for terminal operators to use cargo handling equipment with the cleanest engines by 2012 (2007 on-road heavy-duty engine emission standards or Tier 4 off-road engine standards). The CAAP accelerates the implementation of CARB's rule requirements through lease requirements or other mechanisms. The CAAP measure provides an additional 15 percent NOx and 19 percent PM reductions by 2011 beyond CARB's regulation based on the replacement of existing cargo handling equipment with equipment meeting Tier IV off-road or 2007 on-road engine standards (for port tenants with lease openings by 2011).

By 2020 under current regulations, all cargo handling equipment will meet Tier 3 off-road standards with a PM retrofit device, 2007 or 2010 on-road standards, or Tier 4 off-road standards.

PROPOSED METHOD OF CONTROL

Cargo handling equipment is generally categorized as construction equipment (excavators, front-end loaders, tractors, etc) used for bulk material handling, forklifts, container handling equipment (top picks, side picks), rubber-tired gantry cranes, and yard trucks. This equipment is predominately diesel powered. Due to the CARB regulation, the 2023 population is estimated from the CHE Emissions Inventory Model to be 85 percent Tier 4 or 2010 on-road, 9 percent Tier 4i or 2007 on-road, and 6 percent Tier 3 with PM retrofit devices. As a result, there are opportunities to further reduce emissions through accelerated turnover to zero-emission and near-zero emission technologies.

The proposed measure is to further develop zero-emission technologies for cargo handling equipment. Zero-emission technologies include battery electric (BEV) and plug-in electric hybrid (PHEV) technologies. These technologies are based on automotive systems and are now being demonstrated in cargo handling equipment. Other potential technologies include fuel cell (FC) and fuel cell-battery hybrids (FCH) for mobile equipment, as well as container movement systems using wide-span grid-power based overhead cranes and container conveyer systems to replace cranes, forklifts, and yard trucks. In addition, hybrid systems have been developed and deployed on cranes used at marine ports and intermodal railyards. The following table summarizes potential zero-emission and hybrid systems to be evaluated over the next several years.

TECHNOLOGY	APPLICATION	STATUS/ POTENTIAL EMISSION REDUCTION
Electric	Wide Span Gantry Cranes	Available but not used in local ports, demonstrations under discussion/100%
Battery-Electric	Yard Tractor; Top-Pick/Side-Pick; Forklifts	Yard tractor demonstrations underway, other CHE demonstrations planned/100%
Fuel Cell	Yard Tractor; Top-Pick/Side-Pick; Forklifts	Demonstrations under discussion /100%
Plug-In Hybrid Electric	Yard Tractor; Top-Pick/Side-Pick; Forklifts	Drayage truck demonstration underway, CHE Demonstrations under discussion /75%
Alternative Fuels	Compressed/Liquefied Natural Gas	Available for trucks and forklifts, demonstrations under discussion for CHE/ 50%
Hybrid Systems	Gantry Cranes	Available but in limited use; Demonstration under discussion/50%
Battery-Electric	Gantry Cranes	Demonstration under discussion/100%

Battery-electric and fuel-cell equipment. Zero-emission yard truck prototype testing is underway with funding from the Port of Los Angeles, the Port of Long Beach, and the District. A demonstration of the Balqon lead-acid battery electric truck was initiated in 2007. The battery was upgraded to a lithium-ion battery, and testing of the upgraded system is underway. Additional testing is ongoing with units made specifically for drayage by Vision Motor Corporation, using a combination of lithium-ion batteries and fuel cells. Transfer of these technologies from on-road truck applications to off-road yard trucks are considered to be straightforward and is currently in the planning stage at the Ports of Los Angeles. Transfer of the technology to cargo handling equipment such as top picks is in the discussion stage but has not been demonstrated.

Hybrid diesel-electric equipment. Class 6 hybrid and/or plug-in hybrid trucks offering reduced emissions are now becoming commercially available from a number of established manufacturers, e.g. Kenworth T370. These trucks could operate in drayage service and development is continuing on Class 7 and Class 8 trucks. Application of these technologies to yard trucks are also considered to be straight forward. The Ports are currently considering a demonstration of a hybrid yard truck. Applications of hybrid technologies to other cargo handling equipment including forklifts, top-picks/side-picks, and gantry cranes are in the research and development stage with demonstrations possible within two years. Ports are also evaluating alternative fueled drayage trucks and are planning to demonstrate CNG and LNG cargo handling equipment.

Grid electric. Wide span gantry cranes and automated guideways for moving and positioning cargo containers in the ports and railyards are commercially feasible but have not been used in local port applications. The Ports have reviewed some proposals for demonstrations and are in continuing discussions with applicants.

Alternative Fuels. Natural gas fueled trucks and buses are commonly available. Gasoline and propane fueled off-road equipment is available and could be adapted to compressed or liquid natural gas.

Schedule for Action

The actions described below are directed at developing and demonstrating technologies for zero-or near-zero emission cargo handling systems. Development of equipment capable of operating on electric power, even for relatively short times, should be viewed as an important initial part of the effort to develop a zero-emission cargo handling system. For these reasons, it is appropriate that the schedules for technology development and demonstration activities, and technology deployment, reflect the potential for earlier technology implementation in focused applications rather than for all equipment categories and vocations. The schedules specified below for zero-emission cargo handling equipment technology deployment extend from 2015 to beyond 2023.

Actions

San Pedro Bay Ports Technology Advancement Program (TAP) Working Group (2012-2014). The District, CARB, and U.S. EPA serve on the TAP Working Group to evaluate potential emission reduction projects. The TAP could serve as a forum to focus efforts specifically on zero-emission penetration into specific types of cargo handling equipment. The power storage, drive systems, and fast charging technologies are currently emerging technologies. Other technologies and/or combinations of technologies may emerge that could also play a role in the longer-term zero emission cargo handling system. The Working Group would coordinate with core end users to define their needs and key vehicle design parameters in the 2012 – 2014 timeframe.

Secure Funding (2012-2014). Collaborate with public and private partners to secure funding commitments for the development of vehicle prototypes and infrastructure demonstrations.

Develop and Demonstrate Equipment Prototypes (2012-2015). This phase involves the development, design validation, and initial demonstration of several types of advanced prototype vehicles. The demonstration would include technology optimization for prescribed equipment types and functions. This task should seek to further evaluate, develop, and test prototypes.

Select Technologies for Field Evaluation (2012-2017). Identify potential equipment types and drive technologies to test in small-scale demonstrations. Designate equipment test deployment, and develop a test and development plan for a limited number of equipment.

Equipment Evaluation Testing (2013-2020). Develop, deploy and assess, with operators, multiple equipment types with on-going data collection, analysis, and sharing for rapid iterative design improvement.

Deployment (2015+). Identify/develop mechanisms to deploy demonstrated technologies as early as possible. Such mechanisms may include lease agreements, environmental mitigation measures, and funding incentives.

EMISSIONS REDUCTION

Not Determined

COST EFFECTIVENESS

Not Determined

IMPLEMENTING AGENCY

SCAQMD, San Pedro Bay Ports.

REFERENCES

- CARB (2005). California Code of Regulations, Title 13, Chapter 9, Article 4.8, Section 2423 - California Exhaust Emission Standards and Test Procedures for New 2008 and Later Tier 4 Off-Road Compression-Ignition Engines.
- CARB (2005). California Code of Regulations, Title 13, Chapter 9, Article 4.8, Section 2479 - Regulation for Mobile Cargo Handling equipment at Ports and Intermodal Rail Yards.
- CARB (2011). Cargo Handling Emissions Inventory Model, available at <http://www.arb.ca.gov/ports/cargo/cheamd2011.htm>
- Los Angeles County Metropolitan Transportation Authority (2008). Multi-County Goods Movement Action Plan, prepared by Wilbur Smith Associates.
- Los Angeles County Metropolitan Transportation Authority (2009). Alternative Goods Movement Technology Analysis-Initial Feasibility Study, I-710 Corridor Project EIR/EIS Final Report, prepared by URS.
- Ports of Los Angeles and Long Beach (2010). San Diego Ports Clean Air Action Plan, 2010 Update.

ADV-04: ACTIONS FOR THE DEPLOYMENT OF CLEANER COMMERCIAL HARBOR CRAFT [NOX, PM]

CONTROL MEASURE SUMMARY

SOURCE CATEGORY:	CATEGORY 1 AND 2 MARINE ENGINES USED IN COMMERCIAL HARBOR CRAFT
CONTROL METHODS:	ADVANCED HYBRID SYSTEMS AND ALTERNATIVE FUEL ENGINES
EMISSIONS (TONS/DAY):	TBD
CONTROL COST:	THE CONTROL COSTS VARY WITH THE TYPE OF CONTROL TECHNOLOGY IMPLEMENTED
IMPLEMENTING AGENCY:	SCAQMD, SAN PEDRO BAY PORTS, CARB, U.S. EPA

DESCRIPTION OF SOURCE CATEGORY

Background

This measure describes the actions needed to commercialize advanced engine control technologies and hybrid systems that could be deployed in the 2020 to 2030 timeframe. Such technologies include advanced engine controls to achieve at least a 60 percent reduction in NOx exhaust emissions beyond the most stringent Category 1 and 2 marine engine exhaust emissions standards. There are approximately 750 commercial harbor craft operating within the District that are estimated to emit 17.7 tpd of NOx. Commercial harbor craft includes tug, ferry, crew and supply, excursion, commercial fishing, work, barge, dredge, and pilot vessels. Commercial harbor craft generally have multiple propulsion and auxiliary engines per vehicle with total power of between several hundred and several thousand horsepower. Essentially all are currently diesel powered. Work activity varies significantly with some vessels spending most time within the port harbor and adjacent waters while others leave the local port for adjacent ports, Catalina Island, or oil platforms. Several harbor craft operators have deployed hybrid systems on their harbor craft to improve fuel efficiency and reduce criteria and greenhouse gas emissions. NOx and PM reducing aftertreatment systems are also beginning to be demonstrated.

Regulatory History

The U.S. EPA established new engine standards for new “Category 1 and 2” diesel engines – engines rated over 50 hp used for propulsion in most commercial harbor craft. These standards are to be phased in between 2004 and 2017 and limit NOx, VOC, CO and PM emissions, but the emissions reductions achieved are modest in the next five years. The current most stringent standard for marine engines is Tier 4 (0.03 g/bhp-hr PM and 1.3 g/bhp-hr NOx) which takes effect in all engine categories by 2017. These standards do not require either diesel particulate filters or selective catalytic reduction after-treatment systems.

In 2007, CARB adopted a Regulation for Commercial Harbor Craft to accelerate deployment of low emission engines. A compliance schedule was included requiring that commercial harbor craft with Tier 0 and Tier 1 engines would have to be retired or repowered by 2023. In addition, any new vessel had to have engines built to the then current emission standard (Tier 2, Tier 3 or Tier 4).

The San Pedro Bay Ports Clean Air Action Plan (CAAP) contains a source specific control measure (HC-1) to repower all home port vessels to Tier 3 within five years of engine availability. The CAAP HC-1 measure is implemented through lease requirements or other mechanisms.

PROPOSED METHOD OF CONTROL

Available control technologies that achieve maximum control of emissions include aftertreatment systems using catalysts to control NO_x and PM emissions as well as hybrid engine technologies. The following table summarizes potential near zero-emission technologies to be evaluated over the next several years.

TECHNOLOGY	APPLICATION	STATUS/ POTENTIAL EMISSION REDUCTION
Battery-Electric	Vessels with high percentage of standby time or low load time while docked	Small excursion or pleasure craft are available but not commercial harbor craft/100%
Fuel Cell	Vessels with high percentage of medium to high power that have access to fueling infrastructure	Demonstration units in development/100%
Diesel-Electric Hybrid Systems	Vessels with variable engine loads, limited standby time while docked and need for extended range some times.	Technology demonstrated on two tugboats/50% NO _x and 70% PM compared to similar standard diesel engine
SCR/DPF Aftertreatment	Vessels with high usage and space available for installation of the systems.	Commercialized in Europe, local demonstration projects underway/80% from Tier 2

Battery-electric. Battery powered recreational boats have been available for many years. Advanced lithium battery technology can be applied to harbor craft.

Fuel cells. Fuel cell power systems are being demonstrated for on-road vehicles and have been used commercially for stationary power generation. Testing is ongoing with units made specifically for drayage by Vision Motor Corporation, using a combination of lithium-ion batteries and fuel cells. Application of these technologies to harbor craft operating appears technically feasible and would provide extended range needed for many harbor craft.

Diesel-electric hybrid. Diesel-battery hybrid technology has been demonstrated on two tugboats at the Ports of Los Angeles and Long Beach. The vessels are equipped with batteries and an electric propulsion motor. This system allows the auxiliary engines to provide electrical propulsion power as well as supply electrical power to the vessel. With advanced software the power to propel the vessel can come from on-board batteries, one or both auxiliary engines and one or both of the main engines, or any combination of on-board power sources. In addition, when the vessel is docked, grid based power can be used to charge the batteries thereby displacing a portion of the use of the diesel engines for propulsion and electrical generation. Engine use is thus minimized and optimized and can result in significant emission reductions. The two hybrid tugs are in operation in the Ports of Los Angeles and Long Beach have shown emission reductions of 50 percent for NO_x and 70 percent for diesel PM as well as fuel savings of over 25 percent.

SCR/DPF Aftertreatment. Diesel aftertreatment systems have been demonstrated on ferries in New York and California and will soon be demonstrated on tugs in the District. These systems include selective catalytic reduction (SCR) catalysts for control of NO_x and diesel oxidation catalysts (DOC) or DOC plus diesel particulate filters (DPF) for control of PM, VOC, and CO. SCR catalyst systems have been in operation in Europe for more than 10 years on over 200 vessels without any technical issues. These systems have achieved up to 80 percent control of emissions from commercial harbor craft engines. After-treatment systems are particularly appropriate for in-use vessels because of the long useful life of boats and marine engines but space constraints, urea tanks, and high heat from DPF systems are safety concerns. Currently, CARB in coordination with the District and Hug Filtersystems have begun a demonstration of an SCR/DPF aftertreatment device on a tug boat at the Ports of Los Angeles and Long Beach.

Schedule for Action

The following actions are directed at developing and demonstrating reduced emission technologies for commercial harbor craft.

San Pedro Bay Ports Technology Advancement Program (TAP) Working Group (2012-2013). The District, CARB and US EPA serve on the San Pedro Bay Ports Technology Advancement Program (TAP) advisory committee. The TAP could serve as a forum to focus efforts specifically for reduced emission technologies for commercial harbor craft.

Secure Funding (2012-2014). Collaborate with public and private partners to secure funding commitments in 2013 for the development of technology prototypes and in-vessel demonstrations.

Develop and Demonstrate Prototypes (2012-2015). This phase involves the development, design validation, and initial demonstration of reduced emission technologies on vessels. The demonstration would include technology optimization primarily for vessels identified by the Working Group as good candidates for early implementation.

Select Technologies for Field Evaluation (2012-2017). Identify potential vessels and low emission technologies to test in the small scale demonstrations in Phase 3. Designate vessel deployment and lay out a test and development plan for a limited number of vessels.

Technology Evaluation Testing (2013-2020). Develop, deploy, and assess, with vessel operators, multiple technology and vessel types with on-going data collection, analysis, and sharing for rapid iterative design improvement.

Deployment (2015+). Identify/develop mechanisms to deploy demonstrated technologies as early as possible. Such mechanisms may include lease agreements, environmental mitigation, measures, and funding incentives.

EMISSIONS REDUCTION

Not Determined

COST EFFECTIVENESS

Not Determined

IMPLEMENTING AGENCY

SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA.

REFERENCES

CARB (2010). Initial Statement of Reasons for Amendments to the Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline.

CARB (2011). Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated with California Waters and 24 Nautical Miles of the California Baseline, California Code of Regulations, Title 17, Section 93118.5, as amended 2011.

University of California Riverside – CE-CERT (2010). Evaluating Emission Benefits of a Hybrid Tug Boat, Final Report, ARB Contracts 07-413 and 07-419.

**ADV-05: ACTIONS FOR THE DEPLOYMENT
OF CLEANER OCEAN-GOING MARINE VESSELS
[NOX, PM]**

CONTROL MEASURE SUMMARY

SOURCE CATEGORY:	CATEGORY 3 MARINE ENGINES USED IN OCEAN-GOING MARINE VESSELS
CONTROL METHODS:	DEPLOY TIER 3 MARINE ENGINES IN NEW SHIP BUILDS AND TIER 3 LEVEL RETROFIT TECHNOLOGIES IN EXISTING CATEGORY 3 MARINE ENGINE VESSELS
EMISSIONS (TONS/DAY):	TBD
CONTROL COST:	THE CONTROL COSTS VARY WITH THE TYPE OF CONTROL TECHNOLOGY IMPLEMENTED
IMPLEMENTING AGENCY:	SCAQMD, SAN PEDRO BAY PORTS, CARB, U.S. EPA

DESCRIPTION OF SOURCE CATEGORY

Background

Ocean-going marine vessels, which primarily run on diesel oil, contribute a significant portion of NO_x, PM, greenhouse gas, and toxic emissions particularly in coastal regions and in and around shipping ports. These emissions contribute to on-shore air quality problems. In order for progress to continue to meet clean air goals, emission reductions from marine vessels are necessary.

Currently, the San Pedro Bay Ports Technology Advancement Program (TAP) Advisory Group, which is comprised of CARB, U.S. EPA, and SCAQMD is exploring promising retrofit technologies to be used on marine vessels. The TAP is also working on demonstration projects. The primary objectives of the marine vessel technology demonstration projects are to identify technologies that are capable of reducing NO_x, PM, and greenhouse gases, identify and demonstrate emission measurement systems capable of accurately measuring pollutant emissions in ship exhaust streams; and install the most promising technology on an in-use Category 3 ocean-going vessel for demonstration under real world conditions and establish the emission reduction potential in different modes of operation.

This measure describes the actions needed to deploy retrofit technologies on existing Category 3 marine engines to achieve Tier 3 marine engine emissions standards. The actions proposed are consistent with Measure OGV-6 provided in the San Pedro Bay Ports Clean Air Action Plan (CAAP). Marine engine manufacturers have indicated that such retrofits are feasible. The Ports of Los Angeles and Long Beach have documented various control technologies that are potentially feasible to deploy. To-date, a limited number of demonstrations have been conducted.

Regulatory History

The regulation of emissions from mobile port-related emission sources is traditionally the responsibility of CARB and U.S. EPA. Specifically, ships are each subject to specific emission standards pursuant to state, federal, and/or international requirements. The standards, primarily affecting new units, vary in stringency and compliance dates.

OGV main and auxiliary engines are subject to the International Maritime Organizations international emission standards as contained in Annex VI to the International Convention on the Prevention of Pollution from Ships (MARPOL Annex VI). U.S. flagged ships must meet similar U.S. EPA requirements. In October 2008, the IMO adopted the current standards for engines and these require vessels to meet increasingly more stringent NO_x emission standards. The standards are designated by tiers ranging from Tier 0 being uncontrolled or no emission controls to the most stringent Tier 3 standard. NO_x emission standards are modestly more stringent when going from Tier 0 to Tier 2 (approximately 20 percent cleaner) and can be achieved through engine design changes. The Tier 3 NO_x standard is significantly more stringent (better than 80 percent cleaner) and most likely can only be met using engine after-treatment systems. Engines on vessels must meet the Tier 3 NO_x standard if they are built after 2015 and travel through designated Emission Control Areas (ECA). ECAs can be created by member states if approved by the IMO. On March 26, 2010, the IMO officially designated waters within 200 nautical miles of the United States and Canadian Coasts as the North American ECA.

In addition to NO_x emission requirements, IMO and CARB require vessels to use lower sulfur distillate fuels when the vessels travel close enough to our shores. By 2015, all vessels will be required to use distillate fuels with sulfur contents less than 1,000 ppmw when they travel within the North American ECA. With the low sulfur fuel requirements, reduction of SO_x and PM emissions will be realized.

PROPOSED METHOD OF CONTROL

As part of the San Pedro Bay Ports Clean Air Action Plan 2010 update, the Ports have adopted a program to reduce diesel particulate matter (DPM) and NO_x emissions from the existing fleet of vessels through the identification of new effective technologies. Numerous emission reduction technologies are being evaluated for integration into vessel new builds and use of these technologies as a retrofit for existing vessels will be explored. These would fall into several broad categories shown in the table below. Many of these retrofit technologies are currently available and demonstrated in Europe on smaller ocean-going vessels. The two major marine engine manufacturers, MAN Diesel and Wartsila, have been developing these technologies to meet current and future International Maritime Organization (IMO) standards..

CONTROL	CONTROL DETAILS	ESTIMATE EMISSION REDUCTIONS*	
		NOx	PM
Engine Technologies	Common Rail Fuel Injection, Slide Valves, Electronic Fuel Control, Electronically Controlled Lubrication Systems, and Automated Engine Monitoring/Control Systems	Up to 20%	Up to 40%
Engine Support Technologies	Water Injection, Exhaust Gas Recirculation, High Efficiency Turbo Charging, Scavenging Air Moistening/Humid Air Motor, Two Stage Turbo Charging	Up to 60%	Up to 20%
After-Treatment Technologies	Selective Catalytic Reduction (SCR), and Exhaust Gas Scrubbers (Wet –freshwater, saltwater, hybrid, and Dry)	Up to 90%	Up to 90%
Alternative Fuels	Liquefied Natural Gas	Up to 90%	Up to 99%
Alternative Supplemental Power Systems	Wind and Solar Power, Marine Fuel Cell, Marine Hybrid Systems, Waste Heat Recovery	Data Not Available	Data Not Available

* San Pedro Bay Ports Clean Air Action Plan – Guide to OGV Emission Control Strategies

New Slide Valve Designs - Replacement of existing valves on main and auxiliary engines with new “slide” valves could provide up to 30 percent reduction in NOx (depending on the design). In addition, installing slide valves reduces particulate emissions and leads to greater fuel efficiency. MAN Diesel (one of the two leading manufacturers of marine engines) currently has such slide valves commercially available. Slide valves are in use on several marine vessels operating in Europe. Slide valves are being tested on container vessels operating in California.

Internal Engine Modifications - There are several modifications that could be made to the engine’s operation that would lead to reduced NOx emissions. Modifications include: delayed fuel injection and ignition, which reduces the in-cylinder duration of the combustion gases at high temperatures; lowering fuel injection pressure; raising the degree of premixing; advancing the closing time of the inlet valve to lower the final combustion temperature (“Miller valve timing”); reducing the temperature and pressure of the combustion air fed into the cylinders; optimizing the geometry of the combustion space and the compression ratio; and optimizing the fuel injection method. Such modifications could result in up to 30 percent reduction in NOx emissions.

Direct Water Injection (DWI) - Direct water injection is a form of diesel emulsification, where freshwater is injected into the combustion chamber. Injecting water lowers the combustion temperature leading to lower NOx emissions (on the order of 40 to 50 percent reduction).

Typical water to fuel ratio ranges between 40 to 70 percent. As of 2005, there are about 23 vessels operating in the Baltic Region, equipped with water injection, primarily on auxiliary engines. Such use could be transferred to vessels operating in and out of California ports.

Humid Air Motor (HAM) or Saturated Air Motor (SAM) - HAM is similar to the direct water injection application except that seawater is vaporized directly into the combustion chamber to lower the combustion temperature. The waste heat is recovered and used to vaporize the seawater. The salt content of the Baltic Sea water is not as high as in other parts of the ocean, which makes the HAM application more appealing since there is no need to store freshwater on board the vessel.

Selective Catalytic Reduction (SCR) - Similar application to stationary source boilers and engines. SCR technologies have been applied to ferries and roll-on/roll-off vessels in Europe. In addition, four steel carrier vessels operating between California and Korea have used SCR since the early 1990s. The two major Category 3 marine engine manufacturers have indicated that SCR technologies will most likely be Tier 3 solutions. Such technologies can achieve over 90 percent emission reduction in NOx from uncontrolled levels.

Exhaust Gas Recirculation (EGR) - EGR technologies are similar to that used on on-road engines. However, the units are much larger in size and have not been fully developed at this point. As with on-road engine applications, the expected NOx emission reduction is about 50 percent.

Sea Water Scrubbers - Sea water scrubber systems are developed primarily for the cleanup of sulfur oxides and particulates. Relative to NOx emissions reduction, the sea water scrubber has been estimated to have about a 5 percent benefit.

LNG Fueled Marine Engines - Currently there is limited use of liquid natural gas (LNG) to power propulsion engines on marine vessels. One of the major category 3 marine engine manufacturers recently announced plans to manufacture additional LNG-fueled ocean-going vessels. LNG could meet Tier 3 emissions levels and reduce greenhouse gas emissions.

All of these systems and approaches need additional study, research, design, proof of concept testing, and both small and full scale demonstration programs to advance the technology for application on ocean-going vessels traveling in the South Coast Air Basin, as well as a greater examination of operational impacts and costs.

Schedule for Actions

With the goal of ensuring only the cleanest vessels visit the San Pedro Bay Ports, the following actions are identified.

Actions

San Pedro Bay Ports OGV 5 and OGV 6 Task Force (2012-2014). The Ports along with the District, CARB, and U.S. EPA have formed the OGV 5 and OGV 6 task force to work with stakeholders (including vessel operators, engine manufacturers, regulatory agencies) to identify

and prioritize technology options as well as the most appropriate vessel types for early introduction of the technology using cost, feasibility, operational integration, and other parameters identified by the task force. Technology gaps will also be identified.

Identify and Secure Funding (2012-2014). The TAP program is the ports' vehicle to identify sources and develop partnerships that would accelerate the deployment of developing or developed technology. Through the TAP, partnerships with other public and private groups are developed to secure funding commitments for the development of prototype demonstrations. Efforts to expand these partnerships for other candidate funding sources such as other U.S. Ports, Federal Agencies (e.g., U.S. Maritime Administration), international organizations (e.g., IMO) and air districts should be considered. Interested technology developers and engine manufacturers are also candidates for in-kind contributions as well as vessel operators.

Develop and Demonstrate Prototypes (2012-2015). Through the TAP collaborative demonstration projects with stakeholders for the development, design validation, and initial demonstration of reduced emission retrofit technologies on vessels are performed. These demonstrations would include retrofit technology optimization primarily for vessel types and engines identified as good candidates for early implementation.

Select Technologies for Fleet Evaluation (2012-2017). Identify potential vessels and retrofit technologies to test in the small scale demonstrations. Through the TAP designate vessel test deployment, and lay out a test and development plan for a limited number of vessels.

Technology Evaluation Testing (2015-2020). Develop, deploy and assess with multiple vessels with on-going data collection, analysis and sharing for rapid iterative design improvement. The TAP can provide the structure to monitor and evaluate equipment performance and emission benefits during demonstration projects.

Deployment (2017+). Identify and develop mechanism to deploy demonstrated technologies as early as possible. Such mechanism may include lease agreements, environmental mitigation measures, and funding. The San Pedro Bay Ports have adopted programs to incentivize Tier 2 and Tier 3 vessel calls.

As part of this action, between 2012 to 2015, the South Coast Air Quality Management District, CARB, the San Pedro Bay Ports, and U.S. EPA will collaborate and develop potential additional mechanisms to incentivize or require Tier 3 vessel calls at the state and federal levels.

EMISSIONS REDUCTION

Not Determined

COST EFFECTIVENESS

Not Determined

IMPLEMENTING AGENCY

SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA.

REFERENCES

San Pedro Bay Ports Clean Air Action Plan 2010 Update, October 2010

**ADV-06: ACTIONS FOR THE DEPLOYMENT OF
CLEANER OFF-ROAD EQUIPMENT
[NOX, PM]**

CONTROL MEASURE SUMMARY

SOURCE CATEGORY:	OFF-ROAD CONSTRUCTION, INDUSTRIAL ENGINES
CONTROL METHODS:	ADVANCED HYBRID SYSTEMS AND CONTROL TECHNOLOGIES TO ACHIEVE AT LEAST AN ADDITIONAL 60 PERCENT REDUCTION BEYOND TIER 4 EMISSION STANDARDS
EMISSIONS (TONS/DAY):	TBD
CONTROL COST:	THE CONTROL COSTS VARY WITH THE TYPE OF CONTROL TECHNOLOGY IMPLEMENTED
IMPLEMENTING AGENCY:	SCAQMD, CARB, U.S. EPA

DESCRIPTION OF SOURCE CATEGORY

Background

This measure describes the actions needed to commercialize advanced zero-emission and near-zero emission technologies that could be deployed in the 2020 to 2030 timeframe. Such technologies include advanced engine controls to achieve at least an additional 60 percent reduction in NO_x exhaust emissions beyond the Tier 4 off-road emissions standards.

Regulatory History

The federal Tier 4 Final standards are currently the most stringent emission standards for off-road diesel engines used in heavy construction and industrial equipment. These standards take effect in 2014 or 2015 for engines in the 75-750 hp range which includes the majority of this equipment and requires NO_x emissions not to exceed 0.3g/bhp-hr. In addition to these standards for new engines, CARB adopted the In-Use Off-Road Diesel-Fueled Fleets Regulation (Off-Road rule) in 2007 in order to accelerate the introduction of equipment using Tier 4 engines. The off-road rule applies to diesel fueled construction, mining, industrial, airport ground support equipment, and mobile oil drilling equipment and established increasingly stringent annual fleet average emission targets. Fleets that do not meet the fleet average in any year are required to “turnover,” (i.e., retire, replace, retrofit, or repower) a specified percentage of their horsepower. The rule currently requires large and medium sized fleets to meet 1.5 g/bhp-hr NO_x by 2023 and small fleets to meet 1.5 g/bhp-hr NO_x by 2028. This represents 70 percent Tier 4, 7 percent Tier 4i equipment with decreasing fractions of Tier 3, Tier 2, Tier 1 and Tier 0 equipment.

PROPOSED METHOD OF CONTROL

Equipment subject to the Off-Road rule represents 59 percent of the 2023 NO_x emissions from this source category. Diesel engines produce 70 percent of the 2023 construction and industrial NO_x emissions while large spark ignition (LSI) engines, primarily gasoline, represent about 30 percent of the NO_x emissions. Different methods of control may be best suited to different types of equipment due to size, work location, and duty cycle. The following four phase program is proposed to identify and apply the most appropriate control method for each equipment type.

Construction and industrial equipment have substantially different work locations and duty cycles and include engines from all horsepower categories and fuel types. Equipment types range from small boom lifts to heavy off-road trucks and dual engine scrapers. Construction equipment is usually operated at field locations with limited grid power and limited access. As a result, zero emission drive systems are more difficult to deploy in construction equipment than other off-road mobile categories. Industrial equipment is usually operated at fixed sites with readily available grid power and with access to alternative fuel required for fuel cells. Industrial equipment therefore is a more likely candidate for early introduction of zero emission drive systems than off-road construction equipment. The following table summarizes potential zero- and near zero-emissions systems to be evaluated over the next several years.

TECHNOLOGY	APPLICATION	STATUS/POTENTIAL EMISSION REDUCTION
Battery-Electric	Equipment with high percentage of standby time or low load time and located at site with grid power	Industrial equipment commercialized, smaller construction equipment demonstrations needed/100%
Fuel Cell	Equipment with access to fuel infrastructure – most likely equipment at fixed sites or returning to equipment yards at night.	Development of forklifts and other industrial equipment in process/100%
Plug-In Hybrid Electric	Equipment with energy recovery duty cycles or high percentage of idle/low power operation. Equipment can operate at remote sites with conventional fuel or grid power if available at job site. Hybrid technology may vary by equipment type.	On-road truck systems commercialized; industrial equipment in development, construction equipment depends on market interest/40% from Tier 4
CNG/LNG	Equipment at fixed sites or returning to equipment yards at night	Available for some forklifts; demonstrations underway for heavy construction equipment/60% from Tier 4
Hybrid Systems	Equipment with energy recovery duty cycles or high percentage of idle/low power operation. Equipment can operate at remote sites with diesel fuel. Hybrid technology may vary by equipment type.	Entering commercialization in selected applications/25% from Tier 4
Cleaner Combustion Engines	Heavy construction equipment >300 hp	Engines with NO _x emissions at least 60% cleaner from Tier 4 standards

Battery-Electric Equipment. Battery-electric equipment is already commercialized for many industrial equipment categories. However, this equipment has been developed with conventional automotive lead acid battery technology. Further demonstrations are needed in conjunction with the latest battery technologies.

Fuel Cell Equipment. This zero-emission technology is being demonstrated in light-duty passenger cars, buses and trucks. Fuel cell technologies need additional development for off-road applications.

Hybrids. Hybrid electric drives are now being introduced into construction equipment (Caterpillar D7E bulldozer and Komatsu excavator). Other manufacturers including Volvo and John Deere are developing diesel hybrid equipment. For smaller equipment, plug-in hybrid systems are being adapted from light and medium duty on-road vehicles.

In order to establish the emission benefit and to facilitate the deployment of hybrid equipment through incentive programs, a methodology to determine the emissions of hybrid drive systems compared to conventional diesel engines will be developed in cooperation with CARB, EPA, and equipment manufacturers with input through the Working Group.

Reduced Emission Diesel Engines. More significant emission reductions (60% below Tier 4 – 0.12 g/bhp-hr) will require further advancements in engine and exhaust treatment technologies for diesel engines or use of alternative fuels such as natural gas. Many of these technologies currently exist and are used for passenger car and truck engines. However, these technologies are not likely to be used in off-road engines without new technology forcing exhaust emissions standards.

Schedule for Action

The following actions are directed at developing and demonstrating technologies for zero- or near-zero emission construction and industrial equipment. Since all of these technologies are currently in some stage of development for on-road trucks and industrial equipment, it is appropriate that the schedules for technology development, demonstration activities and technology deployment, reflect the potential for earlier technology implementation in selected applications than for all equipment categories and applications. The schedules specified below for zero-emission construction equipment technology deployment where feasible extend from 2015 to beyond 2021.

Actions

Off-road Equipment Working Group (2012-2014). A technical working would be formed to focus efforts specifically on near-zero and zero-emission opportunities for penetration into each type of off-road construction and industrial equipment. Performance requirements, work location, and duty cycle will be matched to technology factors including power storage, drive system type, system size and weight, and charging technologies. The Working Group would coordinate with core end users to define their needs and key equipment design parameters in the 2012 – 2013 timeframe. The Working Group will include air quality regulatory agencies,

equipment and drive system manufacturers, equipment operators, and independent research and academic organizations.

Secure Funding (2012-2014). Collaborate with public and private partners to secure funding commitments for the development of vehicle prototypes and infrastructure demonstrations similar to the Off-Road Showcase.

Develop and Demonstrate Equipment Prototypes (2012-2015). This phase involves the development, design validation, and initial demonstration of several types of advanced prototype vehicles. The demonstration would include technology optimization for equipment types and applications recommended by the Working Group.

Select Technologies for Field Evaluation (2012-2017). Identify potential equipment types and drive technologies to test in the small scale demonstrations. Designate equipment deployment and lay out a test and development plan for a limited number of equipment.

Equipment Evaluation Testing (2013-2020). Develop, deploy and assess, with equipment operators, multiple equipment types with on-going data collection, analysis and sharing for rapid iterative design improvement.

Deployment (2015+). Identify/develop mechanisms to deploy demonstrated technologies as early as possible. Such mechanisms may include lease agreements, environmental mitigation measure, and funding incentives.

EMISSIONS REDUCTION

Not Determined

COST EFFECTIVENESS

Not Determined

IMPLEMENTING AGENCY

SCAQMD, CARB, USEPA

REFERENCES

CARB (2005). California Exhaust Emission Standards and Test Procedures for New 2008 and Later Tier 4 Off-Road Compression-Ignition Engines, California Code of Regulations, Title 13, Chapter 9, Article 4.8, Section 2423.

CARB (2011). In-Use Off-Road Diesel Fueled Fleet Regulation, California Code of Regulations, Title 13, Chapter 9, Article 4.8, Sections 2449 through 2449.2.

CARB (2010). Off-Road Simulation Model, available at http://www.arb.ca.gov/msprog/ordiesel/offroad_1085.htm

**ADV-07: ACTIONS FOR THE DEPLOYMENT
OF CLEANER AIRCRAFT ENGINES
[NOX, PM]**

CONTROL MEASURE SUMMARY

SOURCE CATEGORY:	COMMERCIAL JET AIRCRAFT ENGINES
CONTROL METHODS:	ADVANCED ENGINE TECHNOLOGIES AND CLEANER AVIATION FUELS
EMISSIONS (TONS/DAY):	TBD
CONTROL COST:	THE CONTROL COSTS VARY WITH THE TYPE OF CONTROL TECHNOLOGY IMPLEMENTED
IMPLEMENTING AGENCY:	SCAQMD, CARB, FAA, U.S. EPA

DESCRIPTION OF SOURCE CATEGORY

Background

This measure describes the actions needed to develop, demonstrate, and commercialize advanced technologies, procedures, and sustainable alternative jet fuels that could be deployed in the 2020 to 2030 timeframe. Such technologies include advanced engine controls to reduce landing and takeoff cycle NO_x emissions by at least 60 percent, without increasing other gaseous or particulate emissions beyond the International Civil Aviation Organization (ICAO) standards adopted in 2004. In addition, greater use of sustainable alternative jet fuels in conjunction with advanced technologies is critical over the next 10 to 20 years to realize substantial emissions reductions from commercial jet aircraft applications.

Regulatory History

In 1973, the U.S. EPA published emissions standards and test procedures to regulate gaseous emissions, smoke, and fuel venting from aircraft engines. In 1997, the standards were revised to be more consistent with those of the ICAO Committee of Aviation Environmental Protection (CAEP) for turbo engines used in commercial aircraft. These standards (CAEP/2) included new CO, HC, and NO_x emissions standards of 118 grams per kilonewtons (g/kN), 19.6 g/kN, and 40 g/kN, respectively. In 2005, the standards were harmonized with ICAO CAEP/4 requirements which tightened the CAEP/2 NO_x standards by 32% for newly-certified commercial aircraft engines.

On June 1, 2012, the U.S. EPA Administrator signed a final rule to further revise the standards to be consistent with the current ICAO CAEP/6 and CAEP/8 requirements to further reduce NO_x emissions. The first set of standards take effect 30 days after from the date the rule is published in the Federal Register and will require all new engines meet the ICAO CAEP/6 standards. The CAEP/6 standards represent approximately 12 percent emissions reduction from

the ICAO Tier 4 levels. The second set of standards, Tier 8, take effect in 2014 and represents approximately a 15 percent from Tier 6 levels.

PROPOSED METHOD OF CONTROL

The proposed actions seek the development and deployment of new and cleaner commercial aircraft engines beginning 2015 such that by 2023, there will be a substantial number of low-emissions commercial jet aircraft that could be routed to the South Coast Air Basin.

Schedule for Action

State and local aircraft emission regulation is preempted by the Clean Air Act which gives that responsibility to U.S. EPA in consultation with the Federal Aviation Administration (FAA). New engine aircraft standards were adopted in 2005 and revised standards are being proposed by US and CAEP. No regulations are planned for the in-use aircraft fleet so emission reductions can only be achieved through fleet turn-over. Fortunately, new aircraft offer lower fuel consumption as well as reduced emissions providing an economic incentive for airlines to accelerate replacement of their older aircraft.

In 2010, the FAA initiated the Continuous Lower Energy, Emissions and Noise (CLEEN) Program to reduce NOx emissions by 75% relative to the 2005 emission standards by 2025. Potential low emission aircraft technologies include alternative fuels, lean combustion burners, high rate turbo bypass, advanced turbo-compressor design, and engine weight reduction. This program provides a framework and goal to develop and demonstrate technologies for improved efficiency and reduced emissions on a continuous incremental basis. The major elements of the framework are described below.

Actions

Formation of the CLEEN program working group (completed). The working group consists of aircraft manufacturers, jet engine manufacturers, component suppliers, the U.S. EPA, and NASA. The working group meets bi-annually.

Secure Funding (2012-2018). The FAA is providing limited funding for test and evaluation. Participating companies are also providing internal research, prototype preparation and laboratory tests.

Develop and Demonstrate Equipment Prototypes (2012-2018). Prototype technologies are being prepared for laboratory testing.

Select Technologies for Fleet Evaluation (2015-2018). Select successful technology improvements from bench test data to test in flight operations. Identify target flight test partners and lay out a test and development plan for a limited number of vehicles.

Technology Evaluation Testing (2018-2020). Develop, deploy and assess the selected engine technologies on aircraft operated by participating airlines. Provide on-going data collection,

analysis and sharing for rapid iterative design improvement and support for FAA and international flight certification.

Prepare and Submit FAA Certification and Application (2018-2020). Each engine manufacturer is responsible for obtaining certification of successfully demonstrated technology improvements.

Deployment (2020+). Identify/develop mechanisms to deploy demonstrated technologies as early as possible.

EMISSIONS REDUCTION

Not Determined

COST EFFECTIVENESS

Not Determined

IMPLEMENTING AGENCY

SCAQMD, U.S. FAA, U.S. EPA, CARB

REFERENCES

Federal Aviation Administration (2011). Continuous Lower Energy, Emissions, and Noise (CLEEN) Program Presentation by Jim Skalecky. Presented at the AIAA Aerospace Sciences Meeting.

Federal Aviation Administration (2011). Continuous Lower Energy, Emissions, and Noise (CLEEN) Program Presentation by Rhett Jeffries. Presented at the UC Davis Symposium.

Federal Aviation Administration (2012). FAA CLEEN Program Website:
http://www.faa.gov/about/office_org/headquarters_offices/apl/research/aircraft_technology/cleen/

U.S. EPA (2012). Control of Air Pollution From Aircraft and Aircraft Engines; Final Emission Standards and Test Procedures, signed June 1, 2012.

**DRAFT FINAL 2012 SOUTH COAST
AIR QUALITY MANAGEMENT PLAN
APPENDIX IV-C**

**Regional Transportation Strategy and
Control Measures**

November 2012

Mission Statement

Under the guidance of the Regional Council and in collaboration with our partners, our mission is to facilitate a forum to develop and foster the realization of regional plans that improve the quality of life for Southern Californians.



SCAG Regional Council

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Ventura County: Linda Parks, Ventura County | Glen Becerra, Simi Valley | Bryan A. MacDonald, Oxnard | Carl Morehouse, San Buenaventura

Tribal Government Representative: Vacant

Orange County Transportation Authority: Jerry Amante, Tustin

Riverside County Transportation Commission: Mary Craton, Canyon Lake

San Bernardino Associated Governments: Alan Wapner, Ontario

Ventura County Transportation Commission: Keith Millhouse, Moorpark

Transportation Corridors Agency: Lisa Bartlett, Dana Point

Ex-Officio: Randall Lewis, Lewis Group of Companies

Executive Summary

This Appendix describes the Southern California Association of Government's (SCAG) transportation strategy and transportation control measures (TCMs) to be included as part of the 2012 Air Quality Management Plan (AQMP) / PM2.5 State Implementation Plan (SIP) for the South Coast Air Basin. The transportation strategy and TCMs are based on SCAG's adopted 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and 2011 Federal Transportation Improvement Program (FTIP) as amended which were developed in consultation with federal, state and local transportation and air quality planning agencies and other stakeholders. The four County Transportation Commissions (CTCs) in the South Coast Air Basin, namely Los Angeles County Metropolitan Transportation Authority, Riverside County Transportation Commission, Orange County Transportation Authority and the San Bernardino Associated Governments, were actively involved in the development of the regional transportation measures of this Appendix.

The Regional Transportation Strategy and Transportation Control Measures portion of the 2012 AQMP/SIP consists of the following three related Sections.

Section I. Linking Regional Transportation Planning to Air Quality Planning

As required by federal and state laws, SCAG is responsible for ensuring that the regional transportation plan, program, and projects are supportive of the goals and objectives of AQMPs/SIPs. SCAG is also required to develop demographic projections and regional transportation strategy and control measures for the AQMPs/SIPs.

As the Metropolitan Planning Organization (MPO), SCAG develops the RTP/SCS every four years. The RTP/SCS is a long-range regional transportation plan that provides a vision for transportation investments throughout the SCAG region. The 2012-2035 RTP/SCS also integrates land use and transportation planning to achieve regional greenhouse gas (GHG) reduction targets set by the California Air Resources Board (ARB) pursuant to SB375.

SCAG also develops the biennial FTIP. The FTIP is a multimodal list of capital improvement projects to be implemented over a six year period. The FTIP implements the programs and projects in the RTP/SCS.

Section II. Regional Transportation Strategy and TCMs

The SCAG region faces daunting mobility, air quality, and transportation funding challenges. Under the guidance of the goals and objectives adopted by SCAG's Regional Council, the 2012-2035 RTP/SCS was developed to provide a blueprint to integrate land use and transportation strategies to help achieve a coordinated and balanced regional transportation system. The 2012-2035 RTP/SCS represents the culmination of more than two years of work involving dozens of public agencies, 191 cities, hundreds of local, county, regional and state officials, the business community, environmental groups, as well as various nonprofit organizations. The 2012-2035 RTP/SCS was formally adopted by the SCAG Regional Council on April 4, 2012.

The 2012-2035 RTP/SCS contains a host of improvements to every component of the regional multimodal transportation system including:

- Active transportation
- Transportation demand management (TDM)
- Transportation system management (TSM)
- Transit
- Passenger and high-speed rail
- Goods movement
- Aviation and airport ground access
- Highways
- Arterials
- Operations and maintenance

Included within these transportation system improvements are projects that reduce vehicle use or changing traffic flow or congestion conditions (“TCMs”). TCMs include the following three main categories of transportation improvement projects and programs:

- High occupancy vehicle (HOV) measures,
- Transit and systems management measures, and
- Information-based transportation strategies.

New to this cycle of the RTP is the inclusion of the SCS as required by SB 375. The primary goal of the SCS is to provide a vision for future growth in Southern California that will decrease per capita GHG emissions from passenger vehicles. However, the strategies contained in the 2012-2035 RTP/SCS will produce benefits for the region far beyond simply reducing GHG emissions. The SCS strives to integrate the transportation network and related strategies with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. The regional vision of the SCS maximizes current voluntary local efforts that support the goals of SB 375. The SCS focuses the majority of new housing and job growth in high-quality transit areas and other opportunity areas on existing main streets, in downtowns, and commercial corridors, resulting in an improved jobs-housing balance and more opportunity for transit-oriented development. In addition, SCAG is a strategic partner in a regional effort to accelerate fleet conversion to near-zero and zero-emission transportation technologies. A significant expansion of alternative-fuel infrastructure is needed throughout the region to accommodate the anticipated increase in alternative fueled vehicles.

Section III. Reasonably Available Control Measure Analysis

As required by the Federal Clean Air Act (CAA), a reasonably available control measure (RACM) analysis must be included as part of the overall control strategy in the AQMP/SIP to ensure that all potential control measures are evaluated for implementation and that justification is provided for those measures that are not implemented. Appendix IV-C contains the TCM RACM component for the South Coast PM_{2.5} control strategy. In accordance with EPA procedures, this analysis considers TCMs in the 2012-2035 RTP/SCS, measures identified by the CAA, and relevant measures adopted in other non-attainment areas of the country.

Based on this comprehensive review, it is determined that the TCMs being implemented in the South Coast Air Basin are inclusive of all TCM RACM. None of the candidate measures reviewed and determined to be infeasible meets the criteria for RACM implementation.

Section I. Linking Regional Transportation Planning to Air Quality Planning

Federal and State Requirements

The air quality conformity requirements of the Federal CAA establish a need to integrate air quality planning and regional transportation planning. This integration presents the challenge of balancing the real need for improved mobility with the equally important goal of cleaner air. As the federally-designated MPO for the six-county Southern California region, SCAG is required by law to ensure that transportation activities “conform” to, and are supportive of, the goals of regional and state air quality plans to attain the National Ambient Air Quality Standards (NAAQS). In addition, SCAG is a co-producer, with the South Coast Air Quality Management District (AQMD), of the AQMP for the South Coast Air Basin. SCAG has the responsibility for the demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies, as well as analyzing and providing emissions data related to its planning responsibilities (California Health and Safety Code §40460).

Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and Federal Transportation Improvement Program (FTIP)

The SCAG Region is the largest metropolitan planning area in the United States, encompassing 38,000 square miles. The region is divided into 14 subregions and is one of the largest concentrations of population, employment, income, business, industry and finance in the world. The six-county SCAG Region is home to more than 18 million people, nearly half of the population of the state of California.

Federal and state regulations require SCAG, as the Regional Transportation Planning Agency and MPO, to develop an RTP every four years in order for our region's transportation projects to qualify for federal and state funding. The RTP is updated to reflect changes in trends, progress made on projects, and to adjust the growth forecast for population changes. The long-range transportation plan provides a vision for transportation investments throughout the region. Using growth forecasts and economic trends that project out over a 20-year period, the RTP considers the role of transportation in the broader context of economic, environmental, and quality-of-life goals for the future, identifying regional transportation strategies to address our mobility needs.

The SCS is a newly required element of the RTP. The SCS integrates land use and transportation strategies that will achieve ARB greenhouse gas emissions reduction targets. According to SB 375, “The Sustainable Communities Strategy shall:

1. identify the general location of uses, residential densities, and building intensities within the region;
2. identify areas within the region sufficient to house all the population of the region, including all economic segments of the population, over the course of the planning period of the regional transportation plan taking into account net migration into the region, population growth, household formation and employment growth;
3. identify areas within the region sufficient to house an eight-year projection of the regional housing need for the region;

4. identify a transportation network to service the transportation needs of the region;
5. gather and consider the best practically available scientific information regarding resource areas and farmland in the region;
6. consider the state housing goals specified in Sections 65580 and 65581;
7. set forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce the greenhouse gas emissions from automobiles and light trucks to achieve, if there is a feasible way to do so, the greenhouse gas emission reduction targets approved by the state board;
8. allow the regional transportation plan to comply with the federal Clean Air Act."

The RTP/SCS was developed through a collaborative process, guided by the SCAG Regional Council and its Policy Committees and Sub-committees, the Plans & Programs Technical Advisory Committee, numerous task forces, CTCs, subregions, local governments, state and federal agencies, environmental and business communities, tribal governments, non-profit groups, as well as the general public. The RTP/SCS constitutes the Regional Transportation Strategy and Control Measures for the AQMP.

SCAG is also responsible for developing a biennial short-term (six year planning horizon) FTIP. SCAG develops the FTIP in partnership with the CTCs of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura, and Caltrans Districts 7, 8, 11, and 12. The FTIP is a multimodal list of capital improvement projects to be implemented over a six-year period. The FTIP identifies specific funding sources and fund amounts for each project. It is prioritized to implement the region's overall strategy for providing mobility and improving both the efficiency and safety of the transportation system, while supporting efforts to attain federal and state air quality standards for the region by reducing transportation related air pollution. The FTIP must include all federally funded transportation projects in the region, as well as all regionally significant transportation projects for which approval from federal funding agencies is required, regardless of funding source. The FTIP is developed to incrementally implement the programs and projects in the RTP. TCMs that are committed to in the applicable SIP are derived from the first two years of the prevailing FTIP.

Section II. Regional Transportation Strategy and TCMs

Introduction

The 2012-2035 RTP/SCS is a long-range regional transportation plan that provides a blueprint to integrate land use and transportation strategies to help achieve a coordinated and balanced regional transportation system. Transportation projects in the SCAG region must be included in the RTP/SCS in order to receive federal funding. The 2012-2035 RTP/SCS is comprised of the following elements: (1) a policy element that presents an overview of the challenges facing the region; the RTP/SCS goals, policies and performance outcomes; (2) the SCS, which includes land use policies and forecasted future growth and land use for the region; (3) an action element that describes the transportation investments and programs necessary to implement the Plan and performance measures to determine how the Plan performs; and (4) the financial element that summarizes the cost of Plan implementation constrained by a realistic projection of available revenues and provides recommendations for the allocation of funds.

The 2012-2035 RTP/SCS represents the culmination of more than two years of work involving dozens of public agencies, 191 cities, hundreds of local, county, regional and state officials, the business community, environmental groups, as well as various nonprofit organizations, and was founded on a broad-based public outreach effort. The implementation of one of the most comprehensive and coordinated public participation plans ever undertaken by SCAG is documented in the 2012-2035 RTP/SCS, Public Participation and Consultation Appendix¹.

The 2012-2035 RTP/SCS was formally adopted by the SCAG Regional Council on April 4, 2012 and submitted for approval to the federal agencies. The 2012-2035 RTP/SCS constitutes the transportation control strategy portion of the 2012 AQMP. A full, illustrative list of the 2012-2035 RTP/SCS projects can be found in the Project List Appendix of the 2012-2035 RTP/SCS. (See <http://rtpscs.scag.ca.gov/Pages/2012-2035-RTP-SCS.aspx>)

Key Planning Challenges

The challenges facing the region's future are daunting:

Mobility Challenges: The region's roadways are the most congested in the nation, resulting in over three million hours wasted each year sitting in traffic. Traffic relief is critical, even more so in the region's current economic situation. By failing to adequately address congestion in the Region, we have foregone jobs - every 10 percent decrease in congestion can bring an employment increase of about 132,000 jobs.

Air Quality Challenges: While Southern California is a leader in reducing emissions and ambient levels of air pollutants are improving, the SCAG region continues to have the worst air quality in the nation, and air pollution causes thousands of premature deaths every year, as well as other serious adverse health effects. The South Coast Air Basin has the worst air quality of the four air basins contained in the SCAG region.

¹ http://rtpscs.scag.ca.gov/Documents/2012/final/SR/2012fRTP_PublicParticipation.pdf

Funding Need: Of all the challenges facing the transportation system today, there is perhaps none more critical than funding. With the projected growth in population, employment, and demand for travel, the costs of our multimodal transportation needs surpass projected revenues available from our historic transportation funding source - the gas tax. State and federal gas taxes have not changed in nearly 20 years. Yet, highway construction costs have grown by over 80 percent. The region must consider ways to stabilize existing revenue sources and supplement them with reasonably available new sources.

Regional Goals and Policies: To Realize a Sustainable Future

To guide development of the projects, programs, and strategies, SCAG's Regional Council adopted goals and objectives that help carry out the 2012-2035 RTP/SCS vision which encompasses three principles: mobility, economy, and sustainability. The regional goals reflect the wide-ranging challenges facing transportation planners and decision-makers in achieving the RTP/SCS vision. The goals demonstrate the need to balance many priorities in the most cost-effective manner. SCAG's Regional Council adopted the following goals as part of the 2012-2035 RTP/SCS.

- Align the plan investments and policies with improving regional economic development and competitiveness
- Maximize mobility and accessibility for all people and goods in the region
- Ensure travel safety and reliability for all people and goods in the region
- Preserve and ensure a sustainable regional transportation system
- Maximize the productivity of our transportation system
- Protect the environment and health of our residents by improving air quality and encouraging active transportation (non-motorized transportation, such as bicycling and walking)
- Actively encourage and create incentives for energy efficiency, where possible
- Encourage land use and growth patterns that facilitate transit and non-motorized transportation
- Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies

The six 2012-2035 RTP/SCS guiding policies below help focus future investments on the best-performing projects and strategies that seek to preserve, maintain, and optimize the performance of the existing system.

- 1) Transportation investments shall be based on SCAG's adopted regional Performance Indicators
- 2) Ensuring safety, adequate maintenance, and efficiency of operations on the existing multimodal transportation system should be the highest RTP/SCS priorities for any incremental funding in the region
- 3) RTP/SCS land use and growth strategies in the RTP/SCS will respect local input and advance smart growth initiatives
- 4) Transportation demand management (TDM) and non-motorized transportation will be focus areas, subject to Policy 1

- 5) HOV gap closures that significantly increase transit and rideshare usage will be supported and encouraged, subject to Policy 1
- 6) Monitoring progress on all aspects of the Plan, including the timely implementation of projects, programs, and strategies, will be an important and integral component of the Plan

Transportation Investments

The RTP/SCS contains a host of improvements to the regional multimodal transportation system. These improvements include closures of critical gaps in the network that hinder access to certain parts of the region, as well as the strategic expansion of our transportation system where there is room to grow in order to provide the region with the mobility it needs.

Active Transportation Component: \$6.7 billion will be invested in various active transportation strategies to increase bikeways in the SCAG region from 4,315 miles to 10,122 miles, bring significant amount of sidewalks into compliance with the Americans with Disabilities Act (ADA), safety improvements, and various other strategies.

Transportation Demand Management (TDM) Component: \$4.5 billion will be invested in various TDM strategies to incentivize drivers to reduce solo driving: (1) Increase carpooling and vanpooling; (2) Increase the use of transit, bicycling, and walking; (3) Redistribute vehicle trips from peak periods to non-peak periods by shifting work times/days/locations; (4) Encourage greater use of telecommuting; and (5) Other “first mile/last mile” strategies to allow travelers to easily connect to and from transit service at their origin and destination. These strategies include the development of mobility hubs around major transit stations, the integration of bicycling and transit through folding-bikes-on-buses programs, triple bike racks on buses, and dedicated racks on light and heavy rail vehicles.

Transportation System Management (TSM) Component: \$7.6 billion will be invested in various TSM strategies to enhanced incident management, advanced ramp metering, traffic signal synchronization, advanced traveler information, improved data collection, universal transit fare cards (Smart Cards), and Transit Automatic Vehicle Location (AVL) to increase traffic flow and reduce congestion.

Transit Component: A total of \$55.0 billion will be invested in (1) bus rapid transit (BRT) - new BRT routes, extensions, and/or service enhancements in Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties; (2) light rail transit - new light rail and commuter rail routes/extensions in Los Angeles and San Bernardino Counties; (3) heavy rail transit – heavy rail extension in Los Angeles County; and (4) bus - new and expanded bus service in Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties.

Passenger and High-Speed Rail Component: A total of \$51.8 billion will be invested in (1) commuter rail - Metrolink extensions in Riverside County and Metrolink system-wide improvements to provide higher speeds; and (2) high speed rail - improvements to the Los Angeles to San Diego (LOSSAN) Rail Corridor with an ultimate goal of providing San Diego-Los Angeles express service in under two hours, and Phase I of the California High-Speed Train (HST) project that would provide high-speed service from the Kern County line to Anaheim via

L.A. Union Station with stops in Palmdale, San Fernando Valley, L.A. Union Station, Norwalk and Anaheim.

Goods Movement (includes Grade Separations) Component: \$48.4 billion will be invested in various goods movement strategies including Port access improvements, freight rail enhancements, grade separations, truck mobility improvements including an East-West Freight Corridor, intermodal facilities, and support of emission-reduction strategies such as the deployment of commercially available lower-emission trucks and locomotives in the near term while taking critical steps (including technology demonstration projects) toward the phased implementation of a zero- and near-zero emission freight system.

Aviation and Airport Ground Access Component: As included in their respective modal investments, substantial investment will be made in various airport ground access improvements including rail extensions and improvements to provide easier access to airports, and new express bus service from remote terminals to airports.

Highways Component: \$64.2 billion will be invested in (1) toll facilities - closure of critical gaps in the highway network to provide access to all parts of the region (\$27.3 billion); (2) High-Occupancy Vehicle (HOV)/High-Occupancy Toll (HOT) - closure of gaps in the HOV lane network and the addition of freeway-to-freeway direct HOV connectors to complete Southern California's HOV network and a connected network of Express/HOT lanes (\$20.9 billion); and (3) mixed flow – interchange improvements to and closures of critical gaps in the highway network to provide access to all parts of the region (\$16.0 billion).

Arterials Component: \$22.1 billion will be invested in various arterial improvements including spot widening, signal prioritization, driveway consolidations and relocations, grade separations at high-volume intersections, new bicycle lanes, and other design features such as lighting, landscaping, and modified roadway, parking, and sidewalk widths.

Operations and Maintenance Component: \$216.9 billion will be invested in the operations and maintenance of transit (\$139.3 billion), highways (\$56.7 billion), and arterials (\$20.9 billion) to preserve our multimodal system in a good state of repair.

Financial Plan

The 2012–2035 RTP/SCS financial plan identifies how much money is available to support the region's transportation investments. The plan includes a core revenue forecast of existing local, state, and federal sources along with funding sources that are reasonably available over the time horizon of the RTP/SCS. These new sources include adjustments to state and federal gas tax rates based on historical trends and recommendations from two national commissions (National Surface Transportation Policy and Revenue Study Commission and National Surface Transportation Infrastructure Financing Commission) created by Congress, further leveraging of existing local sales tax measures, value capture strategies, potential national freight program/freight fees, as well as passenger and commercial vehicle tolls for specific facilities. Reasonably available revenues also include innovative financing strategies, such as private equity participation. In accordance with federal guidelines, the plan includes strategies for ensuring the availability of these sources.

Sustainable Communities Strategy

Under SB 375, the primary goal of the SCS is to provide a vision for future growth in Southern California that will decrease per capita greenhouse gas emissions from automobiles and light trucks. This leads to strategies that can help reduce per capita vehicle miles traveled over the next 25 years. The strategies contained in the 2012–2035 RTP/SCS will produce benefits for the region far beyond simply reducing GHG emissions. Because it is the latest refinement of an evolving regional blueprint that SCAG began in 2000, the 2012–2035 RTP/SCS will help the region contend with many ongoing issues across a wide range of concerns, including better placemaking, lower cost to taxpayers and families, benefits to public health and environment, greater responsiveness to changing demographics and housing markets, and improved access and mobility.

The 2012–2035 RTP/SCS was built primarily from local General Plans and input from local governments using the Local Sustainability Planning Tool, from the subregional COGs and from the County Transportation Commissions. A review of local plans and subregional strategies points to the common ground that is inherent in SCAG’s 2008 Advisory Land Use Policies. The advisory land use policies are a foundation for the overall regional land use development pattern:

- Identify regional strategic areas for infill and investment – Identify strategic opportunity areas for infill development of aging and underutilized areas and increased investment in order to accommodate future growth.
- Structure the plan on a three-tiered system of centers development – Identify strategic centers based on a three-tiered system of existing, planned, and potential, relative to transportation infrastructure.
- Develop “complete communities” – Create mixed-use districts, or “complete communities,” in strategic growth areas through a concentration of activities with housing, employment, and a mix of retail and services, located in close proximity to each other.
- Develop nodes on a corridor – Intensify nodes along corridors with people-scaled, mixed-use developments.
- Plan for additional housing and jobs near transit – Support and improve transit use and ridership by creating pedestrian-friendly environments and more compact development patterns in close proximity to transit.
- Plan for a changing demand in types of housing – Address shifts in the labor force that will likely induce a demand shift in the housing market for additional development types such as multifamily and infill housing in central locations, which will appeal to the needs and lifestyles of these large populations.
- Continue to protect stable, existing single-family areas – Continue to protect stable, existing single-family neighborhoods as future growth and a more diverse housing stock are in infill locations near transit stations.
- Ensure adequate access to open space and preservation of habitat – Ensure access to open space and habitat preservation despite competing quality-of-life demands driven by growth, housing and employment needs, and traditional development patterns.

- Incorporate local input and feedback on future growth – Continue public outreach efforts and incorporate local input through public workshops, scenario planning, and stakeholder outreach.

These policies have evolved over time and serve as the basis for SCAG’s Compass Blueprint, a regional voluntary program that offers innovative planning tools, creative strategies, and collaborative partnerships to all local governments within the region. Since its inception, Compass Blueprint has supported local demonstration projects that seek to improve mobility for all residents, foster livability in all communities, enable prosperity for all people, and promote sustainability for future generations.

The SCS strives to integrate the transportation network and related strategies with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. The regional vision of the SCS maximizes current voluntary local efforts that support the goals of SB 375, as evidenced by several Compass Blueprint demonstration projects and various county transportation improvements. The SCS focuses the majority of new housing and job growth in high-quality transit areas and other opportunity areas in existing main streets, downtowns, and commercial corridors, resulting in an improved jobs-housing balance and more opportunity for transit-oriented development. This overall land use development pattern supports and complements the proposed transportation network that emphasizes system preservation, active transportation, and transportation demand management measures. The RTP/SCS fully integrates the two subregional SCSs prepared by the Gateway Cities and Orange County Council of Governments.

In addition to Compass Blueprint, cities and counties within the SCAG region continue to implement their own local land use and transportation projects that support the goals of the 2012–2035 RTP/SCS.

To achieve the goals of the 2012–2035 RTP/SCS, public agencies at all levels of government may implement a wide range of strategies that focus on four key areas:

- A Land Use growth pattern that accommodates the region’s future employment and housing needs and protects sensitive habitat and natural resource areas;
- A Transportation Network that consists of public transit, highways, local streets, bikeways, and walkways;
- Transportation Demand Management (TDM) measures that reduce peak-period demand on the transportation network; and
- Transportation System Management (TSM) measures that maximize the efficiency of the transportation network.

In addition, SCAG is a strategic partner in a regional effort to accelerate fleet conversion to zero- and near-zero emission transportation technologies. SCAG’s policy with regard to alternative fuels is technology neutral and does not favor any one technology over any other. To accommodate the anticipated increase in alternative fueled vehicles, a significant expansion of infrastructure is needed throughout the region, among other preparedness steps.

SB 375 provides incentives in the form of CEQA streamlining to encourage community design that supports reduction in per capita GHG emissions. Generally, two types of projects are eligible for streamlined CEQA review once a compliant RTP/SCS has been adopted: (1) residential/mixed-use projects (consistent with the SCS) or (2) a Transit Priority Project (TPP).

Regional Transportation Emissions

Based on the data generated from SCAG’s Regional Travel Demand Model (e.g., traffic volumes, vehicle speeds, transit ridership, etc.), an estimate of emissions associated with on-road mobile sources can be generated using CARB’s emission factor model (EMFAC). Through this process, future emissions from on-road mobile sources can be compared for the regional transportation system assuming implementation of the RTP/SCS versus a baseline case without RTP/SCS implementation. It is generally understood that potential future improvements in air quality deriving from the RTP/SCS will likely be much smaller, since motor vehicle emissions have and will continue to be substantially reduced through technology (i.e., emission standards for new engines and in-use standards for existing fleets). Table 1 below compares VOC (ROG), NOx, and PM2.5 emissions between implementation of the 2012-2035 RTP/SCS and the baseline without the regional transportation strategy for 2014 and 2035.

Table 1 Regional Transportation Emissions (annual average) (tons per day) *

	VOC (ROG)		NOx		PM _{2.5} **	
	2014	2035	2014	2035	2014	2035
2012 RTP/SCS	137.5	70.9	285.9	119.6	15.2	14.2
2012 RTP Baseline	137.6	72.8	285.5	124.8	15.2	15.6
RTP/SCS Reduction	-0.1	-1.9	-0.4	-5.2	0.0	-1.4

Note: * Calculated with EMFAC2007; ** Does not include fugitive dust calculations

Transportation Control Measures

TCMs are measures that are specifically identified and committed to in the applicable implementation plan that are either one of the types listed in CAA section 108, or any other measures for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Vehicle technology-based, fuel-based, and maintenance-based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs. TCMs in this plan include the following three main categories of transportation improvement projects and programs:

- High occupancy vehicle (HOV) measures,
- Transit and systems management measures, and

- Information-based transportation strategies.

The 2012-2035 RTP/SCS includes TCM type projects throughout the entire Plan horizon (i.e., 2035) and are all part of the regional transportation strategy for the 2012 South Coast PM2.5 AQMP. Those TCM type projects which have funding programmed for right of way or construction in the first two years of the prevailing FTIP are considered committed for air quality planning purposes in the applicable SIP. Attachment A of this Appendix illustrates the currently committed TCMs that are derived from the TCM projects of the 2011 FTIP, as amended.

TCM Emissions Reduction Benefits To estimate the emission benefits of TCMs, the socio-economic data variables of the 2012-2035 RTP/SCS were held constant while the transportation network was modified to account for the TCMs in the Plan (both TCM-type projects and committed TCMs). In other words, the TCM emissions reduction benefits are the difference between the 2012-2035 RTP/SCS which includes TCMs and the AQMP baseline which is defined as RTP minus TCMs. It should be noted that this analysis is done for illustrative purposes as the regional transportation strategy is appropriately viewed on a systems-level basis, and not by its components since each of the individual transportation improvements and strategies affect each other and the system.

Compared to previous AQMPs/SIPs, potential future improvements in air quality deriving from TCMs is consistently diminishing for two reasons. On one hand, motor vehicle emissions have and will continue to be substantially reduced through technology. On the other hand, most of the TCM projects in the South Coast Air Basin were adopted into the SIP to meet the one-hour ozone standard by 2010 and have already been implemented. Thus, the emission reductions associated with these projects are now included in the baseline emissions and no longer show up in the TCM benefit values. Table 2 shows the results of the TCM modeling analysis for years 2014, 2019, and 2023.

Table 2 TCM Emissions (annual average) (tons per day) *

	VOC (ROG)			NOx			PM _{2.5} **		
	2014	2019	2023	2014	2019	2023	2014	2019	2023
2012 RTP/SCS	137.5	110.7	93.7	285.9	194.1	157.7	15.2	14.8	13.5
RTP/SCS without TCM	137.8	111.1	94.4	286.6	195.5	159.2	15.3	15.1	13.9
TCM Reduction	-0.3	-0.4	-0.7	-0.7	-1.4	-1.5	-0.1	-0.3	-0.4

Note: * Calculated with EMFAC2007; ** Does not include fugitive dust calculations

Section III. Reasonably Available Control Measure Analysis

Introduction

Clean Air Act Section 172(c)(1) requires SIPs to provide for the implementation of all reasonably available control measures (RACM) as expeditiously as practicable. Guidance on interpreting RACM requirements in the context of the 1990 Amendments was set forth in the General Preamble (57 FR 13498, 13560) in 1992. In the General Preamble, U.S. Environmental Protection Agency (EPA) interpreted section 172(c)(1) as imposing a duty on States to consider all available control measures and to adopt and implement measures that are reasonably available for implementation in a specific nonattainment area. It also retained an earlier interpretation of RACM that it would not be reasonable to require the implementation of measures that do not advance the date for attainment.

With regard to TCMs, EPA revised earlier guidance by indicating that it is inappropriate to presume that all Section 108(f)(1)(A) measures of the CAA are available in all nonattainment areas. Instead, States should consider Section 108(f)(1)(A) measures as potential options that are not exhaustive, but indicative of the types of measures that should be considered. In addition, any measure identified as reasonably available during the public comment period should also be considered for implementation. EPA indicated that States could reject measures as not reasonably available for reasons related to local conditions. States are required to justify why available measures were not considered RACM and not adopted in the SIP.

To meet the RACM requirements articulated in the EPA guidance described above, this RACM analysis was performed using several steps. First is a description of the process by which SCAG and related transportation agencies in the South Coast Air Basin identify, review, and make enforceable commitments to implement TCMs. Second is the assembly and review of a list of control measures recently implemented in other ozone nonattainment areas. This effort involved a review of measures implemented in California nonattainment areas as well as those located in Arizona, Colorado, Georgia, New York, Texas, and Washington D.C., and the organization of those measures in the 16 categories specified in CAA Section 108(f). The third step is to determine RACM measures by contrasting the list of candidate measures with measures implemented to date in the South Coast Air Basin, as well as any new commitments in the current AQMP. The fourth step is to provide a reasoned justification for any of the available measures that have yet to be implemented. These justifications must address criteria described in the above-cited guidance.

SCAG RACM/TCM Development Process

While the SCAG Region has an extensive, systematic TCM development program continually updated through the FTIP process, areas are obligated during SIP preparation to evaluate TCMs and determine whether they qualify as RACM.

The RACM process relies predominantly on the continuous updating and addition process for TCMs in the South Coast Air Basin. The TCM process was established for the South Coast Air Basin by replacing a process that developed TCMs each time a SIP was produced with a

continuous ongoing TCM process. This process continues to govern the selection and implementation of TCMs today. TCMs are continuously identified and reviewed throughout the transportation planning process. SCAG's ongoing public outreach effort, including an involved interagency input process via the TCWG, helps ensure that the process to identify and review TCMs is robust, inclusive, and comprehensive. Development of TCMs arises from multiple processes and multiple sources, which include CTCs, subregional agencies, task forces, committees, and the public. These funding and scheduling incentives ensure that TCMs are developed, sponsored, and clearly identified throughout the process.

Assembly and Review of Candidate RACM

EPA and related court decisions have maintained that TCMs considered RACM must be measures that 1) advance the attainment date, typically by at least one year and 2) are technologically and economically feasible. Measures must pass both the advance attainment and technical/economic feasibility tests to be deemed RACM.

U.S. EPA guidance documents provide help in identifying the type of measures to be considered. CAA Section 108(f)(1)(A) provides a list of sixteen categories of TCMs that are potential options that should be considered indicative types of control measures:

- i. Programs for improved use of public transit;*
- ii. Restriction of certain roads or lanes to, or construction of such roads or lanes for use by, passenger buses or high occupancy vehicles;*
- iii. Employer-based transportation management plans, including incentives;*
- iv. Trip-reduction ordinances;*
- v. Traffic flow improvement programs that achieve emission reductions;*
- vi. Fringe and transportation corridor parking facilities, serving multiple occupancy vehicle programs or transit service;*
- vii. Programs to limit or restrict vehicle use in downtown areas or other areas of emission concentration, particularly during periods of peak use;*
- viii. Programs for the provision of all forms of high-occupancy, shared-ride services, such as the pooled use of vans;*
- ix. Programs to limit portions of road surfaces or certain sections of the metropolitan area to the use of non-motorized vehicles or pedestrian use, both as to time and place;*
- x. Programs for secure bicycle storage facilities and other facilities, including bicycle lanes, for the convenience and protection of bicyclists, in both public and private areas;*
- xi. Programs to control extended idling of vehicles;*
- xii. Programs to reduce motor vehicle emissions, consistent with Title II of the Clean Air Act, which are caused by extreme cold start conditions;*
- xiii. Employer-sponsored programs to permit flexible work schedules;*
- xiv. Programs and ordinances to facilitate non-automobile travel, provision and utilization of mass transit, and to generally reduce the need for single-occupant vehicle travel, as part of transportation planning and development efforts of a locality, including programs and*

ordinances applicable to new shopping centers, special events, and other centers of vehicle activity;

- xv. Programs for new construction and major reconstruction of paths, tracks or areas solely for the use by pedestrian or other non-motorized means of transportation, when economically feasible and in the public interest; and*
- xvi. Programs to encourage the voluntary removal from use and the marketplace of pre-1980 model year light duty vehicles and pre-1980 model light duty trucks.*

EPA guidance has emphasized that these sixteen measures are an illustrative, but not exhaustive list. Instead, TCMs need to be evaluated on an area-by-area basis to determine which are reasonably available. In addition to the measures listed above, the 1992 General Preamble of the CAA cite other sources to include TCMs that were a) suggested during public comments (e.g. at workshops, public hearings, in written comments, etc.); b) adopted in other nonattainment areas of the country; and c) specifically identified by the EPA (i.e. EPA TCM database, support documents for rulemaking, etc.).²

To develop a list of candidate RACM, SCAG performed a comprehensive review of available TCMs in California, as well as in other states. SCAG reexamined the candidate RACM identified during the comprehensive RACM analysis performed for the 2007 AQMP. Additionally, SCAG coordinated with other MPOs and air quality districts to identify measures that are being implemented in the following other nonattainment areas:

- **Maricopa County, Arizona:** Maricopa Association of Governments. Eight-Hour Ozone Resignation Request and Maintenance Plan for the Maricopa Nonattainment Area, February, 2009.
- **Bay Area, California:** Bay Area Air Quality Management District. Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard, October 24, 2001.
- **Sacramento, California:** Sacramento Metropolitan Air Quality Management District. Sacramento Regional 8-Hour Ozone Attainment and RFP Plan, December 19, 2008. EPA approval pending.
- **San Joaquin Valley, California:** San Joaquin Valley Air Pollution Control District. 2007 Ozone Plan, April 30, 2007.
- **Denver Metropolitan Area, Colorado:** North Front Range Metropolitan Organization. Denver Metro Area and North Front Range Ozone Action Plan, December 12, 2008.
- **Atlanta Metropolitan Area, Georgia:** Georgia Department of Natural Resources, Environmental Protection Division. Proposed Georgia's State Implementation Plan for the Atlanta 8-Hour Ozone Nonattainment Area, March 26, 2009. EPA approval pending.
- **New York Metropolitan Area, New York:** New York State Department of Environmental Conservation Ozone (8-Hour NAAQS) Attainment Demonstration for NY Metro Area, August 9, 2007.
- **Dallas-Fort Worth Area, Texas:** Texas Commission on Environmental Quality. Revisions to the State of Texas Air Quality Implementation Plan for the Control of Ozone

² Seitz, John S. (December 2, 1999). Memo from John Seitz: Guidance on the Reasonably Available Control Measures (RACM) Requirement and Attainment Demonstration Submissions for Ozone Nonattainment Areas. Available at: <http://www.epa.gov/ttn/oarpg/t1/memoranda/revracm.pdf>.

Air Pollution, Dallas-Forth Worth 8-Hour Ozone Nonattainment Area, December 7, 2011. EPA approval pending.

- **Houston-Galveston Area, Texas:** Texas Commission on Environmental Quality. Revisions to the State of Texas Air Quality Implementation Plan for the Control of Ozone Air Pollution, Houston-Galveston-Brazoria 1997 8-Hour Ozone Nonattainment Area, March 10, 2010. EPA approval pending.
- **Washington D.C.:** Metropolitan Washington Council of Governments (MWCOG). Plan to Improve Air Quality in the Metropolitan Washington, DC-MD-VA Region: State Implementation Plan (SIP) for 8-Hour Ozone Standard, May 23, 2007.

Additionally, TCMs were discussed and reviewed at numerous TCWG meetings as part of the 2011 FTIP, 2012-2035 RTP/SCS, and 2012 AQMP. Further, SCAG has an extensive and robust public participation process for the development of the RTP/FTIP through ongoing public meetings, and technical, advisory, and policy committees. These groups generally meet on a monthly basis and provide explicit opportunities for the public to participate and contribute.

In summary, SCAG performed the RACM analysis based on information reviewed from the following sources:

- CAA Section 108(f)(1)(A)
- 2007 South Coast AQMP RACM Analysis
- Other nonattainment areas in California
- Other nonattainment areas outside California
- RTP/FTIP Updates
- Interagency Consultation (TCWG)

The candidate measures were reviewed to determine which can be considered RACM. As discussed above, the RACM TCM requirement consists of two core criteria that must be satisfied: 1) TCMs must advance attainment of the air quality standards; and 2) TCMs must be both technically and economically feasible. EPA has not provided specific definitions on these core criteria, but has preferred to allow flexibility in each region's determination.

In practice, agencies have based their determination of the first criteria on whether a measure or group of measures would help an area achieve attainment one year earlier than in the absence of the measure or group of measures. In other words, TCM implementation must significantly reduce emissions to facilitate attainment of the NAAQS one year earlier than without the TCMs. Considering the magnitude of the emissions reductions necessary to demonstrate attainment in the South Coast Air Basin, the implementation of TCMs is not expected to meet this criterion. Technical feasibility has been determined in terms of local factors, such as environmental impacts, availability of control measures, and ability to achieve the emission reductions. Project cost-effectiveness has been considered a determining factor to determine economic feasibility.

Determining RACM Measures

For this step of the RACM analysis, SCAG compared the list measures implemented within the South Coast Air Basin with those implemented in other areas. SCAG then organized measures, including candidate measures and those measures currently implemented in the region, according to the sixteen categories specified in Section 108(f)(1)(A) of the CAA. No formal requirement exists on how to organize TCMs. However, SCAG utilized this organization scheme as a way to highlight those measures that fall within the sixteen CAA categories, which are formally recognized as "TCMs" and subject to CAA and federal conformity requirements. SCAG found a small number of candidate measures that were not currently implemented in the region and not included in the 2007 AQMP RACM analysis. In addition, a new category titled "Other Measures and Programs" was added to the list of measures. This category includes TCMs that do not fall in any of the sixteen Section 108(f) categories. New measures that were in addition to those reviewed as part of the 2007 RACM analysis were highlighted in bold font as shown in Attachment B.

For this RACM analysis, SCAG also reviewed statewide and South Coast AQMD measures that have been adopted since the last RACM analysis. Although these measures are out of the realm of SCAG's funding authority, they are discussed below for completeness. Statewide mobile source measures are also covered in California RACM analysis completed for the latest ozone SIP revision for the South Coast Air Basin. Table 3 shows on-road TCMs and mobile source measures that were adopted by the ARB and are currently being implemented in the SCAG region.

Table 3 Adopted California Transportation Control Measures

RACM	Implementing Nonattainment Area	Implemented in SCAG?
California Diesel Fuel Regulation	ARB	Yes
On-Road Heavy-Duty Diesel Vehicles Regulation	ARB	Yes
California Reformulated Gasoline	ARB	Yes
Low Emission Vehicle Standards (LEV II)	ARB	Yes
Transportation Refrigeration Unit ATCM	ARB	Yes
School Bus Idling ATCM	ARB	Yes
Fleet Rule for Transit Agencies	ARB	Yes
Drayage Truck Regulation	ARB	Yes
Hybrid Truck and Bus Voucher Incentive Program	ARB	Yes
Clean Vehicle Rebate Project	ARB	Yes
Solid Waste Collection Vehicle Rule	ARB	Yes
Heavy-Duty Vehicle Inspection Program	ARB/BAR	Yes
Periodic Smoke Inspection Program	ARB/BAR	Yes
School Bus Retrofit Program	ARB/SCAQMD	Yes
Goods Movement Program/Proposition 1B	ARB/CTC/SCAQMD	Yes

Reasoned Justification

The fourth step is to provide a reasoned justification for any of the available measures that have yet to be implemented or will not be implemented. In 1999, EPA issued a memorandum entitled “Guidance on the Reasonably Available Control Measures Requirement and Attainment Demonstration Submissions for Ozone Nonattainment Areas.”³ In this memorandum, EPA states that in order to determine whether a state has adopted all RACM necessary for attainment and as expeditiously as practicable, the state must explain why the selected implementation schedule is the earliest schedule based on the circumstances of the area. This indicated that States could reject measures as not reasonably available for reasons related to local conditions. In such cases, States are obligated to provide justification as to why potentially reasonable measures have not been adopted. Valid reasons for rejecting a measure include that it would not advance the attainment date, it is economically infeasible, or it is technologically infeasible.

The complete listing of all candidate measures evaluated for RACM determination is included in Attachment B. A “Measure Number” is assigned for each strategy for ease of discussion (not rank in priority). The “Description” column provides a brief description of the relevant measure in discussion. “Has It Been Implemented?” confirms whether the measure is currently implemented in the SCAG region. The final column “Reasoned Justification for Not Implementing” provides a reasoned justification for those measures that were not considered RACM. SCAG appropriately considered a number of factors that included technical and economic feasibility, enforceability, geographic applicability, and ability to provide emission reductions. Of the TCMs that were deemed candidate measures, none were found to meet the criteria for RACM implementation.

Conclusion

CAA Section 172(c)(1) requires SIPs to provide for the implementation of all RACM as “expeditiously as practicable.” EPA and related court decisions have maintained that TCMs considered RACM must be measures that 1) advance the attainment date, typically by at least one year and 2) are technologically and economically feasible. Measures must pass both the advance attainment and technical/economic feasibility tests to be deemed RACM.

Based on a comprehensive review of TCM projects in other nonattainment areas or otherwise identified, it is determined that the TCMs being implemented in the South Coast Air Basin are inclusive of all RACM. None of the candidate measures reviewed herein and determined to be infeasible meets the criteria for RACM implementation.

SCAG and the local transportation agencies have in place a comprehensive, formal process for identifying, evaluating, and selecting TCMs. The regular RTP, FTIP, and AQMP/SIP public update processes ensure that TCM identification and implementation is a routine consideration that helps SCAG and the AQMD demonstrate attainment of applicable NAAQS.

³ Seitz, John S. (December 2, 1999). *Memo from John Seitz: Guidance on the Reasonably Available Control Measures (RACM) Requirement and Attainment Demonstration Submissions for Ozone Nonattainment Areas*. Available at: <http://www.epa.gov/ttn/oarpg/t1/memoranda/revracm.pdf>

Attachment A: Committed Transportation Control Measures (TCMs)

Los Angeles County			
Lead Agency	Project ID	Project Description	Completion Date
BALDWIN PARK	LAFA141	BALDWIN PARK METROLINK TRANSPORTATION CENTER. FUNDED THRU STIP AUGMENTATION CONSTRUCTION A TRANSPORTATION CENTER AND PARKING STRUCTURE AT THE BALDWIN PARK METROLINK STATION.	11/1/2014
FOOTHILL TRANSIT ZONE	LA0B311	PARK AND RIDE FACILITY TRANSIT ORIENTED NEIGHBORHOOD PROGRAM SAFETEA-LU # 341 (E-2006-BUSP-092) (E-2006-BUSP-173)	12/31/2013
GLENDALE	LA0G406	FAIRMONT AVE. PARK-N-RIDE FACILITY (83 PARKING SPACES) TO SERVE COMMUTERS USING SR-134, I-5. THE LOCATION OF THE PARK-N-RIDE IS FAIRMONT AVENUE AND SAN FERNANDO RD.	12/30/2013
LOS ANGELES COUNTY	LAF1514	EMERALD NECKLACE BIKE TRAIL PROJECT. DESIGN AND CONSTRUCT 1.1 MILES OF CLASS I BIKE PATH TO CONNECT DUARTE ROAD TO THE SAN GABRIEL RIVER BICYCLE TRAIL.	6/30/2013
LOS ANGELES COUNTY MTA	LA0G270	EXPANSION AND IMPROVEMENT TO EXISTING TRANSIT CENTER IN THE CITY OF PALMDALE. E2009-BUSP-137.	9/30/2013
LOS ANGELES COUNTY MTA	LA0F021	EXPOSITION LIGHT RAIL TRANSIT SYSTEM PHASE II – FROM CULVER CITY TO SANTA MONICA	12/31/2017
LOS ANGELES COUNTY MTA	LA29202W	MID -CITY TRANSIT CORRIDOR: WILSHIRE BLVD. FROM VERMONT TO SANTA MONICA DOWNTOWN- MID-CITY WILSHIRE BRT INCL. DIV. EXPANSION AND BUS ONLY LANE	12/31/2014
LOS ANGELES COUNTY MTA	LA0G194	ACQUIRE FOUR (4) ALTERNATE FUEL BUSES FOR THE CITY OF ARTESIA TO BE USED FOR NEW FIXED ROUTE SERVICE EARMARK ID #E2008-BUSP-0694	10/31/2012
LOS ANGELES COUNTY MTA	LA0C10	MID-CITY/EXPOSITION CORRIDOR LIGHT RAIL TRANSIT PROJECT PHASE I TO VENICE-ROBERTSON STATION	12/31/2012
LOS ANGELES COUNTY MTA	LA0G431	MULTI-MODAL TRANSIT CENTER AT CSUN TO INCLUDE PASSENGER LOADING AREAS AND BUS SHELTERS	10/1/2012
LOS ANGELES COUNTY MTA	LA974165	MACARTHUR PARK STATION IMPROVEMENTS INCLUDE DESIGN AND CONSTRUCTION OF A PLAZA TO ACCOMMODATE PUBLIC ACCESS (PEDESTRIAN ENTRANCES, WALKWAYS, BICYCLE FACILITIES) PPNO# 3417	12/30/2011
LOS ANGELES, CITY OF	LA0G155	LACRD – TRANSIT SIGNAL PRIORITY IN THE CITY OF LOS ANGELES.	02/28/2012

Attachment A: Committed Transportation Control Measures (TCMs)

Los Angeles County			
Lead Agency	Project ID	Project Description	Completion Date
PASADENA	LAE3790	THE PASADENA ITS INTEGRATES 3 COMPONENTS; TRAFFIC SIGNAL COMMUNICATION AND CONTRL, TRANSIT VEHICLE ARRIVAL INFO AND PUBLIC PARKING AVAILABILITY INFO. SAFETEA-LU PRJ #3790 AND #399	6/30/2013
PICO RIVERA (PREVIOUSLY LEAD AGENCY WAS SGVCOG)	LA0C57	ACE/GATEWAY CITIES-CONSTRUCT GRADE SEP. AT PASSONS BLVD IN PICO RIVERA (& MODIFY PROFILE OF SERAPIS AV.)(PART OF ALAMEDA CORR EAST PROJ.)SAFETEA-LU HPP # 1666 (TCRP #54.3)	12/31/2012
ROLLING HILLS ESTATE	LAF1529	PALOS VERDES DRIVE NORTH BIKE LANES. CONSTRUCTION OF CLASS II BIKE LANE AND RELATED IMPROVEMENTS ON PALOS VERDES DRIVE NORTH	12/31/2013
SANTA CLARITA	LAF1424	MCBEAN REGIONAL TRANSIT CENTER PARK AND RIDE. PURCHASE LAND, DESIGN, AND CONSTRUCT A REGIONAL PARK-AND-RIDE LOT ADJACENT TO THE MCBEAN REGIONAL TRANSIT CENTER IN THE CITY OF SANTA CLARITA.	10/1/2013
WHITTIER	LA0G257	WHITTIER GREENWAY TRAILHEAD PARK. EXTENSION OF WHITTIER GREENWAY TRAIL FROM MILLS AVENUE TO 300 FEET EAST OF MILLS AVENUE ON CITY OWNED RIGHT-OF-WAY IN CONJUNCTION WITH THE CONSTRUCTION OF NEW TRAILHEAD PARK WITH A PARK AND RIDE PARKING LOT FOR NEARBY PUBLIC TRANSIT STOP. NEW 20 SPACE PARKING LOT WOULD BE CONSTRUCTED OF "GREEN" PERMEABLE PAVEMENT IN COMPLIANCE WITH NPDES REQUIREMENTS. INCLUDES THE INSTALLATION OF PARK AMENITIES, DRINKING FOUNTAIN FOR THE CONVENIENCE OF PEDESTRIAN AND BICYCLE PATRONS OF THE WHITTIER GREENWAY TRAIL. CONSTRUCTION OF NEW SIDEWALKS ALONG MILLS AVENUE TO PROVIDE WHITTIER GREENWAY TRAIL CROSSING CONNECTION AT THE SIGNALIZED INTERSECTION OF MILLS AVENUE AT LAMBERT ROAD.	9/30/2014
ARTESIA	LAF1607	SOUTH STREET PEDESTRIAN, BIKEWAY AND TRANSIT IMPROVEMENT. IMPROVE PEDESTRIAN ENVIRONMENT AND TRANSIT STOP LOCATIONS WITH LANDSCAPED MEDIANS, TRANSIT SHELTERS, BENCHES, SIDEWALK ENHANCEMENTS AND LIGHTING. CLOSE EXISTING BIKE LANE GAP.	10/1/2014
AVALON	LAF1501	COUNTY CLUB DRIVE BIKEWAY IMPROVEMENT PROJECT. CONSTRUCTION OF A 4-FOOT WIDE CLASS II BIKE LANE IN BOTH DIRECTIONS ALONG A ONE MILE SECTION OF COUNTRY CLUB DRIVE.	10/1/2013
AZUSA	LAF3434	AZUSA INTERMODAL TRANSIT CENTER. CONSTRUCT REGIONAL AZUSA INTERMODAL TRANSIT CENTER TO ACCOMMODATE EXISTING AND FUTURE PARKING DEMAND AND SUPPORT EFFECTIVE TRANSIT USE.	6/30/2015

Attachment A: Committed Transportation Control Measures (TCMs)

Los Angeles County			
Lead Agency	Project ID	Project Description	Completion Date
BALDWIN PARK	LAE0076	CONSTRUCT ADD'L VEHICLE PARKING (200 TO 400 SPACES), BICYCLE PARKING LOT AND PEDESTRIAN REST AREA AT THE TRANSIT CENTER	12/31/2014
BALDWIN PARK	LAF1654	BALDWIN PARK METROLINK PEDESTRIAN OVERCROSSING. CONSTRUCT A PEDESTRIAN OVERCROSSING OVER BOGART AVE AND THE METROLINK LINE TO LINK THE STATION WITH VITAL BUS TRANSFER POINTS AND TO PROVIDE ACCESS TO PARKING OVERFLOW AREAS.	10/1/2015
BURBANK	LAF1502	SAN FERNANDO BIKEWAY. IMPLEMENT A CLASS I BIKEWAY ALONG SAN FERNANDO BLVD, VICTORY PLACE AND BURBANK WESTERN CHANNEL TO COMPLETE THE BURBANK LEG OF A 12 MILE BIKEWAY.	6/30/2014
CALTRANS	LA000358	ROUTE 5: – FROM ROUTE 134 TO ROUTE 170 HOV LANES (8 TO 10 LANES) (CFP 346)(2001 CFP 8355). (EA# 12180, 12181,12182,12183,12184, 13350 PPNO 0142F,151E,3985,3986,3987) SAFETEA LU # 570. CONSTRUCT MODIFIED IC @ I-5 EMPIRE AVE, AUX LNS NB & SB BETWEEN BURB	12/31/2014
CALTRANS	LA000548	ROUTE 10: FROM PUENTE TO CITRUS HOV LANES FROM 8 TO 10 LANES (C-ISTEA 77720) (EA# 117080, PPNO# 0309N)	2/12/2016
CALTRANS	LA0B875	ROUTE 10: HOV LANES FROM CITRUS TO ROUTE 57/210 – (EA# 11934, PPNO# 0310B)	3/15/2016
CALTRANS	LA0D73	ROUTE 5: LA MIRADA, NORWALK & SANTA FE SPRINGS-ORANGE CO LINE TO RTE 605 JUNCTION. WIDEN FOR HOV & MIXED FLOW LNS, RECONSTRUCT VALLEY VIEW (EA 2159A0, PPNO 2808). TCRP#42.2&42.1	12/1/2016
CALTRANS	LA000357	ROUTE 5: FROM ROUTE 170 TO ROUTE 118 ONE HOV LANE IN EACH DIRECTION (10 TO 12 LANES) INCLUDING THE RECONSTRUCTION OF THE I-5/SR-170 MIXED FLOW CONNECTOR AND THE CONSTRUCTION OF THE I-5/SR-170 HOV TO HOV CONNECTOR (CFP 345) (2001 CFP 8339; CFP2197).	12/31/2013
CALTRANS	LA01342	ROUTE 10: RT 10 FROM RT 605 TO PUENTE AVE HOV LANES (8+0 TO 8+2) (EA# 117070, PPNO 0306H) PPNO 3333 3382 AB 3090 REP (TCRP #40)	10/28/2013
CALTRANS	LA996134	ROUTE 5: RTE. 5/14 INTERCHANGE & HOV LNS ON RTE 14 – CONSTRUCT 2 ELEVATED LANES – HOV CONNECTOR (DIRECT CONNECTORS) (EA# 16800)(2001 CFP 8343) (PPNO 0168M)	5/24/2013
CLAREMONT	LAF1510	CLAREMONT PORTION OF THE CITRUS REGIONAL BIKEWAY. THIS PROJECT PROPOSES THE IMPLEMENTATION OF THE CLAREMONT PORTION OF THE CITRUS REGIONAL BIKEWAY UTILIZING BONITA AVENUE AND FIRST STREET AS PRIMARY CLASS II BIKE ROUTES.	10/1/2012

Attachment A: Committed Transportation Control Measures (TCMs)

Los Angeles County			
Lead Agency	Project ID	Project Description	Completion Date
EL MONTE	LAF1504	EL MONTE: TRANSIT CYCLE FRIENDLY. EL MONTE PROPOSES TO IMPLEMENT THE 1ST PHASE OF THE EL MONTE BIKE-TRANSIT HUB COMPONENT (METRO BICYCLE TRANSPORTATION STRATEGIC PLAN) A COUNTYWIDE EFFORT TO IMPROVE BIKE FACILITIES	10/1/2013
LONG BEACH	LAE1296	LONG BEACH INTELLIGENT TRANSPORTATION SYSTEM	9/30/2012
LONG BEACH	LAF1530	BICYCLE SYSTEM GAP CLOSURES & IMPROVED LA RIVER BIKE PATH. PROJECT WILL CONSTRUCT PRIORITY CLASS I & III BICYCLE SYSTEM GAP CLOSURES IN LONG BEACH AND IMPROVE CONNECTION TO LA RIVER.	10/1/2014
LOS ANGELES COUNTY MTA	LA0D198	CRENSHAW TRANSIT CORRIDOR	12/31/2018
LOS ANGELES COUNTY MTA	LA0G010	REGIONAL CONNECTOR – LIGHT RAIL IN TUNNEL ALLOWING THROUGH MOVEMENTS OF TRAINS, BLUE, GOLD, EXPO LINES. FROM ALAMEDA / 1ST STREET TO 7TH STREET/METRO CENTER	12/31/2019
LOS ANGELES COUNTY MTA	LA0G154	LACRD – EL MONTE TRANSIT CENTER IMPROVEMENTS AND EL MONTE BUSWAY IMPROVEMENTS, INCLUDING BIKE LOCKERS, TICKET VENDING MACHINES AT EL MONTE BUSWAY STATIONS AND UP TO 10 BUS BAYS.	12/31/2012
LOS ANGELES COUNTY MTA	LA0G447	METRO PURPLE LINE WESTSIDE SUBWAY EXTENSION SEGMENT 1 – WILSHIRE/WESTERN TO FAIRFAX	12/31/2019
LOS ANGELES COUNTY MTA	LA0C8114	LA CITY RIDESHARE SERVICES; PROVIDE COMMUTE INFO, EMPLOYER ASSISTANCE AND INCENTIVE PROGRAMS THROUGH CORE & EMPLOYER RIDESHARE SERVICES & MTA INCENTIVE PROGRAMS. PPNO 9003	12/30/2016
LOS ANGELES COUNTY MTA	LA963542	ACQUISITION REVENUE VEHICLES – 2,513 CLEAN FUEL BUSES: LEASED VEH, FY02 (370) FY03 (30 HC) + FY04 (70 HC) + (200 ARTICS); FY05-FY10 TOTAL OF 1000 BUSES.	6/30/2014
LOS ANGELES COUNTY MTA	LAE0036	WILSHIRE/ VERMONT PEDESTRIAN PLAZA IMPROVEMENTS AND INTERMODAL PEDESTRIAN LINKAGES	2012
LOS ANGELES COUNTY MTA	LAE0195	DESIGN AND CONSTRUCT IMPROVED PEDESTRIAN LINKAGES BETWEEN LOS ANGELES PIERCE COLLEGE AND MTA’S RAPID BUS TRANSIT STOPS TO INCLUDE PASSENGER AMENITIES, 2007 CFP # F1658	10/1/2014

Attachment A: Committed Transportation Control Measures (TCMs)

Los Angeles County			
Lead Agency	Project ID	Project Description	Completion Date
LOS ANGELES, CITY OF	LA0C8164	EXPOSITION BLVD RIGHT-OF-WAY BIKE PATH-WESTSIDE EXTENSION. DESIGN AND CONSTRUCTION OF 2.5 MILES OF CLASS 1 BIKEWAY, LIGHTING, LANDSCAPING & INTERSECTION IMPROVEMENTS. (PPNO# 3184)	2/2/2012
LOS ANGELES, CITY OF	LAF1704	DOWNTOWN L.A. ALTERNATIVE GREEN TRANSIT MODES TRIAL PROGRAM. OFFER SHARED RIDE-BICYCLE AND NEIGHBORHOOD ELECTRIC VEHICLE TRANSIT SERVICES TO LA CITY HALL AS AN ALTERNATIVE TO OVERCROWDED DASH SERVICE	6/27/2014
LOS ANGELES, CITY OF	LA002738	BIKEWAY/PEDESTRIAN BRIDGE OVER LA RIVER AT TAYLOR YARD CLASS I (CFP 738, 2077) (PPNO# 3156)	7/31/2015
LOS ANGELES, CITY OF	LA0B7330	SAN FERNANDO RD ROW BIKE PATH PHSE II – CONSTRUCT 2.75 MILES CLAS I FRM FIRST ST TO BRANFORD ST,ON MTA-OWND ROW PARLEL TO SAN FERNANDO RD. LINK CYCLSTS TO NUMEROUS BUS LNE. PPNO 2868.	1/30/2014
LOS ANGELES, CITY OF	LAF1450	ENCINO PARK-AND-RIDE FACILITY RENOVATION. RENOVATION OF THE ENCINO PARK-AND-RIDE FACILITY IN ORDER TO ADDRESS PHYSICAL AND STRUCTURAL DEFICIENCIES AND ADD CAPACITY TO THIS HEAVILY UTILIZED FACILITY. INCLUDES 50 NEW PARKING SPACES AND BIKE LOCKERS.	10/1/2013
LOS ANGELES, CITY OF	LAF1520	IMPERIAL HIGHWAY BIKE LANES. THIS PROJECT INVOLVES THE MODIFICATION OF THE MEDIAN ISLAND AND THE WIDENING OF IMPERIAL HIGHWAY ALONG 1000 FT EAST OF PERSHING DRIVE TO ACCOMMODATE BIKE LANES.	6/1/2014
LOS ANGELES, CITY OF	LAF1524	SAN FERNANDO RD. BIKE PATH PH. IIIA/IIIB – CONSTRUCTION. RECOMMEND PHASE IIIA- CONSTRUCTION OF A CLASS I BIKE PATH WITHIN METRO OWNED RAIL RIGHT-OF-WAY ALONG SAN FERNANDO RD. BETWEEN BRANFORD ST. AND TUXFORD ST INCL BRIDGE.	10/1/2015
LOS ANGELES, CITY OF	LAF1615	EASTSIDE LIGHT RAIL PEDESTRIAN LINKAGE. IMPROVE LINKAGES WITHIN 1/4 MILE OF METRO’S GOLD LINE LRT.	6/29/2012
LOS ANGELES, CITY OF	LAF1657	LOS ANGELES VALLEY COLLEGE (LAVC) BUS STATION EXTENSION. PROJECT WILL EXTEND THE ORANGE LINE STATION AT THE LA VALLEY COLLEGE BY PROVIDING A DIRECT PEDESTRIAN CONNECTION FROM THE STATION TO A NEW PEDESTRIAN ENTRANCE TO LAVC.	10/1/2013
LOS ANGELES, CITY OF	LAF1708	HOLLYWOOD INTEGRATED MODAL INFORMATION SYSTEM. INSTALLATION OF ELECTRONIC, DIRECTION AND PARKING AVAILABILITY SIGNS WITH INTERNET CONNECTIVITY TO PROVIDE ADVANCE AND REAL-TIME INFORMATION INTENDED TO INCREASE TRANSIT RIDERSHIP	9/21/2015

Attachment A: Committed Transportation Control Measures (TCMs)

Los Angeles County			
Lead Agency	Project ID	Project Description	Completion Date
LOS ANGELES, CITY OF	LAF3419	SUNSET JUNCTION PHASE 2. CREATE A MULTI-MODAL TRANSIT PLAZA TO INTEGRATE PUBLIC TRANSPORTATION, PEDESTRIAN & BICYCLE IMPROVEMENTS THAT WOULD RESULT IN REGIONAL & LOCAL BENEFITS (CFP3844). TRIANGLE PROPERTY ON SUNSET BLVD BWT MANZANITA AND SANTA MONICA.	6/30/2017
MONROVIA	LAE0039	TRANSIT VILLAGE – PROVIDE A TRANS. FACILITY FOR SATELLITE PARKING FOR SIERRA MADRE VILLA GOLD LINE STA, P-N-R FOR COMMUTERS, A FOOTHILL TRANSIT STORE.	12/31/2012
PORT OF LOS ANGELES	LAF3170	PORT TRUCK TRAFFIC REDUCTION PROGRAM: WEST BASIN RAILYARD. INTERMODAL RAILYARD CONNECTING PORT OF LA WITH ALAMEDA CORRIDOR TO ACCOMMODATE INCREASED LOADING OF TRAINS AT THE PORT, THEREBY REDUCING TRUCK TRIPS TO OFF-DOCK RAILYARDS.	12/1/2014
RANCHO PALOS VERDES	LAF1506	BIKE COMPATIBLE RDWY SAFETY AND LINKAGE ON PALOS VERDES DR. THE PROJECT WILL HAVE A CLASS II BIKE LANE ON BOTH SIDES OF PALOS VERDES DRIVE SOUTH, WITH AN UNPAVED SHOULDER FOR EMERGENCY USE.	10/9/2014
RANCHO PALOS VERDES	LAF1605	PEDESTRIAN SAFE BUS STOP LINKAGE. LINKING 11 BUS STOPS CURRENTLY INACCESSIBLE BECAUSE OF LACK OF SIDEWALKS ON BOTH THE EAST AND WEST SIDE OF HAWTHORNE BLVD. FROM CREST RD. TO PALOS VERDES DR. SOUTH (ABOUT 13,000')	12/9/2013
SAN DIMAS	LAF1503	BIKEWAY IMPROVEMENTS ON FOOTHILL BLVD. AT SAN DIMAS WASH. THE BWY IMPROVEMENTS ON FOOTHILL BLVD. AT SAN DIMAS WASH; WILL CLOSE THE GAP ON A BRIDGE & CONNECT THE EXISTING CLASS II BIKE LANES TO THE EAST & WEST OF SAN DIMAS WASH CROSSING.	12/1/2013
SAN GABRIEL VALLEY COG	LA990359	GRADE SEP XINGS SAFETY IMPR; 35- MI FREIGHT RAIL CORR. THRGH SAN.GAB. VALLEY – EAST. L.A. TO POMONA ALONG UPRR ALHAMBRA & L.A. SUBDIV – ITS 2318 SAFETEA #2178;1436 #1934 PPNO 2318	6/30/2018
SANTA FE SPRINGS	LA0F096	NORWALK SANTA FE SPRINGS TRANSPORTATION CENTER PARKING EXPANSION AND BIKEWAY IMPROVEMENTS. PROVIDE ADDITIONAL 250 PARKING SPACES FOR TRANSIT CENTER PATRONS AND IMPROVE BICYCLES ACCESS TO THE TRANSIT CENTER	6/30/2012
SANTA MONICA	LAE0364	CONSTRUCT INTERMODAL PARK AND RIDE FACILITY AT SANTA MONICA COLLEGE CAMPUS ON SOUTH BUNDY DRIVE NEAR AIRPORT AVENUE	12/31/2013

Attachment A: Committed Transportation Control Measures (TCMs)

Los Angeles County			
Lead Agency	Project ID	Project Description	Completion Date
TORRANCE	LA0G358	SOUTH BAY REGIONAL INTERMODAL TRANSIT CENTER PROJECT. THE LAND IS IN THE PROCESS OF BEING PURCHASED AND ESCROW WILL CLOSE ON DECEMBER 17, 2009. PRESENTLY, THE LOT IS VACANT/OPEN LAND WITH NO EXISTING STRUCTURE UPON IT. THE ADDRESS IS 465 N. CRENSHAW BLVD., TORRANCE, CA 90503.	12/31/2015
WESTLAKE VILLAGE	LA960142	LINDERO CANYON ROAD FROM AGOURA TO JANLOR DR CONSTRUCT BIKE PATH, RESTRIPE STREET, INTERSECTION WIDENING, SIGNAL COORDINATION	1/30/2013

Orange County			
Lead Agency	Project ID	Project Description	Completion Date
ANAHEIM	ORA000100	GENE AUTRY WAY WEST @ I-5 (I-5 HOV TRANSITWAY TO HASTER) ADD OVERCROSSING ON I-5 (S)/MANCHESTER AND EXTEND GENE AUTRY WAY WEST FROM I-5 TO HASTER (3 LANES IN EA DIR.)	11/16/2012
CALTRANS	ORA000193	HOV CONNECTORS FROM SR-22 TO I-405, BETWEEN SEAL BEACH BLVD. (I-405 PM 022.558) AND VALLEY VIEW ST. (SR-22 PM R000.917), WITH A SECOND HOV LANE IN EACH DIRECTION ON I-405 BETWEEN THE TWO DIRECT CONNECTORS.	2/1/2015
CALTRANS	ORA000194	HOV CONNECTORS FROM I-405 TO I-605, BETWEEN KATELLA AVE. (I-605 PM R001.104) AND SEAL BEACH BLVD. (I-405 PM 022.643), WITH A SECOND HOV LANE IN EACH DIRECTION ON I-405 BETWEEN THE TWO DIRECT CONNECTIONS.	7/1/2015
FULLERTON	ORA020113	FULLERTON TRAIN STATION – PARKING STRUCTURE, PHASE I AND II. TOTAL OF 800 SPACES (PPNO 2026)	5/31/2012
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA041501	PURCHASE (71) STANDARD 30FT EXPANSION BUSES – ALTERNATIVE FUEL – (31) IN FY08-09, (9) IN FY09-10, (7) IN FY11-12, (6) IN FY12-13 AND (18) IN FY13-14	6/30/2016
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA110633	RIDESHARE VANPOOL PROGRAM – CAPITAL LEASE COSTS	9/30/2012
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA65002	RIDESHARE SERVICES RIDEGUIDE, DATABASE, CUSTOMER INFO, AND MARKETING (ORANGE COUNTY PORTION).	6/30/2016

Attachment A: Committed Transportation Control Measures (TCMs)

Orange County			
Lead Agency	Project ID	Project Description	Completion Date
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA0826016	PURCHASE (72) PARATRANSIT EXPANSION VANS – (21) IN FY09/10, (51) IN FY10/11.	6/30/2016
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA082618	PURCHASE PARATRANSIT VEHICLES EXPANSION (MISSION VIEJO) (11) IN FY09/10. ON-GOING PROJECT.	6/30/2030
TCA	10254	SJHC, 15 MI TOLL RD BETWEEN I-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, EXISTING 3/M/F EA.DIR.1 ADD’L M/F EA DIR, PLUS CLIMBING & AUX LNS AS REQ, BY 2020 PER SCAG/TCA MOU 4/5/01	12/31/2020
TCA	ORA050	ETC (RTE 241/261/133) (RTE 91 TO I-5/JAMBOREE) EXISTING 2 M/F EA.DIR, 2 ADD’L M/F IN EA. DIR, PLUS CLIMB AND AUX LNS AS REQ, BY 2020 PER SCAG/TCA MOU 4/05/01.	12/31/2020
TCA	ORA051	(FTC-N) (OSO PKWY TO ETC) (13MI) EXISTING 2 MF IN EA. DIR, 2 ADDITIONAL M/F LANES, PLS CLMBNG & AUX LANS AS REQ BY 2020 PER SCAG/TCA MOU 4/05/01.	12/31/2020
TCA	ORA052	(FTC-S) (I-5 TO OSO PKWY) (15MI) 2 MF EA. DIR BY 2013; AND 1 ADDITIONAL M/F EA. DIR. PLS CLMBNG & AUX LANES AS REQ BY 2030 PER SCAG/TCA MOU 4/05/01. #1988	6/15/2030

Riverside County			
Lead Agency	Project ID	Project Description	Completion Date
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV010212	ON SR91 – ADAMS TO 60/215 IC: ADD ONE HOV LN IN EACH DIRECTION, RESTRIPE TO EXTEND 4TH WB MIXED FLOW LANE FROM 60/215 IC TO CENTRAL OFF-RAMP, RESTRIPE TO EXTEND 5TH WB MIXED FLOW LANE FROM 60/215 IC TO 14TH ST OFF-RAMP, AUX LNS (MADISON-CENTRAL), BRIDGE WIDENING & REPLACEMENTS, EB/WB BRAIDED RAMPS, IC MOD/RECONSTRUCT + SOUND/RETAINING WALLS	8/3/2015
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV050555	ON I-215 (N/O EUCALYPTUS AVE TO N/O BOX SPRINGS RD) & SR60 (E/O DAY ST TO SR60/I-215 JCT): RECONSTRUCT JCT TO PROVIDE 2 HOV DIRECT CONNECTOR LNS (SR60 PM: 12.21 TO 13.6) AND MINOR WIDENING TO BOX SPRINGS RD FROM 2 TO 4 THROUGH LANES BETWEEN MORTON RD AND BOX SPRINGS RD/FAIR ISLE DR IC (EA: 449311)	4/29/2013

Attachment A: Committed Transportation Control Measures (TCMs)

Riverside County			
Lead Agency	Project ID	Project Description	Completion Date
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV051201	IN CORONA – CONTINUE THE IMPLEMENTATION OF A 60 SPACE PARK-AND-RIDE LOT (VIA ANNUAL LEASE AGREEMENT) AT LIVING TRUTH CHRISTIAN FELLOWSHIP AT 1114 W. ONTARIO AVE.	6/30/2013
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV070303	ON SR60 IN NW RIV CO: CONTINUE THE IMPLEMENTATION OF THE EXPANDED SR60 FREEWAY SERVICE PATROL (FSP) (BEAT #7 PATROL , 2 TRUCKS) BETWEEN MILIKEN AVE & MAIN ST (SR60 HOV LN CHANGE TCM SUBSTITUTION PROJECT)	ON GOING TCM PROGRAM IN RIVERSIDE COUNTY
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV070304	ON I-215 IN SW RIV CO: CONTINUE THE IMPLEMENTATION OF I-215 FREEWAY SERVICE PATROL (FSP) (BEAT #19, 2 TRUCKS) BETWEEN SR74/4TH ST AND ALESSANDRO BLVD (SR60 HOV LANE CHANGE TCM SUBSTITUTION PROJECT)	ON-GOING TCM PROGRAM IN RIVERSIDE COUNTY
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV070307	ON SR60 IN MORENO VALLEY: CONTINUE THE IMPLEMENTATION OF SR60 FREEWAY SERVICE PATROL (FSP) (BEAT #8, 2 TRUCKS) BETWEEN DAY ST AND REDLANDS BLVD (SR60 HOV LANE CHANGE TCM SUBSTITUTION PROJECT)	ON-GOING TCM PROGRAM IN RIVERSIDE COUNTY
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV520109	RECONSTRUCT & UPGRADE SAN JACINTO BRANCH LINE FOR RAIL PASSENGER SERVICE (RIVERSIDE TO PERRIS) (PERRIS VALLEY LINE) (FY 07 5307) (UZA: RIV-SAN)	2014
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV520111	REGIONAL RIDESHARE – CONTINUING PROGRAM.	ON-GOING TCM PROGRAM IN RIVERSIDE COUNTY
RIVERSIDE TRANSIT AGENCY	RIV041030	IN THE CITY OF HEMET – CONSTRUCT NEW HEMET TRANSIT CENTER (WITH APPROXIMATELY 4 BUS BAYS) AT 700 SCARAMELLA CR., HEMET, CA (5309C FY 04 + 05 EARMARKS).	6/30/2013
RIVERSIDE TRANSIT AGENCY	RIV050553	IN TEMECULA – CONSTRUCT NEW TEMECULA TRANSIT CENTER AT 27199 JEFFERSON AVE. (SW OF JEFFERSON AVE & SE OF CHERRY ST) (04, 05, 06, 07, E-2006-091, E-2007-0131, & 2008-BUSP-0131, SAFETEA-LU).	12/30/2014
RIVERSIDE TRANSIT AGENCY	RIV090609	IN WESTERN RIVERSIDE COUNTY FOR RTA: INSTALL ADVANCE TRAVELER INFORMATION SYSTEMS (ATIS) ON VARIOUS FIXED ROUTE VEHICLES AND INSTALLATION OF ELECTRONIC MESSAGE SIGNS AT APPROX. 60 BUS STOPS (FY 'S 05, 07, 08, 09, AND 10 – 5309).	12/30/2012

Attachment A: Committed Transportation Control Measures (TCMs)

Riverside County			
Lead Agency	Project ID	Project Description	Completion Date
TEMECULA	RIV62029	AT HWY 79 SO AND LA PAZ ST: ACQUIRE LAND, DESIGN AND CONSTRUCT PARK-AND-RIDE LOT – 250 SPACES (FY 05 HR4818 EARMARK)	12/31/2015

San Bernardino County			
Lead Agency	Project ID	Project Description	Completion Date
OMNITRANS	981118	BUS SYSTEM – PASSENGER FACILITIES: DESIGN AND BUILDING OF ONTARIO TRANSCENTER	5/31/2012
RIALTO	200450	RIALTO METROLINK STATION – INCREASE PARKING SPACES FROM 225-775	12/1/2012
SANBAG	200074	LUMP SUM – TRANSPORTATION ENHANCEMENT ACTIVITIES PROJECTS FOR SAN BERNARDINO COUNTY-BIKE/PED PROJECTS (PROJECTS CONSISTENT W/40CFR PART 93.126,127,128, EXEMPT TABLE 2 & 3).	12/1/2015
SANBAG	20040827	RIDESHARE PROGRAM FOR SOUTHCOAST AIR DISTRICT	12/1/2015
VARIOUS AGENCIES	713	I-215 CORRIDOR NORTH – IN SAN BERNARDINO, ON I-215 FROM RTE 10 TO RTE 210 – ADD 2 HOV & 2 MIXED FLOW LNS (1 IN EA. DIR.) AND OPERATIONAL IMP INCLUDING AUX LANES AND BRAIDED RAMP	9/1/2013

Note: Projects may include TCM and non-TCM portions. Committed TCMs include only that portion of the projects that meets the definition of TCMs.

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 1. Programs for Improved Public Transit					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
1.1	Regional Express Bus Program	Purchase of buses to operate regional express bus services.	Yes		CTCs (MTA, OCTA), Transit Operators
1.2	Transit access to airports	Operation of transit to airport to serve air passengers.	Yes		Transit Operators, CTCs (MTA, SCRRRA)
1.3	Accelerate Bus Retrofit Program	Accelerate application of retrofit of diesel-powered buses to achieve earlier compliance with state regulations.	Yes		CTCs (MTA, OCTA), Transit Operators
1.4	Mass transit alternatives	Major change to the scope and service levels.	Yes		SCAG, CTCs
1.5	Expansion of public transportation systems	Expand and enhance existing public transit services.	Yes		CTCs
1.6	Transit service improvements in combination with park-and-ride lots and parking Management	Local jurisdictions and transit agency improve the public transit system and add new park-and-ride facilities and spaces on an as needed basis.	Yes		CTCs (MTA, SCRRRA)

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 1. Programs for Improved Public Transit					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
1.7	Free transit during special events	Require free transit during selected special events to reduce event-related congestion and associated emission increases.	No <i>(The Mobile Source Air Pollution Reduction Review Committee has been co-funding free event center shuttle service demonstration projects)</i>	The Legislature significantly reduced authority of AQMD to implement indirect source control measures through revisions to the Health & Safety Code (HSC 40717.8). Transit agencies should decide individually whether this measure is economically feasible for them.	
1.8	Require that government employees use transit for home to work trips, expand transit, and encourage large businesses to promote transit use	Require all government employees use transit a specified number of times per week, or expand transit, and encourage business to promote transit use.	Yes		CTCs
1.9	Increase parking at transit centers or stops	Encourage transit convenience by providing additional parking at transit centers.	Yes		CTCs
1.10	Expand regional transit connection ticket distribution	Provides interchangeability of transit ticket.	Yes		CTCs, Metrolink

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 2. Restriction of Certain Roads or Lanes to, or Construction of Such Roads or Lanes for Use By, Passenger Buses or High Occupancy Vehicles					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
2.1	Update High Occupancy Vehicle (HOV) Lane Master Plan	Analysis of increased enforcement, increasing occupancy requirements, conversion of existing HOV lanes to bus only lanes and/or designation of any new carpool lanes as bus-only lanes; utilization of freeway shoulders for peak-period express bus use; commercial vehicle buy-in to HOV lanes; and appropriateness of HOV lanes for corridors that have considered congestion pricing or value pricing.	Yes		SCAG, Caltrans, CTCs
2.2	Fixed lanes for buses and carpools on arterials	Provide fixed lanes for buses and carpools on arterial streets where appropriate.	Yes		CTCs (MTA, OCTA), LA City
2.3	Expand number of freeway miles available, allow use by alternative fuel vehicles, changes to HOV lane requirements and hours	Various measures evaluated in many ozone nonattainment areas. Specifics vary according to freeway system, use patterns and local characteristics.	Yes		ARB, Caltrans

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 3. Employer-Based Transportation Management Plans, Including Incentives					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
3.1*	Commute solutions	The federal law that complements parking cash-out is called the <i>Commuter Choice Program</i> . It provides for benefits that employers can offer to employees to commute to work by methods other than driving alone.	Yes		Employer, AQMD
3.2*	Parking cash-out	State law requires certain employers who provide subsidized parking for their employees to offer a cash allowance in lieu of a parking space.	Yes		Employer, AQMD
3.3*	Employer Rideshare Program Incentives	Employer rideshare incentives and introduction of strategies designed to reduce single occupant vehicle trips. Examples include: public awareness campaigns, Transportation Management Associations among employers, alternative work hours, and financial incentives.	Yes		Employer, AQMD
3.4*	Implement Parking Charge Incentive Program	Evaluate feasibility of an incentive program for cities and employers that convert free public parking spaces to paid spaces. Review existing parking policies as they relate to new development approvals.	Yes		Cities, Counties, Employer
3.5*	Preferential parking for carpools and vanpools	This measure encourages public and private employers to provide preferential parking spaces for carpools and vanpools to decrease the number of single occupant automobile work trips. The preferential treatment could include covered parking spaces or close-in spaces.	Yes		Employer, AQMD

* This measure relates to AQMD Rule 2202, *On-Road Motor Vehicle Mitigation Options*. Administered by AQMD, Rule 2202 provides a menu of options for employers in choosing how they will comply. Individual employers implement the mitigation option(s) that they have chosen.

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 3. Employer-Based Transportation Management Plans, Including Incentives					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
3.6*	Employee parking fees	Encourage public and private employers to charge employees for parking.	Yes		Employer, AQMD
3.7	Merchant transportation incentives	Implement “non-work” trip reduction ordinances requiring merchants to offer customers mode shift travel incentives such as free bus passes and requiring owners/managers/developers of large retail establishments to provide facilities for non-motorized modes.	No	Require state legislation.	
3.8*	Purchase vans for vanpools	Purchase a specified number of vans for use in employee commute travel.	Yes		Employer, AQMD
3.9*	Encourage merchants and employers to subsidize the cost of transit for employees	Provide outreach and possible financial incentives to encourage local employers to provide transit passes or subsidies to encourage less individual vehicle travel.	Yes		Employer, AQMD
3.10*	Compressed work weeks	Work 80 hours in 9 days, or 40 hours in 4 days, or 36 hours in 3 days in lieu of working 40 hours in 5 days.	Yes		Employer, AQMD
3.11*	Telecommuting	Goal of specified percentage of employees telecommuting at least once per week.	Yes		Employer, AQMD
3.12	Income Tax Credit to Telecommuters	Provide tax relief to employees telecommuting to work.	No	Requires state legislation.	

* This measure relates to AQMD Rule 2202, On-Road Motor Vehicle Mitigation Options. Administered by AQMD, Rule 2202 provides a menu of options for employers in choosing how they will comply. Individual employers implement the mitigation option(s) that they have chosen.

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 4. Trip Reduction Ordinance

In December 1995, Congress changed the Clean Air Act Amendments to make the Employee Commute Option program voluntary (no longer mandatory). California State Law prohibits mandatory employer based trip reduction ordinance programs (SB437). (HSC 40717.9) To account for these restrictions, SCAQMD Rule 2202 provides employers with a menu of options to reduce mobile source emissions generated from employee commutes. Rule 2202 complies with federal and state Clean Air Act requirements, HSC 40458, and HSC 182(d)(1)(B) of the federal Clean Air Act. Nevertheless, some jurisdictions continue to implement Trip Reduction Ordinances. For example, the City of Santa Monica requires new and existing non-residential development projects to adopt Emission Reduction Plans and pay transportation impact fees to reduce traffic congestion and improve air quality in the city.

Section 108 (f) 5. Traffic Flow Improvement Programs That Achieve Emissions Reductions					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
5.1	Develop Intelligent Transportation Systems	The term “Intelligent Transportation Systems” includes a variety of technological applications intended to produce more efficient use of existing transportation corridors.	Yes		CTCs, Caltrans
5.2	Coordinate traffic signal systems	This measure implements and enhances synchronized traffic signal systems to promote steady traffic flow at moderate speeds.	Yes		CTCs, Counties, and Cities
5.3	Reduce traffic congestion at major intersections	This measure implements a wide range of traffic control techniques designed to facilitate smooth, safe travel through intersections. These techniques include signalization, turn lanes or median dividers. The use of grade separations may also be appropriate for high volume or unusually configured intersections.	Yes		CTCs, Counties, and Cities
5.4	Site-specific transportation control measures	This measure could include geometric or traffic control improvements at specific congested intersections or at other substandard locations. Another example might be programming left turn signals at certain intersections to lag, rather than lead, the green time for through traffic.	Yes		CTCs, Counties, and Cities

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 5. Traffic Flow Improvement Programs That Achieve Emissions Reductions					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
5.5	Removal of on-street parking	Require all commercial/industrial development to design and implement off-street parking.	Yes		CTCs, Counties, and Cities
5.6	Reversible lanes	Implement reversible lanes on arterial streets to improve traffic flow where appropriate.	Yes		CTCs, Counties, and Cities
5.7	One-way streets	Redesignate streets (or portions of in downtown areas) as one-way to improve traffic flow.	Yes		CTCs, Counties, and Cities
5.8	On-Street parking restrictions	Restrict on-street parking where appropriate.	Yes		CTCs, Counties, and Cities
5.9	Bus pullouts in curbs for passenger loading	Provide bus pullouts in curbs, or queue jumper lanes for passenger loading and unloading.	Yes		CTCs, Counties, and Cities
5.10	Additional freeway service patrol	Operation of additional lane miles of new roving tow truck patrols to clear incidents and reduce delay on freeways during peak periods.	Yes		CTCs, CHP
5.11	Fewer stop signs, remove unwarranted and "political" stop signs and signals	Improve flow-through traffic by removing stop signs and signals. Potential downside in safety issues.	Yes		CTCs, Counties, and Cities
5.12	Ban left turns	Banning all left turns would stop the creation of bottlenecks although slightly increase travel distances.	No	No clear demonstration of air quality emissions benefits.	
5.13	Changeable lane assignments	Increase number of one-way lanes going in congested flow direction during peak traffic hours.	Yes		Caltrans, CTCs, Counties, and Cities
5.14	Adaptive traffic signals and signal timing	Self explanatory.	Yes		Counties, Counties, and Cites

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 5. Traffic Flow Improvement Programs That Achieve Emissions Reductions					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
5.15	Freeway bottleneck improvements (add lanes, construct shoulders, etc.)	Identify key freeway bottlenecks and take accelerated action to mitigate them.	Yes		Caltrans, SCAG
5.16	Minimize impact of construction on traveling public. Have contractors pay when lanes are closed as an incentive to keep lanes open.	Prohibit lane closures during peak hours, limit work to weekends and/or nights.	Yes		Caltrans
5.17	Internet provided road and route information	Reduce travel on highly congested roadways by providing accessible information on congestion and travel.	Yes		CTCs, Caltrans, Counties, Cities
5.18	Regional route marking systems to encourage underutilized capacity	Encourage travel on local roads and arterials by better route marking to show alternatives.	Yes		Caltrans, Counties, Cities
5.19	Congestion management field team to clear incidents	Self explanatory.	Yes		CTCs, CHP
5.20	Use dynamic message signs to direct/smooth speeds during incidents	Self explanatory.	Yes		Caltrans
5.21	Get real-time traffic information to trucking centers and rental car agencies	Reduce travel in congested areas by providing information directly to high volume travelers.	Yes		CTCs, Caltrans

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 5. Traffic Flow Improvement Programs That Achieve Emissions Reductions					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
5.22	55 mph speed limit during ozone season	Self explanatory	No	Reductions in freeway speeds are governed by California Vehicle Code 22354, which authorizes Caltrans to lower speeds after doing an engineering and traffic survey, which shows that the legislatively- set maximum speed of 65 mph, is more than is reasonable or safe. No consideration of emissions is contemplated under this statute. This measure is not feasible until the statute is changed.	
5.23	Require 40 mph speed limit on all facilities	Depends on area's emission factors.	No	The California Vehicle Code Sections 22357 and 22358 mandates a methodology for setting speed limits for local areas. This measure is not feasible until the statute is changed.	
5.24	Require lower speeds during peak periods	Self explanatory.	No	The California Vehicle Code Sections 22357 and 22358 mandates methodology for setting speed limits for local areas. This measure is not feasible until the statute is changed.	
5.25	On-street parking restrictions	Restrict on-street parking where appropriate.	Yes		State, Counties, and Cities

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 6. Fringe and Transportation Corridor Parking Facilities Serving Multiple Occupancy Vehicle Programs or Transit Service					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
6.1	Park-and-ride lots	Develop, design, and implement new park-and-ride facilities in locations where they are needed.	Yes		CTCs, Transit Operators, SCRRRA
6.2	Park-and-ride lots serving perimeter counties	Specific to a locality.	Yes		CTCs, Transit Operators, SCRRRA

Section 108 (f) 7. Programs to Limit or Restrict Vehicle Use in Downtown Areas or Other Areas of Emission Concentration Particularly During Periods of Peak Use					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
7.1	Off-peak goods movement	Restrict truck deliveries by time or place in order to minimize traffic congestion during peak periods.	Yes		PierPass A non-profit organization of marine terminal operators at the Ports of Los Angeles and Long Beach.
7.2	Truck restrictions during peak periods	Restrict truck travel during peak periods in order to minimize traffic congestion.	Yes		See Measure 7.1
7.3	Involve school districts to encourage walking/bicycling to school	Decrease vehicle emissions due to school trips by reducing these trips through education and out-reach programs.	Yes		School Districts

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 7. Programs to Limit or Restrict Vehicle Use in Downtown Areas or Other Areas of Emission Concentration Particularly During Periods of Peak Use					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
7.4	Adjust school hours so they do not coincide with peak traffic periods and ozone seasons	Measure to reduce travel during peak periods and ozone-contributing periods in the early morning.	No	School hours are dictated by many variables, including overcrowding and year-round schooling. This measure is not feasible.	
7.5	Area-wide tax for parking	Reduce driving by limiting parking through pricing measures.	Yes		Counties, Cities
7.6	Increase parking fees	Reduce driving by limiting parking through pricing measures.	No	Attorney General ruled AQMD lacks authority to implement this measure.	
7.7	Graduated pricing starting with highest in Central Business District	Charge the most for parking in the central business or other high volume areas in a city to discourage vehicle travel in these areas.	Yes		Market Driven
7.8	Buy parking lots and convert to other land use	Limit parking by converting available parking to other land uses to discourage driving.	Yes		Counties and Cities
7.9	Limit the number of parking spaces at commercial airlines to support mass transit	Reduce airport travel by limits on parking at airports.	No	Regulatory agencies do not have the legal authority to make local land use decisions. It is at the discretion of the regional or local airport authority to make local land use decisions pertaining to airports. Additionally, It is necessary to have significant mass transit available at airports before this measure can be implemented.	

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 7. Programs to Limit or Restrict Vehicle Use in Downtown Areas or Other Areas of Emission Concentration Particularly During Periods of Peak Use					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
7.10	No Central Business District (CBD) vehicles unless LEV or alt fuel or electric	Define high-use area and ticket any vehicles present unless they are low emitting, alternative fueled or electric.	No	The Legislature significantly reduced authority to implement indirect source control measures through revisions to the Health & Safety Code (40717.6, 40717.8, and 40717.9).	
7.11	Auto restricted zones	No vehicles allowed in certain areas where high emissions, congestion or contribution to ozone problems.	Yes		Counties and Cities
7.12	Incentives to increase density around transit centers	Lower travel by increasing residential and commercial density in areas near transit.	Yes		Counties and Cities
7.13	Land use/air quality guidelines	Guidelines for development that contributes to air quality goals.	Yes		ARB, AQMD, SCAG
7.14	Cash incentives to foster jobs/housing balance	Specific to locality – encouraged by California Clean Air Plan.	No	No dedicated source of funding for this measure.	
7.15	Trip reduction oriented development	Land use decisions that encourage trip reductions.	Yes		Counties, Cities, CTCs
7.16	Transit oriented development	Land use decisions that encourage walkable communities and multi-modal transit systems.	Yes		Counties, Cities, CTCs
7.17	Sustainable development	Land use decisions that create equitable standards of living to satisfy the basic needs of all peoples, all while taking the steps to avoid further environmental degradation.	Yes		Counties, Cities, CTCs

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 8. Programs For the Provision of All Forms of High-Occupancy, Shared-Ride Services					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
8.1*	Financial Incentives, Including Zero-Bus Fares	Provide financial incentives or other benefits, such as free or subsidized bus passes and cash payments for not driving, in lieu of parking spaces for employees who do not drive to the workplace.	Yes		AQMD, Employer
8.2	Internet ride matching services	Provide match-lists, route info, hours and contact information over the internet to assist individuals in joining or developing carpools.	Yes		CTCs, SCAG
8.3*	Preferential parking for carpoolers	Provide free, covered, near-building or similar incentives to carpoolers.	Yes		AQMD, Employer
8.4*	Credits and incentives for carpoolers	Self-explanatory – form depends on locality.	Yes		AQMD, Employer
8.5*	Employers provide vehicles to carpoolers for running errands or emergencies	Having vehicles available for workday errands makes it easier to go to work without one.	Yes		AQMD, Employer
8.6	Subscription services	Free van services to provide transportation for the elderly, handicapped or other individuals who have no access to transportation.	Yes		County, Employer
8.7	School car pools	Self explanatory and voluntary	No	Not economically feasible and insufficient resources available for implementation.	
8.8*	Guaranteed ride home	Self explanatory.	Yes		AQMD, Employer

* This measure relates to AQMD Rule 2202, On-Road Motor Vehicle Mitigation Options. Administered by AQMD, Rule 2202 provides a menu of options for employers in choosing how they will comply. Individual employers implement the mitigation option(s) that they have chosen.

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 8. Programs For the Provision of All Forms of High-Occupancy, Shared-Ride Services					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
8.9	Transit Voucher Program	Transit vouchers for elderly and low income commuters.	Yes		CTCs, SCAG

Section 108 (f) 9. Programs to Limit Portions of Road Surfaces or Certain Sections of the Metropolitan Area to the Use of Non-Motorized Vehicles or Pedestrian Use, Both as to Time and Place					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
9.1	Establish Auto-Free Zones and pedestrian malls	Establish auto free zones and pedestrian malls where appropriate.	Yes		Counties and Cities
9.2	Encouragement of pedestrian travel	This measure involves encouraging the use of pedestrian travel as an alternative to automobile travel. Pedestrian travel is quite feasible for short shopping, business, or school trips.	Yes		CTCs, Counties, Cities, SCAG
9.3	Bicycle/Pedestrian Program	Fund high priority projects in countywide plans consistent with funding availability.	Yes		CTCs, Counties, and Cities
9.4	Close certain roads for use by non-motorized traffic	During special events, weekends, or certain times of the day, close some roads to all but non-motorized traffic.	Yes		Counties, and Cities

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 9. Programs to Limit Portions of Road Surfaces or Certain Sections of the Metropolitan Area to the Use of Non-Motorized Vehicles or Pedestrian Use, Both as to Time and Place					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
9.5	Encouragement of bicycle travel	Promotion of bicycle travel to reduce automobile use and improve air quality. Bikeway system planning, routes for inter-city bike trips to help bicyclists avoid other, less safe facilities. Another area for potential actions is the development and distribution of educational materials, regarding bicycle use and safety.	Yes		SCAG, CTCs, Counties, and Cities
9.6	Free bikes	Provide free bikes in the manner of Boulder, CO. Simple utilitarian bikes that can be used throughout the metro area and dropped off at destination for use by anyone desiring use.	No	Evidence suggests that bicycle theft is a problem in other programs and renders the measure technically and economically infeasible.	
9.7*	Cash rebates for bikes	Provide financial incentives to purchase bicycles and thereby encourage use.	Yes		Employer
9.8	Close streets for special events for use by bikes and pedestrians	Self Explanatory.	Yes		Counties and Cities
9.9	Use condemned dirt roads for bike trails	Self Explanatory.	No	Not applicable because there are no condemned dirt roads in the region.	

* This measure relates to AQMD Rule 2202, On-Road Motor Vehicle Mitigation Options. Administered by AQMD, Rule 2202 provides a menu of options for employers in choosing how they will comply. Individual employers implement the mitigation option(s) that they have chosen.

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 10. Programs for Secure Bicycle Storage Facilities and Other Facilities, Including Bicycle Lanes, for the Convenience and Protection of Bicyclists, in Both Public and Private Areas					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
10.1*	Bike racks at work sites	Self Explanatory.	Yes		AQMD, Employer
10.2	Bike racks on buses	Bike racks would be placed on a to-be-determined number of buses to increase bicycle travel.	Yes		CTCs, Transit Operators, SCRRA
10.3	Regional bike parking	Bike Transit Centers	Yes		CTCs
10.4	Development of bicycle travel facilities	Encourages a variety of capital improvements to increase bicycle use. Off-street bikeways where high-speed roadways preclude safe bicycling. Clearly mark travel facilities with signs and provide adequate maintenance.	Yes		CTCs, Transit Operators, SCRRA
10.5	Expedite bicycle projects from RTP	Create bicycle and pedestrian master plan and build out at an accelerated rate to achieve benefits in time for attainment deadline.	Yes		SCAG, CTCs, Counties, Cities
10.6	Provide bike/pedestrian facilities safety patrols	Self Explanatory.	Yes		Counties and Cities
10.7	Inclusion of bicycle lanes on thoroughfare projects	Self Explanatory.	Yes		State, Counties, and Cities
10.8	Bicycle lanes on arterial and frontage roads	Self Explanatory.	Yes		State, Counties, and Cities
10.9	Bicycle route lighting	Self Explanatory.	Yes		State, Counties, Cities

* This measure relates to AQMD Rule 2202, On-Road Motor Vehicle Mitigation Options. Administered by AQMD, Rule 2202 provides a menu of options for employers in choosing how they will comply. Individual employers implement the mitigation option(s) that they have chosen.

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 11. Programs to Control Extended Idling of Vehicles					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
11.1	Limit excessive car dealership vehicle starts	Require car dealers to limit the starting of vehicles for sale on their lot(s) to once every two weeks. Presently, a number of new and used car dealers start their vehicles daily to avoid battery failure and assure smooth start-ups for customer test drives.	No	This measure was investigated by the AQMD and it was determined that in contrast to colder climates where vehicles are started on a daily basis, vehicles in the South Coast started much less frequently. For this reason it was determined not to be technically feasible.	
11.2	Encourage limitations on vehicle idling	Encourage limitations to limit extended idling operations.	Yes		ARB
11.3	Turn off engines while stalled in traffic	Public outreach or police-enforced program.	No	This measure raises safety and congestion concerns. No clear demonstration of air quality emissions benefits.	
11.4	Outlaw idling in parking lots	Self-explanatory and police enforced program.	No	Enforcement of idle restrictions is a low priority for police relative to their other missions. The cost effectiveness of this measure has not been demonstrated. It is not economically feasible.	
11.5	Reduce idling at drive-throughs; ban drive-throughs	Mandate no idling or do not allow drive-through windows during ozone season.	No	No clear demonstration of air quality emissions benefits. This measure is not economically feasible.	

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 11. Programs to Control Extended Idling of Vehicles					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
11.6	Promote use of pony engines	Use special battery engines to keep air conditioning and other truck systems working while truck not in use.	Yes		ARB
11.7	Idle restrictions at airport curbsides	Self-explanatory and police enforced.	Yes		Airport authority
11.8	Truck Stop Electrification	Provide electric charging stations for at truck stops to power heating/AC units and other on-board equipment.	Yes		ARB

Section 108 (f) 12. Program to Reduce Motor Vehicle Emissions Consistent with Title II, Which Are Caused by Extreme Cold Start Conditions	
Not applicable. The definition of an "extreme cold start" specifies temperatures below 20 degrees Fahrenheit.	Not applicable in the South Coast - No extreme cold start conditions

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 13. Employer-sponsored programs to permit flexible work schedules					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
13.1*	Alternative work schedules	Enables workers to choose their own working hours within certain constraints. Flextime provides the opportunity for employees to use public transit, ridesharing, and other Nonmotorized transportation. A related strategy, staggered work hours, is designed to reduce congestion in the vicinity of the workplace. Alternative workweeks have been implemented extensively by large private and public employers.	Yes		AQMD, Employer
13.2*	Modifications of work schedules	Implement alternate work schedules that flex the scheduled shift time for employees. Encourage the use of flexible or staggered work hours to promote off-peak driving and accommodate the use of transit and carpooling.	Yes		AQMD, Employer
13.3*	Telecommunications-Telecommuting/Teleconferencing	Encourage the use of telecommuting-telecommuting/teleconferencing in place of motor vehicle use where appropriate.	Yes		AQMD, Employer

* This measure relates to AQMD Rule 2202, On-Road Motor Vehicle Mitigation Options. Administered by AQMD, Rule 2202 provides a menu of options for employers in choosing how they will comply. Individual employers implement the mitigation option(s) that they have chosen.

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 14. Programs and Ordinances to facilitate Non-automotive travel, provision to and utilization of mass transit, and to generally reduce the need for single-occupant vehicle travel, as part of transportation planning and development efforts					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
14.1	Areawide public awareness programs	This measure focuses on conducting ongoing public awareness programs throughout the year to provide the public with information on air pollution and encourage changes in driving behavior and transportation mode use.	Yes		AQMD
14.2	Special event controls	This measure would require new and existing owners/operators of the special event centers to reduce mobile source emissions generated by their events. A list of optional strategies would be available that reduce mobile source emissions. The definition of "special event center" could be developed through the rule development process.	Yes		Counties, Cities, Special Event Operators
14.3	Land Use/development alternatives	This measure includes encouraging land use patterns, which support public transit and other alternative modes of transportation. In general, this measure would also encourage land use patterns designed to reduce travel distances between related land uses	Yes		ARB, SCAG, AQMD, Counties, Cities
14.4	Voluntary No-Drive Day programs	Conduct voluntary No-Drive Day programs during the ozone season through media and employer based public awareness activities.	Yes		CTCs
14.5**	New Development Air Quality Impact Evaluation	Evaluate air quality impacts of new development and recommend or require mitigation for significant adverse impacts.	Yes		AQMD, Counties, Cities, CEQA Lead Agencies

** AQMD and SCAG recommend mitigation as commenting agencies on new development projects; cities and counties require mitigation under their discretionary authority as lead agency.

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 14. Programs and Ordinances to facilitate Non-automotive travel, provision to and utilization of mass transit, and to generally reduce the need for single-occupant vehicle travel, as part of transportation planning and development efforts					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
14.6	Transportation for Livable Communities (TLC)/Housing Incentive program	Program provides planning grants, technical assistance, and capital grants to help cities and Nonprofit agencies define and implement transportation projects that support community plans including increased housing near transit.	Yes		SCAG, State
14.7	Incentives to increase density around transit centers	Lower travel by increasing residential and commercial density in areas near transit.	Yes		Counties, Cities, CTCs
14.8	Incentives for cities with good development practices	Provide financial or other incentive to local cities that practice air quality-sensitive development.	Yes		Counties, Cities
14.9	Increase state gas tax	Self Explanatory.	No	Need state legislation.	
14.10	Pay-As-You-Drive Insurance	Self Explanatory.	No	Need state legislation. No clear demonstration of air quality emission benefits so does not advance attainment date..	

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 15. Programs for new construction and major reconstructions of paths, tracks or areas solely for the use by pedestrian or other Non-motorized means of transportation when commercially feasible and in the public interest					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
15.1*	Encouragement of pedestrian travel	Promote public awareness and use of walking as an alternative to the motor vehicle.	Yes		AQMD, SCAG, CTCs, Employer
15.2	Pedestrian and bicycle overpasses where safety dictates	Ongoing implementation as development occurs.	Yes		Counties, Cities

Section 108 (f) 16. Program to encourage the voluntary removal from use and the marketplace of pre-1980 model year light duty vehicles and pre-1980 model light duty trucks					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
16.1	Counties assess ten dollar license plate fee to fund repair/replacement program for high-emitters	Self explanatory.	Yes		ARB, BAR**
16.2	Buy vehicles older than 1975	Self explanatory.	Yes		ARB, AQMD***
16.3	Demolish impounded vehicles that are high emitters	Self explanatory.	No	Not economically feasible.	

* This measure relates to AQMD Rule 2202, On-Road Motor Vehicle Mitigation Options. Administered by AQMD, Rule 2202 provides a menu of options for employers in choosing how they will comply. Individual employers implement the mitigation option(s) that they have chosen.

** Similar program administered with different funding source as part of smog check.

*** Voluntary car scrapping programs to generate credits.

Attachment B: 2012 South Coast PM2.5 AQMP Reasonably Available Control Measure (RACM) Analysis - TCMs

Section 108 (f) 16. Program to encourage the voluntary removal from use and the marketplace of pre-1980 model year light duty vehicles and pre-1980 model light duty trucks					
Measure #	Measure Title	Description	Has It Been Implemented	Reasoned Justification for Not Implementing Measure	Implementing Agency or Agencies
16.4	Do whatever is necessary to allow cities to remove the engines of high emitting vehicles (pre-1980) that are abandoned and to be auctioned	Self explanatory.	No	Not economically feasible.	
16.5	Accelerated retirement program	Identify high emitting vehicle age groups and develop a program to remove them from use.	Yes		ARB, AQMD

**DRAFT FINAL 2012 AQMP
APPENDIX V**

MODELING AND ATTAINMENT DEMONSTRATIONS

NOVEMBER 2012

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD**

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CHAPTER 1

MODELING OVERVIEW

Introduction

Modeling Methodology

Uncertainties Associated with the Technical Analysis

Document Organization

INTRODUCTION

This appendix to the Draft Final 2012 AQMP provides the details of the modeling attainment demonstrations presented in Chapter 5 of the main document. The federal Clean Air Act (CAA) sets forth specific requirements to use air quality simulation modeling techniques to estimate future air quality in areas that do not meet the air quality standards. This Draft Final 2012 AQMP provides the future year attainment demonstration for the 24-hour average PM_{2.5} standard and additional analyses to update future year projections of the annual PM_{2.5} and 8-hour ozone standards.

The South Coast Air Basin (Basin) is currently designated nonattainment for PM_{2.5}, ozone (8-hours), and PM₁₀. On April 28, 2010, CARB forwarded the District's request to U.S. EPA to redesignate the Basin as attainment for PM₁₀. Air quality monitoring data measured from 2005 through 2007 indicated that the standard had been achieved and that the Basin has not experienced any violations of the 24-hour average PM₁₀ standard, except during a few exceptional events. Future year projections of PM₁₀ provided in the 2007 AQMP and the updated attainment demonstration included in the redesignation request provide the basis for a PM₁₀ maintenance plan for the Basin. EPA's final approval of the redesignation request is currently pending.

The 2007 modeling attainment demonstrations served as an update of the 2003 AQMP ozone, PM₁₀ and carbon monoxide plans for the South Coast Air Basin and other portions of the Southeast Desert Modified Nonattainment Area that are under the District's jurisdiction and were submitted as part of the California State Implementation Plan (SIP). The Final 2007 AQMP provided attainment demonstrations for 8-hour ozone, PM_{2.5}, and PM₁₀. This plan provides the attainment demonstration to address the 2006 revision to the 24-hour PM_{2.5} standard which reduced the level from 65 µg/m³ to the current 35 µg/m³. This analysis reflects the updated baseline and future year emissions inventories, estimated revisions to the attainment demonstration methodology, new technical information and enhanced air quality modeling techniques, and the control strategy provided in Chapter 4 and Appendix IV of the Draft Final 2012 AQMP.

Note that the baseline adjustment deriving from emissions reductions from mobile source incentive programs is not yet reflected in the modeling results presented in this chapter. It is expected that controlled 24-hour PM_{2.5} design values will decrease approximately 0.2 - 0.3 µg/m³ when these adjustments are included in the

model, primarily associated with ambient ammonium nitrate reductions. The Final 2012 AQMP modeling results will fully reflect the impact of this baseline adjustment.

Background

The Basin is currently designated nonattainment for PM_{2.5}, and extreme nonattainment for ozone. The District's goal is to develop an integrated control strategy which: 1) ensures that ambient air quality standards for all criteria pollutants are met by the established deadlines in the federal Clean Air Act (CAA); and 2) achieves an expeditious rate of reduction towards the state air quality standards. The overall control strategy is designed so that efforts to achieve the standard for one criteria pollutant do not slow or counteract efforts to achieve the standard for another. A two-step modeling process, consistent with the approach used in the 2007 AQMP, has been conducted for the Draft Final 2012 AQMP. First, future year 24-hour average PM_{2.5} are simulated for 2014, 2017 and 2019 to determine the earliest possible date for attainment. (If attainment cannot be demonstrated by 2014, U.S. EPA can grant up to an additional 5-years to demonstrate attainment of the 24-hour standard. However, the length of the extension is contingent upon the earliest year beyond 2014 that attainment can be demonstrated implementing all feasible control measures).

Concurrently, simulations are also conducted to confirm that the annual average PM_{2.5} concentrations will meet the 15 $\mu\text{g}/\text{m}^3$ standard by 2014, and demonstrate progress in following years. The update to the annual PM_{2.5} modeling is not intended to replace the approved modeling attainment demonstration submitted in the 2007 AQMP. The updated modeling is included to provide insight into the level of compliance with the current standard in future years, and provide a first glance at the impact that proposed revisions to lower the standard will have on attainment status. U.S. EPA recently proposed revisions to the federal annual PM_{2.5} standard that will lower the standard to a value between 12 and 13 $\mu\text{g}/\text{m}^3$. While the exact attainment date has not been published, the proposed rule will likely provide 5 years after designation to demonstrate attainment of new the annual standard. As with the current 24-hour PM_{2.5} standard, U.S. EPA can grant up to an additional 5-years to demonstrate attainment of the annual standard. That would set an attainment date no later than 2023. The annual PM_{2.5} simulations presented in this section for model years beyond 2014 are included to demonstrate the continued progress towards meeting the range of the new federal standard by the early 2020's.

Finally, the future year 8-hour average ozone emissions control strategy builds upon the PM_{2.5} strategy to demonstrate attainment of the federal 8-hour average ozone standard in 2024. There is no federal requirement to update the current ozone attainment demonstration at this time; however an update to the 8-hour average ozone SIP that demonstrates attainment of the 75 ppb standard is scheduled to be submitted no later than December 2015. The deadline for the Basin to attain the 75 ppb standard is likely to be 2032, 8-years after the attainment date for the previous 80 ppb federal standard in 2024. It is critical to conduct preliminary analyses to assess the current control strategy given the extent of required emissions reductions needed to meet the 80 ppb standard in 2024.

Model Selection

During the development of the 2003 Plan, the District convened a panel of seven experts to independently review the regional air quality modeling conducted for ozone and PM₁₀. The consensus of the panel was for the District to move to more current state-of-the-art dispersion platforms and chemistry modules. At that time, the model selected for the 2007 AQMP ozone attainment demonstrations was the Comprehensive Air Quality Model with Extensions (CAMx) [Environ, 2002], using SAPRC99 chemistry. For PM_{2.5}, the 2007 AQMP used the CAMx “one atmosphere” approach which coupled CB-IV gas phased chemistry and a static two-mode particle size aerosol module as the particulate modeling platform. The CAMx “one atmosphere” chemistry approach better preserved mass consistency taking advantage of an advanced dispersion platform.

In the 2007 AQMP, CAMx coupled with the SAPRC99 chemistry was simulated to demonstrate attainment of the federal ozone standard. A total of 36 days were simulated covering 6 ozone episode periods from which 19 days meeting performance criteria were selected for inclusion in the attainment demonstration. Future year ozone projections were developed using the CAMx/SAPRC99 couple supported by MM5 meteorological data fields and day specific emissions inventories.

The 2007 AQMP PM_{2.5} attainment demonstration incorporated the CAMx/CB-IV chemistry and aerosol modules together with the MM5 meteorological fields. The PM_{2.5} analyses relied on average week day and weekend day emissions profiles that were adjusted for monthly averaged temperature and humidity. The annual and episodic PM_{2.5} demonstrations were based on 365 days of particulate simulation. It is important to note that PM_{2.5} and ozone attainment demonstrations were run

independently due to differences in the computational requirements resulting from separate modeling domains and definitions of vertical structure.

In keeping with the recommendations of the expert panel as well as the Scientific Technical Peer Modeling Review Committee, the Draft Final 2012 AQMP has continued to move forward to incorporate current state-of-the-art modeling platforms to conduct regional modeling analyses in support of the PM_{2.5} attainment demonstrations and ozone update. The Draft Final 2012 AQMP PM_{2.5} attainment demonstration has been developed using the U.S. EPA supported Community Multiscale Air Quality (CMAQ) (version 4.7.1) air quality modeling platform with SAPRC99 chemistry, and the Weather Research and Forecasting model (WRF) (version 3.3) meteorological fields. (Comprehensive descriptions of the CMAQ modeling system are provided by U.S. EPA at their SCRAM website: <http://www.epa.gov/scram001/>. Additional descriptions of the SAPRC99 chemistry module are provided at the UCR website: <http://www.engr.ucr.edu/~carter/SAPRC/>. Documentation of the NCAR WRF model is available from UCAR website: <http://www.wrf-model.org/>). Supporting PM_{2.5} and ozone simulations were also conducted using the most current, publicly available version of CAMx (Environ, Inc, version 5.3) which also used SAPRC99 chemistry and WRF meteorology. The model analyses were conducted on an expanded domain, with increased resolution in the vertical structure for a 4 x 4 km grid size.

MODELING METHODOLOGY

Design Values

EPA guidance recommends the use of multiple year averages of design values, where appropriate, to dampen the effects of single year anomalies to the air quality trend due to factors such as adverse or favorable meteorology or radical changes in the local emissions profile. The trend in the Basin 24-hour PM_{2.5} design values, determined from routinely monitored Federal Reference Monitoring (FRM), from 2001 through 2011 (Figure V-1-1) depicts sharp reductions in concentrations over the period. The 24-hour PM_{2.5} design value for 2001 was 76 µg/m³ while the 2008 design value (based on data from 2006, 2007 and 2008) is 53 µg/m³. Furthermore, the most current design value computed for 2011 has been reduced to 38 µg/m³. The annual PM_{2.5} design value has demonstrated a reduction of 13.6 µg/m³ over the 10-year period from 2001 through 2011. In each case, the trend in PM_{2.5} levels is steadily moving in the direction of air quality improvement.

The trend of Basin ozone design values is presented in Figure V-1-2. The design values have averaged a reduction of approximately three parts per billion over the 14-year period; however the most recent design value (107 PPB) continues to exceed the 1997 8-hour ozone standard by 34 percent and the 2006 ozone standard by 43 percent.

In its modeling guidance, U.S. EPA has recommended that a multiple year weighted design value be used in attainment demonstrations. It is reasonable to use a representative design value that is not fixed in a multiple year average that overly reflects data that are not consistent with the current air quality trend or unusual weather. The PM_{2.5} attainment demonstrations presented in the 2007 AQMP relied on 2005 design values based on monitoring data between 2003 and 2005. In general, the 2005 design value was more consistent with the monitoring data observed in 2004, the center year in the design value calculation. The 2007 AQMP attainment demonstrations were anchored to a 2005 emissions data set and particulate speciation profiles obtained from an extensive monitoring program conducted over the course of 2005. Had the 2006 PM_{2.5} data been available for inclusion in the analysis, the revised weighted annual design value centered around 2005 (including data from 2004 through 2006) would be 22.7 $\mu\text{g}/\text{m}^3$, essentially the same value as the 2005 design of 22.6 $\mu\text{g}/\text{m}^3$.

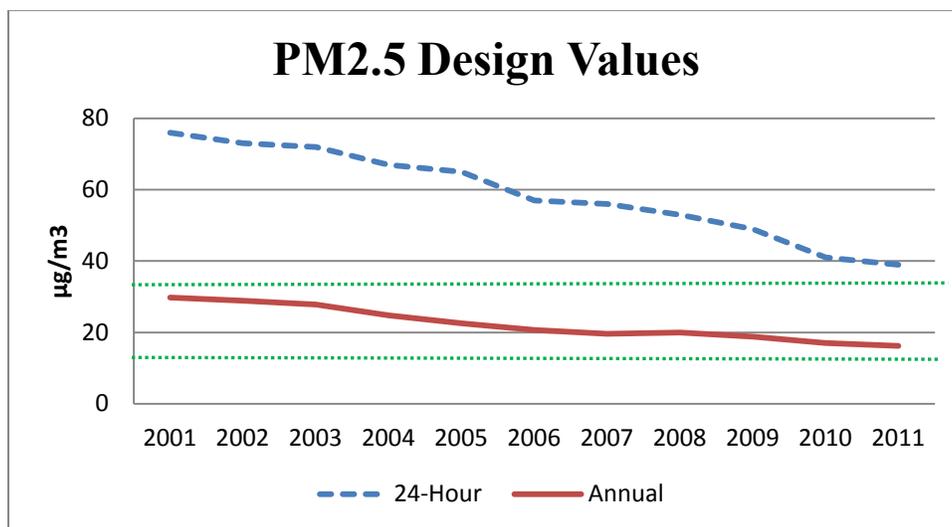


FIGURE V-1-1

South Coast Air Basin 24-Hour Average and Annual PM_{2.5} Design Values

(Each value represents the 3-year average of the highest annual average PM_{2.5} concentration).
The dotted lines represent 24-hr and annual standards, respectively.

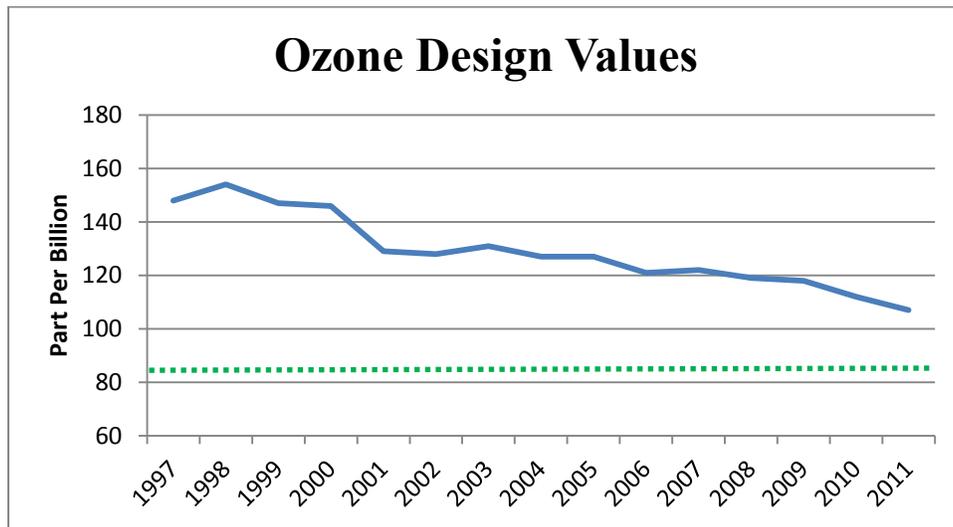


FIGURE V-1-2

South Coast Air Basin 8-Hour Average Ozone Design Values
(Each value represents the 3-year average of the 4th highest 8-Hour Average Ozone concentration) standard line needs adjustment and explanation

The Draft Final 2012 AQMP relies on a set of 5-years of monitored particulate data centered on 2008, the base year selected for the emissions inventory development and the anchor year for the future year PM_{2.5} projections. In July, 2010, U.S. EPA proposed revisions to the PM_{2.5} 24-hour average modeling attainment demonstration guidance. In the 2007 AQMP attainment demonstrations, maximum quarterly concentrations equal to or less than the yearly 24-hour average design value were incorporated in the future year design projection. Since the 24-hour attainment demonstration used the 2005 design value, the future year design projection was based on 3-years of quarterly PM_{2.5} data observed from 2003 through 2005. A total of 12 quarterly design values were used in the projection of the 2015 attainment demonstration.

The new guidance suggests using 5-years of data, but instead of directly using quarterly calculated design values, the procedure requires the top eight daily PM_{2.5} concentrations days in each quarter to reconstruct the annual 98th percentile values. The logic in the analysis is twofold. First, by selecting the top eight values in each quarter, the 98th percentile concentration is guaranteed to be included in the calculation. Second, the analysis projects future year concentrations for each of the

32 days in a year (160 days over 5-years) to test the response of future year PM2.5 to the proposed control strategy. Since the 32 days in each year include different meteorological and particulate species profiles, it is expected that those individual days will respond independently to the projected the future year emissions profile and that a new distribution of PM2.5 concentrations will result. The methodology uses the projected air quality for the 32 days in each year to build a new annual 24-hour 98th percentile concentration, not necessarily occurring on the same day exhibiting the 98th percentile in the base year. The five years of projected 98th percentile concentrations are weighted to create a new future year 24-hour PM2.5 design value to test attainment of the standard. Overall, the process is more robust in that the analysis is examining the impact of control strategy implementation on 10 times the number of days, covering a wider variety of potential meteorology and emissions combinations.

It is important to note that the use of the quarterly design values for a 5-year period centered around 2008 were also used in the projection of the future year annual average PM2.5 concentrations. The revised PM2.5 guidance did not modify the procedures used to calculate the future year annual average PM2.5 concentrations. The future year design value reflects the weighted quarterly average concentration calculated from the projections of 5-years of days (20 quarters).

The weighted 2008 24-hour and annual PM2.5 8-hour ozone design values for the Basin are presented in Chapters 5, 6, and 7 of this appendix, respectively.

Relative Response Factors and Future Year Design Values

To bridge the gap between air quality model output evaluation and applicability to the health based air quality standards, EPA guidance has proposed the use of relative response factors (RRF). The RRF concept was first used in the 2007 AQMP modeling attainment demonstrations. The RRF is simply a ratio of future year predicted air quality with the control strategy fully implemented to the simulated air quality in the base year. The mechanics of the attainment demonstration are pollutant and averaging period specific. For 24-hour PM2.5, the top 10 percentile of modeled concentrations in each quarter of the simulation year are used to determine the quarterly RRF. For the annual average PM2.5, the quarterly average RRFs are used for the future year projections. For the 8-hour average ozone simulations (to be further discussed in Chapter 10 of this document) the aggregated response of several

episode days to the implementation of the control strategy are used to develop an averaged RRF for projecting a future year design value. Simply stated, the future year design value is estimated by multiplying the non-dimensional RRF to the base year design value. Thus, the simulated improvement in air quality, based on multiple meteorological episodes, is translated to a simple metric that directly determines compliance of the standard. Equations V-1 and V-2 summarize the calculation.

Equation V-1.

$$\text{RRF} = \text{Future-Year Model Prediction} / \text{Base-Year Model Prediction.}$$

Equation V-2.

$$\text{Attainment Demonstration} = \text{RRF} \times \text{Design Value} \leq \text{Air Quality Standard.}$$

The modeling analyses described above use the RRF and design value approach to demonstrate future year attainment of the standards.

Regional Modeling

The Draft Final 2012 AQMP employs the CMAQ air quality modeling platform with SAPRC99 chemistry and WRF meteorology as the primary tool used to demonstrate future year attainment of the 24-hour average PM_{2.5} standard. Unlike the 2007 AQMP attainment demonstrations, PM_{2.5} and ozone were modeled jointly in one year-long simulation covering 366 days and 8784 hours. Predicted daily maximum values of 24-hour PM_{2.5} and 8-hour ozone were calculated from the respective running 24-hour and 8-hour average simulated concentrations.

The Draft Final 2012 AQMP modeling attainment demonstrations using the CMAQ platform were conducted using a vastly expanded modeling domain compared with the analysis conducted for the 2007 AQMP modeling attainment demonstration. The simulations were conducted using a Lambert Conformal grid projection where the western boundary of the domain was extended to 084 UTM, over 100 miles west of the ports of Los Angeles and Long Beach. The eastern boundary extended beyond the Colorado river, while the northern and southern boundaries of the domain extend to the San Joaquin Valley and the Northern portions of Mexico (3543 UTM). The grid size has been reduced from 5 x 5 kilometers to 4 x 4 kilometers, and the vertical

resolution has been increased to 18 layers. Figure V-1-1 depicts the modeling domain which includes a grid of 154 cells from west to east and 102 cells from south to north.

The final WRF simulated meteorological fields were generated for the identical domain, layer structure and grid size. The vertical structure of the modeling domain was increased to 18 layers after conducting several optimizing simulations. The WRF simulations were initialized from NCEP analyses and run for 4-day increments with 1-day spinup. Four dimensional data assimilation (FDDA) was conducted with vertical sounding and surface measurements. The base WRF simulation was simulated using a vertical structure that included 30 layers extending from the surface to 19 km. A systematic analysis of the impact of layer collapsing from 30 layers to a lesser number was conducted to optimize the number of levels that would best retain the WRF meteorological characterization yet provide enhanced resolution for the CMAQ air quality simulation.

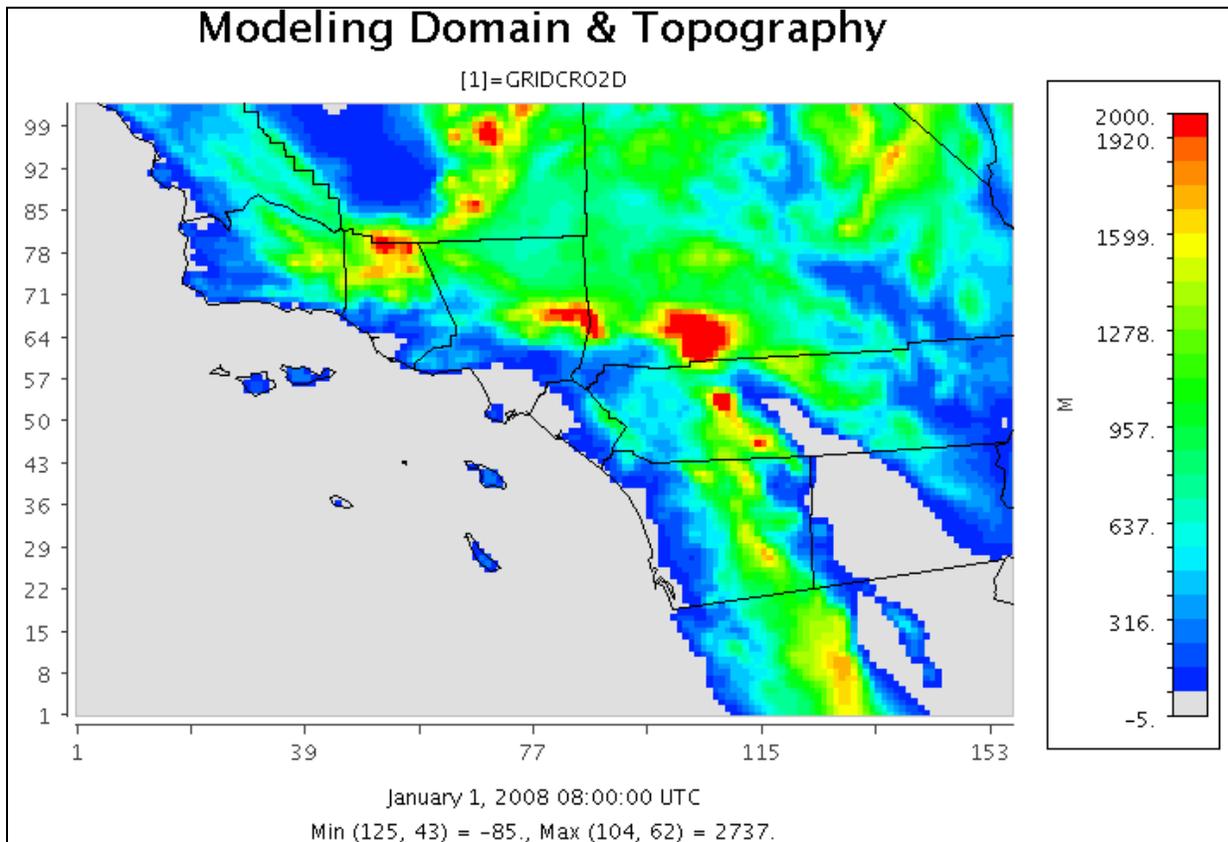


Figure V-1-3
2012 AQMP Regional Modeling Domain

Lateral and vertical boundary conditions were designated using an “U.S. EPA clean boundary profile.” The analysis tested the use of MOZART (Model of Ozone and Related Chemical Tracers, [Horowitz, L.W., et. Al., 2003]), global chemical simulation model output to specify the lateral and vertical boundary conditions used for the CMAQ modeling. Grid scale matching using MOZART at 60 x 60 km compared with the CMAQ 4 x 4 km grid introduced significant uncertainty to the boundary concentration profiles and subsequent regional simulations. Background simulations including the MOZART boundary specification while excluding anthropogenic emissions depicted large variations in background concentrations. Discussions conducted at the Scientific Technical Modeling Peer Review Advisory Group suggested that a finer scale MOZART output might dampen the variable impact to the regional air quality simulations. While this recommendation was acknowledged, the resources and time requirements needed to generate new global modeling output were prohibitive. The final simulations reverted to the more stable clean boundary assumption.

The atmospheric chemistry package used in the CMAQ simulations relied on SAPRC99 gas phase chemistry coupled with Acid Deposition Model (**RADM**) aqueous chemical mechanism, AE5 aerosol chemistry, and SOAP secondary organic chemistry with the Euler Backward Iterative (EBI) gas phase chemistry solver. The aerosol size distribution algorithm utilized a tri-modal distribution to represent nuclei, fine and coarse particles. The analysis was also conducted using the CAMx modeling platform using the “one atmosphere” approach comprised of the SAPRC99 gas phase chemistry and a static two-mode particle size aerosol module as the particulate modeling platform. Parallel testing was conducted to evaluate the CMAQ performance against CAMx and the results indicated that the two model/chemistry packages performance were similar. The CAMx results are provided as a component of the weight of evidence discussion and are presented as an attachment to this document.

Weight of Evidence

PM_{2.5} modeling guidance strongly recommends the use of corroborating evidence to support the future year attainment demonstration. The weight of evidence demonstration for the Draft Final 2012 AQMP includes brief discussions of the observed 24-hour PM_{2.5} levels, emissions trends, and future year PM_{2.5} predictions.

UNCERTAINTIES ASSOCIATED WITH THE TECHNICAL ANALYSIS

As with any plan update, there are uncertainties associated with the technical analysis. The following paragraphs describe the primary contributors to such uncertainties as well as some of the safeguards built in to the air quality planning process to manage and control such uncertainties.

Demographic and Growth Projections

Uncertainties exist in the demographic and growth projections for the future years. As projections are made to longer periods (i.e., over ten or more years), the uncertainty of the projections become greater. Examples of activities that may contribute to these types of uncertainties include the rate and the type of new sources locating in the Basin and their geographic distribution, future year residential construction, military base reuse and their air quality impact, and economic conditions.

Ambient Air Quality Monitoring Data

Generally, ambient air quality measurements are accurate to within plus or minus half of a unit of measurement (e.g., for ozone usually reported in units of parts-per-hundred million (pphm) would be accurate to within ± 0.5 pphm or ± 5 ppb). Due to this uncertainty and associated rounding conventions, the Basin's 8-hour attainment status based on ambient monitoring data would be achieved if all ozone monitors reported ozone concentration levels less than or equal to 84 ppb. Similar uncertainty is observed in particulate data measurements and laboratory analysis. For example, PM_{2.5} is comprised of six primary constituents (NH₄⁺, NO₃, SO₄⁻, OC, EC and crustal), as well as bonded water and total mass. Each of the primary species has individual uncertainty associated with the laboratory analysis procedure used to analyze concentration, the type of filter media to collect the sample and the total mass collected can be affected by minor changes in the volumetric flow that fall within the approved instrument calibration range. As a consequence, the sum of the total species may not add up to or may exceed the filter measured mass.

Emissions Inventory

While significant improvements have been realized in mobile source emissions models, uncertainties continue to exist in the mobile source emissions inventory estimates. EMFAC2011 on-road mobile source emission estimates have improved

with each new EMFAC release. On-road mobile source emissions have inherent uncertainties with the current methodologies used to estimate vehicle miles traveled, the impacts of fuel additives such as ethanol, and day-of-week diurnal profiles of traffic volume. Stationary (or point) source emission estimates have less associated uncertainties compared to area source emission estimates. Major stationary sources report emissions annually whereas minor stationary and area source emissions are, in general, estimated based on a top down approach that relies on production, usage or activity information. Area source emissions including paved road dust and fugitive dust have significant uncertainties in the estimation of particulate (PM_{2.5}) emissions due to the methodologies used for estimation, temporal loading and weather impacts.

Air Quality and Meteorological Models

The air quality models used for ozone and particulate air quality analysis are state-of-the-art, comprehensive 3-dimensional models that utilize 3-dimensional meteorological models, complex chemical mechanisms that accurately simulate ambient reactions of pollutants, and sophisticated numerical methods to solve complex mathematical equations that lead to the prediction of ambient air quality concentrations. While air quality models progressively became more sophisticated in employing improved chemical reaction modules that more accurately simulate the complex ambient chemical reaction mechanisms of the various pollutants, such improved modules are still based on limited experimental data which carry associated uncertainties. In order to predict ambient air quality concentrations, air quality models rely on the application of sophisticated numerical methods to solve complex mathematical equations that govern the highly complex physical and chemical processes that also have associated uncertainties. Layer averaging of model output reduces the sensitivity of the model to changing patterns in the vertical structure.

Are There Any Safeguards Against Uncertainties?

Yes. While completely eliminating uncertainties is an impossible task, there are a number of features and practices built into the air quality planning process that manage and control such uncertainties and preserve the integrity of an air quality management plan.

The concerns regarding uncertainties in the technical analysis are reduced with future AQMP revisions. Each AQMP revision employs the best available technical information. Under state law, the AQMP revision process is a dynamic process with

revisions occurring every three years. The AQMP revision represents a “snapshot in time” providing the progress achieved since the previous AQMP revision and efforts still needed in order to attain air quality standards.

Under the federal Clean Air Act, a state implementation plan (SIP) is prepared for each criteria pollutant. The SIP is not updated on a routine basis under the federal Clean Air Act. However, the federal Clean Air Act recognizes that uncertainties do exist and provides a safeguard if a nonattainment area does not meet an applicable milestone or attain federal air quality standards by their applicable dates. Contingency (or backstop) measures are required in the AQMP and must be developed into regulations such that they will take effect if a nonattainment area does not meet an applicable milestone or attainment date. In addition, federal sanctions may be imposed until an area meets applicable milestone targets.

In September 2006, U.S. EPA released an updated guidance document on the use of modeled results to demonstrate attainment of the federal ozone, PM_{2.5} and regional haze air quality standards. The guidance document recognized that there will be uncertainties with the modeling analysis and recommends supplemental analysis or weight of evidence discussion that corroborates the modeling attainment analysis where attainment is likely, even if the modeled results are inconclusive. Table V-1-1, is taken directly from the modeling guidance document to illustrate the value of supplemental analyses. Where possible, the U.S. EPA recommends that at least one “mid-course” review of air quality, emissions and modeled data be conducted. A second review, shortly before the attainment date, should be conducted also. Statistical trend analyses of monitored data can also provide support for assessing the likelihood for future year attainment. The District will undertake such actions at the appropriate times.

DOCUMENT ORGANIZATION

This document provides the federal attainment demonstration for 24-hour PM_{2.5} and additional analyses for annual PM_{2.5} and ozone. Chapter 2 provides the Modeling Protocol which summarizes the key elements that have been revised relative to the 2007 AQMP Modeling protocol. Chapter 3 provides a discussion of the meteorological modeling, including model performance and the impact of modifications to the land usage profiles. Chapter 4 provides a brief summary of the modeling emissions, including characterization of the daily/diurnal emissions profiles and OGV emissions. Chapter 5 provides the 24-hour PM_{2.5} attainment

demonstration meeting the 2014 attainment date. The chapter includes a characterization of the particulate species profile, discussion of the revised attainment demonstration methodology, and selected future year particulate impacts. A series of alternative emissions simulations are also presented to test the sensitivity of the proposed control strategy and to simulate the impacts of CEQA alternatives to the proposed plan. Chapter 6 provides an update to projected annual PM_{2.5} concentrations for the different future year emissions scenarios. Similarly, Chapter 7 will provide an update to the future year 8-hour ozone projections based on the CMAQ modeling analyses. The ozone analysis includes discussions of the representativeness of the 2008 meteorological year, base-year modeling performance, and projections of future year concentrations for baseline emissions as well as the implementation of the short-term control strategy. The ozone analysis will also provide updated isopleth analyses and a discussion of future year carrying capacities for the current and proposed ozone standards. As with the particulate analyses, weight of evidence discussions for ozone will be incorporated in Chapter 5. Chapter 8 provides a brief summary of the analysis.

Table V-1-2 lists the Attachments to this document. CAMx simulation analyses will be included as an attachment in the final document.

TABLE V-1-1

Guidelines for Weight of Evidence Determinations (U.S. EPA, 2006)

Results of Modeled Attainment Test			Supplemental Analyses
Ozone	Annual PM2.5	24-Hour PM2.5	
Future Design Value < 82 ppb, all monitoring sites	Future Design Value < 14.5 $\mu\text{g}/\text{m}^3$, all monitoring sites	Future Design Value < 62 $\mu\text{g}/\text{m}^3$, all monitoring sites	Basic supplemental analyses should be completed to confirm the outcome of the modeled attainment test
Future Design Value 82 - 87 ppb, at one or more sites/grid cells	Future Design Value 14.5 – 15.5 $\mu\text{g}/\text{m}^3$, at one or more sites/grid cells	Future Design Value 62 – 67 $\mu\text{g}/\text{m}^3$, at one or more sites/grid cells	A weight of evidence demonstration should be conducted to determine if aggregate supplemental analyses support the modeled attainment test
Future Design Value > 87 ppb, at one or more sites/grid cells	Future Design Value > 15.5 $\mu\text{g}/\text{m}^3$, at one or more sites/grid cells	Future Design Value > 67 $\mu\text{g}/\text{m}^3$, at one or more sites/grid cells	More qualitative results are less likely to support a conclusion differing from the outcome of the modeled attainment test.

TABLE V-1-2

Attachments

Number	Description
	References
Attachment-1	WRF METSTAT Model Graphical Performance Statistics
Attachment-2	Quarterly CMAQ 24-Hour PM2.5 Model Performance
Attachment-3	Time Series of Observed Vs. Predicted 8-Hour Ozone
Attachment-4	Draft CEPA Source Level Emissions Reduction Summary for 2014: Annual Average Inventory
Attachment-5	Draft CEPA Source Level Emissions Reduction Summary for 2023: Annual Average Inventory
Attachment-6	CAMx Modeling (To Be Provided)

CHAPTER 2

MODELING PROTOCOL

Background

Draft Final 2012 AQMP Modeling Protocol

BACKGROUND

One of the basic requirements of a modeling attainment demonstration is the development of a comprehensive modeling protocol that defines the scope of the regional modeling analyses including the attainment demonstration methodology, modeling and chemical platforms employed, emission inventories and physical characteristics of the domain simulated. The protocol also defines the methodology to assess model performance and the selection of the periods to be simulated. The 2007 AQMP provided a comprehensive discussion of the modeling protocol used as guidance in the development of the ozone, PM_{2.5}, and PM₁₀ modeling attainment demonstrations. The 2007 AQMP Modeling Protocol for Ozone and Particulate Matter Modeling in Support of the South Coast Air Quality Management District 2007 Air Quality Plan Update which is provided as Attachment-3 in Appendix V of that document serves as the foundation of the Draft Final 2012 AQMP modeling protocol. Modifications made to that protocol to address the requirements of the Draft Final 2012 AQMP attainment demonstrations are presented in this chapter.

The 2007 AQMP modeling protocol was finalized in May of 2006, prior to the release of U.S. EPA's "Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of the Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze." Together, the two guidance documents steered the development of the 2007 ozone and PM_{2.5} attainment demonstrations that have since been approved by U.S. EPA in the California SIP. In a letter dated June 28, 2011, U.S. EPA issued a revision to the modeling attainment demonstration methodology for 24-hour PM_{2.5} entitled "Update to the 24 Hour PM_{2.5} NAAQS Modeled Attainment Test." The revision outlined an overhaul to the structure of the attainment demonstration but did not propose any modifications to the underlying regional modeling analyses. The revised guidance was referenced in the updated 24-hour PM_{2.5} implementation guidance "Implementation Guidance for the 2006 24-Hour Fine Particle (PM_{2.5}) National Ambient Air Quality Standard" dated March 2, 2012.

DRAFT FINAL 2012 MODELING PROTOCOL

Table V-2-1 provides a side-by-side comparison of the Draft Final 2012 AQMP and 2007 AQMP modeling protocols. The differences between the modeling structure focus on a limited number of areas. In general, changes to emissions inventories,

future-year simulations and episode selection evaluation are specific to the base year selected and the level of the non-attainment designation. As such, these changes are expected to occur as part of each modeling update. The more substantive changes to the Draft Final 2012 AQMP protocol reflect the use of CMAQ as the primary modeling platform, WRF as the meteorological modeling platform and the changes to the size of the modeling region, vertical structure and grid size.

For this set of modeling analyses, CMAQ was selected as the primary dispersion modeling platform. One element in the decision to use CMAQ as the primary modeling platform was the fact that it was a publicly available model with numerous computational features and ongoing support in the modeling community. When evaluated for possible use in the attainment demonstration, both CMAQ and CAMx exhibited similar model performance in predicting 24-hour and annual PM_{2.5} levels. CMAQ however tended to predict monitored ozone concentrations with higher accuracy than the CAMx simulations. The migration to WRF from MM5 as the primary meteorology modeling tool follows its ongoing use as the mainstay in weather forecasting by the NWS, and its continuing development and support by NOAA and U.S. EPA.

The most significant changes to the modeling analyses in the Draft Final 2012 AQMP, compared with that defined in 2007 AQMP, occur in the size of the domain, reduced grid size and increased vertical structure. First and foremost, both PM_{2.5} and ozone will be simulated together using the same domain specification. The size of the domain has been expanded 65 km further west to attempt to incorporate clean boundaries into the modeling region, and 40 km to the south to include a greater percentage of northern Mexico emissions. Moreover, the grid size has been reduced from 5 x 5 km to 4 x 4 km. The reduced grid size better enabled the merging of the statewide emissions inventory which is set at the 4 km grid scale based on a Lambert Conformal projection. Table V-2-2 provides the characteristics of the modeling domain and Figure V-1-1 provides a comparison of the Draft Final 2012 AQMP modeling to the PM_{2.5} and ozone modeling domains simulated in the 2007 AQMP attainment demonstrations.

TABLE V-2-1

Summary of Draft Final 2012 AQMP Model Selection and Modeling Protocol

Draft 2012 AQMP	2007 AQMP Element
<p><u>24-Hour PM2.5 and Annual</u></p> <p>Dispersion Platform: CMAQ (CAMx : weight of evidence discussion)</p> <p>Chemistry: SAPRC99 with tri-modal aerosol distribution</p> <p>SMAT/Sandwich approach</p>	<p><u>PM10/PM2.5 Annual and Episodic</u></p> <p>Dispersion Platform: CAMx</p> <p>Chemistry: AERO-LT with CB-IV</p> <p>Enhanced Fine/ Coarse scheme with CB-IV</p> <p>Optional One Atmosphere Aerosol chemistry</p>
<p><u>Ozone</u></p> <p>Dispersion Platform: CMAQ</p> <p>Chemistry: SAPRC99</p>	<p><u>Ozone</u></p> <p>Dispersion Platform: CAMx</p> <p>Chemistry: SAPRC99</p>
<p><u>Domain/ Coordinates</u></p> <p>Ozone and PM: Expanded SCOS97</p> <p>Meteorology, Emissions and Model application: Lambert Conformal</p> <p>Grid: 4 Km X 4 Km</p> <p>Ozone: 18 layers</p> <p>PM2.5: 18 layers</p>	<p><u>Domain/ Coordinates</u></p> <p>Ozone: SCOS97, PM10/2.5 SCAQS87</p> <p>Meteorology, Emissions and Model application: Lambert Conformal</p> <p>Grid: 5 Km X 5 Km</p> <p>Ozone: 16 layers</p> <p>PM10/2.5: 8 layers</p>
<p><u>Emissions Inventories</u></p> <ul style="list-style-type: none"> • 2008 Base year • Day-Specific Emissions • Shipping emissions split into 2layers • EMFAC2011 <ul style="list-style-type: none"> ○ 3- modules ○ Modified DTIM • Adjustments to fugitive PM2.5 Paved road EPA with CA modifications • Day-Specific Biogenic emissions • Revised Mexican emissions profile 	<p><u>Emissions Inventories</u></p> <ul style="list-style-type: none"> • 2002 Base year • Enhanced aircraft/airport and shipping inventories • Updates for Ports of Los Angeles and Long Beach • EMFAC2007 <ul style="list-style-type: none"> ○ gross adjustments ○ “focused” inventories ○ Final public model • Adjustments to fugitive PM10/PM2.5 categories

TABLE V-2-1 (Continued)

Summary of Draft Final 2012 AQMP Model Selection and Modeling Protocol

Draft Final 2012 AQMP	2007 AQMP Element
<p><u>Meteorology</u></p> <ul style="list-style-type: none"> • WRF and MM5 initialized with NCEP data with FDDA 	<p><u>Meteorology</u></p> <ul style="list-style-type: none"> • MM5 with FDDA • Hybrid MM5/CALMET • MM5 initialized using NCEP data
<p><u>Future Year Projections</u></p> <p>PM2.5/Ozone</p> <ul style="list-style-type: none"> • 2014 • 2017 • 2019 • 2023 • 2030 • 2035 	<p><u>Future Year Projections</u></p> <p>Ozone</p> <ul style="list-style-type: none"> • 2017 (Coachella) • 2023 <p>PM2.5/PM10</p> <ul style="list-style-type: none"> • 2014 • 2015 (PM10) • 2020
<p><u>Air Quality Model Performance</u></p> <p>PM2.5 Quarterly statistics at speciation sites:</p> <ul style="list-style-type: none"> • Averages, normalized bias and normalized error • Graphical analyses: Scatter plots, time series, soccer plots • Weight of Evidence Analysis <p><u>Ozone</u></p> <ul style="list-style-type: none"> • Assess model performance based on both 1-hour and 8-hour statistics: Normalized gross bias Normalized gross error Peak prediction accuracy • 60 ppb threshold (both indices) 	<p><u>Air Quality Model Performance</u></p> <p>Ozone</p> <ul style="list-style-type: none"> • Assess model performance based on both 1-hour and 8-hour statistics • 60 ppb threshold (both indices) • Weight of Evidence Analysis • Mid-Course simulations <p><u>PM2.5 (annual and episodic)</u></p> <ul style="list-style-type: none"> • Base statistics at speciation sites • Weight of evidence analysis • Mid-Course simulations 2009 2012

TABLE V-2-2

Draft Final 2012 AQMP Modeling Domain

Projection	Lambert Conformal Projection
Latitude of Origin	37 N
Modeling Domain	156 x 102 x 18
Vertical Layer Structure	Variable up to 50 hPa (mb)
Central Meridian	120.5 W
Standard Parallel	30 N, 60 N
Horizontal Grid Size	4 km x 4 km
Southwest Origin	(-84 km, -552km)

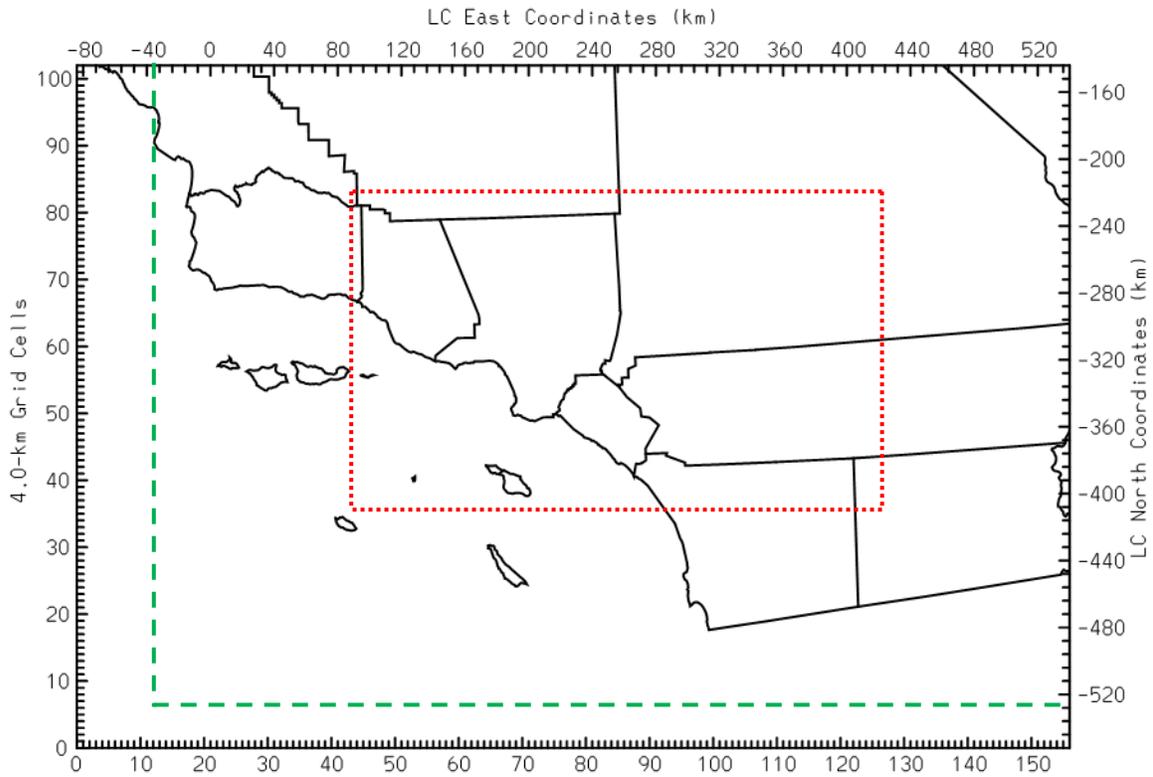


FIGURE V-2-1

Comparison of Regional Modeling Domains: Red Dotted: SCAQS87-- 2007 AQMP PM2.5, Green Dashed: SCOS97-- 2007 AQMP Ozone, Black (Outer): 2012 AQMP

One clear benefit from the modification to the grid size was the smoother coupling of the meteorological modeling field development. The WRF analyses are initialized from NECP model output at 36 km grid level, then scaled downward based on a 3:1 scaling ratio to a 12 km grid inner-modeling domain covering most of California to set the regional meteorological boundary conditions for the 4 km grid modeling domain. Finally, the layer structure in the vertical domain for the modeling region has been increased to 18 layers from the previous 16 layers used for the 2007 AQMP ozone simulations, and from the eight layers used in the CAMx PM_{2.5} attainment demonstration simulations. Table V-2-3 provides a definition of the 18 layer vertical structure used in the air quality simulations. Also listed is the corresponding 30 layer structure of the WRF modeling vertical domain that matches the CMAQ domain at the top height.

By and large, the greatest impact to the modeling analyses resulting from the changes summarized in the protocol and in Table V-2-2 is the impact on the computational requirements to simulate a year's air quality. Since PM_{2.5} is common to all multi-pollutant analyses, the Draft Final 2012 AQMP simulations required 8 times the computational resources to complete a simulation compared with the 2007 AQMP PM_{2.5} attainment demonstration. Figure V-2-2 depicts a typical model simulation configuration of the computation system. A total of 15 servers and 200 CPU's were used in the simulations.

TABLE V-2-3

Draft Final 2012 AQMP Modeling Vertical Layer Structure

WRF Layer Index	Mid-Point Height (m)		CMAQ Layer Index	Mid-Point Height (m)
30	19268		15	19268
29	17355			
28	15755			
27	14337		14	14337
26	13028			
25	11791			
24	10598			
23	9429			
22	8271		13	8271
21	7118			
20	5994			
19	4992			
18	4153			
17	3449		12	3449
16	2858			
15	2361			
14	1944		11	1944
13	1595			
12	1302			
11	1057			
10	851		10	851
9	681		9	681
8	538		8	538
7	418		7	418
6	318		6	318
5	235		5	235
4	165		4	165
3	107		3	107
2	59		2	59
1	18		1	18

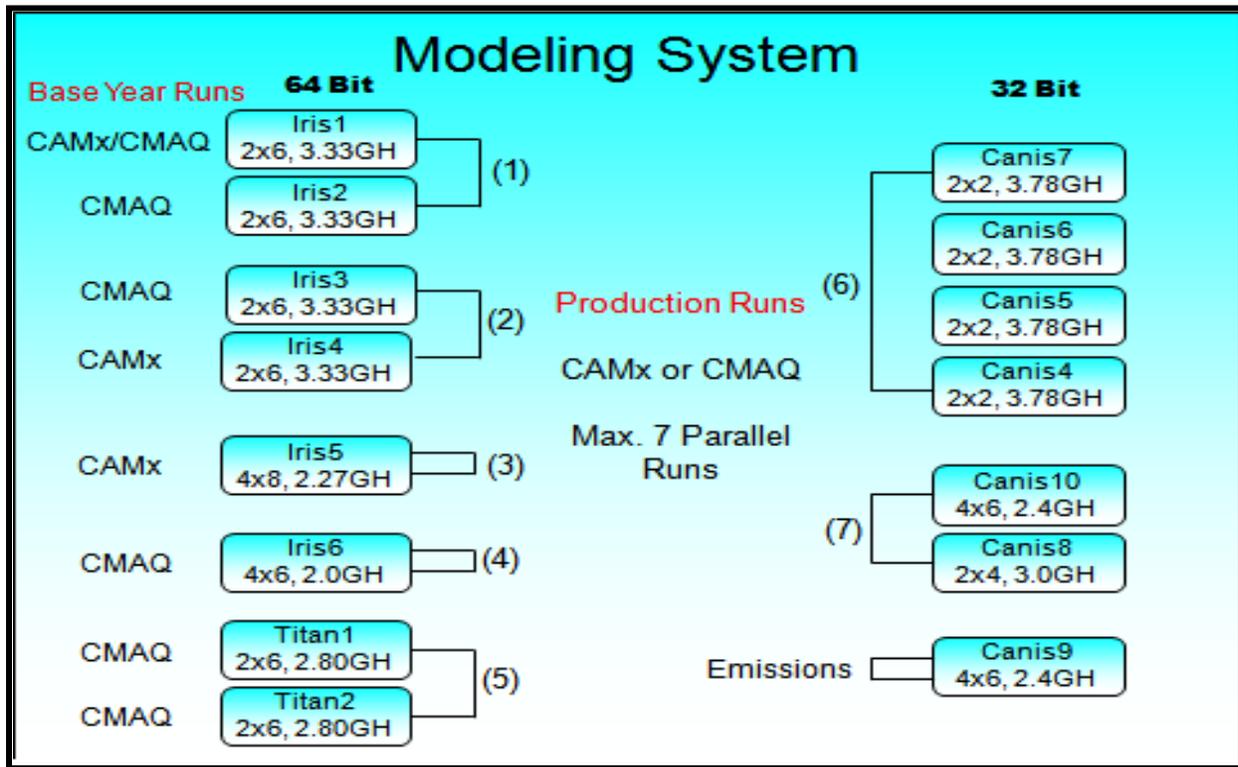


FIGURE V-2-2

Typical CMAQ/CAMx Modeling Simulation Configuration

CHAPTER 3

METEOROLOGICAL MODELING AND SENSITIVITY ANALYSES

Overview

Meteorological Modeling Configuration

Sensitivity Tests for Numerical Parameterization

Land Use Representation

Statistical Performance Evaluation

Sensitivity Tests

OVERVIEW

This chapter provides a description of the meteorological modeling that serves as the foundation of the Draft Final 2012 AQMP modeling analysis. As previously discussed, the Draft Final 2012 AQMP regional modeling relied on WRF model applications for 2008. The previous 2007 AQMP attainment demonstrations relied on National Center for Atmospheric Research (NCAR)/Penn State University (PSU) Mesoscale Model 5 (MM5) meteorological fields. The migration to WRF was based on two factors: First, WRF is the state-of-the-art meteorological forecast model used by the NWS and scientific community. It is under continual review and benefits from updates to critical modeling parameters. Second, MM5 is no-longer supported as a regional meteorological model although it is still posted at the U.S EPA SCRAM website. In moving to a new meteorological model, several analyses were conducted to compare WRF and MM5 meteorological fields to confirm the portability of the CMAQ modeling system to the new model. This chapter describes the meteorological model, the comparison between WRF and MM5, selection of the vertical stability parameterization, land use, and initial and boundary conditions used in the 24-hour PM_{2.5} attainment demonstration and companion annual PM₅ and 8-hour ozone updates.

METEOROLOGICAL MODELING CONFIGURATION

WRF was employed to produce meteorological fields for chemical transport models. The WRF is a 3-D prognostic model that solves the Navier-Stokes' equation, accounts for thermodynamics, conserves mass, and incorporates radiative energy transfer. WRF has been applied to a wide range of phenomena, such as regional climate, monsoons, cyclones, mesoscale fronts, land-sea breezes and mountain-valley circulations. Among two platforms available in WRF – Advanced Research WRF (ARW) and Non-hydrostatic Mesoscale Model (NMM), ARW was chosen for the current modeling analyses.

WRF simulations were conducted with three nested domains of which grid resolutions were 36, 12 and 4 km. The innermost domain has 163 by 115 grid points in abscissa and ordinate, respectively, which spans 652 km by 460 km in east-west and north-south directions, respectively. Geographically, the domain encompasses the greater Los Angeles and suburban areas, its surrounding mountains, and seas off the coast of the Basin as shown in Figure V-3-1. The relative locations and sizes of the three nested grids are given in Figure V-3-1 as well. The model employed 30 layers vertically with the lowest computational layer being approximately 18 m above ground level (agl) and

the top layer at 50 hPa. Note that default modeling top height is 50 hPa in WRF, while that in MM5 is 100 hPa. The National Center for Environmental Prediction (NCEP) North American Model (NAM) model output (Grid 212, 40 km grid spacing), together with vertical soundings and surface measurements, were used to compile initial and boundary values for the outermost domain as well as for the Four Dimensional Data Assimilation (FDDA) to WRF. The cloud radiation, and simple ice cloud physics were chosen for simulations after carefully considering various available options in WRF. Kain-Fritsch cumulus schemes were employed to the outer two domains, while no cumulus parameterization was used for the innermost domain. The selections of PBL and LSM schemes are discussed further in the next section.

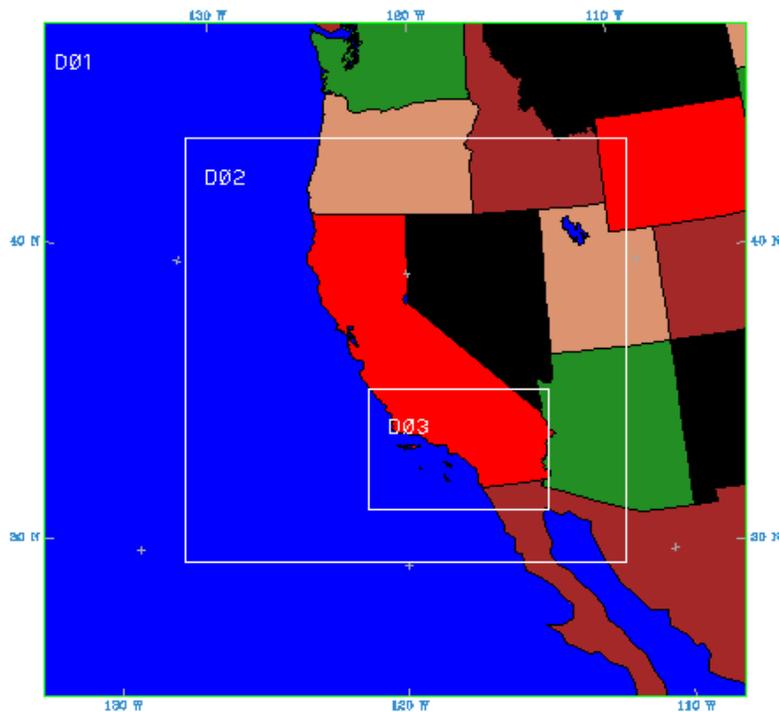


Figure V-3-1

Three nested modeling domains employed in the WRF simulations.

SENSITIVITY TESTS FOR NUMERICAL PARAMETERIZATIONS

Modeling Framework: MM5 vs. WRF

MM5 is a mesoscale meteorological model that has been applied to wide variety of phenomena and wide spectrum of geographical and climatological situations, until it was officially replaced by WRF. As evident from the development history, WRF shares a fundamental platform with MM5. MM5 uses terrain following sigma-coordinate, while WRF uses a vertical coordinate that is a hybrid of terrain following z^* and pressure coordinate. Both MM5 and WRF use a non-hydrostatic equation. A hydrostatic version of MM5 is available only till MM5 version 2. The 2007 AQMP used MM5 version 3 non-hydrostatic model, while a hybrid approach using objective analysis from observations was evaluated as a weight of evidence. WRF provides similar parameterizations to those available in MM5, and more new schemes have been developed and updated constantly. Among them, we chose numerical schemes that are similar to those available in MM5 framework. In terms of planetary boundary layer (PBL) schemes, the Yon-Sei University (YSU) scheme is a continuation, but the updated version of Medium Range Forecast (MRF) scheme and Mellor-Yamada-Janjic (MYJ) turbulent kinetic energy (TKE) scheme is a continuation of ETA meteorological forecast model scheme in MM5. The comparison presented in Figures V-3-2 and V-3-3 was simulated with MM5-MRF and WRF-YSU schemes. For continuity, the dates used in the simulation comparison were the primary 8-hour ozone modeling episodes evaluated in the 2007 AQMP.

Five-layer thermal diffusion scheme (also referred as 'slab') was used in both simulations. The two models were applied to the periods of July 14-18, August 2-8, and August 25-29, 2005, which were among highest ozone episodes that were identified and tested extensively in the 2007 AQMP. The statistical measures presented in the Figures are averages of the simulation period per episode. For example, the July simulations includes the period of July 14-18 so that it had 120 pair of hourly data, while the August episodes covered August 2-9 and 25-30 respectively. All three statistical measures should be zero in a perfect situation, therefore, the smaller the sum of the error measures were, the better the model performed against given observations. The locations of National Weather Services (NWS) METAR measurements used as the baseline for evaluations in addition to the District's routine monitoring station data are given in Figure V-3-4.

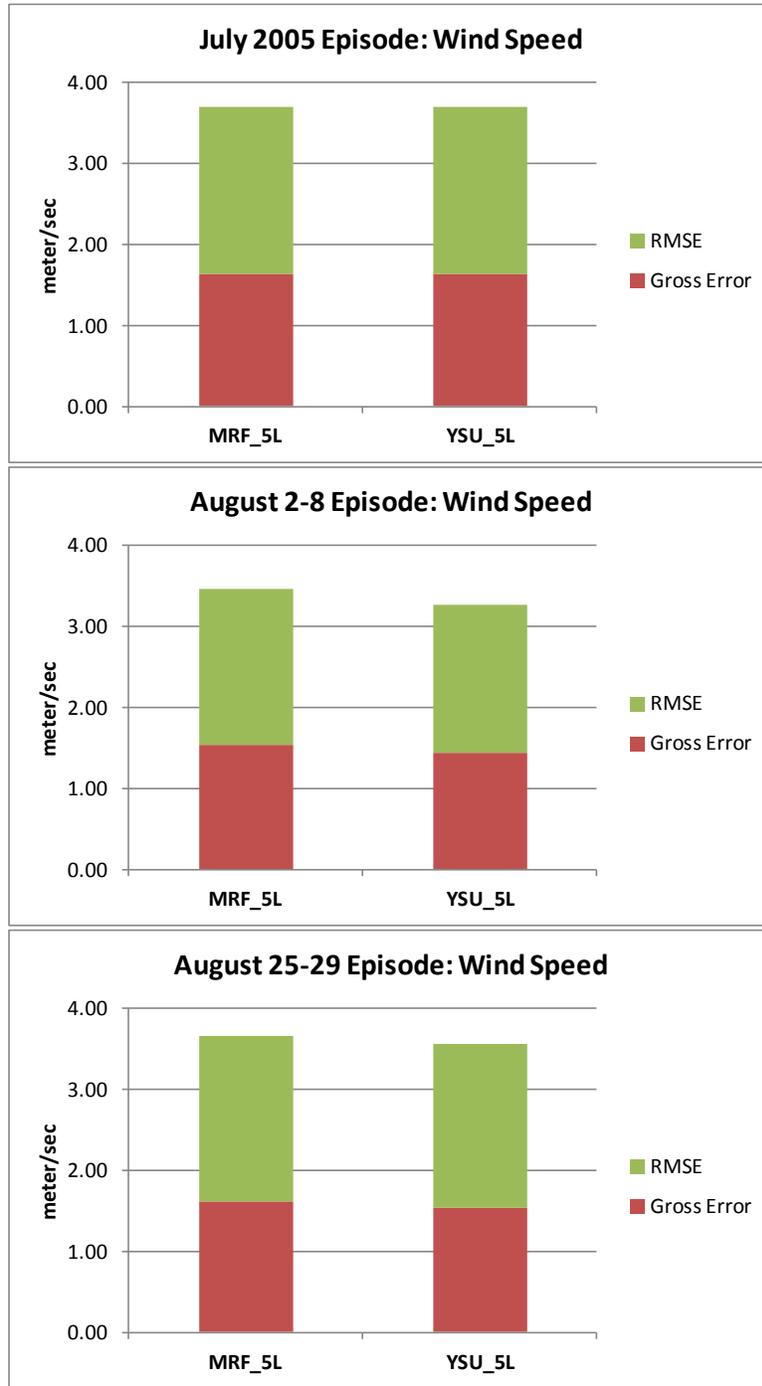


Figure V-3-2

RMSE, gross error and bias of near surface wind speeds simulated with MM5 and WRF. MM5 is noted as MRF and WRF is noted as YSU, respectively, followed by the selected PBL scheme.

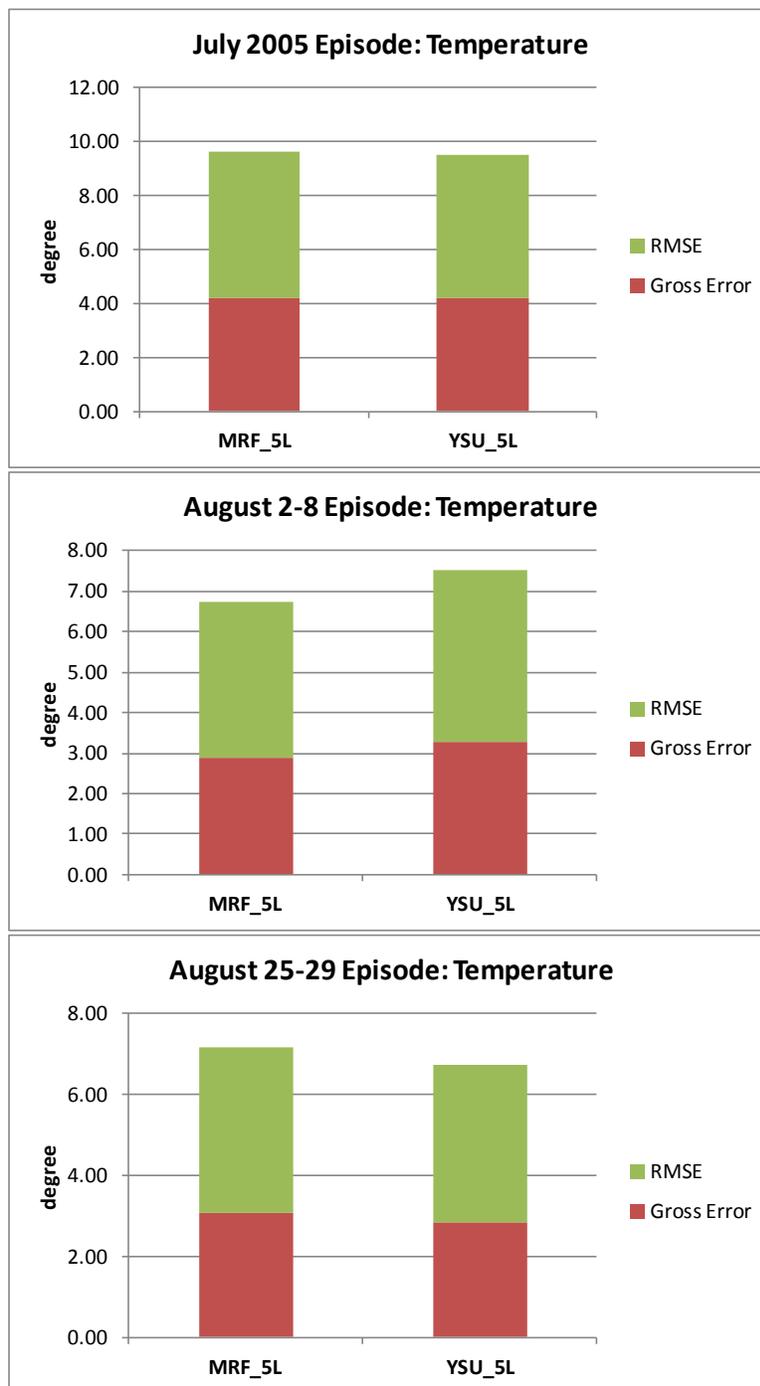
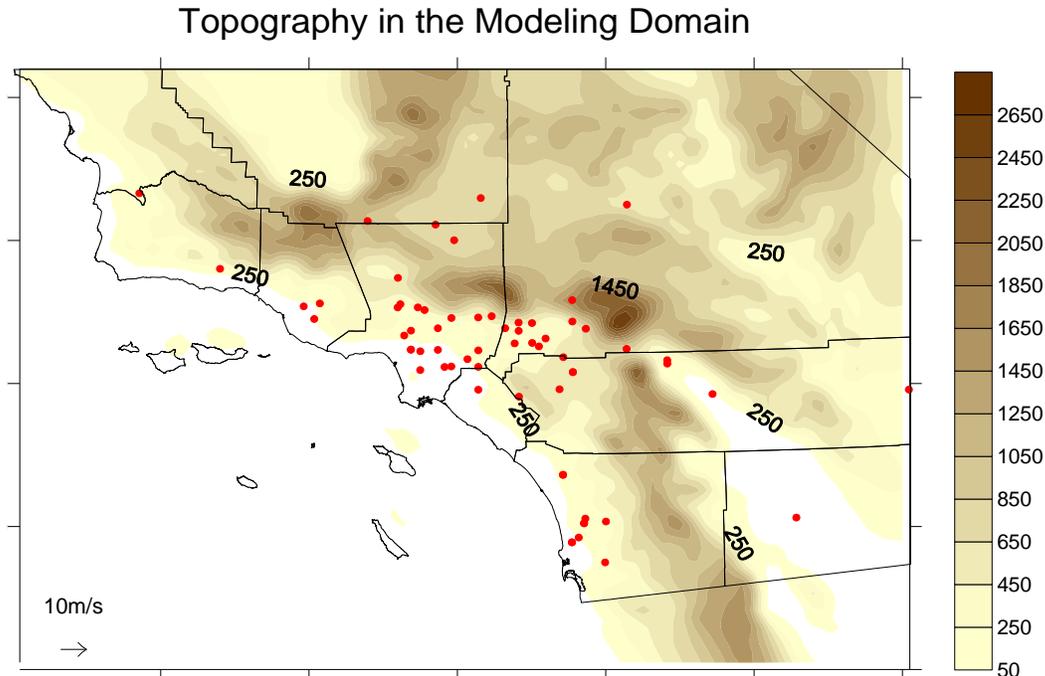


Figure V-3-3

RMSE, gross error and bias of near surface temperature simulated with MM5 and WRF. MM5 is noted as MRF and WRF is noted as YSU, respectively, followed by the selected PBL scheme.

**Figure V-3-4**

NWS METAR stations within the innermost modeling domain.

As evident in Figures V-3-2 and V-3-3, the performance varies from case to case. In terms of wind prediction, the MM5 model with the MRF PBL scheme outperformed in the July episode, while the opposite occurred in the August 2-8 case. The difference became more distinctive in the temperature predictions. This was partly caused by the fact that a scalar variable responds to a mixing scheme more directly than a vector variable which is a combination of complex force functions. WRF represented with the YSU scheme showed far smaller errors in the latter August case, yet, it showed almost 20% larger error in the early August case. This result suggested that, even though modeling performance varies from case to case, no systematic bias existed in WRF or MM5 simulations applied in Southern California.

PBL Parameterization

WRF, like its predecessor MM5, is a community model for which source code is open to the general public such that improvements to an existing scheme or a new scheme are constantly introduced. This leads to multiple options for physical processes, dynamics, and numerical solutions. WRF version 3.3 provides 11 schemes for the PBL and four different Land Surface Models (LSM's) for application with air quality models. Each scheme has advantages and disadvantages in simulating specific phenomenon, weather

conditions and geographic regions. In addition to numerical schemes, another question is the level of data assimilation to be conducted in the retrospective modeling. Four dimensional data assimilation is a common tool to enhance modeling performance.

It has to be kept in mind that the observations used in the data assimilation should not be used to evaluate the performance of the modeling to avoid auto-correlation with the data of which signal is already embedded in the modeled field. Also, measurement data is not free of error. Different monitoring networks have different measurement protocols that include different measurement heights, averaging time periods, time stamps, etc. Given that data is highly sensitive to measurement height, especially in the surface layer, special attention is required to prepare and use surface measurements. At the same time, while data assimilation generally improves modeling performance, a strong nudging is undesirable since the nudging term is not part of fundamental governing equations and therefore, it introduces imbalance in the physics and dynamics fields.

Therefore, considering the complexity and importance of the modeling configuration, we conducted a series of sensitivity tests to optimize the configuration for the Basin. The tests included the performance of numerical parameterizations, the level of data assimilation, and the validity of measurements to evaluate the modeling performances. In terms of numerical schemes, we primarily focused on PBL and LSM, given that the majority of emissions and related air pollution episodes occur below the atmospheric boundary layer. The PBL schemes tested in this study were YSU and Mellor-Yamada-Janjic (MYJ) schemes from WRF and the Blackadar scheme from MM5. The MRF/YSU scheme has 1st order closure with a non-local mixing term to accommodate large eddies developed during convective periods (Hong and Pan, 1996). During the nocturnal stable period, the YSU scheme goes back to the local approach using traditional K-theory.

MYJ has the parameterization of turbulence for both the PBL and the free atmosphere that is represented as a nonsingular implementation of the Mellor-Yamada Level 2.5 turbulence closure model. The TKE production/dissipation differential equation is solved iteratively, and the empirical constants have been revised based on Janjic (1994, 2002). A TKE based scheme has an advantage of having the explicitly predicted TKE, which is later utilized in retrieving boundary layer depth and formulating the effects of urban morphology.

Blackadar is a non-local mixing scheme that quantifies the vertical eddy fluxes of heat, moisture, and momentum using a hybrid non-local and first-order closure. For nocturnal periods, wherein the atmospheric stratification is usually stable or at most marginally

unstable, a first-order closure is used; here the eddy transfer coefficient K is a function of the Richardson number. For the free convection regime, the vertical convective transfer of heat, moisture and momentum is not determined by local gradients, but by the thermal structure of the whole mixed layer and the surface heat flux. Accordingly, the vertical exchanges are realized between the lowest layer and each level of the mixed layer, instead of between adjacent layers as assumed in the K -theory. The mixing intensity is defined as the fraction of mass exchanged per unit time between the surface layer and other PBL layers. It is directly related to the heat flux at the top of the surface layer and the vertically integrated potential temperature difference between the surface layer and the top of the mixed layer (Blackadar 1979; Zhang and Anthes 1982) .

The performances of PBL schemes were compared against METAR surface meteorological measurements at the site depicted in Figure V-3-4. As discussed in the previous section, YSU is the continuation of MRF of the MM5 model and MYJ is a successor of ETA scheme available in MM5. Blackadar scheme showed the least amount of gross error and RMSE in wind speed predictions. No significant difference existed among the other PBL schemes (Figure V-3-5). For temperature prediction, the ETA scheme showed inferior performance as denoted by the largest errors (Figure V-3-5b). The two WRF schemes – non-local K -theory (YSU) and the local TKE scheme (MYJ) essentially yielded the same result. Yet, considering low computational cost of the YSU scheme and discontinuation of Blackadar scheme in WRF, YSU was chosen as a default PBL scheme for the current attainment demonstration.

Land Surface Model

Three land surface models (LSM) were considered for WRF modeling: the five-layer thermal diffusion scheme ('slab' model), and the Noah and Pleim-Xiu schemes. The slab model is the simplest among the three. It calculates soil temperature as a result of thermal diffusion between layers, which are defined at the depths of 0.01, 0.02, 0.04, 0.08, and 0.16 m with the deepest layer being a fixed substrate. The Noah scheme predicts the soil temperature and moisture prognostically in four layers (Chen and Dudhia, 2001).

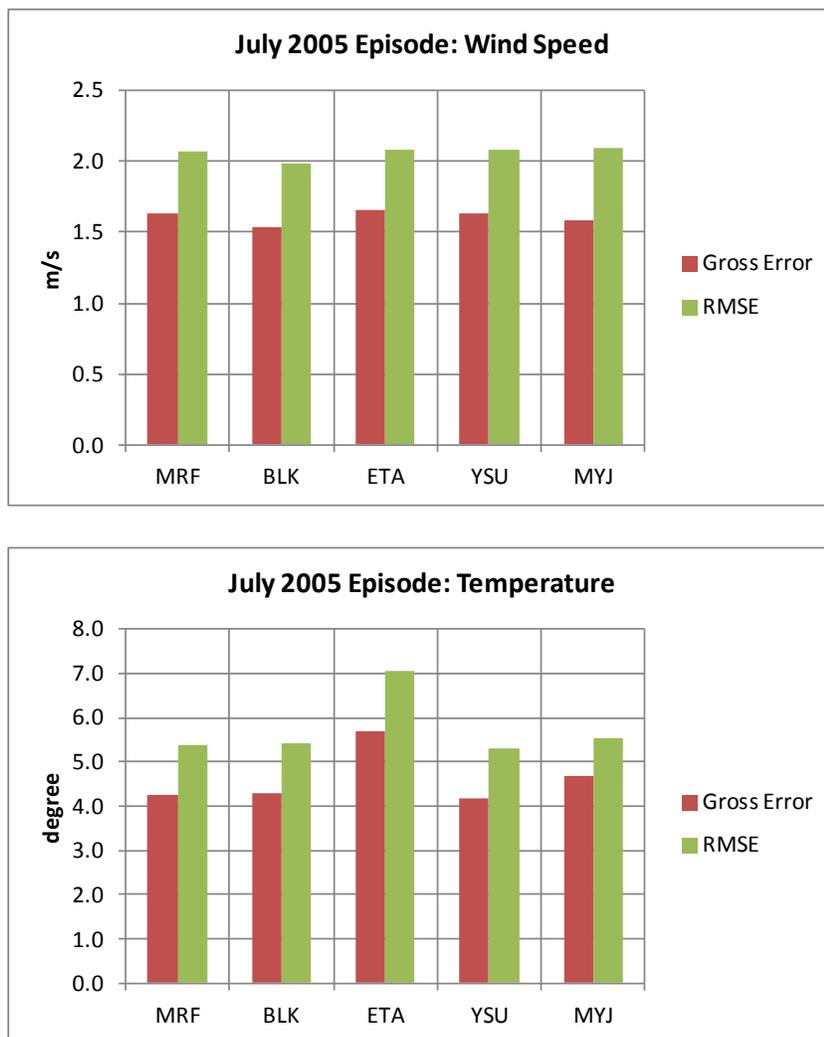


Figure V-3-5

Gross errors and RMSE's of (a) 10 m wind and (b) 2 m temperature from different PBL parameterizations applied to 2005 July Ozone episode. The errors are averages over the entire simulation period and monitoring stations.

By comparison to the effect of using different PBL schemes, modifications to the LSM caused significant responses in near surface variables. First, wind was generally over-predicted during the daytime and under-predicted during the nighttime. The difference between the two schemes was signified during the nocturnal stable period, which occurred in temperature predictions as well. As for wind, the Noah showed a better agreement with observations (Figure V-3-6a), while temperature prediction was worse (Figure V-3-6b). The 5-layer slab model agreed better with the measurements, as evident in the warmer surface temperature fields and the convective boundary layer predicted to be deeper in the Noah scheme (Figure V-3-6c).

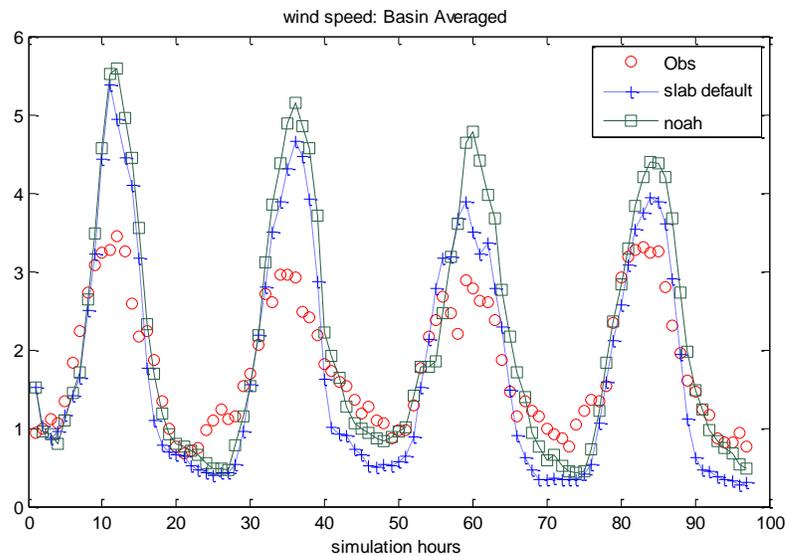


Figure V-3-6a

Time series of Basin-wide averaged wind speeds simulated with five-layer thermal diffusion (referred as ‘slab’ in the inset) and Noah land surface scheme for July 14-17, 2005.

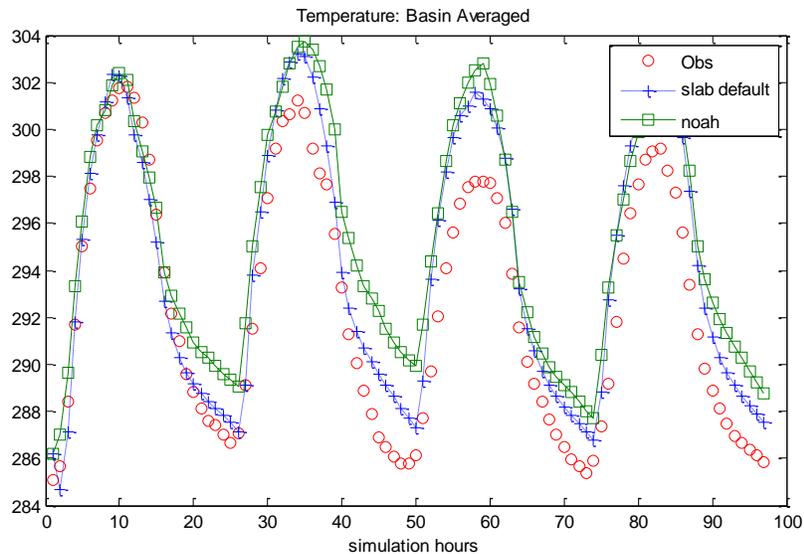


Figure V-3-6b

Time series of Basin-wide averaged temperature simulated with five-layer thermal diffusion (referred as 'slab' in the inset) and Noah land surface scheme for July 14-17, 2005.

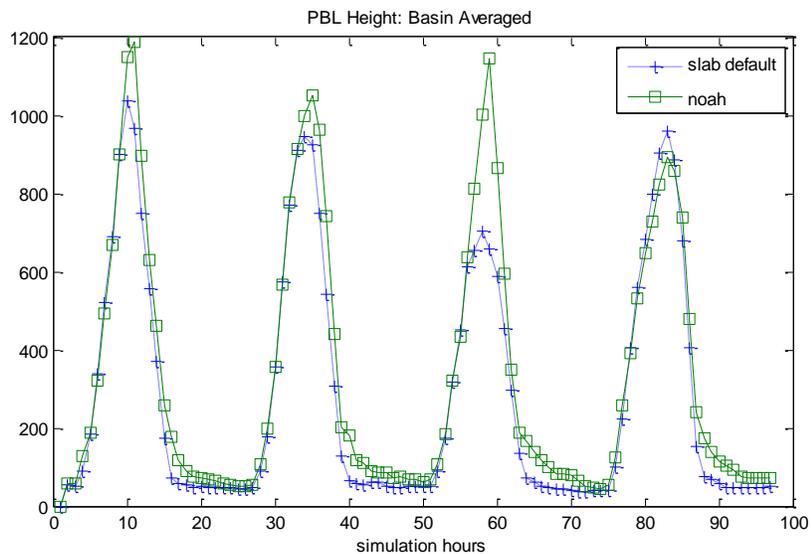


Figure V-3-6c

Time series of Basin-wide averaged mixed layer depth simulated with five-layer thermal diffusion (referred as 'slab' in the inset) and Noah land surface scheme for July 14-17, 2005.

Considering the notable performance differences in the land surface schemes, the choice of LSM was inconclusive since the one that performed better with respect to winds showed larger deviations in temperature. Therefore, we applied the two meteorological fields to the chemical transport model, CMAQ, to evaluate the effects on dispersion. The relatively inert characteristics of carbon monoxide (CO) make it suitable to evaluate transport only. CO concentrations predicted by CMAQ with two different meteorological fields were compared (Figure V-3-7). While differences existed in meteorological fields, the impact on dispersion was relatively small. For a six-day period from July 14 to July 19, 2005, the two schemes showed almost equivalent performance with the only exceptions in the high value range. The slab model predicted higher concentrations, which was, in part, attributed to the shallow mixing in the model relative to the Noah scheme.

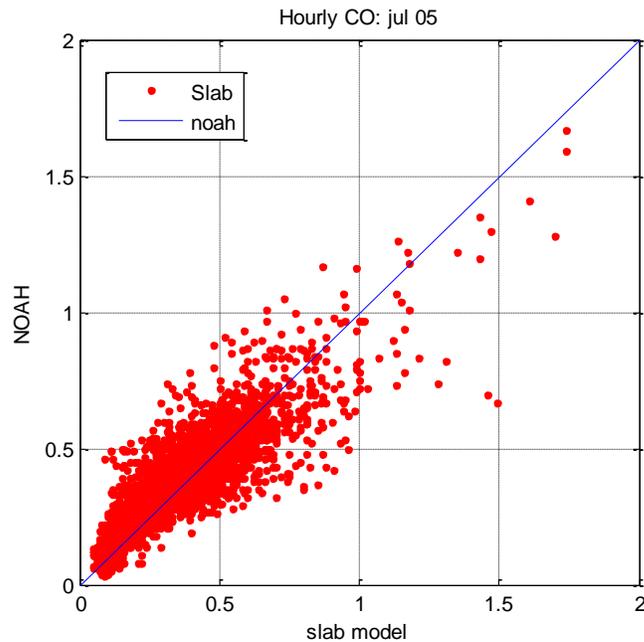


Figure V-3-7

Scatter plot of 1-hour CO concentrations simulated with the slab and the Noah scheme over the period of July 14-19, 2005.

Initial Guess Field

Global Forecast System (GFS) and North American Model (NAM), both widely used operational weather forecast models were evaluated to be used as initial guess fields for WRF. We used WRF and subsequent chemical transport modeling in the retrospective mode in the attainment demonstrations such that 3-D analysis fields were available. Therefore, analysis fields were chosen over direct forecast model output, unless a block of missing data occurred. In such case, forecast fields were used to replace the gap. The analysis fields were compiled to be used as the initial value, the lateral boundary value and 3-D analysis nudging fields. In our application, the NAM provided fields compared well with the GFS fields (Figure 8). Given the fact that synoptic forcing becomes more important during winter months than in summer in Southern California, the same experiments were repeated for a month of December 2008. The performance of the two tests was essentially identical, so the NAM analysis field was selected as the primary initial guess field.

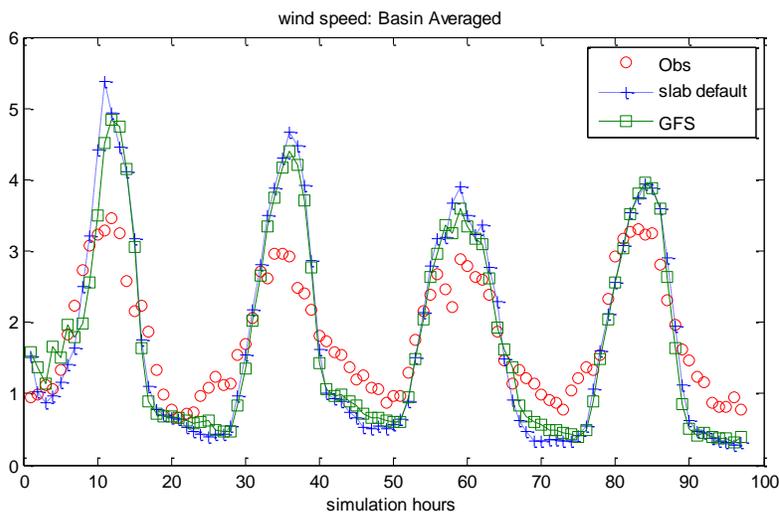


Figure V-3-8a

Time series of Basin-wide averaged wind speed simulated with initial guess fields from GFS and NAM for July 14-17, 2005.

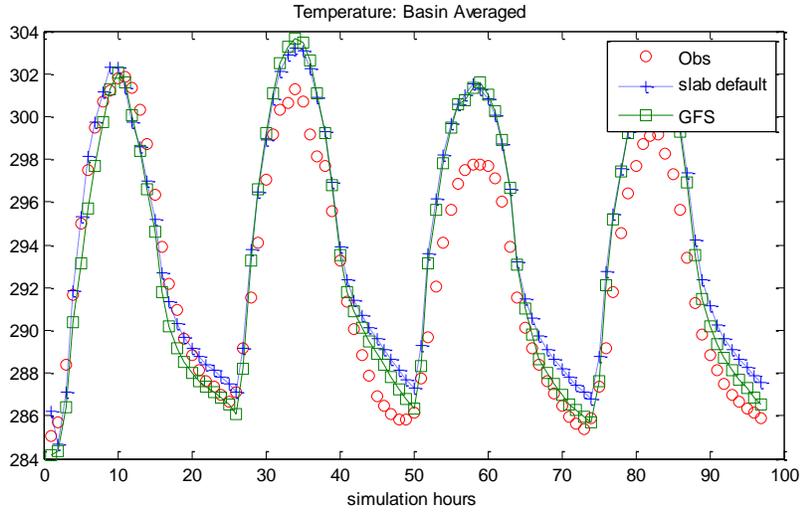


Figure V-3-8b

Time series of Basin-wide averaged temperature simulated with initial guess fields from GFS and NAM for July 14-17, 2005.

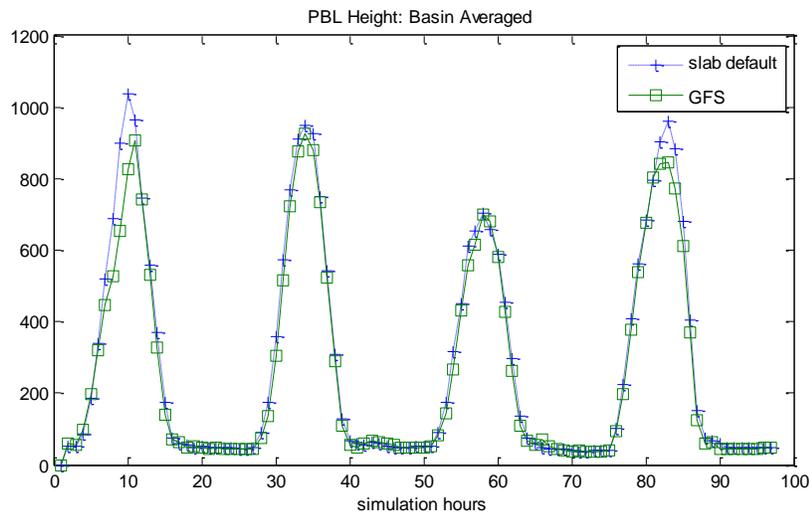


Figure V-3-8a

Time series of Basin-wide averaged temperature simulated with initial guess fields from GFS and NAM for July 14-17, 2005.

LAND USE REPRESENTATION

The land use databases available in WRF are the U.S. Geological Society (USGS) default and the Moderate Resolution Imaging Spectroradiometer (MODIS) satellite based dataset. The USGS dataset has been the default dataset for mesoscale modeling for MM5, a predecessor to WRF. While it is a ready-to-use off-the shelf database, some data representations are several-decades old and consequently do not reflect changes in the areas that have experienced rapid development in recent years. The South Coast Air Basin, especially in parts of Riverside, San Bernardino and the San Fernando Valley areas, have experienced rapid development in the last decade that turned shrub and grassland into suburban housing units and impervious land cover. Accordingly, the location and extent of urban representation is often inaccurate in the Basin. Figure V-3-9 presents the land use distribution in the innermost modeling domain. The urban category represented in dark red is confined to near downtown Los Angeles and appears at a few more spots in Orange, Riverside and San Bernardino Counties.

The majority of open space depicted in the USGS data base between urbanized Los Angeles and Riverside counties has been presented as land use category 7, 8, and 9 which are, respectively, grass, shrub, and mixed shrub/grassland (Table V-3-1). Comparing with land cover retrieved from USGS Land Use Land Cover database 2001 (Figure V-3-10), medium and low intensity developed categories identified in the recent database almost did not exist in the USGS default data. These changes in the recent years are further evident in Figure V-3-11, which are retrieved from NOAA southern coastal land cover land use (2000).

The satellite based dataset provides the most up-to-date land use representation which reflects the recent changes discussed above. The MODIS based land use given in Figure V-3-12 shows an expanded size and shape of urban use compared to Figure V-3-9. Table V-3-2 provides the MODIS index legend. Yet, while the shape and location of “urban” built-up area differs between the satellite-based and USGS dataset, both provide only a single category that represents urban built-up areas for use in the in WRF modeling. The single category specification of urban land use may not adequately characterize the diversity that exists in the “urban” area, ranging from high rises in downtown commercial districts to single story houses in suburban residential areas. According to Grimmond and Oke (1999), the surface roughness length in a residential neighborhood in San Gabriel is approximately 7 m, while that of a metropolitan downtown area in Vancouver is approximately 20 m. The surface roughness length assigned to “urban” in default WRF model is 0.8 m, which is valid only in an area in

which building height is approximately 8 m, essentially the height of a two- to three-story building.

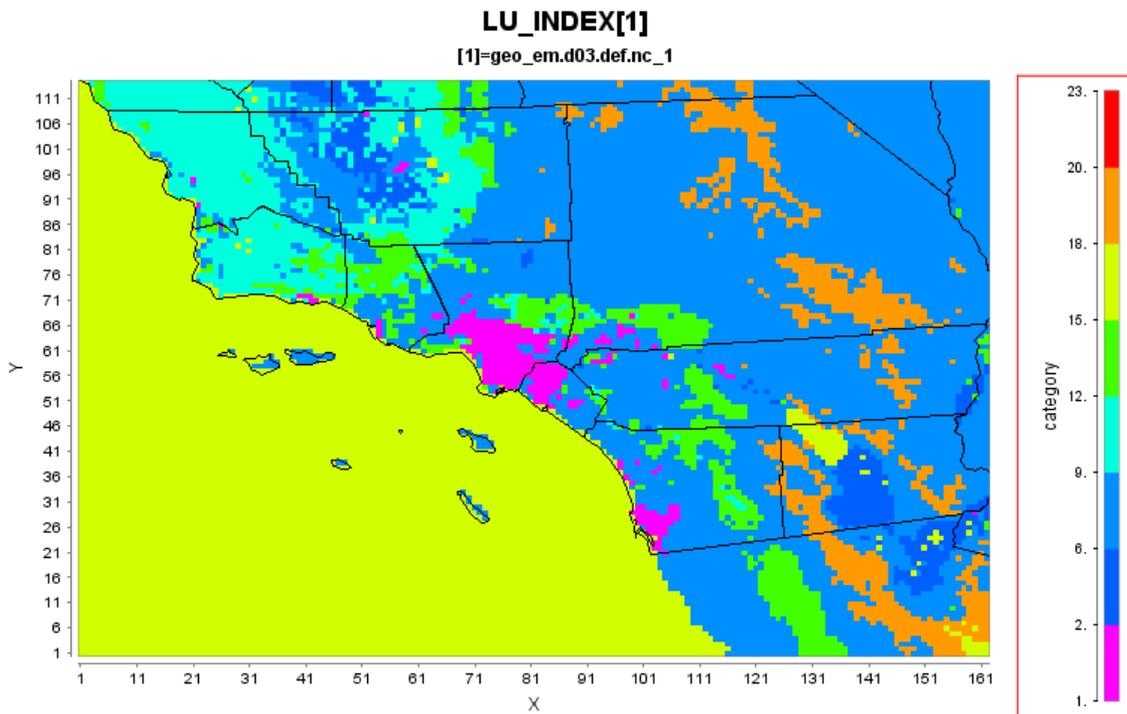


Figure V-3-9

Land use distribution based on USGS 24 category.

(The legend index is given in Table V-3-1).

This is hardly applicable to a downtown high rise district or a suburban residential neighborhood. Therefore, a need was recognized to introduce a new category that distinguishes suburban neighborhood from downtown commercial districts. The Draft Final 2012 AQMP introduced a new category, “suburban” to reduce the gap between the highly impervious commercial area and a suburban housing neighborhood that has altered surface energy balance by artificially introducing irrigation and imperviousness. The ‘urban’ category was assigned with a higher surface roughness length of 1.5 m instead of the default 0.8 m to better characterize the impacts of taller buildings (e.g., high rise skyscrapers) in a commercial district. The ‘suburban’ category was assigned a 0.7 m roughness length considering most suburban housing is single to double story. The location and extent of the new suburban category is depicted in Figure V-3-13.

TABLE V-3-1

USGS 24-category Land Use Categories

Land Use	Land Use Description
1	Urban and Built-up Land
2	Dryland Cropland and Pasture
3	Irrigated Cropland and Pasture
4	Mixed Dryland/Irrigated Cropland and Pasture
5	Cropland/Grassland Mosaic
6	Cropland/Woodland Mosaic
7	Grassland
8	Shrubland
9	Mixed Shrubland/Grassland
10	Savanna
11	Deciduous Broadleaf Forest
12	Deciduous Needleleaf Forest
13	Evergreen Broadleaf
14	Evergreen Needleleaf
15	Mixed Forest
16	Water Bodies
17	Herbaceous Wetland
18	Wooden Wetland
19	Barren or Sparsely Vegetated
20	Herbaceous Tundra
21	Wooded Tundra
22	Mixed Tundra
23	Bare Ground Tundra
24	Snow or Ice

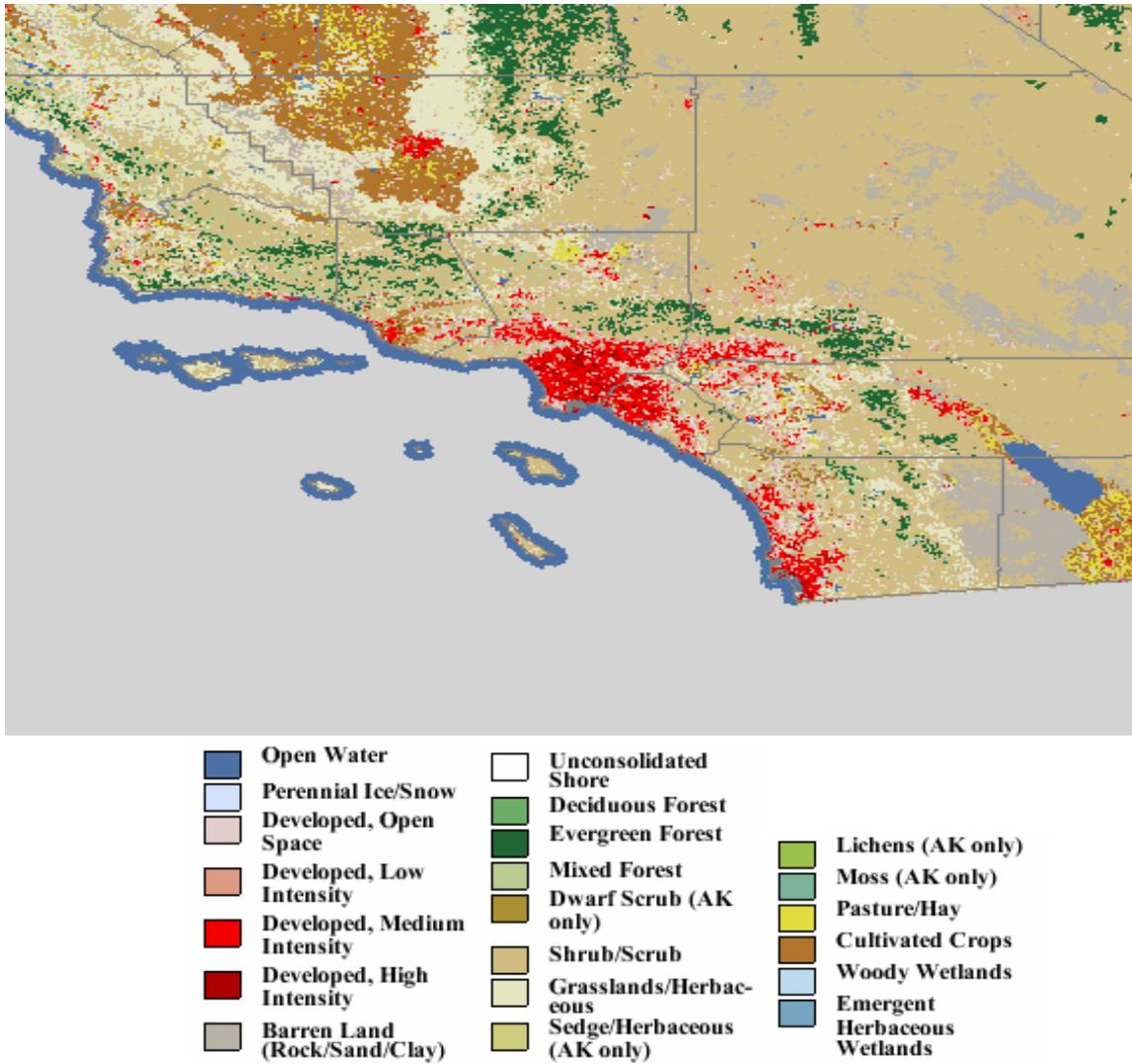


Figure V-3-10

Land use land cover data 2001 from USGS.



Figure V-3-11

NOAA Southern Coastal California Land Cover/Land Use 2000

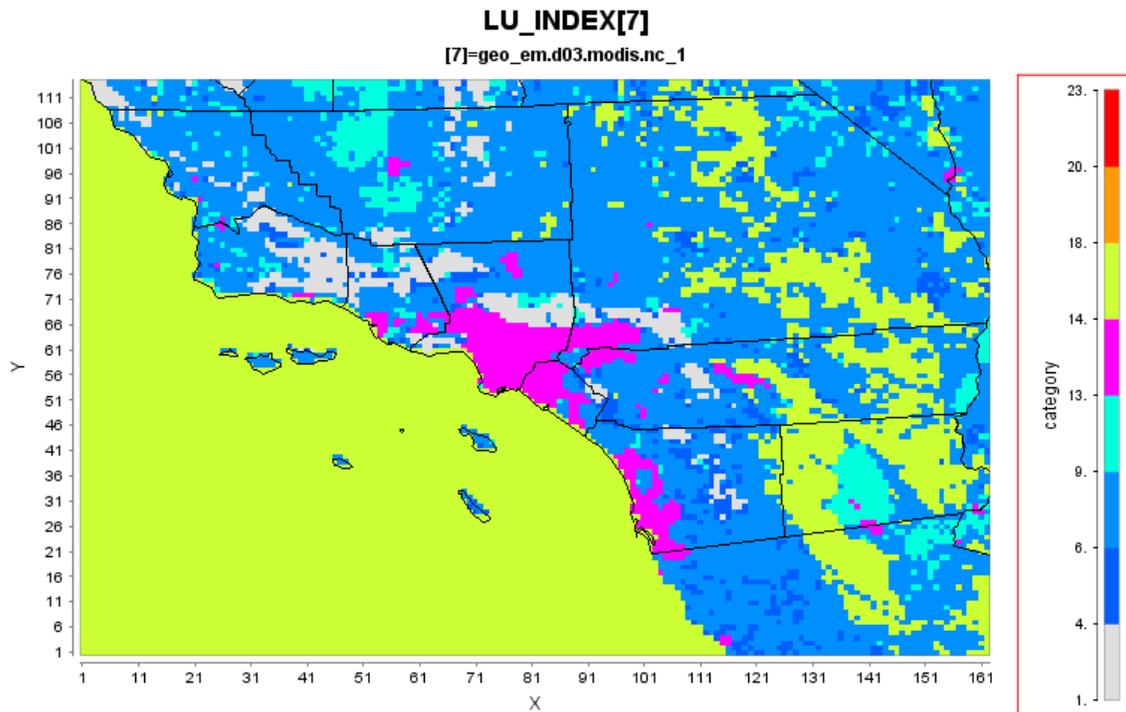


Figure V-3-12

Land use distribution based on MODIS satellite database

TABLE V-3-2

IGBP-Modified MODIS 20-category Land Use Categories

Land Use Category	Land Use Description
1	Evergreen Needleleaf Forest
2	Evergreen Broadleaf Forest
3	Deciduous Needleleaf Forest
4	Deciduous Broadleaf Forest
5	Mixed Forests
6	Closed Shrublands
7	Open Shrublands
8	Woody Savannas
9	Savannas
10	Grasslands
11	Permanent Wetlands
12	Croplands
13	Urban and Built-Up
14	Cropland/Natural Vegetation Mosaic
15	Snow and Ice
16	Barren or Sparsely Vegetated
17	Water
18	Wooded Tundra
19	Mixed Tundra
20	Barren Tundra

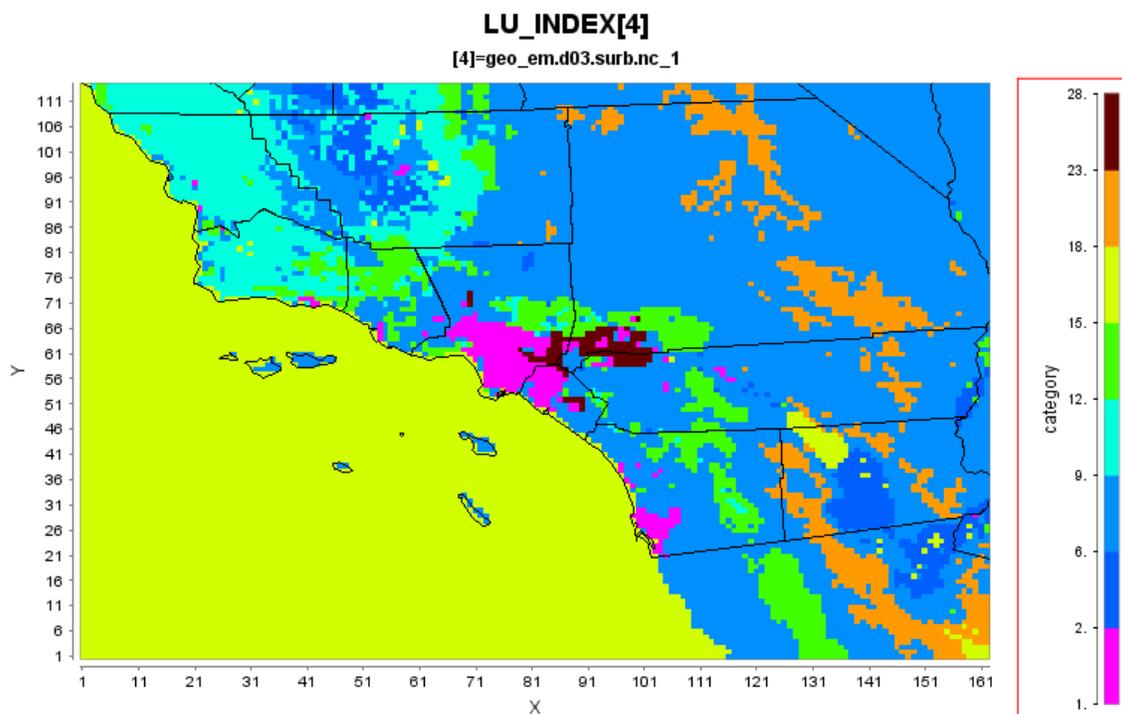


Figure V-3-13

USGS 24 land use category with added suburban category which was marked in dark brown color

In general, the updated land use showed better agreement with observations (Figure V-3-14). Over-prediction of wind was evident during the daytime when the slab model was used with the USGS default land use. This was significantly improved with the updated suburban land use. Neither temperature nor PBL show as large an improvement as seen in the winds. Compared to the Noah land surface model, the slab model showed weaker wind speed, lower temperature and consequently lower mixed layer depth during the daytime, which was consistent to the discussions presented in the previous section and Figure V-3-6. The difference between the two Noah simulations – one with the default USGS and the other with MODIS data was induced by land use difference. The expanded urban category in the MODIS based data exerted larger amount of surface friction which resulted in weaker wind speed. This effect occurred in the slab model with suburban simulation, as well. The Noah-MODIS was distinctively differently in nocturnal temperature. The Noah-MODIS simulated warmer nocturnal condition, which is partly due to the urban heat island effect. Interestingly, this nocturnal warm temperature did not agree well with measurements. Such warmer nocturnal temperatures did not exist in the slab-suburban run. The discrepancy between the simulations appears

to have resulted more from the numerical scheme (Noah vs. slab) selected rather than land use changes. Overall, the slab model outperformed Noah scheme.

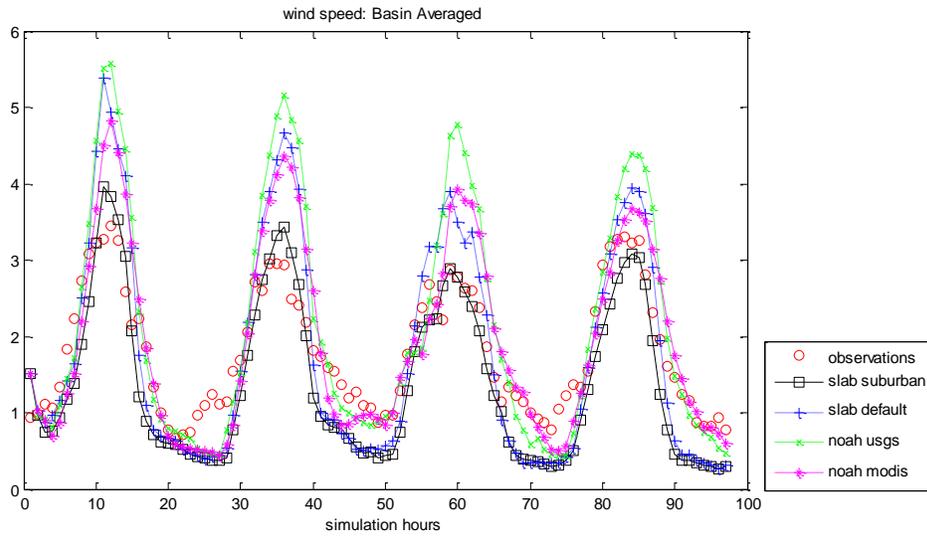


Figure V-3-14a

Time series of Basin-wide averaged wind speed for July 14-17, 2005.

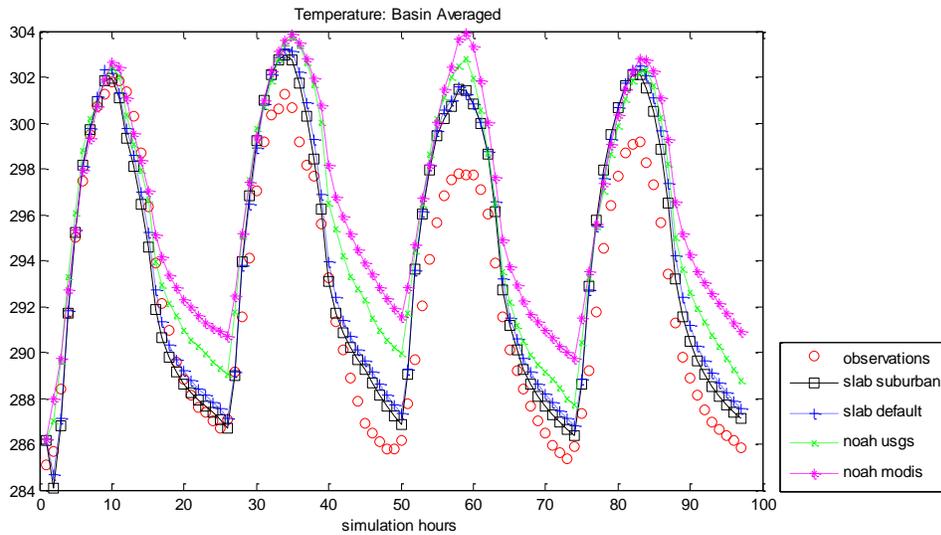


Figure V-3-14b

Time series of Basin-wide averaged temperature for July 14-17, 2005.

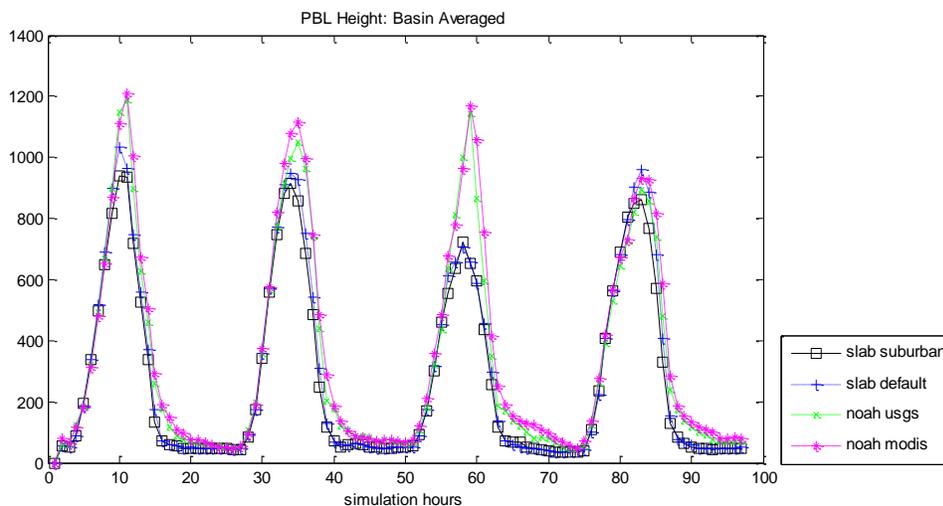


Figure V-3-14c

Time series of Basin-wide averaged mixed layer depth for July 14-17, 2005.

STATISTICAL PERFORMANCE EVALUATION

A set of statistical variables were generated using the METSTAT software to evaluate the WRF modeling performance quantitatively. The list of statistical parameters included bias, gross error and root mean square error and the Index of Agreement (IOA). The IOA was calculated following the approach of Willmont (1981). This metric condenses all the differences between model estimates and observations within a given analysis region and for a given time period (hourly and daily) into one statistical quantity. It is the ratio of the total RMSE to the sum of two differences – between each prediction and the observed mean, and each observation and the observed mean. The index of agreement has a theoretical range of 0 to 1; with a score of 1 suggesting perfect agreement.

The graphical presentation of the WRF performance evaluation for the month of June 2008 is depicted in Figure V-3-15. Shown in the figure are bias, RMSE and index of agreement for near surface wind, temperature and water vapor mixing ratio. Briefly, temperature prediction accuracy was high with an IOA greater than 0.9. The wind speed bias was nominally directed towards lower predicted speeds with a mean IOA on the order of 0.7. Wind direction was reasonably captured on the majority of days with bias falling within 15-30 degrees on average. The WRF humidity simulations depicted a

tendency to overestimate vapor content with a moderate degree of diurnal variability. The humidity IOA averaged approximately 0.5 for the June period.

The METSTAT WRF evaluation compares well to the MM5 meteorological fields generated for the 2007 AQMP attainment demonstrations. In general average IOA estimates are slightly higher for the Draft Final 2012 AQMP WRF simulation. Gross error in the temperature prediction is approximately half of the 2007 MM5 estimates and wind speed error is approximately the same, but with the WRF tendency to be slightly under-predicted where the MM5 simulations were over-estimated. Both models exhibited IOAs of approximately 0.5 for the prediction of water vapor (absolute humidity).

Overall, the daily WRF simulation for 2008 provided representative meteorological fields that well characterized the observed conditions. These fields were used directly in the CMAQ joint particulate and ozone simulations. The fall and winter month's graphical and statistical meteorological characterization of the wind, temperature and humidity fields are presented in Attachment 1 to this document.

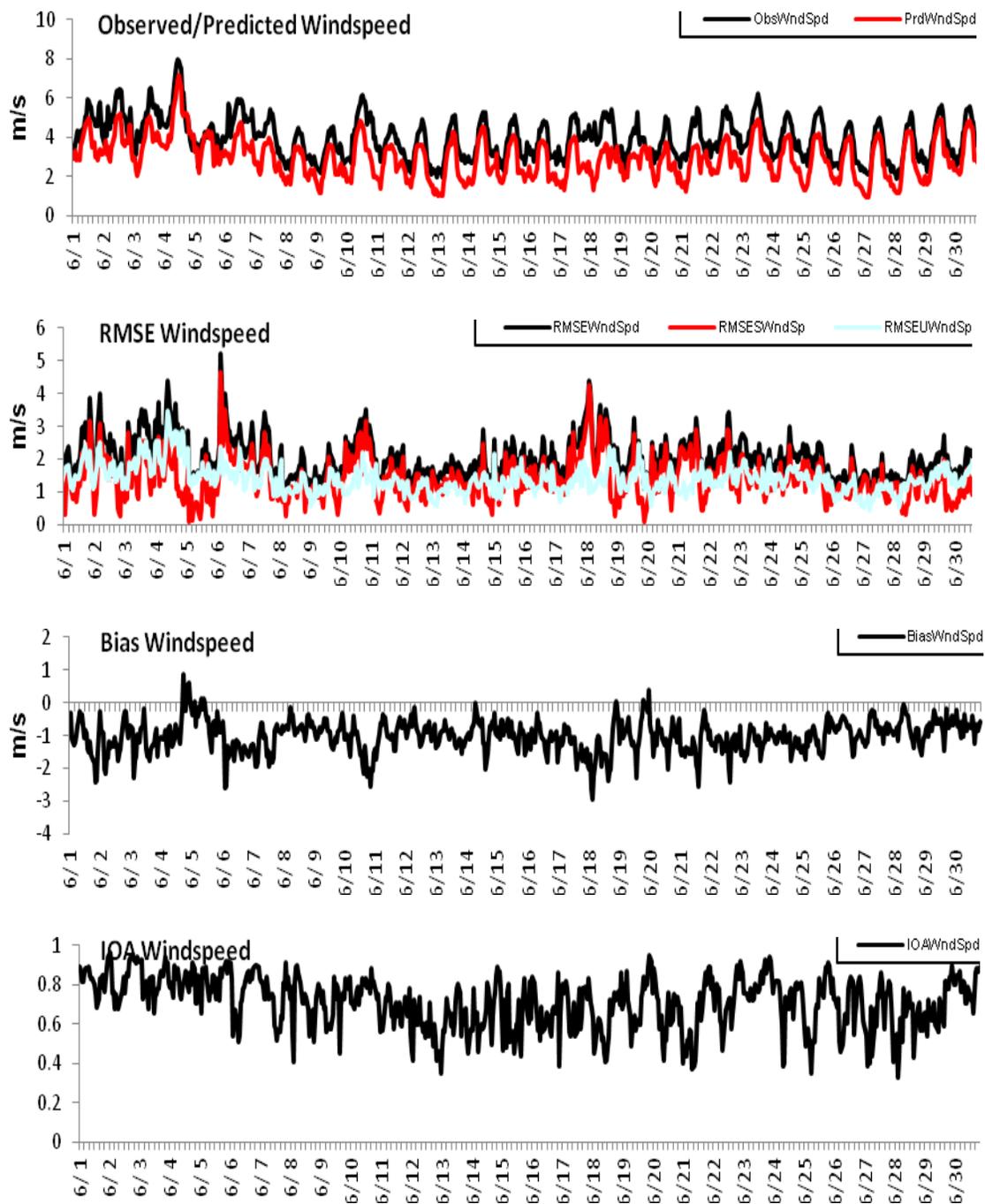


Figure V-3-15a

Time series of Basin-wide averaged wind speed error, bias and IOA for June, 2008.

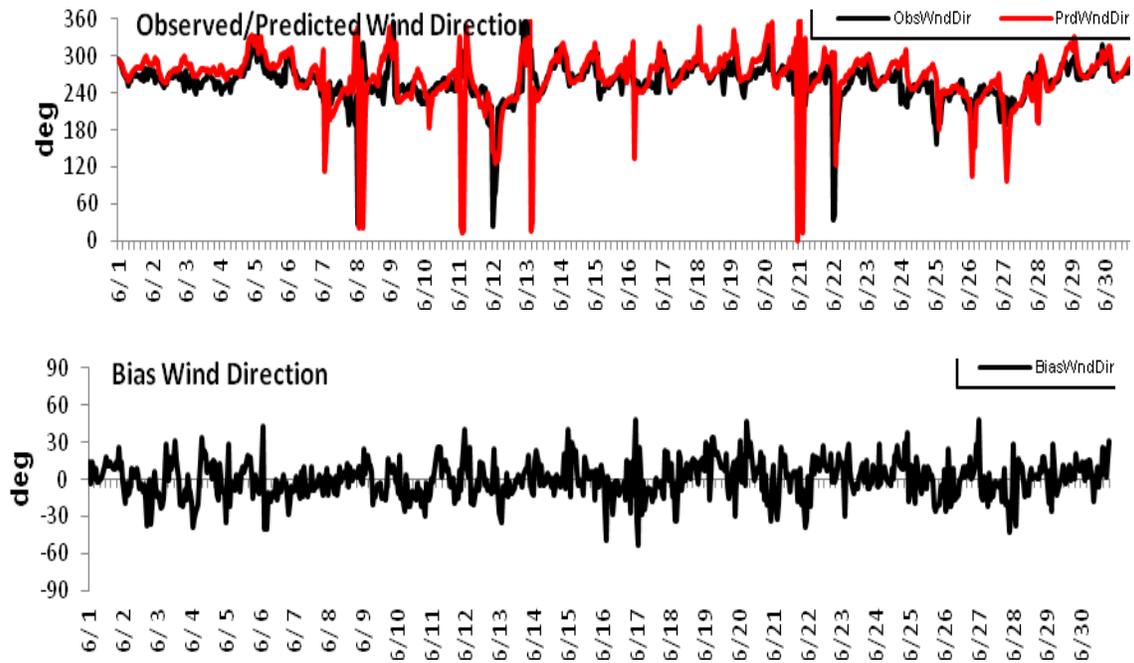


Figure V-3-15b

Time series of Basin-wide averaged wind direction and bias for June, 2008.

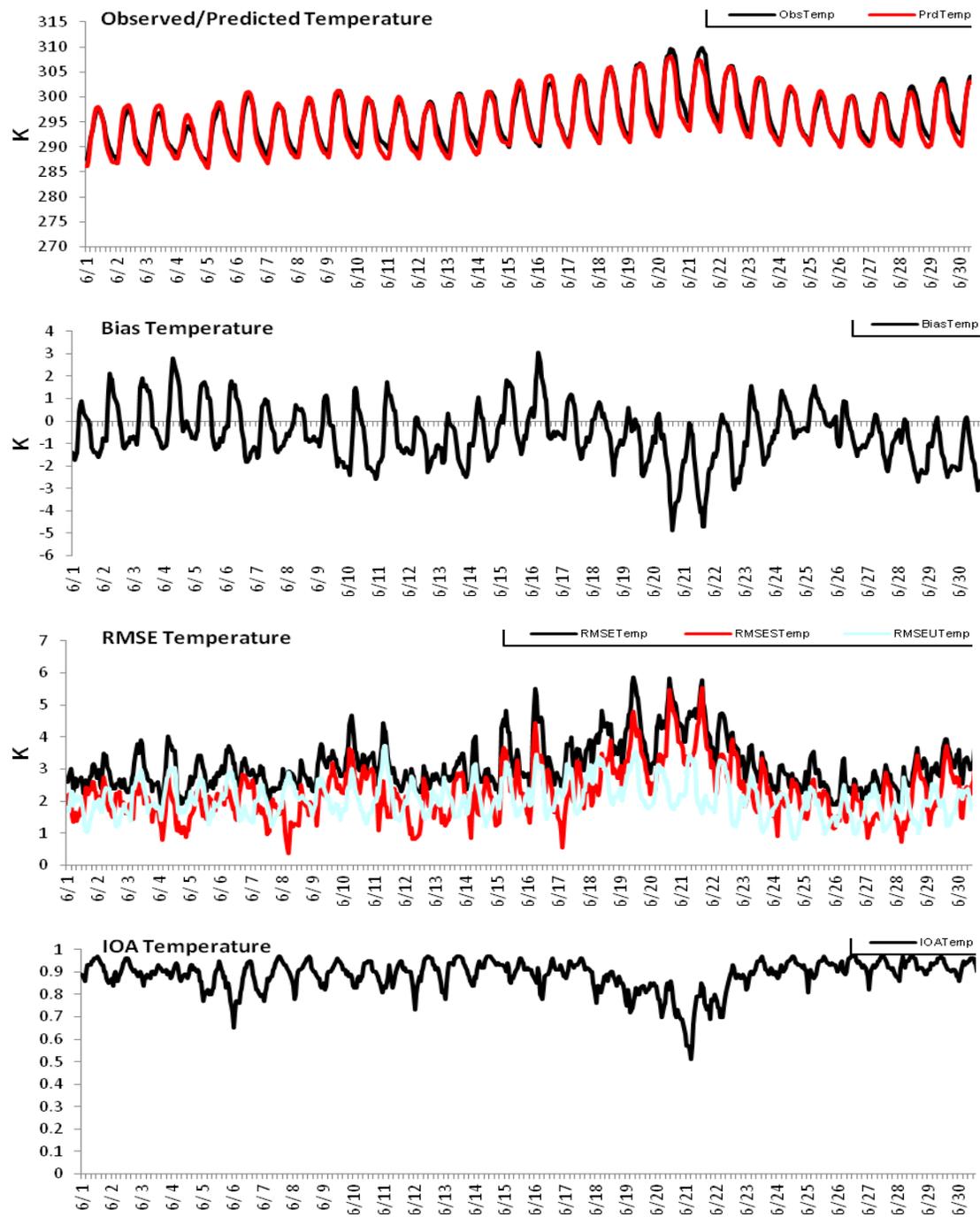


Figure V-3-15c

Time series of Basin-wide averaged temperature error, bias and IOA for June, 2008.

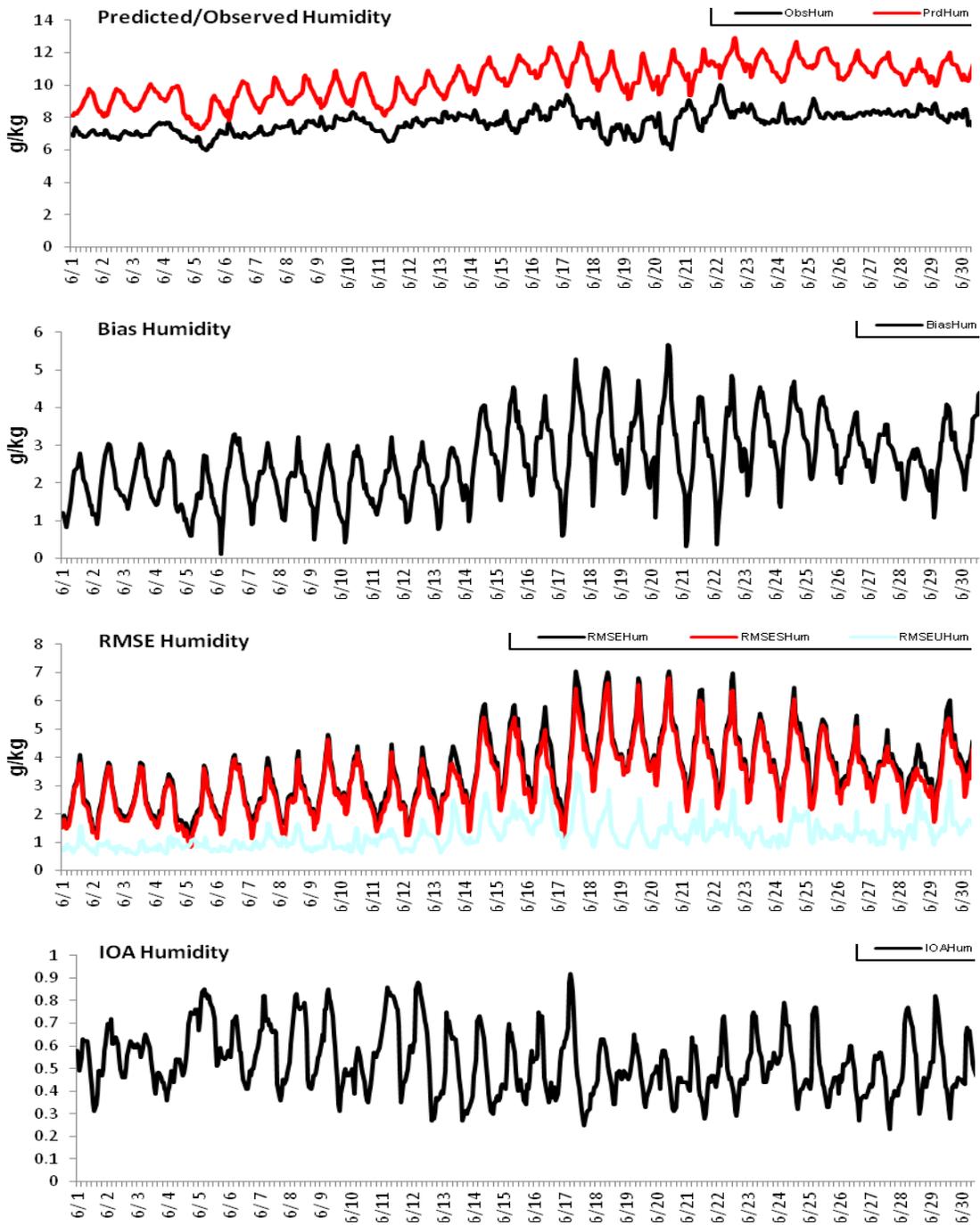


Figure V-3-15d

Time series of Basin-wide averaged humidity error, bias and IOA for June, 2008.

SENSITIVITY TESTS

A series of sensitivity tests were conducted to ensure the best performance of CMAQ. They include an inter-comparison of modeling platforms, the effect of lateral boundary values, vertical computational layer collapsing, the performance of vertical mixing schemes, and mass conservation. Among them, given the significance of the tests, the modeling platform inter-comparison and the effect of lateral boundary values are discussed here in detail.

Modeling Platform Inter-Comparison: CMAQ vs. CAMx

Comprehensive Air Quality Model with extensions (CAMx), including its predecessor Urban Airshed Model (UAM) has been applied to many air pollution episodes in California and has demonstrated its capability as a tool for attainment demonstration successfully. The District employed CAMx for the attainment demonstration in the 2007 AQMP. On the contrary, CMAQ has not been used for a regulatory purpose in the state of California nor in the Basin before. Still, it has been widely applied in other states in a regulatory context. Its large user community enables a robust evaluation of existing schemes and a fast adaption of newly developed parameterizations in the CMAQ framework. In this context, we intended to ensure that CMAQ provides the performance equal to or better than the one demonstrated in the 2007 AQMP. The options used in CMAQ were SAPRC99 chemical mechanism, Euler Backward Iterative (EBI) chemical solver, aero5 aerosol module, Piecewise Parabolic Method (PPM) advection scheme in both horizontal and vertical direction, and Asymmetric Convective Model version-2 (ACM2) vertical diffusion scheme. CAMx was configured to have the same chemical mechanism, chemistry solver, and advection and diffusion schemes.

The maximum 8-hour ozone recorded during the period from June 1st to August 31st of 2008 was 131 ppb recorded at Crestline (Figure V-3-16). The basin-wide maximum concentrations typically occur at Crestline, while Santa Clarita, Glendora, and San Bernardino valleys supplant Crestline as the maximum station when meteorological conditions favor it. In general, CMAQ reproduced the day-to-day variation reasonably well except for a few days at the end of June and the beginning of July in which a large high bias was evident. (CMAQ ozone simulation performance is discussed at length in Chapter 7). These high bias cases are further discussed in the following section. Comparing the two models, CAMx showed significantly lower predictions over the entire period. The bias was distinctive throughout the Basin as well, though the bias tended to increase in the eastern Basin. The Crestline site showed over 20 ppb differences at times, while the difference was rarely over 20 ppb at the Anaheim

location. Subsequent analysis indicated no involvement of systematic or nonsystematic errors in the input data and modeling configurations. In terms of performance statistics, CMAQ yielded better agreement with observations.

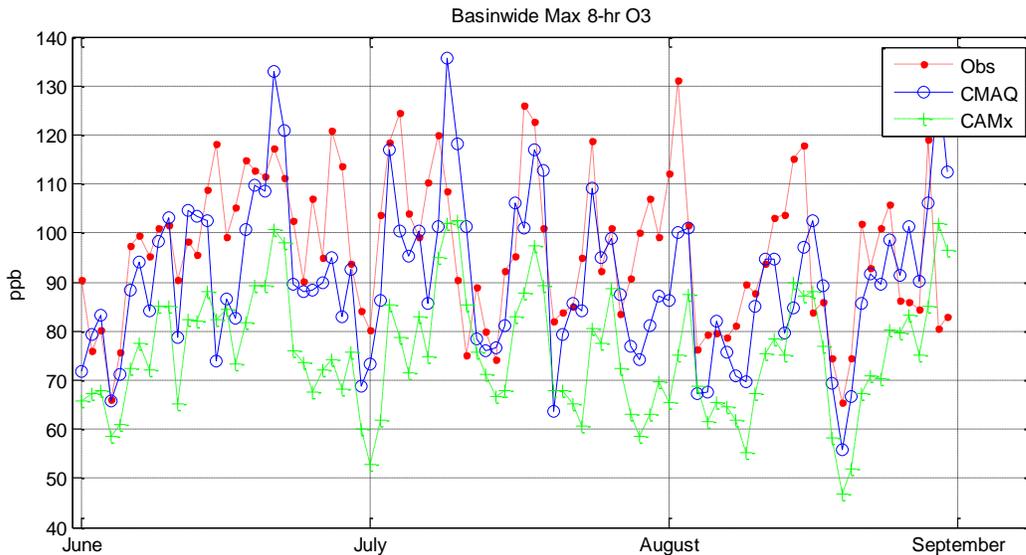


Figure V-3-16

Basin-wide maximum 8-hr ozone during the period of June 1 to August 31, 2008.

Lateral Boundary Values

Given the importance of lateral boundary values and the uncertainties associated with them, a set of lateral boundary values were tested using CMAQ. They were (1) global chemical model results, (2) U.S. EPA clean boundary values, and (3) climatological profiles retrieved from a special measurement campaign conducted in the Basin. Global chemical transport models, such as the Model for Ozone and Related chemical Tracers (MOZART), GEOS-Chem, Regional Air Quality Modeling System (RAQMS), are increasing in their use to drive regional air quality model simulation. Among them, MOZART was used in the current study due to the availability of its output for the modeling year 2008 and accessibility to its interface processor that converts the MOZART output to CMAQ chemical species and format. The clean boundary values were the same ones employed in the 2007 AQMP. The details were provided in Table V-4-7, Appendix V of the 2007 AQMP (SCAQMD, 2007). Aircraft measurements

were taken during a campaign conducted covering periods of 2009 and 2010 along the coast of Southern California, extending offshore out to 100 miles over the ocean. The campaign was designed to have approximately two flights per month; the data were compiled into a climatological profile of ozone and photochemical oxidants (Baxter et al, 2010).

The boundary values retrieved from MOZART are illustrated in Figures V-3-17 through V-3-19. The values were averaged along the northern, southern, eastern and western perimeters of the modeling domain to characterize the general behavior of MOZART along the lateral boundaries. Among the four sides, the east boundary showed the highest concentrations which reflect anthropogenic emissions from the Basin. The vertical variation of ozone set the lowest values in the upper boundary layer, gradually increasing in concentration with height to a maximum concentration at the model top layer. Note that the model top layer is 50 hPa (approximately 20 km) in the lower stratospheric ozone layer. CO and NO₂ had the highest concentration within the boundary layer due to anthropogenic emissions at the ground level.

Through the first 10-layers, the U.S. EPA clean boundary ozone concentration split the MOZART extracted west and east values, while CO and NO₂ from the clean boundary were higher than the MOZART. The climatological profiles compiled from aircraft measurements are presented in Figure V-3-20. A layer of high ozone exists around 600 m above ground level, which corresponded to the height of the sea breeze return flow. The return flow contained high levels of photochemical oxidants that were produced in the Basin during the daytime. This air mass, like the residual layer, stayed inert due to decoupling from surface emissions. This mechanism resulted in the high ozone peak aloft above the marine layer. Easterly winds measured by a radar wind profiler supported a multiple layer structure and the location of the return flow (Baxter et al, 2010). Note that the profile was taken at an Oxnard airport which is located by the shore. Figure V-3-20 suggested that seasonal variation from month to month was evident, but not significant. Therefore, the average profile for the period of May through September was selected and digitized into the modeling grids (Figure V-3-21).

The differences among the lateral boundary values were the largest in the free atmosphere and geographically near the boundaries. Figure V-3-22 illustrates the large differences aloft and the downward mixing to the surface level. The influence of ozone fumigation to ground level near the center of the Basin was several ppb in concentration as shown in Figure V-3-23. The MOZART-retrieved and aircraft-based runs predicted higher surface ozone than the clean boundary, which was attributed to the higher concentration aloft that was entrained into the lower boundary layer via convection.

The western boundary appeared to be set far enough offshore to minimize spurious influence of the boundary values transported into the Basin. Despite the large differences between the MOZART and the aircraft boundaries, surface ozone from the two simulations were almost identical (Figure V-3-23).

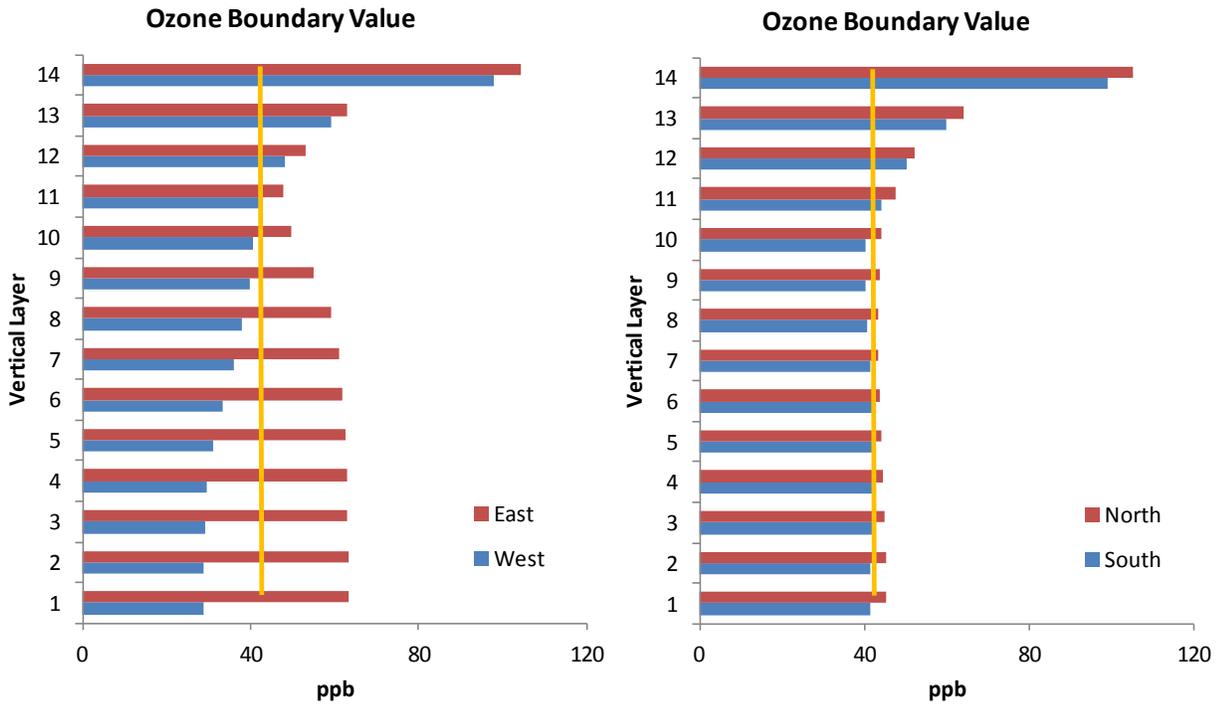


Figure V-3-17

Vertical profiles of Ozone from MOZART in a 15 layer structure. The values were averaged over the perimeter in the given direction at a given layer. The top layer corresponds to the modeling top. The solid yellow line represents the clean boundary value.

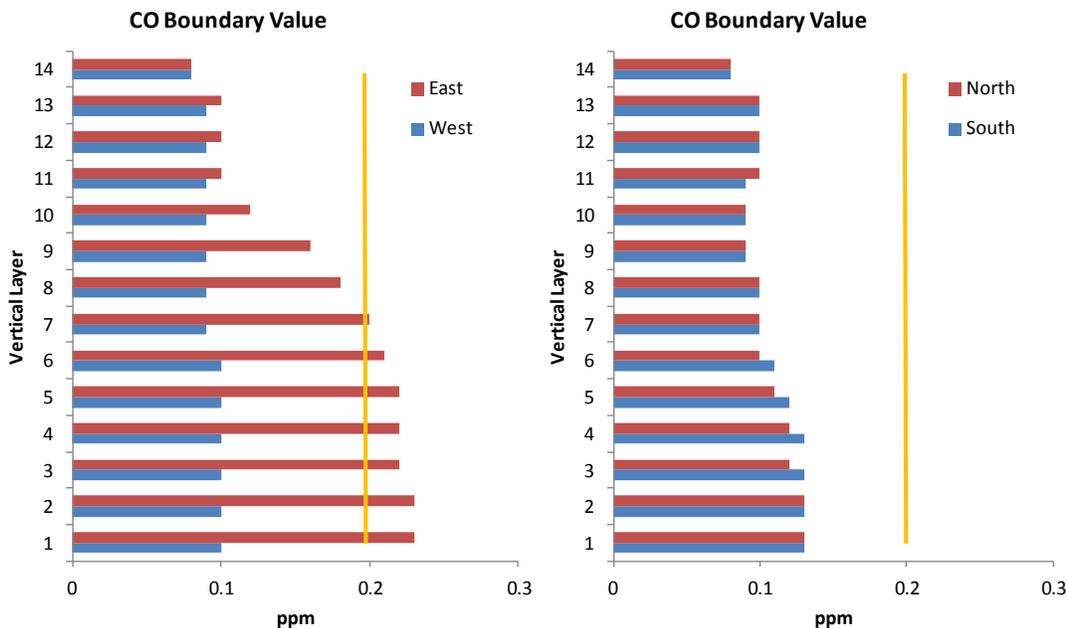


Figure V-3-18

Vertical profiles of CO from MOZART in a 15 layer structure. The values were averaged over the perimeter in the given direction at a given layer. The top layer corresponds to the modeling top. The solid yellow line represents the clean boundary value.

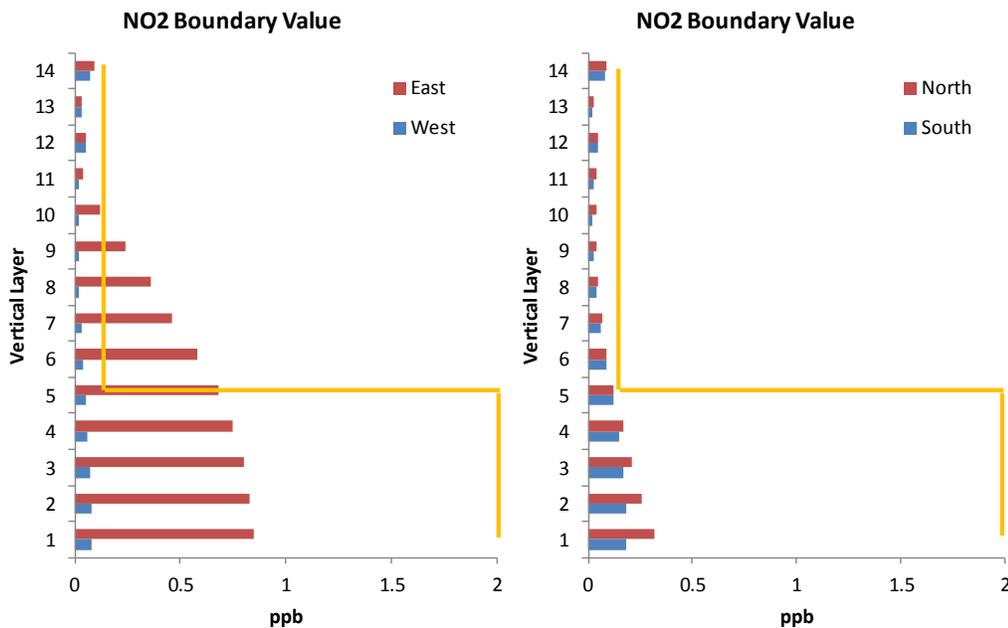


Figure V-3-19

Vertical profiles of NO2 from MOZART in a 15 layer structure. The values were averaged over the perimeter in the given direction at a given layer. The top layer corresponds to the modeling top.

The solid yellow line represents the clean boundary value.

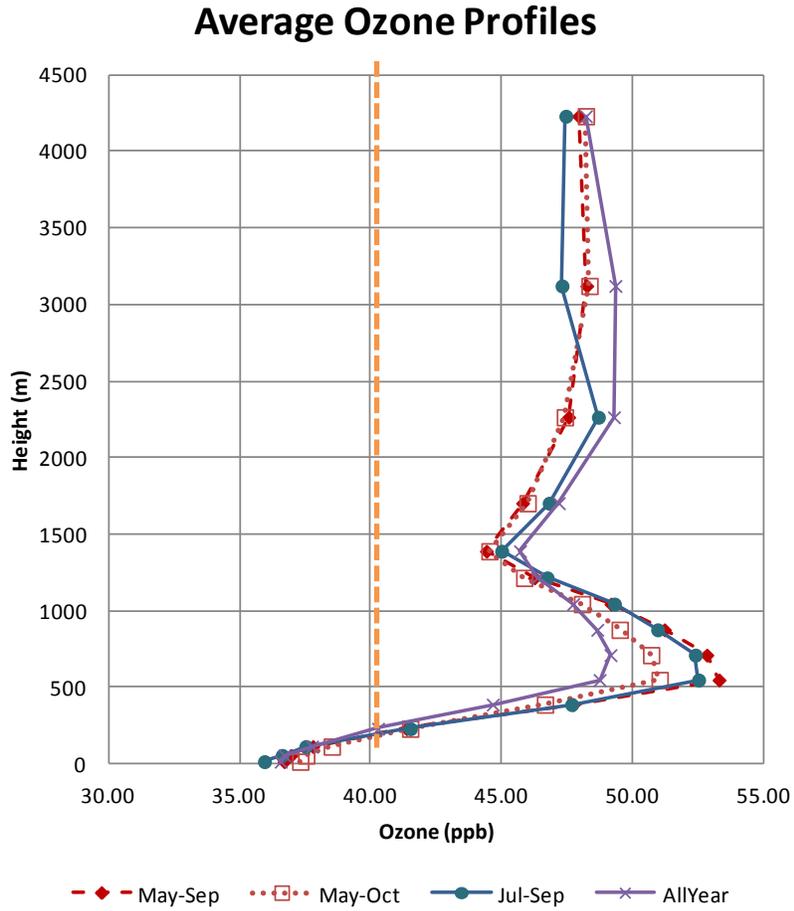


Figure V-3-20

Climatological Ozone profiles compiled from the aircraft measurements. The clean boundary value is given as broken yellow line for comparison.

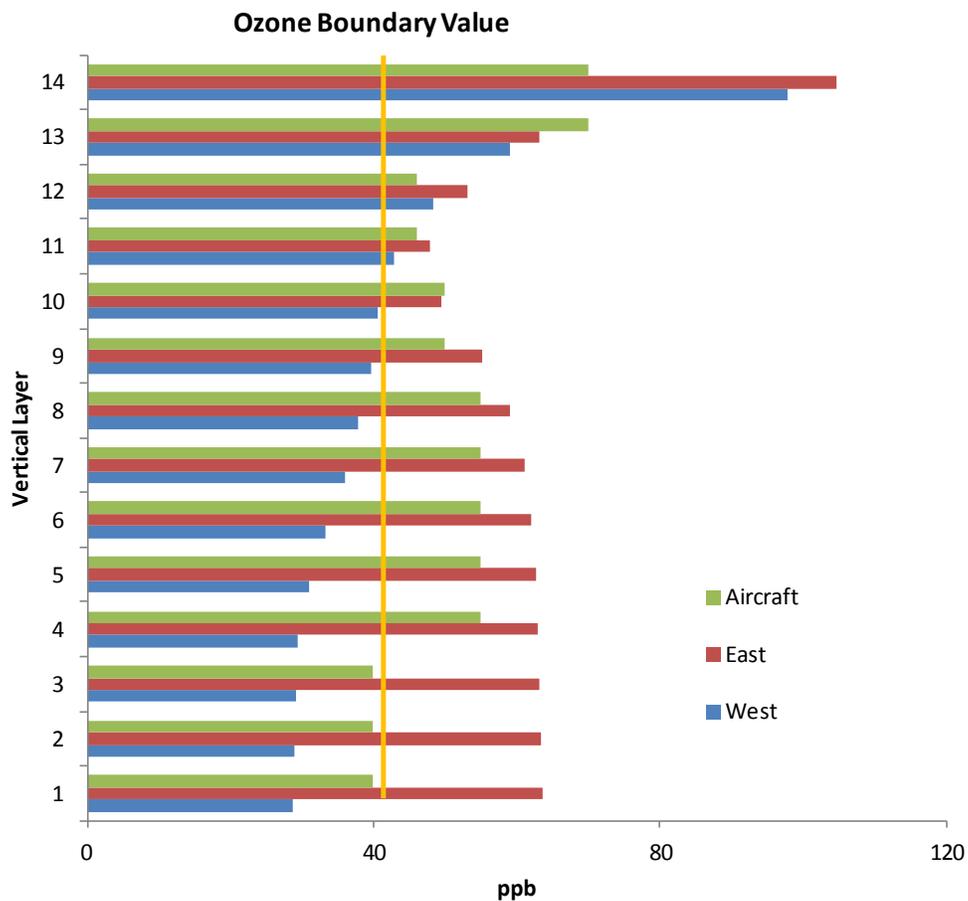


Figure V-3-21

The comparison of MOZART and aircraft-measurement based boundary values digitized in the 15 layer modeling grid. The clean boundary values are presented in yellow solid line.

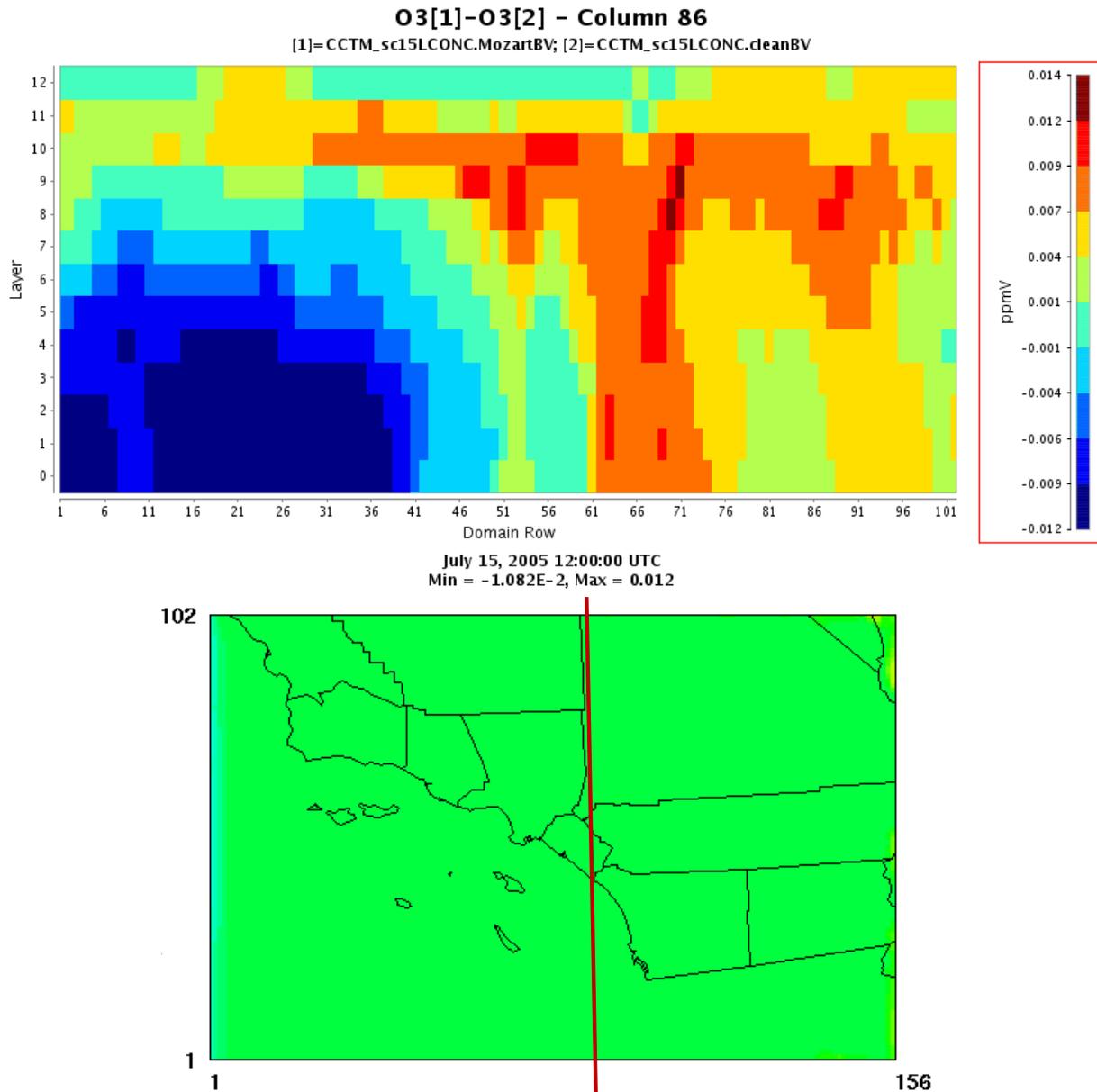


Figure V-3-22

A vertical cross-section of 1-hr ozone differences between MOZART and the clean boundary values along the red line indicated in the lower plot.

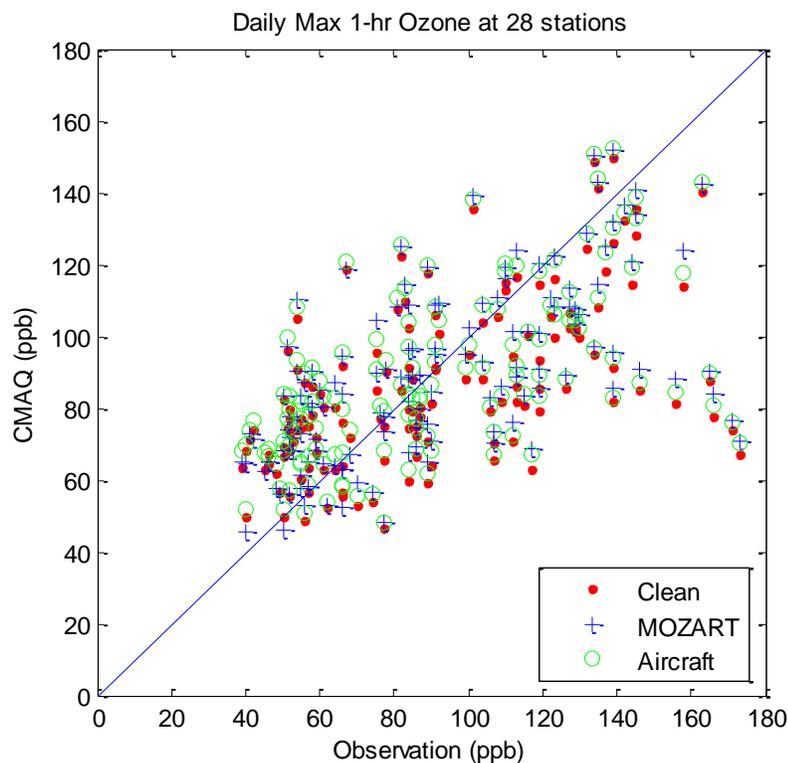


Figure V-3-23

Scatter plot of simulated and observed 1-hour maximum ozone within the Basin.

The impact of the boundary contribution was further analyzed to explore its possible role in the over-predictions identified in Figure V-3-16. The daily MOZART boundaries, shown in Figure V-3-24, contained values that were as high as 110 ppb. These are compared with published and simulated Basin summer boundary ozone values less than 50 ppb. Note that MOZART (version 4), used in the current study, was based on GEOS-5 meteorological fields. The high boundary concentrations extracted from MOZART on June 21st and July 9th coincided with the simulated high-bias episodic ozone peaks in Figure V-3-16. A set of sensitivity simulations were generated including only biogenic emissions and both clean boundary conditions and MOZART defined boundaries. A comparison of the simulation results is shown in Figure V-3-25. The higher MOZART background values seriously impacted regional ozone formation, particularly on the July 9th episode. Also, the simulation including MOZART with biogenic emissions illustrated a decreasing trend over the three month period, which was less evident in the clean boundary simulation. The general decreasing trend was expected to reflect lower biogenic emissions and deeper midsummer mixing of the atmosphere.

The spurious behavior of MOZART was partly attributed to the way the global model was applied to the CMAQ. Due to computational limitations, the CMAQ model used a single domain, but was not configured in a nested way. This abrupt scaling down from a global model to a fine scale regional grid appears to have impacted the spatially allocated background concentrations characteristic of urban emissions profiles. As a consequence, higher levels of background ozone introduced over the northern boundary resulted in erroneously higher projected surface ozone concentrations.

Figure V-3-26 presents the scatter plot of the simulations conducted using the MOZART and clean boundary assumptions. The clean boundary assumption was able to eliminate many of the severely over predicted data points that appeared in the upper portion of the one-to-one mapping line. Accordingly, the clean boundary assumption was chosen as the default lateral boundary value.

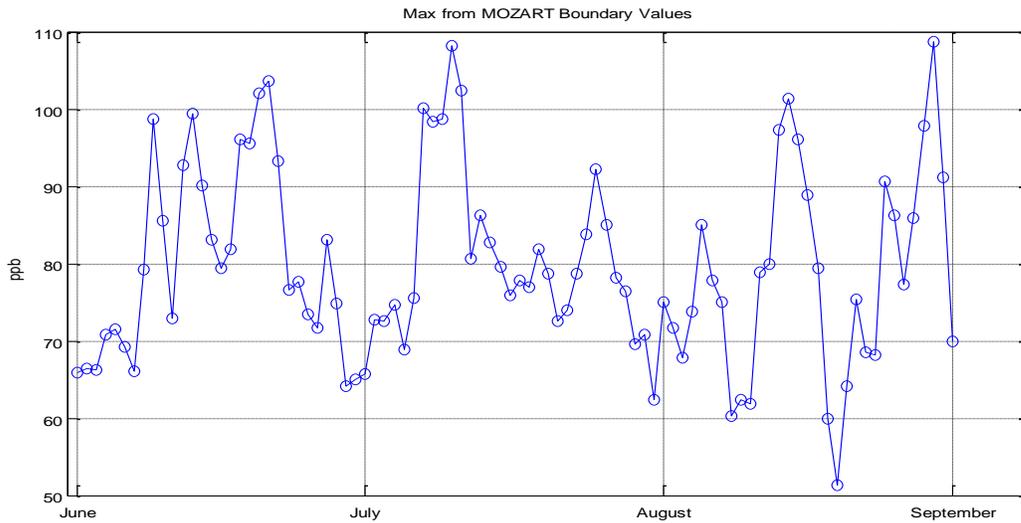


Figure V-3-24

Daily Maximum 1-hour ozone along the lateral boundaries from MOZART.

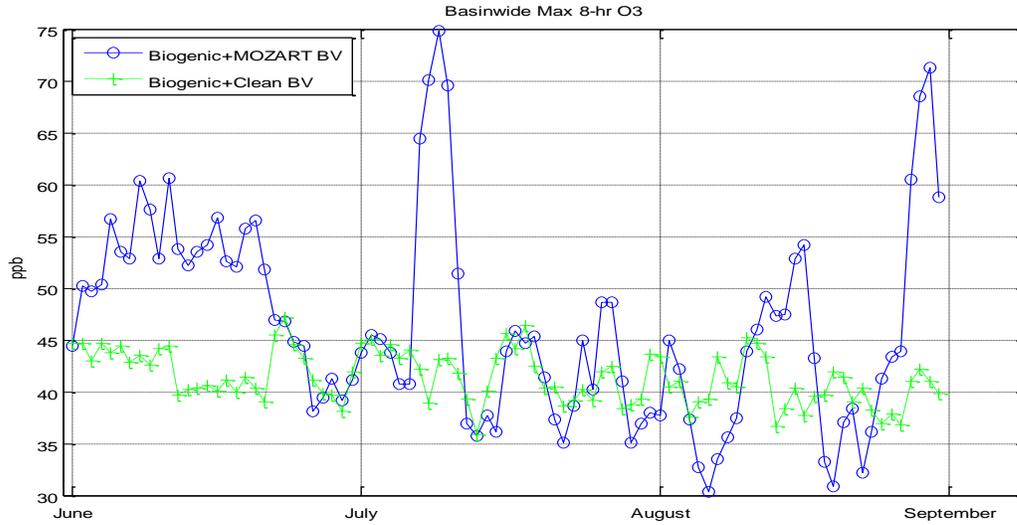


Figure V-3-25

Maximum 8-hr ozone simulated with MOZART boundary values (blue solid line with open circle) and the clean boundary (green broken line with plus mark).

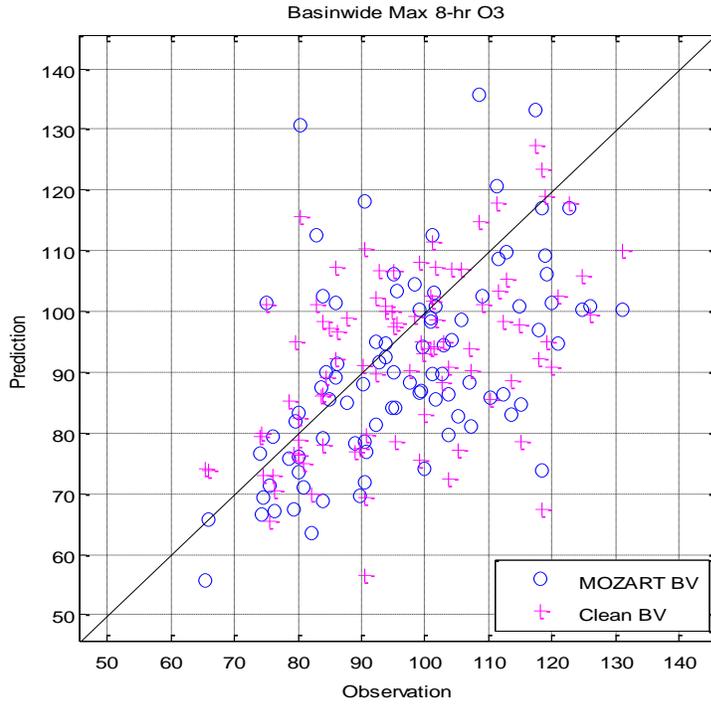


Figure V-3-26

Basin maximum 8-hour ozone simulated with MOZART and the clean boundary values

CHAPTER 4

MODELING EMISSIONS, BOUNDARY, AND INITIAL CONDITIONS

Modeling Emissions Inventory

Inventory Profile

California Environment Quality Act (CEQA) Alternative Emissions

Boundary and Initial Conditions

MODELING EMISSIONS INVENTORY

Table V-4-1 provides the baseline and controlled modeling emissions inventories used in the attainment demonstration and alternative analyses. The CMAQ simulations were based on the annual average inventory, with adjustments made for weekly and daily temperature variations. A brief characterization of the annual day emissions used for the modeling analysis follows. An extensive discussion of the overall emissions inventory is summarized in Appendix III of the Draft Final 2012 AQMP.

INVENTORY PROFILE

Baseline modeling inventories for the historical year 2008 and the future years 2014, 2017, 2019, 2023, 2030 and 2035 are discussed in this section. The baseline emissions projection assumes no further emission controls. These projections reflect the emissions resulting from increases in population and vehicle miles traveled (VMT), as well as the implementation of all adopted rules and regulations up through June 2012. The controlled emission projections reflect the benefits of implementation of the Draft Final 2012 AQMP control measures relative to future baseline emissions. Detailed descriptions of the control measures are provided in Chapter 4 and Appendix IV of the Draft Final 2012 AQMP.

Appendix III contains emission summary reports by source category for the historical base year and future baseline scenarios used in this modeling analysis. Attachments 5 and 6 of this appendix contain the Controlled Emission Projection Algorithm (CEPA) emissions summary report by source category for the future (2014 and 2023) controlled scenarios for the annual average emissions inventory. It should be noted that the inventories reported here may be slightly different than those reported in the Draft Final 2012 AQMP (Chapter 3) and Appendix III, since the inventories used for modeling reflect day-specific conditions. Day specific point, mobile and area emissions inventories were generated for each day in the 2008 base year. Mobile source emissions were temperature corrected by grid cell using a VMT weighted scheme. County-wide area source emissions were temperature corrected and gridded using the spatial emissions surrogate profiles developed for the Draft Final 2012 AQMP.

Day specific modeling emissions inventories were generated for each day in 2008 for the CMAQ (and CAMx) simulations. Mobile source emissions were generated using CARB's EMFAC2011 emissions factors coupled with SCAG's traffic analysis zone data. Off-road emissions were calculated using CARB's off road model. It is important to note that both EMFAC2011 and the off-road models were modified to account for

CARB’s emissions estimation methodology changes reflecting the 2010 adoption of the CARB on-road heavy duty vehicle and off-road mobile source rules. The on-road mobile source emission data incorporate day specific ambient temperature input to correct for evaporative emissions.

Table V-4-1

Annual Average Day Emissions Inventory (tons/day)

Year	VOC	NOX	CO	SOX	PM2.5	NH3
(a) Baseline						
2008	593	754	2880	54	80	109
2014	451	506	2095	18	70	103
2017	427	442	1862	18	70	100
2019	414	394	1708	18	70	98
2023	406	322	1584	18	70	97
2030	407	283	1502	20	72	98
2035	386	279	1473	22	72	98
(b) Controlled						
2014	451	490	2095	18	58*	103
2023	400	296	1584	18	70	97

* Winter episodic day emissions reductions

Annual Emissions Profiles

Day specific emissions were generated for all days in 2008. Figure V-4-1 illustrates the total CO and NOx emissions contained in the modeling domain for each day in 2008. CO emissions are indicative of the on-road mobile source inventory while NOx further incorporates signatures of stationary and off-road emissions. Note that the emissions totals in tons per day are roughly double the totals presented in Table V-4-1. This is because the values in Table V-4-1 represent basin-wide total emissions while those in Figure V-4-1 is the total from the modeling domain. The profile clearly depicts a changing emissions pattern with two distinct cycles represented: a weekly cycle, illustrated by Sunday through Saturday peaks and valleys, and day-to-day variations in

emissions within the weekly cycle. Figure V-4-1 also includes emissions from 2008 wild fires that occurred in the modeling domain.

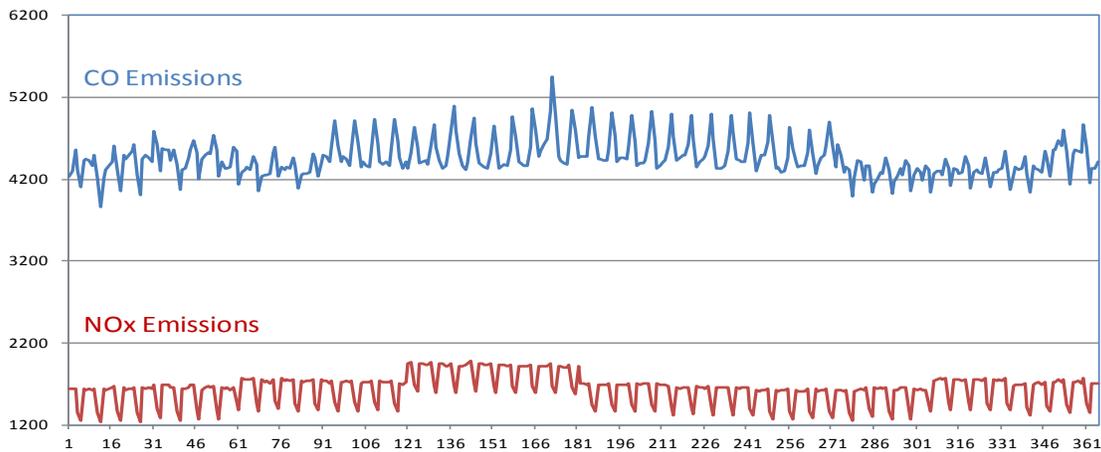


Figure V-4-1

2008 daily CO and NOx emissions in the modeling domain.

Diurnal Emissions Profiles

Where applicable, point, area and off-road mobile sources were adjusted to a day-of-week throughput profile consisting of a Monday-Friday, Saturday and Sunday schedule. Figure V-4-2 depicts the day-of-week and hour-of-day NOx emissions patterns for stationary, on-road, and off-road sources with ocean going vessels (OGVs) independently represented. The peak emissions occur mid-week (Tuesday through Thursday) while emissions on Saturday and Sunday decrease by about 30 percent. Based on CALTRANS data, NOx emissions from heavy-duty vehicles are reduced by more than 60 percent on Saturdays with further reductions occurring on Sundays. Increases in off-road mobile source activities (e.g. pleasure craft and recreational vehicles) account for the bulk of the VOC increase on both Saturdays and Sundays.

Monday and Friday are transitional days with on-road emissions slightly lower than mid-week with slightly modified diurnal profiles. Off-road emissions are relatively consistent throughout the week whereby weekend reductions in some off-road categories (e.g. construction) are replaced by weekend activity emissions (e.g. recreational vehicles and boats). In general, OGV emissions are constant with shipping activities ongoing as a function of arrivals and departures. The largest stationary source contributions (e.g.

refineries, power generation and residential combustion) represent daily usage and do not vary much over the course of the week.

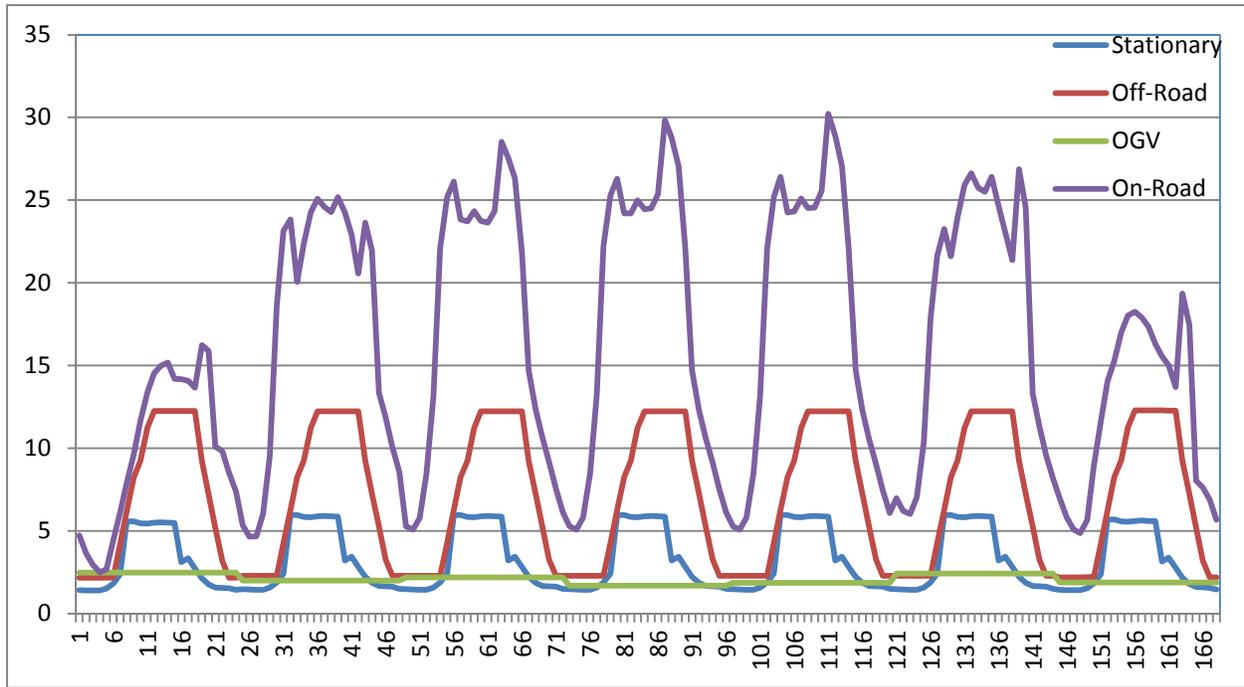


Figure V-4-2

Diurnal NOx emissions (tons per hour) in the modeling domain: Sunday - Saturday.

Spatial Distribution

Figures V-4-3 through V-4-6 provide the spatial distribution of NOx emissions for the stationary (including area sources), OGV, off-road and on-road categories. Area sources in the modeling domain are typically assigned to a surrogate distribution profile (maintained by CARB) to allocate the daily emissions. Area source NOx emissions are included in the stationary source projection depicted in Figure V-4-3.

Paved and Unpaved Road Dust Emissions

U.S. EPA recently revised its AP-42 methodology to estimate paved road dust whereby the new method removed the factor addressing tire and break ware (to address potential double counting) but retained a California usage profile and adjustments for rain and silt loading.

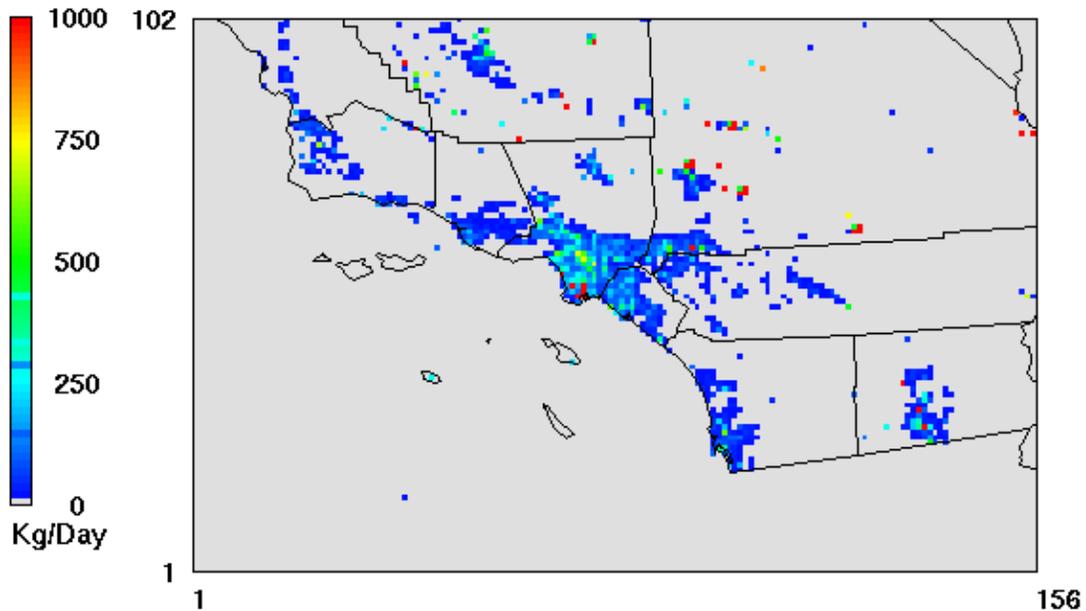


Figure V-4-3

Stationary source NOx emissions (Kg per day) in the modeling domain

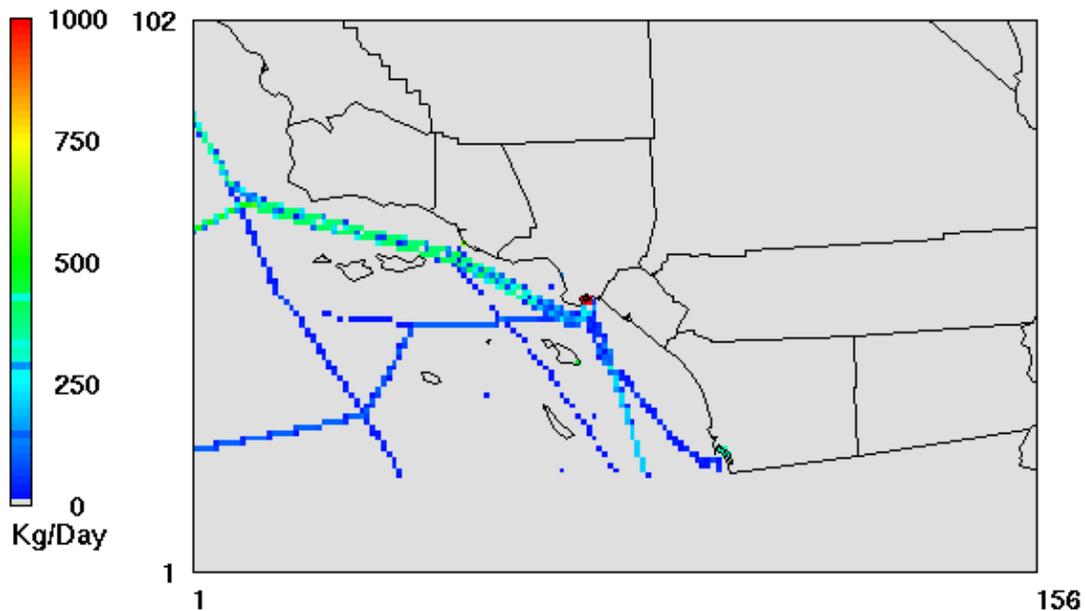


Figure V-4-4

OGV NOx emissions (Kg per day) in the modeling domain

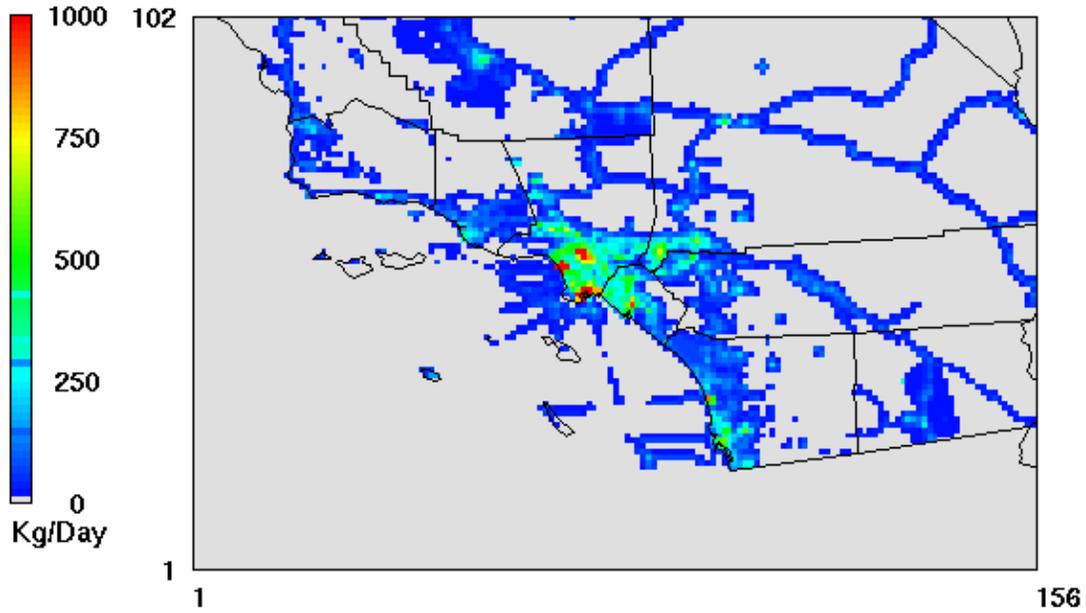


Figure V-4-5

Off-Road NOx emissions (Kg per day) in the modeling domain

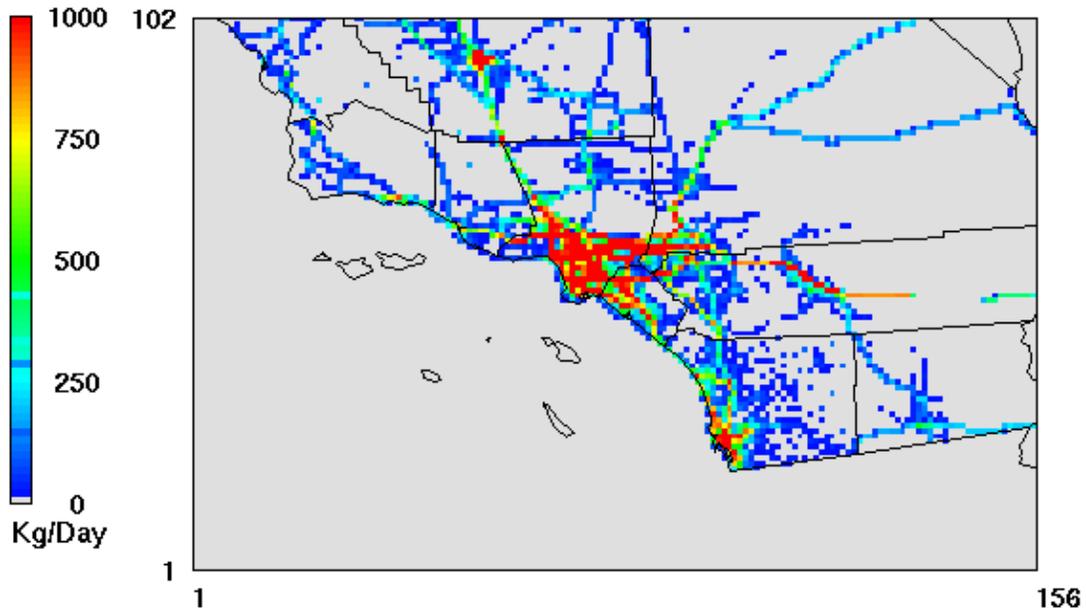


Figure V-4-6

On-Road NOx emissions (Kg per day) in the modeling domain

In addition, the base year paved road dust emissions are a function of VMT. As with the three preceding AQMPs, paved road dust emissions were adjusted to reflect a cap on emissions growth for high VMT road types in future years. Based on CARB's latest assessment (California Air Resources Board. 2012. Miscellaneous Process Methodology 7.9, Entrained Paved Road Travel, Paved Road Dust. July), the Draft Final 2012 AQMP continued this type of adjustment by leaving paved road dust constant on all roads unless there was a change in centerline miles; any emission change in future years would be calculated using the ratio of future-to-current centerline miles (see Appendix III, Table III-2-6).

Unpaved road dust was allocated based on GIS land use profiles.

Ammonia Inventory Adjustments

Selected revisions were made to the spatial distribution and emissions categories defining the ammonia inventory. In general, the total ammonia in the inventory was reduced from 119 TPD in the 2007 AQMP inventory to 109 TPD in the Draft Final 2012 AQMP. Shifts in ammonia emissions occurred in several categories with livestock; fertilizer and on-road emission lowered, being partially offset by increases in the industrial and composting sectors. Table V-4-2 provides a summary comparison of the 2002 and 2008 ammonia inventories from the 2007 AQMP and the Draft Final 2012 AQMP.

Table V-4-2

Annual Average Day Ammonia Emissions Inventory (tons/day)

Source Category	2007 AQMP	Draft Final 2012 AQMP
	2002 Inventory	2008 Inventory
Livestock	26	18.6
Soil	1.4	1.8
Domestic	25.1	25.1
Landfill	1.1	3.6
Composting	9.7	17.8
Fertilizer	6.1	1.5
Sewage Treatment	0.1	0.2
Wood Combustion		0.1
Industrial	13.2	20.2
On-Road Mobile	36.1	19.9
Off-Road Mobile		0.1
Total	118.8	108.9

Biogenic Emissions

Daily biogenic VOC emissions inventories were developed by CARB using the Model of Emissions of Gases and Aerosols from Nature (MEGAN) emissions model. The biogenic inventories were calibrated based on spatially resolved daily temperature. Figure V-4-7 provides the daily total emissions of isoprene and terpenes, measured in millions of moles, for the modeling domain. The trend shows higher emissions for the spring and summer months with several peaks occurring in May and later June when temperatures in Southern California were unseasonably high. The areas with the greatest contribution to the biogenic emissions inventory are depicted by the color lime green in the general land use characterization provided in Chapter 3 (Figure V-3-9).

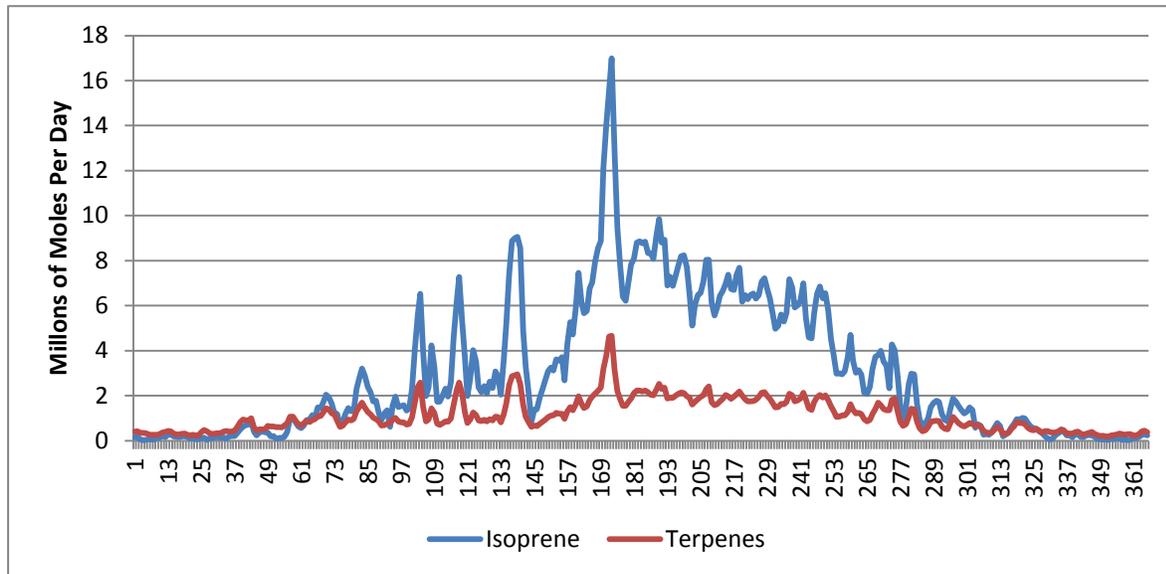


Figure V-4-7

2008 daily biogenic VOC emissions in the modeling domain:
Depicted are Isoprene and terpenes (millions of moles per day).

Ocean Going Vessels

During 2008, OGV emissions, most notably SO_x, varied significantly over the course of the year. Compliance with CARB's marine vessel low sulfur fuel rule was challenged in the courts. As a consequence OGV emissions varied from a relatively low value (approximately 15 TPD) to emissions in excess of 40 TPD when compliance was not enforced and bunker fuel was in use. Figure V-4-8 depicts the vessel weighted profile of OGV SO_x emissions estimated from the schedule of rule enforcement during 2008 in the compliance zone waters 24-nautical miles offshore of the Ports of Los Angeles and Long Beach. The time series accounts for port vessel arrivals and departures by day-of-week, month of year, and vessel tonnage category. The general emissions profile depicted in Figure V-4-8 was used with adjustments to the total SO_x tonnage to generate the gridded SO_x OGV emissions for modeling.

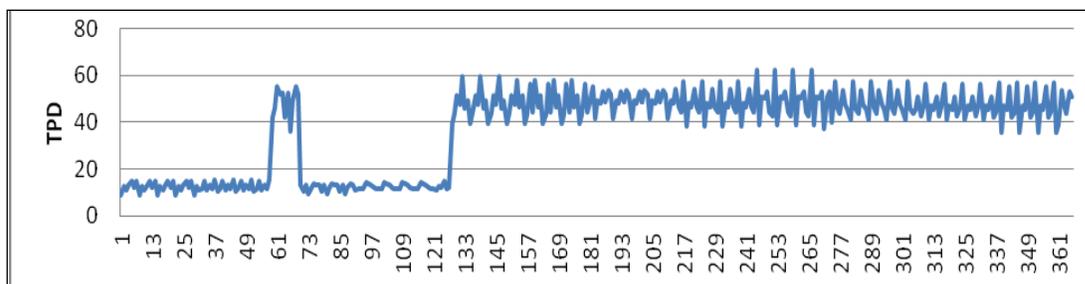


Figure V-4-8

2008 daily vessel weighted OGV SO_x emissions in the modeling domain.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ALTERNATIVE EMISSIONS

As part of the CEQA requirements for project assessment, the analysis must consider alternatives to the proposed project and hence alternative emissions scenarios. The Draft Final 2012 AQMP has identified three viable alternatives to the proposed plan to achieve attainment of the federal 24-hour PM_{2.5} standard within the prescribed time frame. The first alternative is a 2019 no-project alternative which relies on rules and regulations already in place to reduce baseline emissions to a level sufficient to attain the standard by 2019. The second alternative requires local emissions to be controlled nearby the design site in Mira Loma for a 2017 attainment year. The controls include tighter forecast triggers for restrictions on wood burning in fireplaces and woodstoves as well as open burning, and incentive-based accelerated local heavy duty truck clean up. The third alternative targets regional acceleration of heavy duty truck NO_x reductions by 2017 as a replacement to the local control program. Table V-4-3 provides the CEQA alternate emissions scenarios simulated for the Program Environmental Impact Report.

BOUNDARY AND INITIAL CONDITIONS

As discussed in Chapters 2 and 3, the initial concept for establishing boundary conditions for the regional modeling analyses focused on using global chemical simulation model output to define key species concentrations at the edge of the modeling domain. MOZART was selected to provide the characterization. However after evaluation it was discontinued in favor of using an U.S. EPA “clean boundary” US EPA (1991) approach that has been incorporated in previous attainment demonstrations.

Table V-4-4 summarizes the boundary profile concentrations used in the regional simulations. The boundary conditions were adjusted to match the ROG SAPRC profile. Initial conditions were established from ambient data monitored at AQMD and other district stations in their respective monitoring networks. For the future year scenarios, the boundary, region top and ambient air quality concentrations were adjusted to reflect projected emissions reductions from the 2008 base-year.

Table V-4-3

CEQA Alternatives Annual Average Day Emissions Inventory (tons/day)

Year	VOC	NOX	CO	SOX	PM2.5	NH3
(a) Alternative 1	No Project Alternative					
2014	451	506	2095	18	70	103
2019	415	405	1716	18	70	99
(b) Alternative 2	localized PM Control					
2014	451	506	2095	18	63	103
2017	425	451	1867	18	63	97
(c) Alternative 3	Greater Reliance on NOx Reductions					
2014	451	506	2095	18	65	103
2017	420	416	1816	18	61	101
(a) Alternative 4	PM2.5 Control Strategy Only					
2014	451	506	2095	18	58	103
2017	427	452	1867	18	58	101

TABLE V-4-4

Boundary Profile Concentrations (ppb)

SAPRC99 Species	(ppb)	SAPRC99 Species	(ppb)
HCHO	0.930	ARO1	0.210
CCHO	0.530	ARO2	0.070
RCHO	0.250	OLE1	0.180
ISOP	0.020	OLE2	e-13
MEOH	0.100		
ETOH	0.050	O3	40.0
ETHE	0.180	CO	200.
ALK1	2.500		
ALK2	2.300	NO	0.100
ALK3	0.930	NO2 (surf)	2.000
ALK4	e-13	NO2 (aloft)	0.100
ALK5	e-13		

CHAPTER 5

FEDERAL 24-HOUR PM_{2.5} ATTAINMENT DEMONSTRATION PLAN

Introduction

FRM 24-Hour PM_{2.5}

Performance Evaluation

24-Hour PM_{2.5} Modeling Approach

Future Air Quality

CEQA Alternate Simulations

Weight of Evidence

Summary and Control Strategy Choices

INTRODUCTION

The attainment demonstration presented in this chapter is applicable to the federal 24-hour PM_{2.5} standard. The annual PM_{2.5} attainment demonstration provided in the 2007 AQMP was approved by U.S. EPA on September 30, 2011. An update of the model simulation results for the annual PM_{2.5} standard is presented in Chapter 6.

The initial sections of this chapter describe the PM_{2.5} Federal Reference Method (FRM) monitoring data and sampling network, the historical trend of 24-hour PM_{2.5} design values, revisions to the speciated monitoring attainment test (SMAT) and Sandwich data analyses, and the CMAQ modeling methodology. The subsequent sections of this chapter provide the 24-hour PM_{2.5} attainment demonstration, the unmonitored area analysis, and supporting weight of evidence analyses.

24-HOUR PM_{2.5} Sampling

PM_{2.5} FRM Sampling

The district maintains a sampling network of Federal Reference Method (FRM) PM_{2.5} at 20 sites throughout the Basin and Coachella Valley. This network is supplemented by Federal Equivalent Method (FEM) continuous PM_{2.5} monitors at a subset of these locations to provide data for public reporting and for forecasting algorithms. The FRM samplers are designated as the primary samplers, and thus FRM data is used for design value calculations and the attainment demonstration.

Speciated PM_{2.5} Sampling.

The District adopted a Multi-Channel Fine Particulate (MCFP) sampling system for the PTEP monitoring program in 1995, and the TEP 2000 program in 1998-1999. New PM samplers, speciated air sampling system (SASS) samplers, were deployed for two years at ten sites in the Basin to conduct the Multiple Air Toxics Exposure Study III (MATES III) beginning in April, 2004. The SASS sampler collects PM_{2.5} particles on 47mm quartz and Teflon filters simultaneously within the same sampler for 24-hour duration for subsequent laboratory chemical analysis. After the MATES III study, PM speciation sampling was changed from a one-in-three day to a one-in-six day schedule, and reduced to four permanent speciation-sampling sites. However, a monitoring campaign at multiple sites in the Port area included PM_{2.5} speciation in the 2007-2008 timeframe. Furthermore, an enhanced speciation

campaign in 2009 returned to the one-in-three day schedule at seven sites for one year only.

PM2.5 speciation data measured as individual species at six sites in the District air-monitoring network during 2008 provided the PM2.5 chemical characterization for evaluation and validation of the CMAQ annual and episodic modeling. The six sites include the historical PM2.5 maximum location (Riverside-Rubidoux), the stations experiencing many of the highest county concentrations (among the 4-county jurisdiction including Fontana, North Long Beach and Anaheim) and monitoring in locations influenced by goods movement (South Long Beach) and mobile source impacts (Central Los Angeles). It is important to note that the close proximity of Mira Loma to Rubidoux and the common in-Basin airflow and transport patterns enables the use of the Rubidoux speciation data as representative of particulate speciation at Mira Loma. Both sites are directly downwind of the dairy production areas of Chino and the warehouse distribution centers located in the northwestern corner of Riverside County. Speciated data monitored at the selected sites for 2006-2007 and 2009-2010 were analyzed to corroborate the applicability of using the 2008 profiles. PM2.5 mass, ions, organic and elemental carbon, and metals, for a total of 43 chemical species, were analyzed from a one-in-six day sampling schedule at 6 sites.

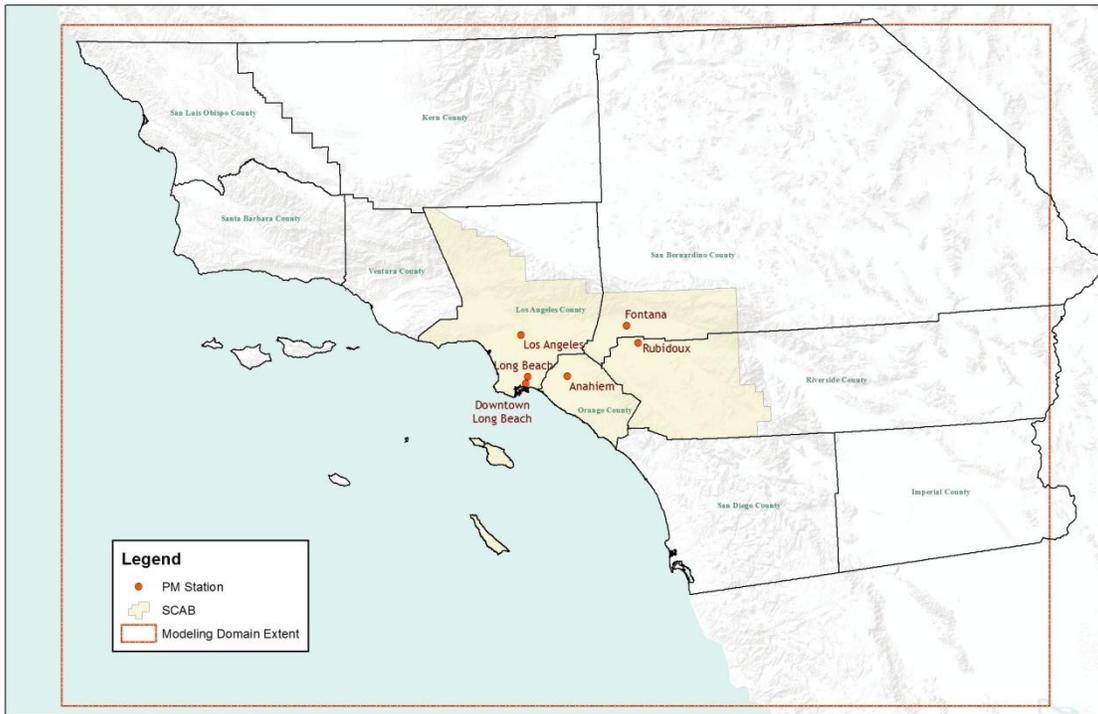


Figure V-5-1

SASS Sampling Sites in the Basin

2008 PM_{2.5} speciation data measured by the SASS sampler is used to derive the species fractions that are required for the PM_{2.5} attainment demonstration. U.S. EPA's PM_{2.5} modeling guidance recommends calculating future year PM_{2.5} design values by multiplying quarterly, species specific RRFs to the base year speciated design values for each quarter for each monitoring site. Base year design values are determined from the FRM mass data, however the FRM filters are not chemically speciated. Therefore, the guidance document recommends multiplying the species fractions that are measured in a speciation sampler such as the SASS to the FRM mass data to derive chemically speciated design values for the FRM data. In the following sections, 24-hour and annual average species concentrations measured by the SASS sampler are summarized and the chemically speciated FRM data are derived for the future year design value calculations.

As previously described in Chapter 1, U.S. EPA recently updated the 24-hour PM_{2.5} attainment test, replacing Section 5.2 of the 2007 PM_{2.5} modeling guidance. The

new guidance recommends using the 8 highest days of FRM data per quarter for each year for each FRM site for calculation of the daily design values to ensure that the 98th percentile concentration day for the year is included in the analysis. This resulted in 32 days of FRM data for each year for each site. Tables V-5-1 through V-5-7 list the 2008 FRM data subset included as a component of the attainment analysis. Data from 2006, 2007, 2009 and 2010 complete the data requirement for the revised attainment test. In total, 160 days of data at each site are included in the calculation. Table V-5-8 provides the 5-year weighted 24-hour PM_{2.5} design values for the seven sites evaluated. The weighting scheme centered on 2008 is as follows: 1/3 weight for 2008; 2/9 weight each for 2007 and 2009, and 1/9 weight each for 2006 and 2010.

In some cases, the FRM and SASS monitoring locations do not overlap. (The FRM network has 21 stations where the SASS network size has varied in time, being limited to 6 sites in 2008). Five of the SASS sites are co-located with the FRM sites. The Downtown Long Beach SASS site was located near the South Long Beach FRM. Similarly, the Mira Loma FRM design site is located in the upwind adjacent grid cell to the Rubidoux SASS sampler. The PM_{2.5} guidance document recommends estimating speciated concentrations from a nearby speciation monitor when an FRM site does not have speciation data. Therefore, the Mira Loma FRM data is speciated using the Rubidoux SASS data and the South Long Beach FRM used the Downtown Long Beach speciation data.

Table V-5-1

2008 Eight Highest PM_{2.5} FRM Data for Each Quarter at Anaheim

	Q1	Q2	Q3	Q4
Highest	39.40	24.55	27.06	67.88
2 nd Highest	39.24	19.06	21.39	47.78
3 rd Highest	31.19	19.05	21.38	43.83
4 th Highest	28.31	18.14	19.21	41.57
5 th Highest	27.60	17.94	18.97	41.00
6 th Highest	24.81	17.31	18.64	39.77
7 th Highest	23.77	16.85	18.06	38.62
8 th Highest	22.39	15.93	17.27	37.78

Table V-5-2

2008 Eight Highest PM2.5 FRM Data for Each Quarter at S. Long Beach

	Q1	Q2	Q3	Q4
Highest	37.13	19.85	24.14	60.91
2 nd Highest	32.52	19.39	22.39	41.78
3 rd Highest	29.21	19.22	22.14	39.57
4 th Highest	27.85	18.72	20.93	38.23
5 th Highest	26.93	18.64	20.76	36.60
6 th Highest	21.43	17.76	20.18	36.44
7 th Highest	19.85	17.39	20.14	35.36
8 th Highest	19.31	17.18	19.43	31.81

Table V-5-3

2008 Eight Highest PM2.5 FRM Data for Each Quarter at N. Long Beach

	Q1	Q2	Q3	Q4
Highest	39.40	22.31	24.89	57.20
2 nd Highest	38.98	19.18	23.97	45.50
3 rd Highest	31.19	18.93	23.18	41.53
4 th Highest	30.94	18.81	20.81	39.77
5 th Highest	29.46	18.01	20.27	38.90
6 th Highest	28.35	17.93	19.72	36.19
7 th Highest	22.51	16.96	19.43	33.52
8 th Highest	22.14	16.63	19.10	32.44

Table V-5-4

2008 Eight Highest PM2.5 FRM Data for Each Quarter at Central Los Angeles

	Q1	Q2	Q3	Q4
Highest	38.14	24.81	43.79	78.35
2 nd Highest	35.78	23.98	40.37	59.92
3 rd Highest	29.88	21.68	32.82	54.56
4 th Highest	26.04	21.44	30.90	50.03
5 th Highest	25.96	20.65	29.07	40.58
6 th Highest	25.18	20.27	26.97	39.95
7 th Highest	25.15	20.06	24.89	34.44
8 th Highest	25.09	19.60	24.05	33.28

Table V-5-5

2008 Eight Highest PM2.5 FRM Data for Each Quarter at Fontana

	Q1	Q2	Q3	Q4
Highest	43.50	49.01	43.93	47.47
2 nd Highest	36.15	24.88	32.13	47.14
3 rd Highest	25.76	24.59	25.26	27.09
4 th Highest	21.76	18.88	24.30	26.38
5 th Highest	21.63	18.26	23.42	25.30
6 th Highest	18.47	17.63	23.09	24.88
7 th Highest	14.59	17.26	21.47	18.09
8 th Highest	14.09	17.26	20.46	17.59

Table V-5-6

2008 Eight Highest PM2.5 FRM Data for Each Quarter at Mira Loma

	Q1	Q2	Q3	Q4
Highest	50.21	31.09	42.11	50.93
2 nd Highest	47.13	25.76	33.85	46.85
3 rd Highest	39.14	24.24	28.73	46.37
4 th Highest	28.72	23.05	28.21	39.85
5 th Highest	26.55	22.96	25.87	38.01
6 th Highest	19.75	21.92	23.93	33.35
7 th Highest	18.21	18.96	21.81	23.39
8 th Highest	16.46	17.83	21.51	20.67

Table V-5-7

2008 Eight Highest PM2.5 FRM Data for Each Quarter at Rubidoux

	Q1	Q2	Q3	Q4
Highest	47.99	31.33	53.30	57.68
2 nd Highest	44.43	30.73	41.04	57.08
3 rd Highest	40.32	30.42	33.99	41.49
4 th Highest	36.95	29.82	32.79	40.00
5 th Highest	36.32	29.30	31.03	39.96
6 th Highest	34.90	28.95	30.90	38.12
7 th Highest	34.15	28.33	28.61	36.21
8 th Highest	32.01	28.28	25.82	31.66

TABLE V-5-8

2008 Weighted 24-Hour PM_{2.5} Design Values ($\mu\text{g}/\text{m}^3$)

Monitoring Site	24-Hour PM _{2.5} Design
Anaheim	35.0
Los Angeles	40.1
Fontana	45.6
North Long Beach	34.4
South Long Beach	33.4
Mira Loma	47.9
Rubidoux	44.1

The revised guidance updated the quarterly species fractions on “high” days, which are required for the 24-hour modeled attainment test. The new guidance recommends using the top 10% of days in each quarter as the “high” days, resulting in 4 days per quarter for the 2008 SASS data. Figures V-5-2 through V-5-7 depict the species breakdown from the average top 4 PM_{2.5} concentrations for each quarter for six sites in the Basin. The data show the unadjusted direct measurements of the chemical species at each site. In general, concentrations in the fourth or first quarter are higher than that of the other quarters and secondary ammonium, nitrate and sulfate can comprise about half of the total PM_{2.5} concentrations. They also show that organic carbon (OC) is the highest single component, which is also close to half of the total concentration in some quarters and sites.

OC as measured by a SASS sampler is believed to be highly uncertain with a mostly positive sampling artifact. The flow rate of the SASS sampler (6.7 lpm) used to collect OC is approximately 2.5 times lower than that of the FRM sampling system (16.7 lpm), which provides the official PM_{2.5} mass measurement. The slower flow rate in the SASS sampler reduces the pressure drop across the filter and increases the adsorption of organic vapor on the quartz filter medium. The FRM uses a Teflon filter for mass measurements which is much less subject to organic vapor adsorption. Therefore, the OC collected by the SASS sampler is higher than that collected by the FRM sampler, often leading to an overbalance of the sum of the PM_{2.5} species

relative to FRM mass. There are also uncertainties in the measurements and the speciation analyses for all species; however, the greatest uncertainty in species concentration is associated with the measurement and analysis of OC.

U.S. EPA recommends estimating uncertain OC concentrations through an adjustment that is discussed as part of the “Sandwich” method in the 2007 AQMP and U.S. EPA’s PM_{2.5} modeling guidance document (Frank, 2007). According to the “Sandwich” method, OC is estimated from the difference between the measured mass and the sum of all chemical species, water and a filter blank of 0.5 ug/m³. The new species fractions for each quarter for each site are calculated by estimating OC, which are then applied to the 32 highest FRM data. Figures V-5-8 through V-5-13 depict the 2008 species fractional splits for the 6 primary components and water vapor for the six SASS sites after the “Sandwich” method was applied.

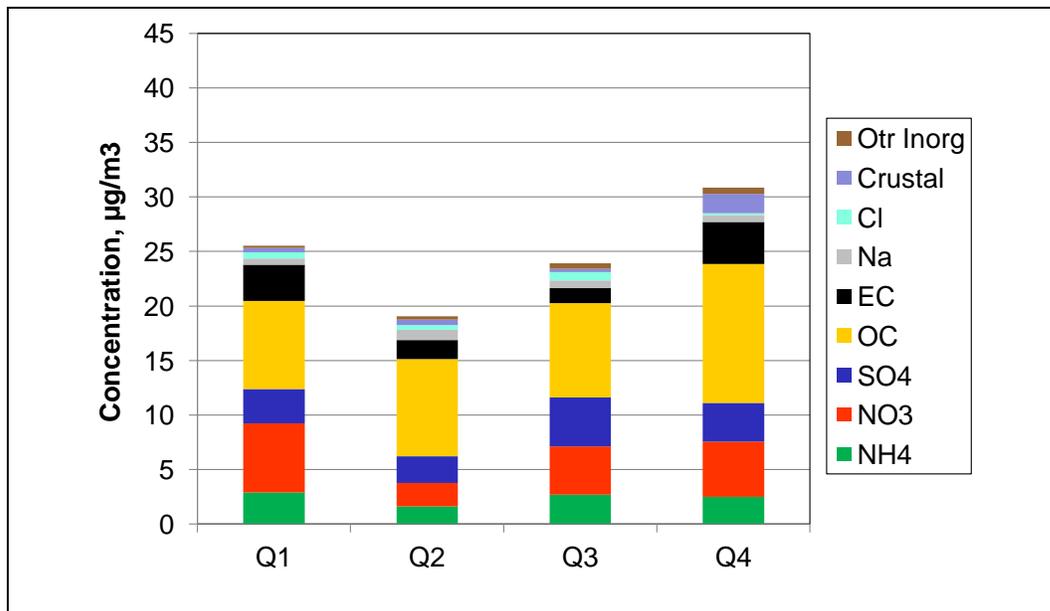


Figure V-5-2

2008 Anaheim Top 4 24-Hr PM_{2.5} Quarterly Average Species Concentrations

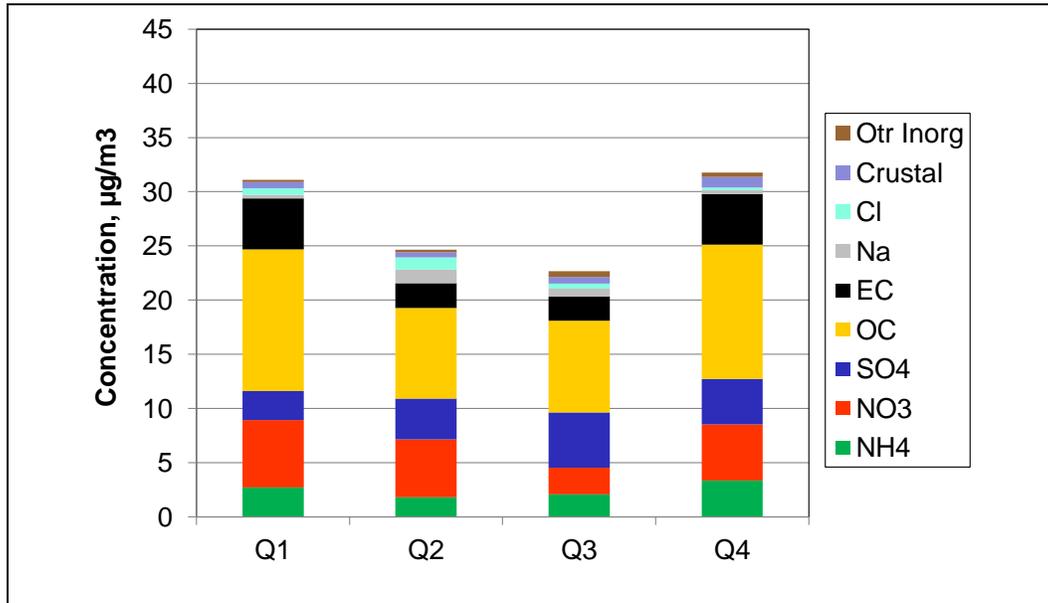


Figure V-5-3

2008 South Long Beach Top 4 24-Hr PM2.5 Quarterly Average Species Concentrations

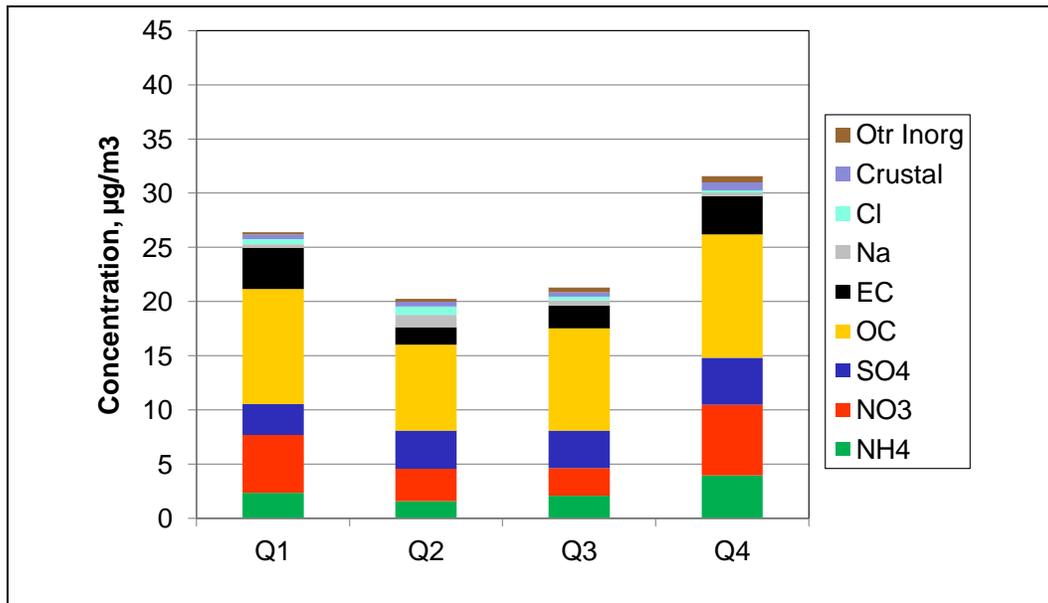


Figure V-5-4

2008 Long Beach Top 4 24-Hr PM2.5 Quarterly Average Species Concentrations

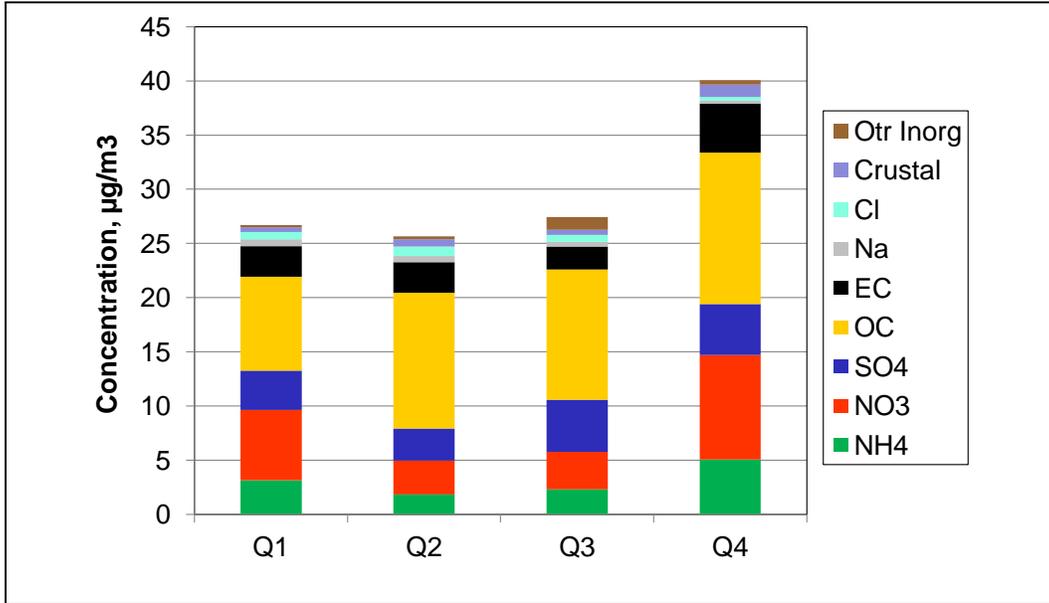


Figure V-5-5

2008 Los Angeles Top 4 24-Hr PM2.5 Quarterly Average Species Concentrations

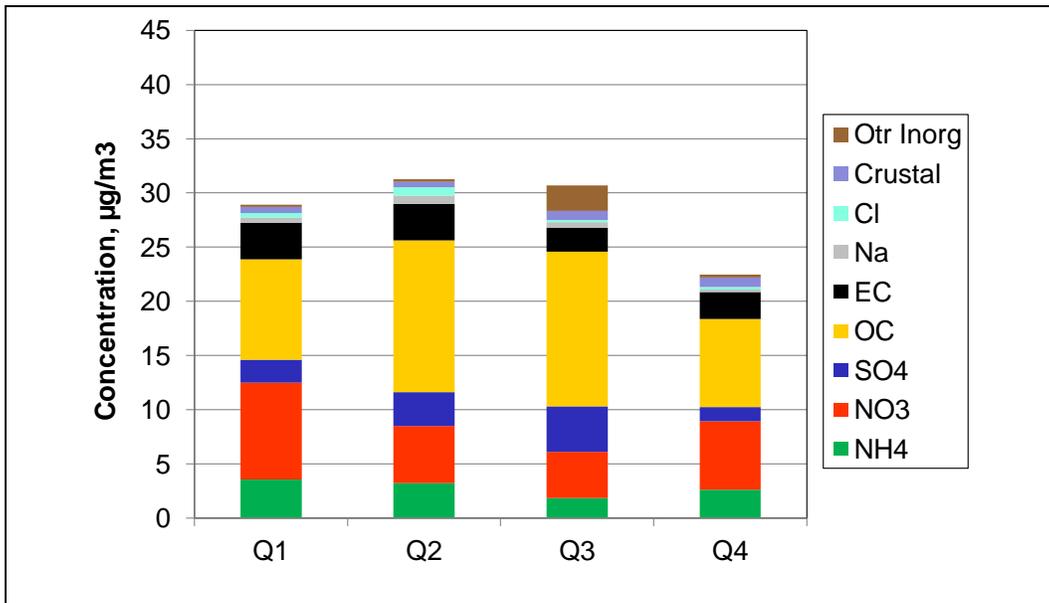


Figure V-5-6

2008 Fontana Top 4 24-Hr PM2.5 Quarterly Average Species Concentrations

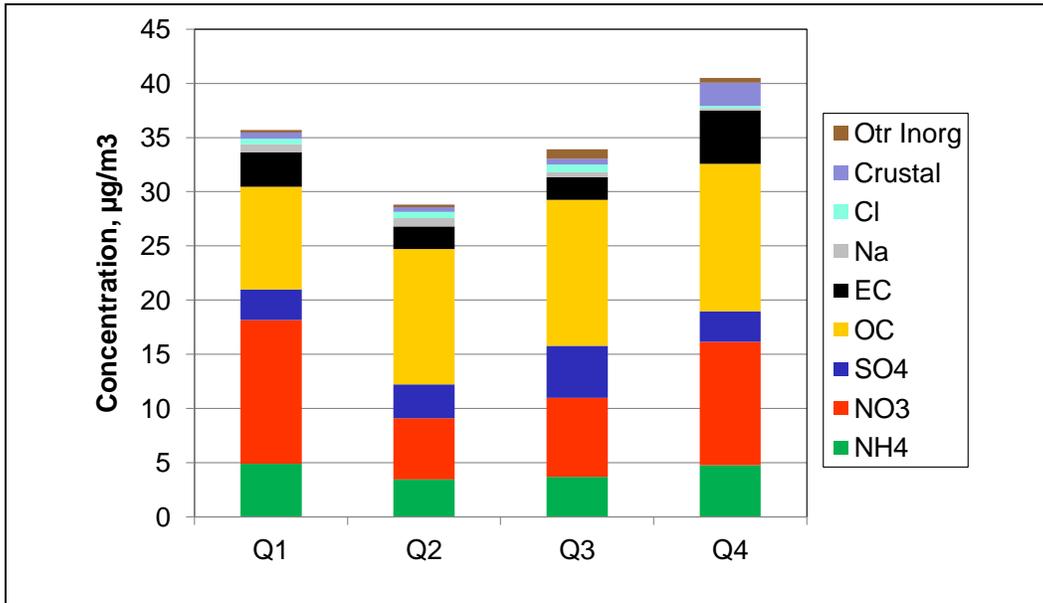


Figure V-5-7

2008 Rubidoux Top 4 24-Hr PM2.5 Quarterly Average Species Concentrations

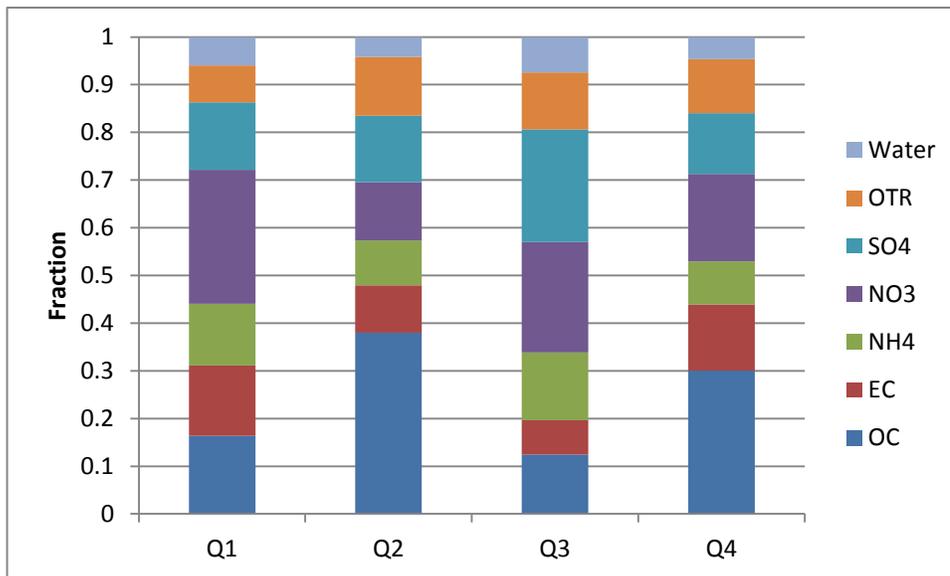


Figure V-5-8

2008 Anaheim 24-Hour PM2.5 species fractional splits after the Sandwich

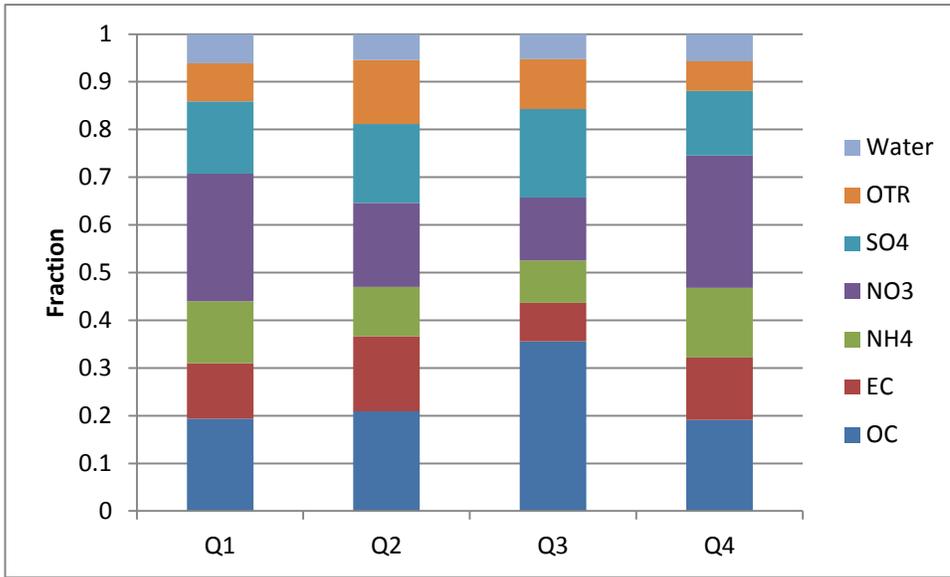


Figure V-5-9

2008 Los Angeles 24-Hour PM2.5 species fractional splits after the Sandwich

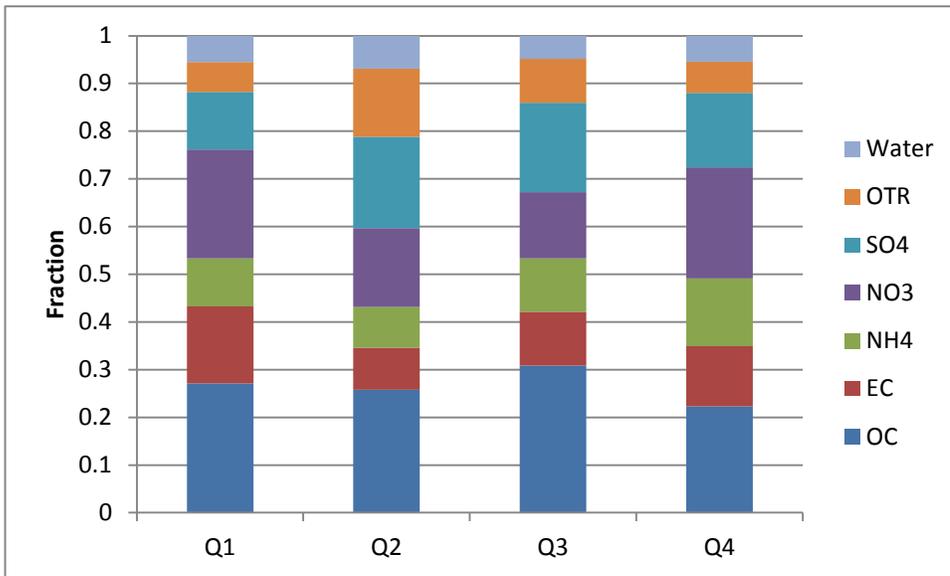


Figure V-5-10

2008 Long Beach 24-Hour PM2.5 species fractional splits after the Sandwich

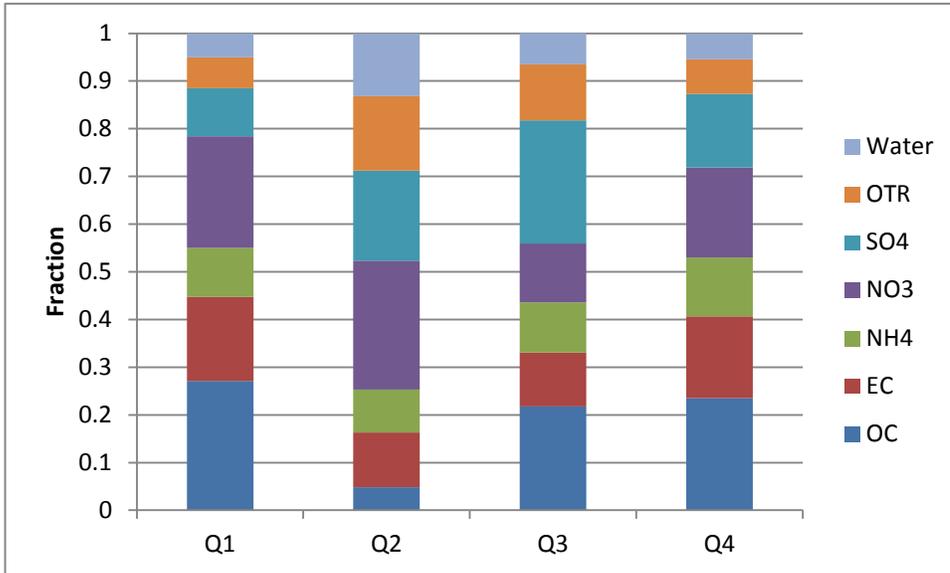


Figure V-5-11

2008 South Long Beach 24-Hour PM2.5 species fractional splits after the Sandwich

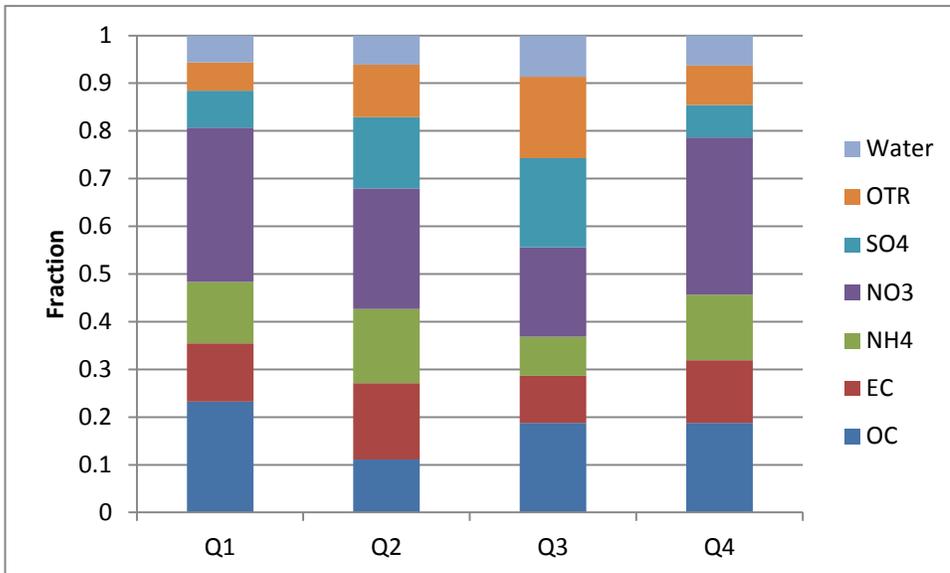


Figure V-5-12

2008 Fontana 24-Hour PM2.5 species fractional splits after the Sandwich

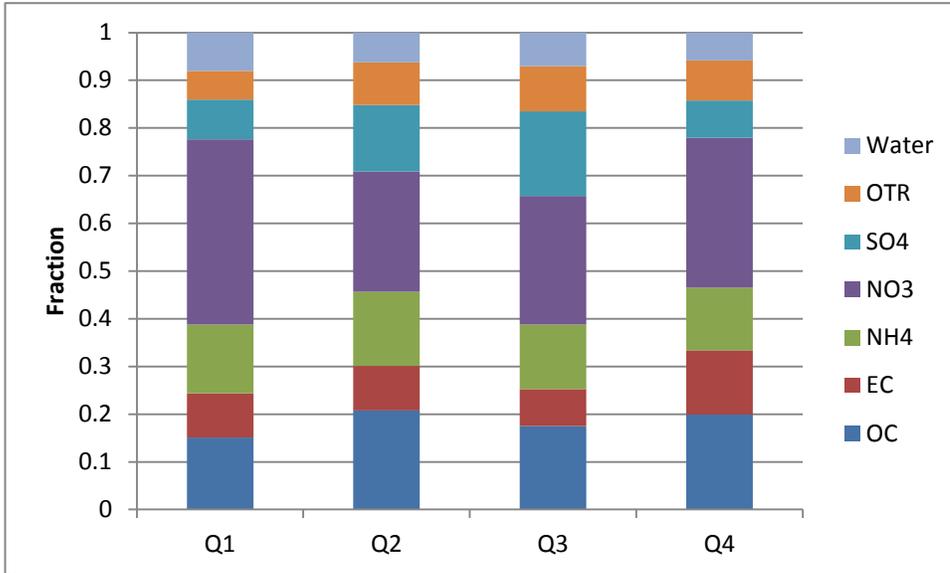


Figure V-5-13

2008 Rubidoux 24-Hour PM_{2.5} species fractional splits after the Sandwich

PERFORMANCE EVALUATION

EPA guidance assesses model performance on the ability to predict the PM_{2.5} component species and the total mass. No specific performance criteria thresholds are recommended in EPA’s modeling guidance document. This is because the model uses relative response factors rather than direct predictions. Performance is evaluated by examining key statistics and graphical representations of the differences between model predicted concentrations and observations. The statistics examine model bias and error, while graphical representations of error, model prediction time series, and concentration scatter plots supplement the methods of model performance evaluation. The CMAQ modeling results presented for each station are based on the same “1-cell” basis.

PM_{2.5} Component Species Performance Evaluation

The CMAQ 2008 base-year 24-hour PM_{2.5} performance statistics are presented in Tables V-5-9 through V-5-14. The analysis includes predicted concentrations and observations for the six component species and total mass at the 6 SASS sites. (Note

that the “others” category collectively includes crustal compounds-metals, sea salt, estimated water vapor and the filter blank). Also presented in the tables are estimates of bias and error for each component at each monitoring site. Quarterly statistics are provided in Attachment 3 to this document.

Figure V-5-14 provides a “soccer goal” graphical representation of error for model performance. Figures V-5-15 through Figure V-5-18 present the time series of model predicted vs. observations for each component at the SASS monitoring sites. Figure V-5-19 through Figure V-5-24 present the scatter-plots of prediction accuracy for each component at the SASS monitoring sites.

The three western Basin Los Angeles County sites analyzed had a total mass absolute prediction accuracy that exceeded 25 percent of the observed average. Prediction accuracy estimated for the three remaining sites measured approximately 20 percent or lower. In general, normalized bias was lowest for nitrate and highest for sulfate. The only systematic bias was evident for EC, whereby the tendency was to under predict observations.

One element observed during the 2008 simulation evaluation was that the eastern portion of the Basin predicted low concentrations of secondary aerosols when high wind “Santa Ana” conditions were observed. This generalized wind condition also impacted the western portion of the Basin but to a lesser extent. The days impacted by the high winds were clustered in the first and fourth quarters. Figure V-5-25 illustrates the frequency of the observed Santa Ana wind events.

TABLE V-5-9CMAQ 2008 Base Year Total Mass Model Predictions ($\mu\text{g}/\text{m}^3$)

Locations	Mean Observed	Mean Predicted	Mean Bias	Mean Error	Normalized Mean Bias	Normalized Mean Error
Anaheim	15.67	14.45	-1.24	6.82	-0.37	2.51
Los Angeles	17.47	12.83	-4.65	8.79	-1.79	2.95
N. Long Beach	17.68	19.78	2.11	7.67	0.89	2.71
S. Long Beach	16.76	18.68	1.92	7.51	0.76	2.71
Fontana	17.43	22.05	4.62	9.41	1.42	3.08
Rubidoux	19.42	14.71	-4.69	9.10	-1.65	2.78

TABLE V-5-10CMAQ 2008 Base Year Ammonium Model Predictions ($\mu\text{g}/\text{m}^3$)

Locations	Mean Observed	Mean Predicted	Mean Bias	Mean Error	Normalized Mean Bias	Normalized Mean Error
Anaheim	1.48	1.78	0.30	0.56	0.20	0.38
Fontana	1.91	1.75	-0.17	0.76	-0.09	0.40
S. Long Beach	1.70	2.60	0.90	1.10	0.53	0.65
N. Long Beach	1.68	2.49	0.81	1.06	0.48	0.63
Los Angeles	1.82	2.34	0.52	0.95	0.28	0.52
Rubidoux	2.31	2.10	-0.20	0.99	-0.09	0.43

Table V-5-11

CMAQ 2008 Base Year Nitrate Model Predictions ($\mu\text{g}/\text{m}^3$)

Locations	Mean Observed	Mean Predicted	Mean Bias	Mean Error	Normalized Mean Bias	Normalized Mean Error
Anaheim	2.92	3.49	0.57	1.42	0.20	0.49
Fontana	4.39	4.32	-0.07	2.12	-0.02	0.48
S. Long Beach	2.87	2.89	0.02	1.30	0.01	0.45
N. Long Beach	3.07	3.16	0.08	1.26	0.03	0.41
Los Angeles	3.26	4.66	1.40	2.10	0.43	0.65
Rubidoux	5.17	5.02	-0.14	2.44	-0.03	0.47

TABLE V-5-12

CMAQ 2008 Base Year Sulfate Model Predictions ($\mu\text{g}/\text{m}^3$)

Locations	Mean Observed	Mean Predicted	Mean Bias	Mean Error	Normalized Mean Bias	Normalized Mean Error
Anaheim	2.50	1.76	-0.74	0.94	-0.30	0.38
Fontana	2.17	1.17	-1.00	1.03	-0.46	0.47
S. Long Beach	3.26	4.69	1.43	1.72	0.44	0.53
N. Long Beach	2.85	4.14	1.29	1.55	0.45	0.54
Los Angeles	2.69	2.22	-0.46	0.99	-0.17	0.37
Rubidoux	2.32	1.42	-0.90	1.12	-0.39	0.48

Table V-5-13CMAQ 2008 Base Year Organic Carbon Model Predictions ($\mu\text{g}/\text{m}^3$)

Locations	Mean Observed	Mean Predicted	Mean Bias	Mean Error	Normalized Mean Bias	Normalized Mean Error
Anaheim	2.52	2.60	0.08	0.78	0.03	0.31
Fontana	2.96	1.65	-1.30	1.31	-0.44	0.44
S. Long Beach	2.53	2.85	0.33	0.75	0.13	0.30
N. Long Beach	2.57	2.55	-0.02	0.61	-0.01	0.24
Los Angeles	3.12	4.83	1.70	1.82	0.55	0.58
Rubidoux	3.03	1.85	-1.18	1.23	-0.39	0.40

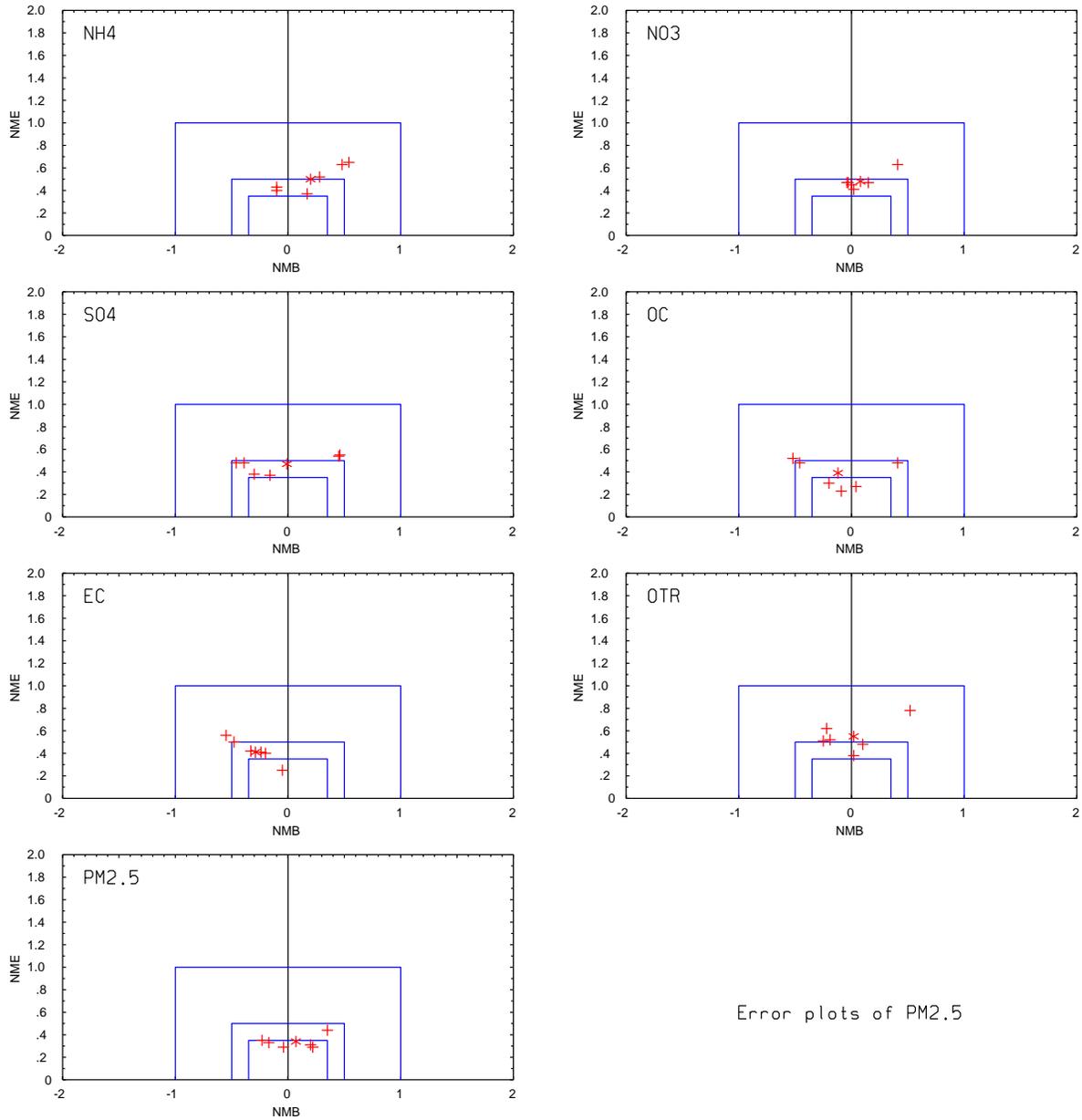
TABLE V-5-14CMAQ 2008 Base Year Elemental Carbon Model Predictions ($\mu\text{g}/\text{m}^3$)

Locations	Mean Observed	Mean Predicted	Mean Bias	Mean Error	Normalized Mean Bias	Normalized Mean Error
Anaheim	1.73	1.21	-0.53	0.73	-0.30	0.42
Fontana	2.21	1.02	-1.19	1.22	-0.54	0.55
S. Long Beach	2.28	1.83	-0.45	0.91	-0.20	0.40
N. Long Beach	2.06	1.57	-0.49	0.84	-0.24	0.41
Los Angeles	2.41	2.27	-0.14	0.61	-0.06	0.25
Rubidoux	2.15	1.14	-1.01	1.06	-0.47	0.49

Table V-5-14

CMAQ 2008 Base Year Others Predictions ($\mu\text{g}/\text{m}^3$)

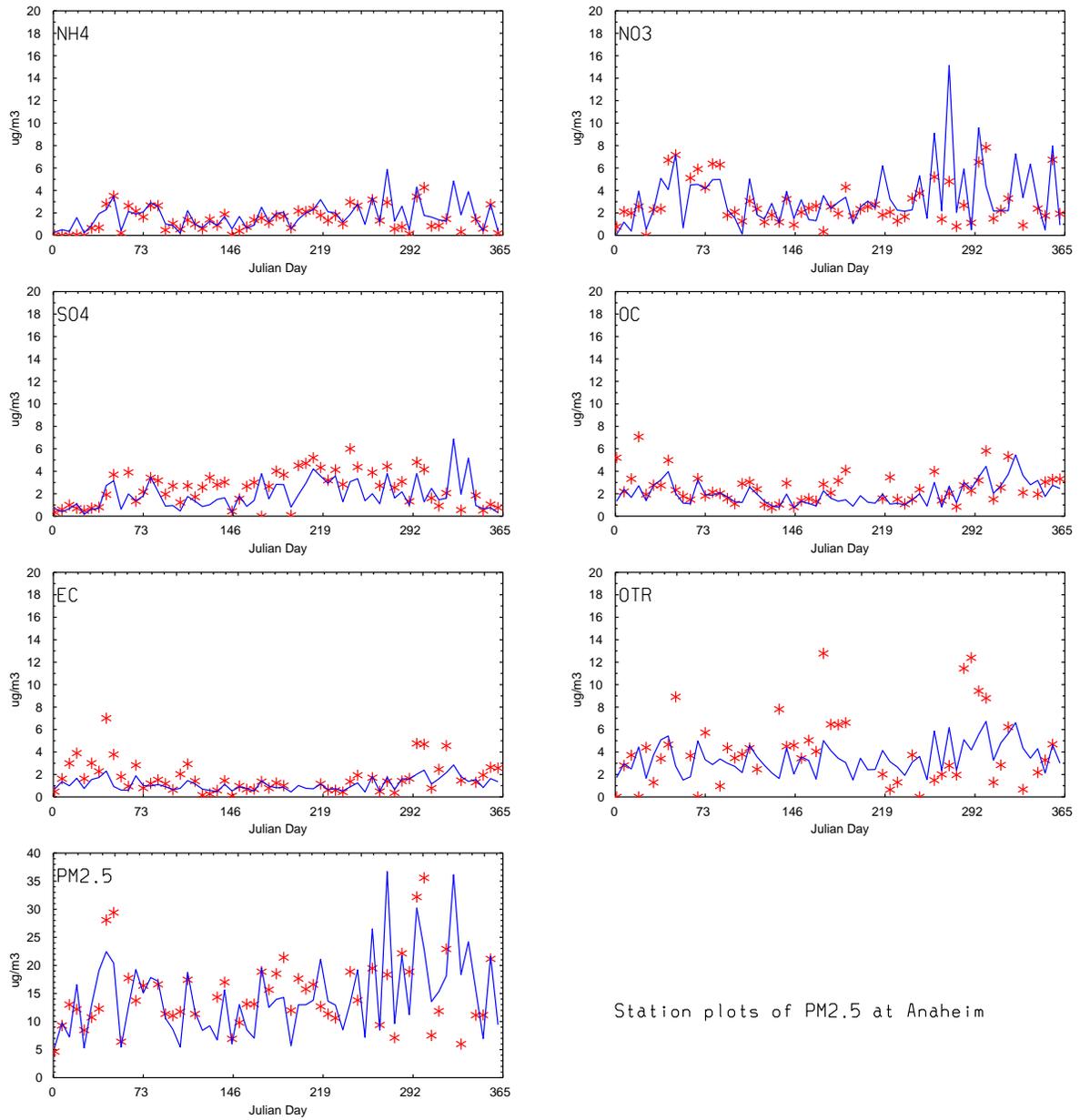
Locations	Mean Observed	Mean Predicted	Mean Bias	Mean Error	Normalized Mean Bias	Normalized Mean Error
Anaheim	4.52	3.61	-0.92	2.39	-0.20	0.53
Fontana	3.83	2.92	-0.92	2.35	-0.24	0.61
S. Long Beach	5.04	4.92	-0.12	1.89	-0.02	0.38
N. Long Beach	4.53	4.77	0.25	2.19	0.05	0.48
Los Angeles	4.13	5.73	1.60	2.94	0.39	0.71
Rubidoux	4.44	3.18	-1.26	2.26	-0.28	0.51



Error plots of PM2.5

Figure V-5-12

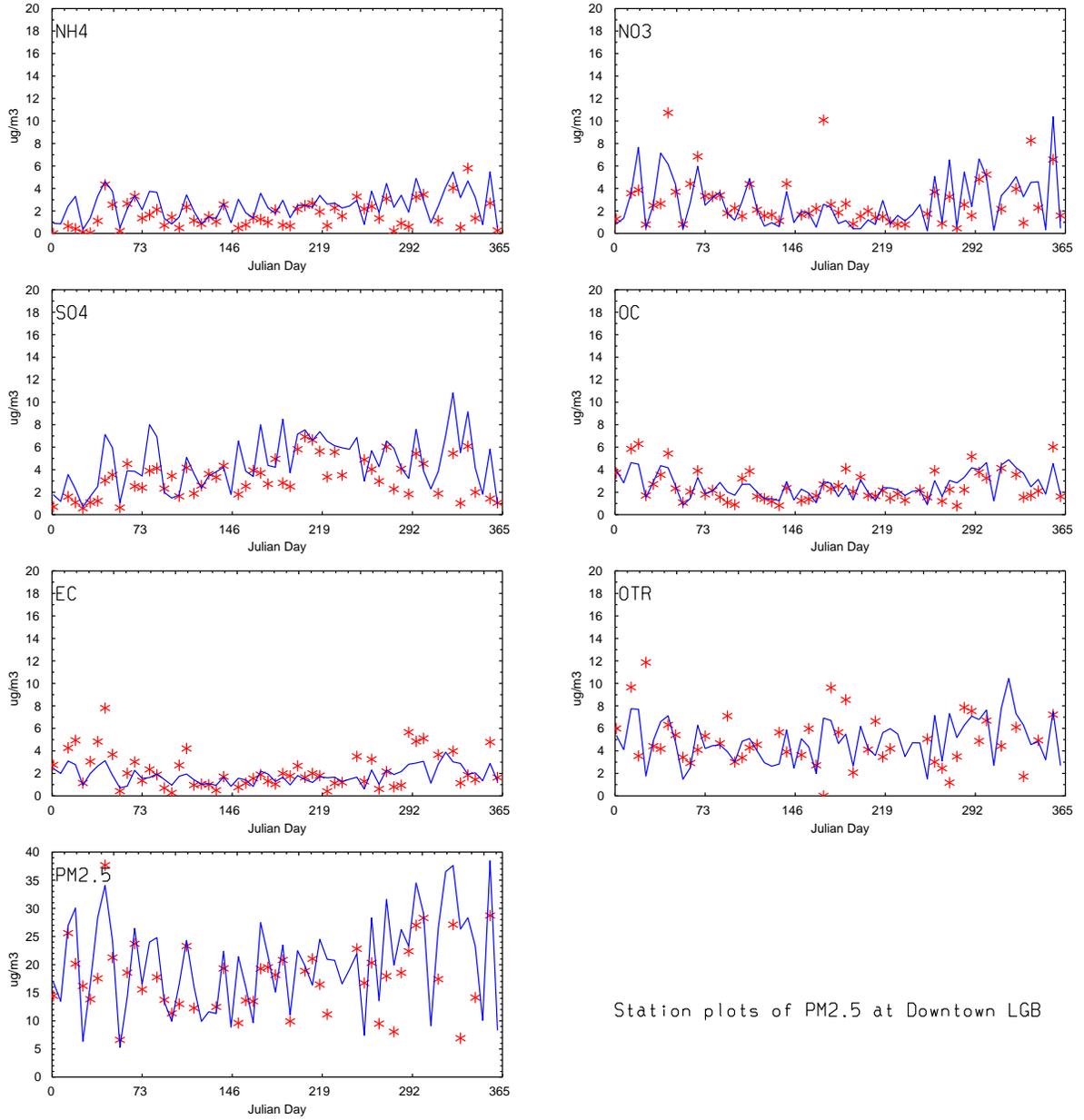
2008 Base Year Soccer Plots of Annual Average Errors at the SASS Sampling Sites



Station plots of $\text{PM}_{2.5}$ at Anaheim

Figure V-5-13

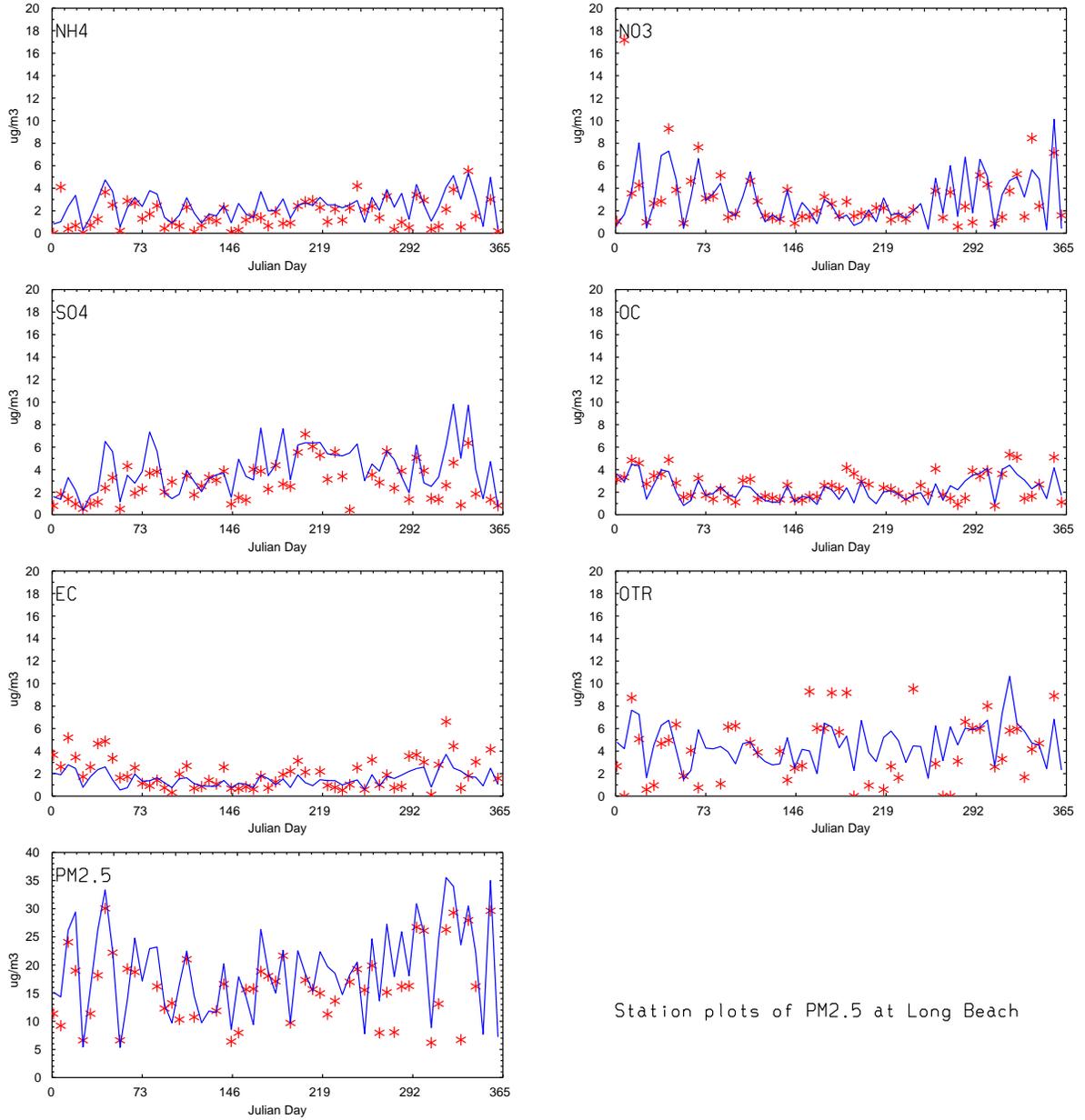
2008 Base Year Time Series: Predicted vs. Observed at Anaheim



Station plots of PM2.5 at Downtown LGB

Figure V-5-14

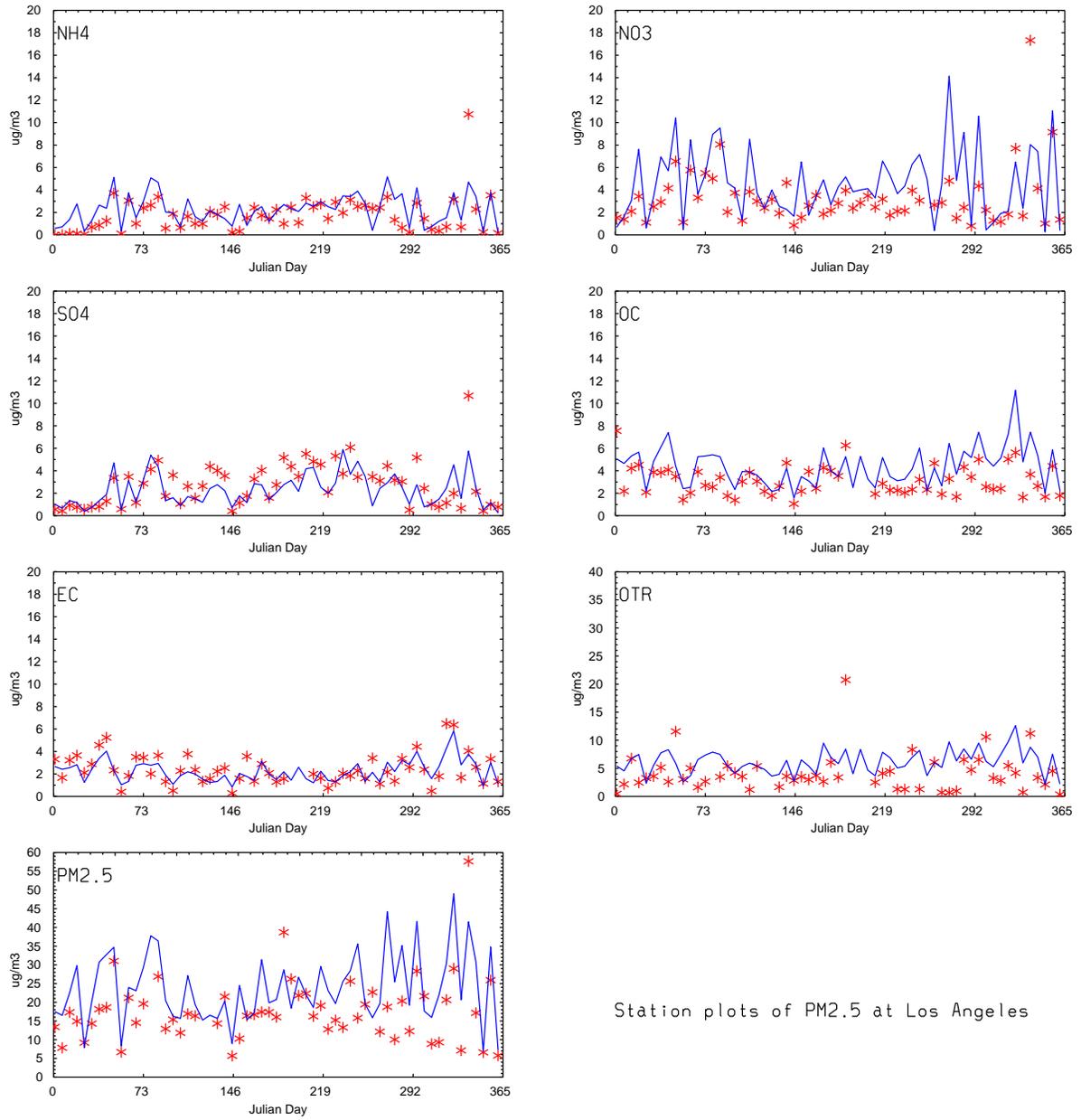
2008 Base Year Time Series: Predicted vs. Observed at Downtown Long Beach



Station plots of $\text{PM}_{2.5}$ at Long Beach

Figure V-5-15

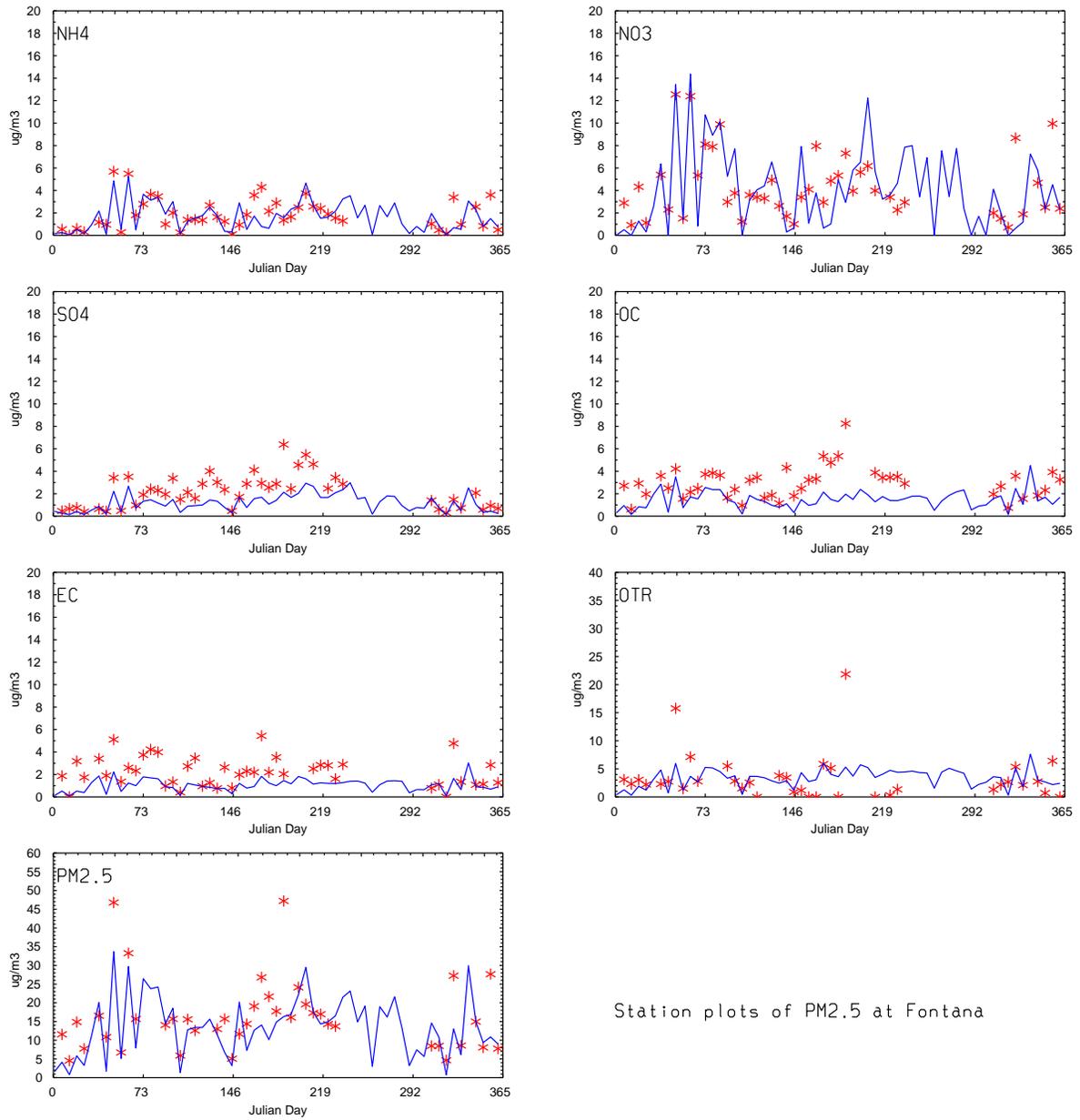
2008 Base Year Time Series: Predicted vs. Observed at Long Beach



Station plots of PM2.5 at Los Angeles

Figure V-5-16

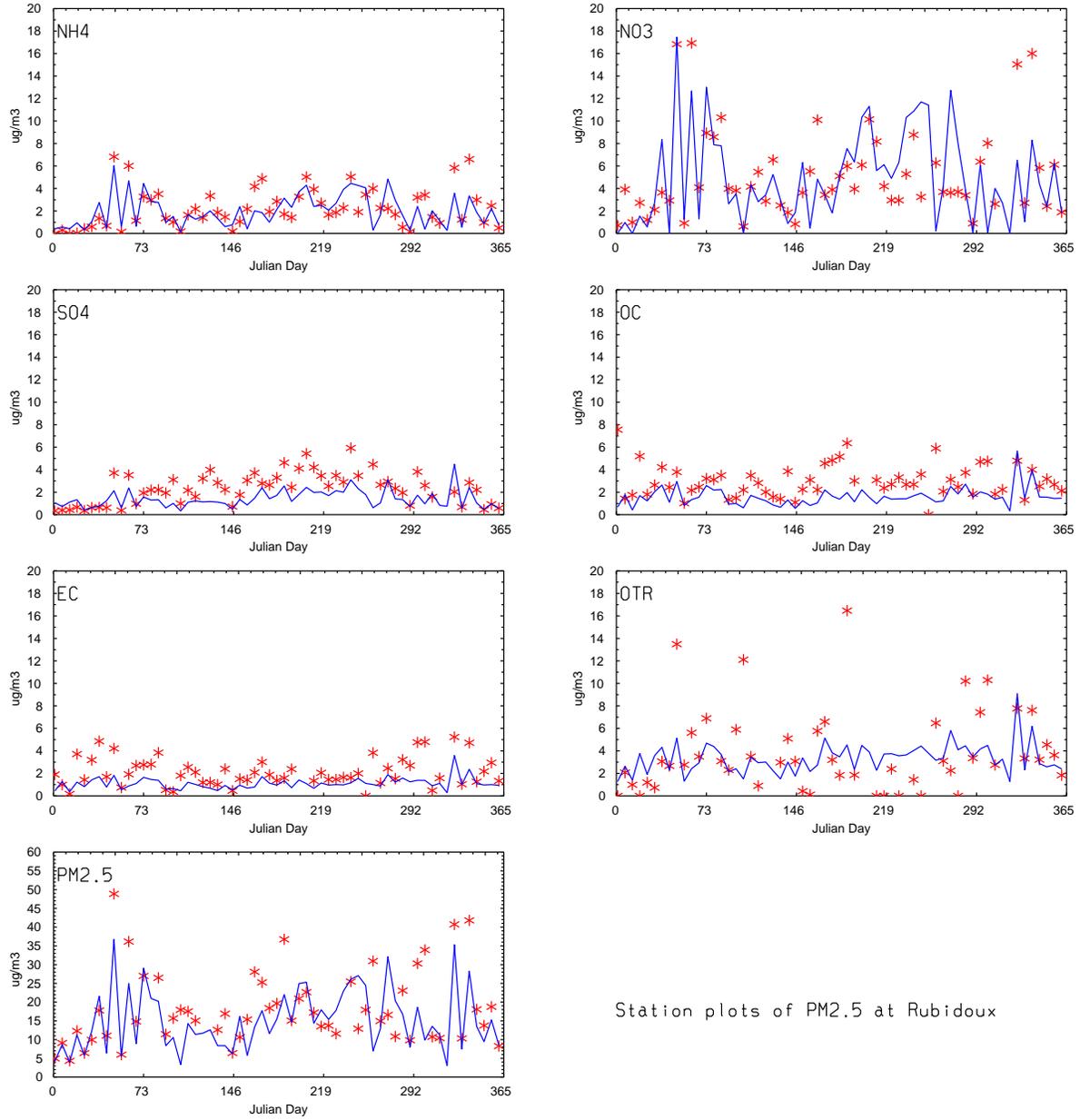
2008 Base Year Time Series: Predicted vs. Observed at Los Angeles



Station plots of $\text{PM}_{2.5}$ at Fontana

Figure V-5-17

2008 Base Year Time Series: Predicted vs. Observed at Fontana



Station plots of PM2.5 at Rubidoux

Figure V-5-18

2008 Base Year Time Series: Predicted vs. Observed at Rubidoux

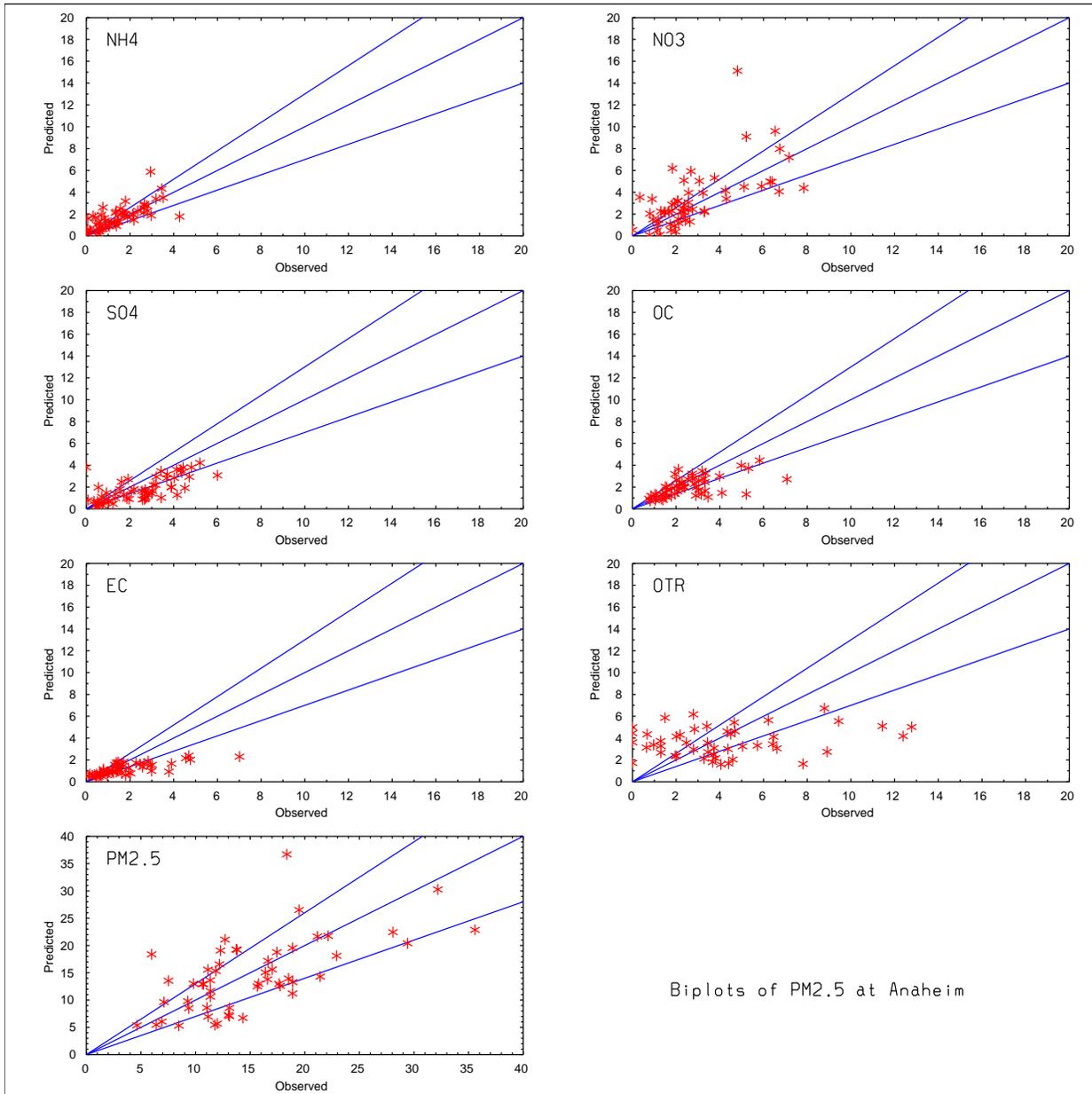
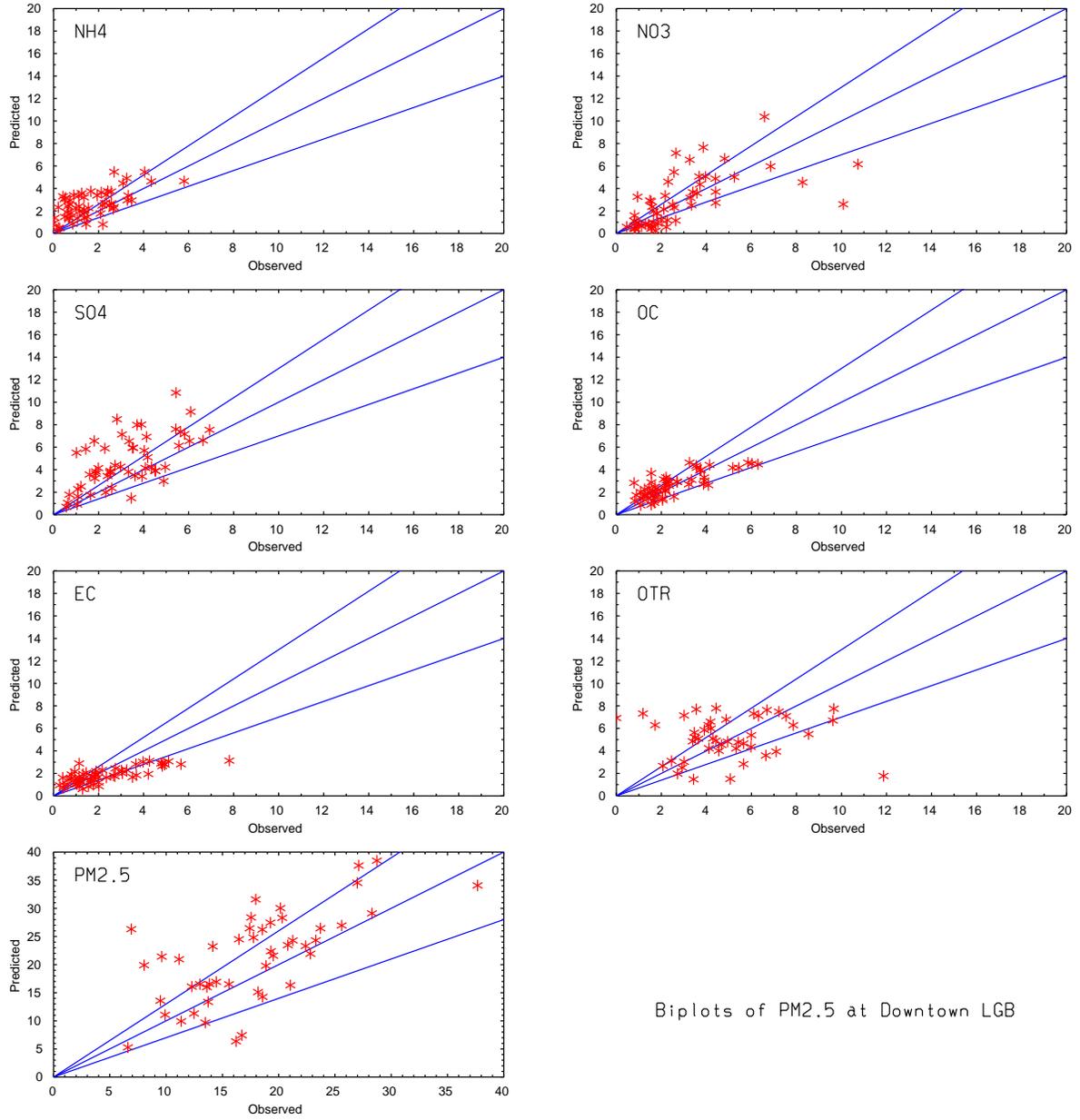


Figure V-5-19

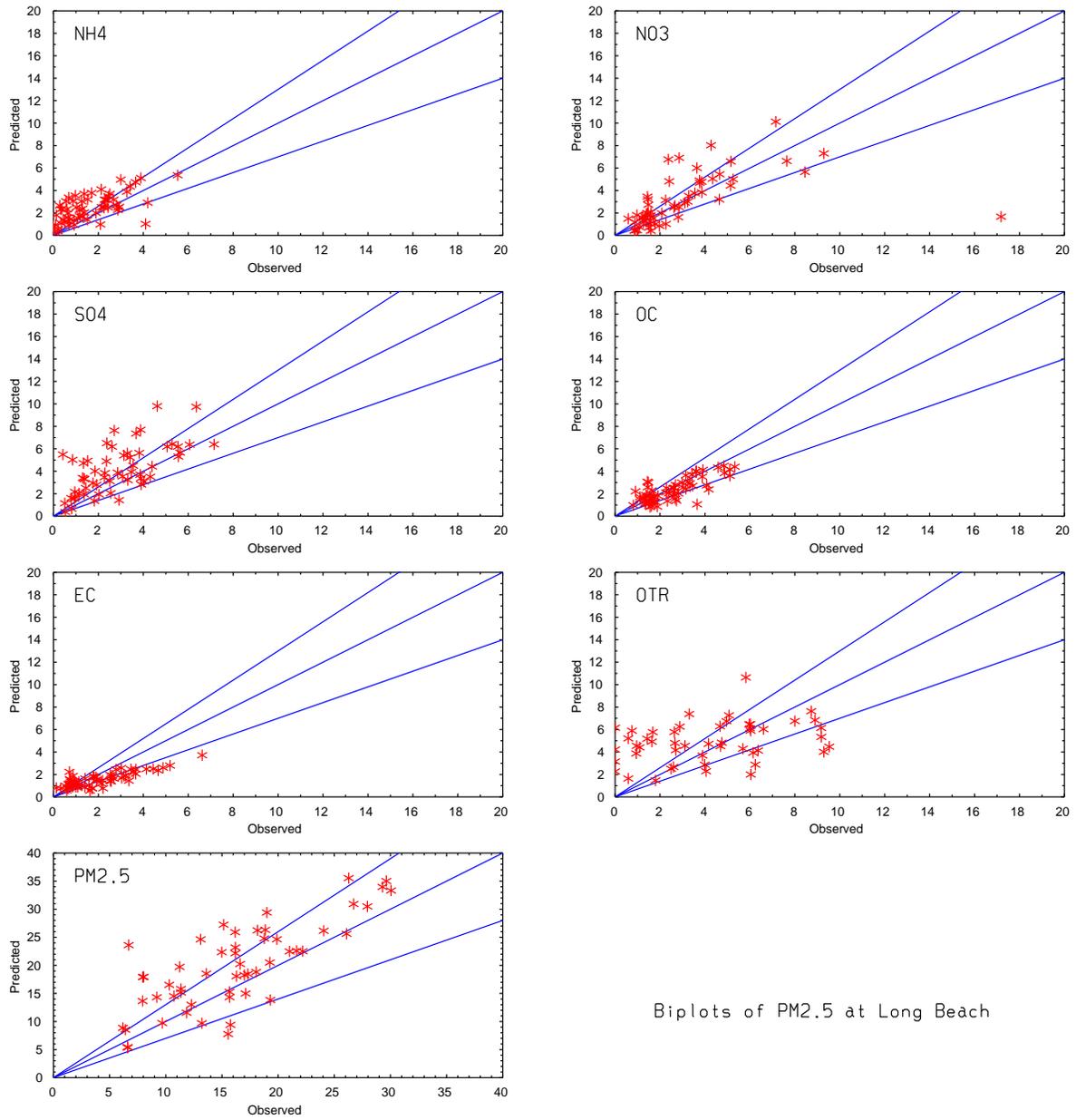
2008 Base Year Bivariate Plots: Predicted vs. Observed at Anaheim



Biplots of PM2.5 at Downtown LGB

Figure V-5-20

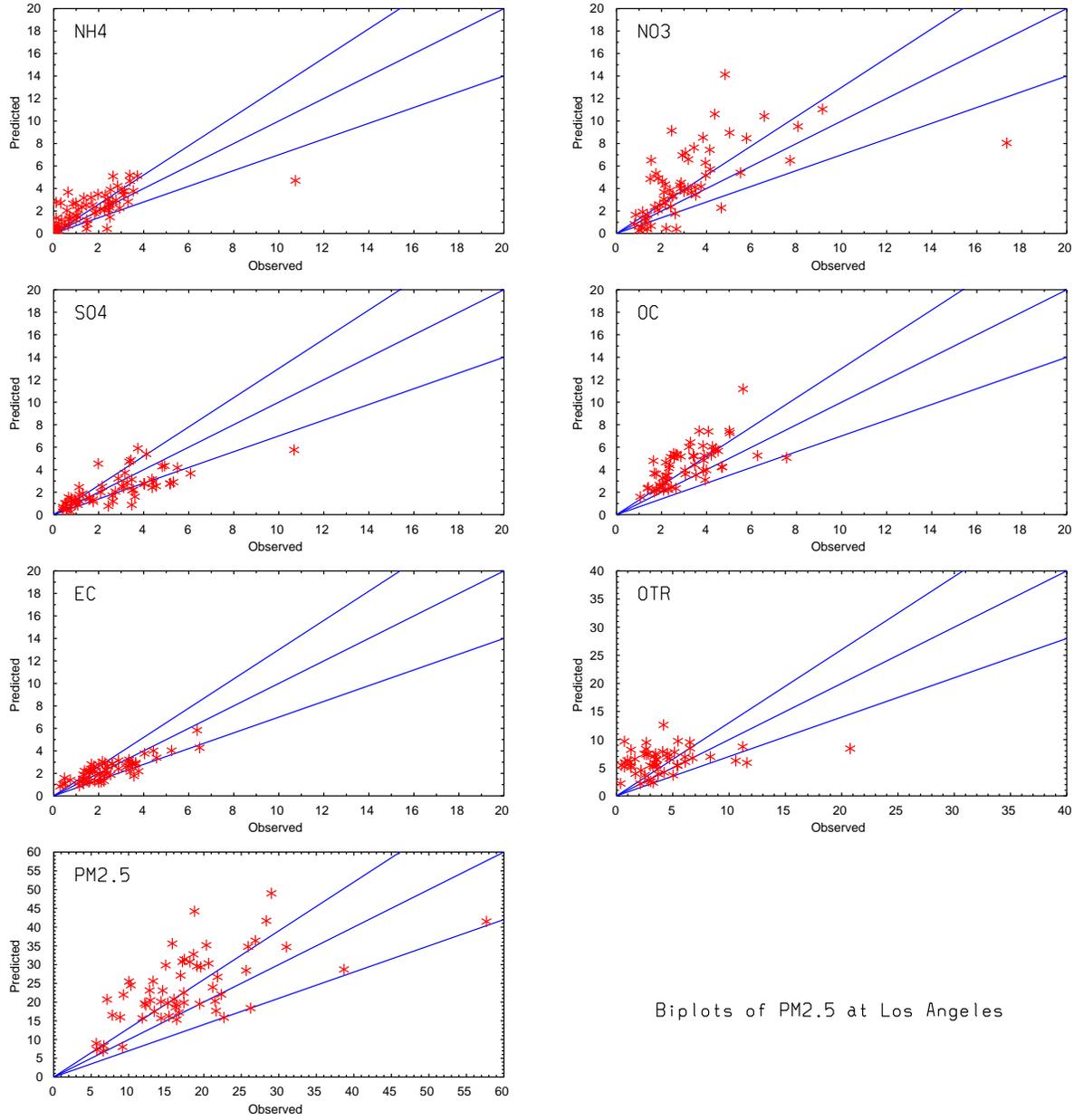
2008 Base Year Bivariate Plots: Predicted vs. Observed at Downtown Long Beach



Biplots of PM2.5 at Long Beach

Figure V-5-21

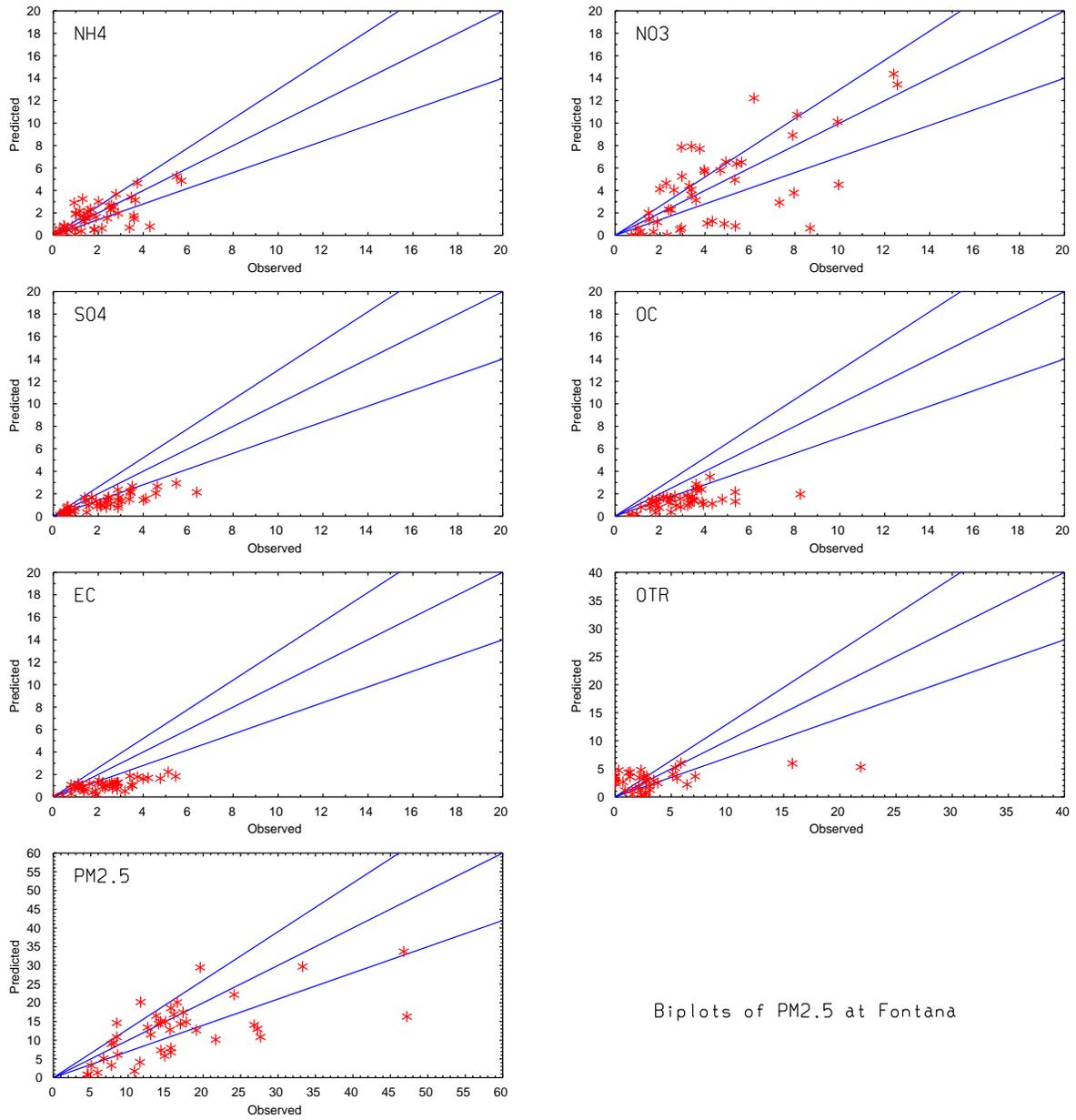
2008 Base Year Bivariate Plots: Predicted vs. Observed at Long Beach



Biplots of PM2.5 at Los Angeles

Figure V-5-22

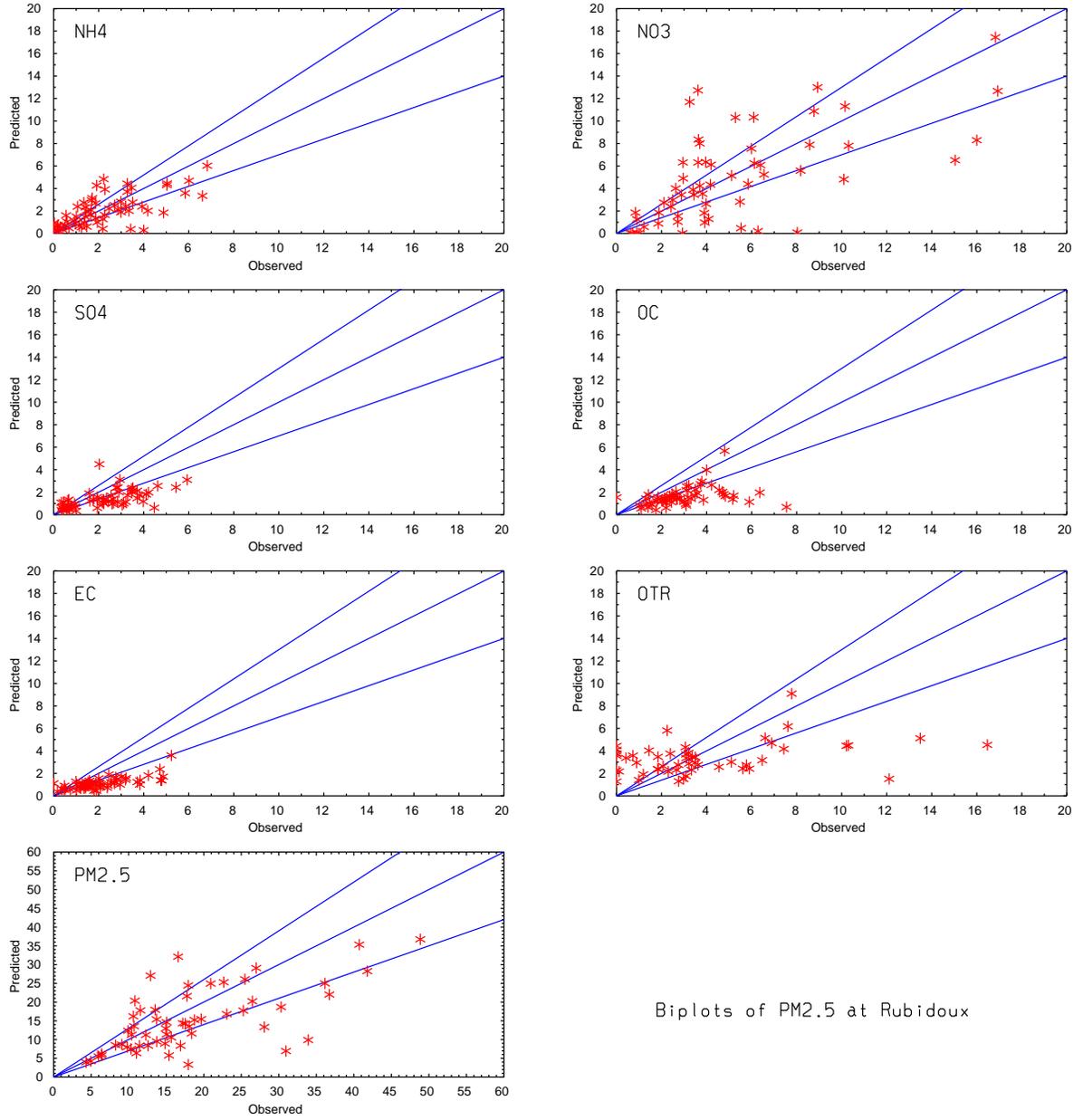
2008 Base Year Bivariate Plots: Predicted vs. Observed at Los Angeles



Biplots of PM2.5 at Fontana

Figure V-5-23

2008 Base Year Bivariate Plots: Predicted vs. Observed at Fontana



Biplots of PM2.5 at Rubidoux

Figure V-5-24

2008 Base Year Bivariate Plots: Predicted vs. Observed at Rubidoux

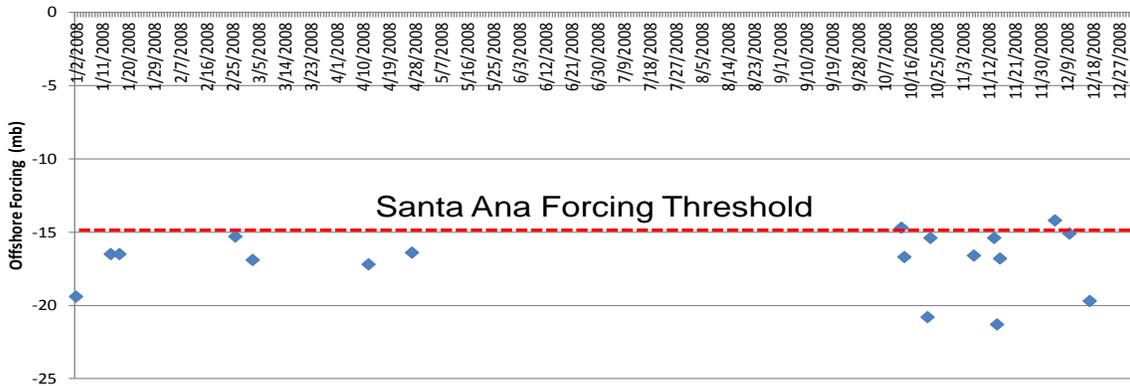


Figure V-5-25

2008 Frequency of Strong Santa Ana Wind Events

Annual Average SSI Mass Performance Evaluation

Table V-5-15 summarizes the performance of the CMAQ simulation in predicting annual average PM_{2.5} vs. FRM observed annual average mass at the monitoring network sites not having parallel SASS sampling. The goal of this analysis is to demonstrate that the model is consistent in the simulation of PM_{2.5} at the key sites and across the modeling domain. The general tendency of the simulation was to over-predict annual observed FRM PM_{2.5} in south central portion of metropolitan Los Angeles County and western San Gabriel Valley. Several sites in the east Basin tend to be under predicted, but by less than 30 percent. Burbank, Ontario, and Riverside Magnolia exhibited prediction accuracy within 10 percent of observations. It is important to remember that the attainment demonstration is based on a relative response factor and not direct future year simulated concentrations.

Base-Year Model Performance Stress Test Evaluation

EPA’s modeling guidance as well as the Draft Modeling Protocol outline a series of basic stress tests that can be applied to the base case simulation to determine the level of sensitivity of model performance to key parameters defining the simulations. These stress tests include modifying the boundary conditions, and introducing gross changes in the meteorological and emissions profiles. The goal for these analyses is to see if any one factor is unduly biasing model performance and in doing so jeopardizing the validity of the analysis. Table V-5-16 summarizes the suite of performance stress tests applied to the CMAQ (and CAMx) PM_{2.5} simulations. Chapter 3 provides a summary of selected tests applied to the WRF meteorological

model. The outcome of the CMAQ testing indicated that the model responded in an expected manner to the changes in simulation parameters and emissions profiles outlined in the stress tests.

TABLE V-5-15

CMAQ Predicted and FRM Observed 2008 Base-Year Annual Average PM_{2.5} (µg/m³)

Location	Predicted	Observed	Prediction Accuracy
Azusa	9.9	14.1	-0.30
Burbank	15.1	14.1	0.07
Compton	18.7	15.5	0.21
Mira Loma	14.1	18.2	-0.23
Mission Viejo	9.6	10.4	-0.08
Ontario	17.3	15.8	0.09
Pasadena	14.8	12.9	0.15
Pico Rivera	16.3	15	0.09
Reseda	10.7	11.9	-0.10
Riverside Magnolia	14.2	13.4	0.06
San Bernardino	13.4	13.5	-0.01

TABLE V-5-16

Selected CMAQ PM2.5 Model Performance Stress Tests

Stress Test Methodology

Boundary conditions only: no anthropogenic emissions with and selected without biogenic emissions

1. Ultra Clean Boundaries
2. EPA Clean Boundaries
3. MOZART Boundaries

Boundary conditions and anthropogenic emissions: no biogenic emissions

Boundary conditions and anthropogenic emissions: 50% biogenic emissions

Shipping emissions split by layers

1. All layer 1
2. Zero layer 1, 100% layer 2
3. 30 % layer 1, 70% layer 2

No emissions in Orange County

No emissions from the Ports of Los Angeles and Long Beach

No livestock emissions

Eliminating all anthropogenic emissions from 49 cells surrounding Mira Loma

No prescribed fires and agricultural burning

Selected restrictions on fireplace/wood stove burning

1. No Riverside and San Bernardino Counties
 2. No Basin burning
-

24-HOUR PM2.5 MODELING APPROACH

CMAQ simulations were conducted for each day in 2008. The simulations included 8784 consecutive hours from which daily 24-hour average PM2.5 concentrations (0000-2300 hours) were calculated. A set of RRFs were generated for each future

year simulation. RRFs were generated for the ammonium ion (NH₄), nitrate ion (NO₃), sulfate ion (SO₄), organic carbon (OC), elemental carbon (EC) and a combined grouping of crustal, sea salts and metals (Others). A total of 24 RRFs were generated for each future year simulation. Water vapor was determined using U.S. EPA's regression model approximation of the AIM model based on simulated concentrations of the ammonium, nitrate and sulfate ions.

Future year concentrations of the six component species were calculated by applying the model generated quarterly RRFs to the speciated 24-hour PM_{2.5} (FRM) data sorted by quarter for each of the five years used in the design value calculation. The 32 days in each year were then re-ranked to establish a new 98th percentile concentration. The resulting future year 98th percentile concentrations for the 5-years were subjected to weighted averaging for the attainment demonstration.

Future year PM_{2.5} 24-hour average design values are presented for 2014, and 2019 to (1) demonstrate the future baseline concentrations if no further controls are implemented; (2) identify the amount of air quality improvement needed to advance the attainment date to 2014; and (3) confirm the attainment demonstration with implementation of the proposed PM_{2.5} control strategy.

FUTURE AIR QUALITY

Under the federal Clean Air Act, the Basin must comply with the federal PM_{2.5} air quality standards by December 2014 [Section 172(a)(2)(A)]. An extension of up-to five years (until 2019) could be granted if attainment cannot be demonstrated with implementation of all feasible measures to advance attainment.

A simulation of 2014 baseline emissions was conducted to assess the extent of the 24-hour PM_{2.5} problem in the Basin. The simulation used the projected emissions for 2014 which include all adopted control measures that will be implemented prior to and during 2014. The resulting 2014 future-year Basin design value (37.3 µg/m³) failed to meet the federal standard of 35 µg/m³. As a consequence additional controls are needed to attain the standard by 2014.

Simulation of the 2019 baseline emissions indicates that the Basin will attain the federal 24-hour PM_{2.5} standard in 2019 without additional controls. However, with the Draft Final 2012 AQMP proposed PM_{2.5} control program in place, the 24-hour PM_{2.5} simulations project that the 2014 design value will be 34.3 µg/m³, thus advancing the attainment date from 2019 to 2014.

Figure V-5-26 depicts future 24-hour PM_{2.5} air quality projections at the Basin design site (Mira Loma) and six other PM_{2.5} monitoring sites having comprehensive particulate species characterization. Shown in the figure are the baseline designs for 2008 along with projections for 2014 with and without proposed control measures in place. All of the sites with the exception of Mira Loma will meet the 24-hour PM_{2.5} standard by 2014 without additional control measures. With implementation of the proposed control measures, all sites in the Basin demonstrate attainment in 2014.

Table V-5-17 provides the RRFs developed from the 2008 base year and 2014 controlled simulations. Tables V-5-18 and V-5-19 provide the CMAQ/SMAT projected future year PM_{2.5} by component species for 2014 with (controlled) and without (base-line) proposed control measures implemented. Tables V-5-20, V-5-21 and V-5-22 provide the projected controlled future year 24-hour PM_{2.5} design values by component species for 2019, 2023 and 2030. Projected 24-hour PM_{2.5} (2019 and beyond) indicates that the Basin will remain in attainment with the standard, with the addition of the short term ozone measures but without the need for continued episodic controls being implemented.

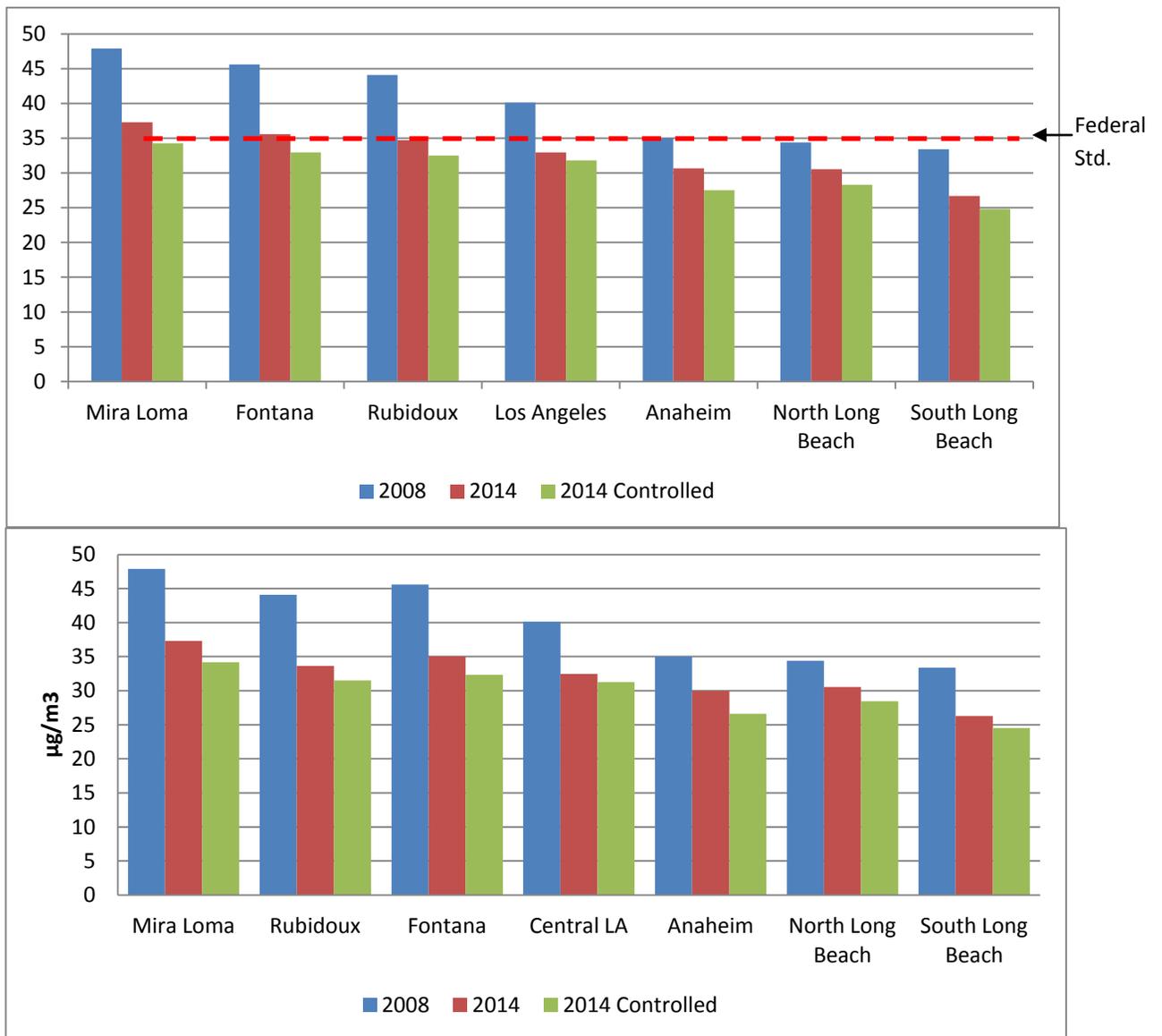


FIGURE V-5-26

Maximum 24-Hour Average PM2.5 Design Concentrations:
2008 Baseline, 2014 and 2014 Controlled

TABLE V-5-17

2014 Controlled Emissions RRFs

Station	Quarter	NH4	NO3	SO4	OC	EC	Others
Anaheim	Q1	0.81	0.95	0.48	0.65	0.52	0.87
	Q2	0.58	0.68	0.40	0.83	0.62	0.91
	Q3	0.67	0.76	0.42	0.84	0.62	0.91
	Q4	0.77	0.99	0.44	0.63	0.52	0.87
Los Angeles	Q1	0.87	0.99	0.58	0.75	0.56	0.93
	Q2	0.69	0.80	0.50	0.87	0.62	0.98
	Q3	0.71	0.83	0.49	0.88	0.62	0.98
	Q4	0.84	0.98	0.59	0.75	0.56	0.94
Fontana	Q1	0.82	0.87	0.55	0.65	0.56	0.92
	Q2	0.68	0.72	0.51	0.84	0.64	1.00
	Q3	0.63	0.68	0.46	0.84	0.64	0.97
	Q4	0.76	0.82	0.53	0.60	0.53	0.92
N. Long Beach	Q1	0.87	1.03	0.67	0.68	0.56	0.90
	Q2	0.69	0.80	0.62	0.80	0.64	0.91
	Q3	0.71	0.87	0.58	0.79	0.65	0.89
	Q4	0.81	0.97	0.66	0.65	0.55	0.90
Rubidoux	Q1	0.78	0.83	0.54	0.67	0.54	0.94
	Q2	0.62	0.65	0.49	0.86	0.61	1.03
	Q3	0.61	0.64	0.50	0.87	0.62	1.01
	Q4	0.79	0.84	0.59	0.63	0.52	0.93
S. Long Beach	Q1	0.83	1.02	0.59	0.68	0.53	0.88
	Q2	0.57	0.79	0.46	0.76	0.62	0.84
	Q3	0.70	0.89	0.55	0.78	0.63	0.89
	Q4	0.79	0.95	0.62	0.66	0.54	0.89

Table V-5-18CMAQ 2014 24-hour PM2.5 Base-line Predictions ($\mu\text{g}/\text{m}^3$)

Locations	NH4	NO3	SO4	OC	EC	Others	Water	Blank	Mass
Anaheim	3.4	8.9	2.5	6.9	3.5	3.3	1.7	0.5	30.7
S. Long Beach	3.1	6.9	2.7	6.5	3.4	2.1	1.5	0.5	26.7
Fontana	4.7	12.0	2.0	7.3	3.7	3.2	2.2	0.5	35.6
N. Long Beach	3.6	8.5	3.2	7.4	3.4	2.1	1.9	0.5	30.5
Los Angeles	3.5	7.4	3.7	10.0	2.5	3.7	1.6	0.5	33.0
Mira Loma	5.3	14.5	2.0	6.4	2.9	3.0	2.7	0.5	37.3
Rubidoux	4.9	13.1	2.2	6.0	2.6	2.9	2.5	0.5	34.7

TABLE V-5-19CMAQ 2014 24-hour PM2.5 Controlled Predictions ($\mu\text{g}/\text{m}^3$)

Locations	NH4	NO3	SO4	OC	EC	Others	Water	Blank	Mass
Anaheim	2.89	7.52	2.20	6.61	2.79	3.53	1.45	0.50	27.49
S. Long Beach	2.96	6.86	2.52	5.55	3.06	1.98	1.37	0.50	24.79
Fontana	4.71	11.80	1.86	5.26	3.27	3.45	2.10	0.50	32.94
N. Long Beach	3.76	8.24	3.39	5.79	2.80	2.08	1.70	0.50	28.27
Los Angeles	4.56	10.49	3.32	5.62	2.68	2.64	2.00	0.50	31.80
Mira Loma	4.92	12.84	1.96	5.61	2.88	3.24	2.33	0.50	34.28
Rubidoux	4.71	12.95	1.95	4.73	2.47	2.77	2.44	0.50	32.51

Table V-5-20

CMAQ 2019 24-hour PM2.5 Controlled Predictions ($\mu\text{g}/\text{m}^3$)

Locations	NH4	NO3	SO4	OC	EC	Others	Water	Blank	Mass
Anaheim	3.5	8.9	2.6	6.7	3.1	3.3	1.7	0.5	30.2
S. Long Beach	3.0	6.8	2.6	6.4	3.1	2.1	1.5	0.5	25.9
Fontana	4.4	11.1	2.0	7.0	3.4	3.5	2.1	0.5	33.9
N. Long Beach	3.9	8.6	3.4	7.0	2.9	2.2	1.8	0.5	30.3
Los Angeles	3.9	9.0	3.6	7.5	2.3	3.2	1.9	0.5	31.9
Mira Loma	4.7	12.4	2.1	6.8	3.2	3.6	2.1	0.5	35.4
Rubidoux	4.3	10.6	2.5	6.3	2.8	3.7	2.0	0.5	32.5

Table V-5-21

CMAQ 2023 24-hour PM2.5 Controlled Predictions ($\mu\text{g}/\text{m}^3$)

Locations	NH4	NO3	SO4	OC	EC	Others	Water	Blank	Mass
Anaheim	3.0	7.6	2.5	7.8	2.8	3.9	1.5	0.5	29.7
S. Long Beach	3.0	6.7	2.6	6.3	2.9	2.2	1.4	0.5	25.5
Fontana	3.9	9.5	2.2	7.6	3.2	3.2	1.8	0.5	32.0
N. Long Beach	3.9	8.6	3.4	6.9	2.7	2.3	1.7	0.5	30.0
Los Angeles	3.8	8.4	3.8	7.4	2.2	3.3	1.9	0.5	31.3
Mira Loma	4.2	10.6	2.3	6.9	3.1	3.9	2.2	0.5	33.7
Rubidoux	4.0	10.2	2.6	5.8	2.4	3.3	2.0	0.5	30.6

Table V-5-22

CMAQ 2030 24-hour PM2.5 Controlled Predictions ($\mu\text{g}/\text{m}^3$)

Locations	NH4	NO3	SO4	OC	EC	Others	Water	Blank	Mass
Anaheim	3.3	7.9	3.1	6.8	2.9	3.6	1.6	0.5	29.7
S. Long Beach	3.1	6.2	3.1	6.5	3.0	2.4	1.4	0.5	26.2
Fontana	3.7	8.8	2.5	7.9	3.2	3.4	1.4	0.5	31.7
N. Long Beach	3.9	8.4	3.6	7.0	2.7	2.4	1.8	0.5	30.3
Los Angeles	3.1	5.9	4.3	10.0	1.9	3.8	1.5	0.5	31.0
Mira Loma	4.0	9.8	2.6	7.2	3.1	4.2	1.9	0.5	33.4
Rubidoux	3.7	8.8	3.1	6.3	2.3	3.8	1.8	0.5	30.3

Spatial Projections of PM2.5 Design Values

Figure V-5-27 provides a Basin-wide perspective of the spatial extent of 24-hour PM2.5 levels in the base year 2008. Figures V-5-28 and V-5-29 show future predicted 24-hour design values in 2014 for base-line emissions and with the proposed control program in place. Several areas around the northwestern portion of Riverside and southwestern portion of San Bernardino Counties depict grid cells with weighted PM2.5 24-hour design values exceeding 35 µg/m³ in 2008. By 2014, the number of grid cells with concentrations exceeding the federal standard is restricted to a small region surrounding the Mira Loma monitoring station in northwestern Riverside County. With the control program fully implemented in 2014, the Basin does not exhibit any grid cells exceeding the federal standard.

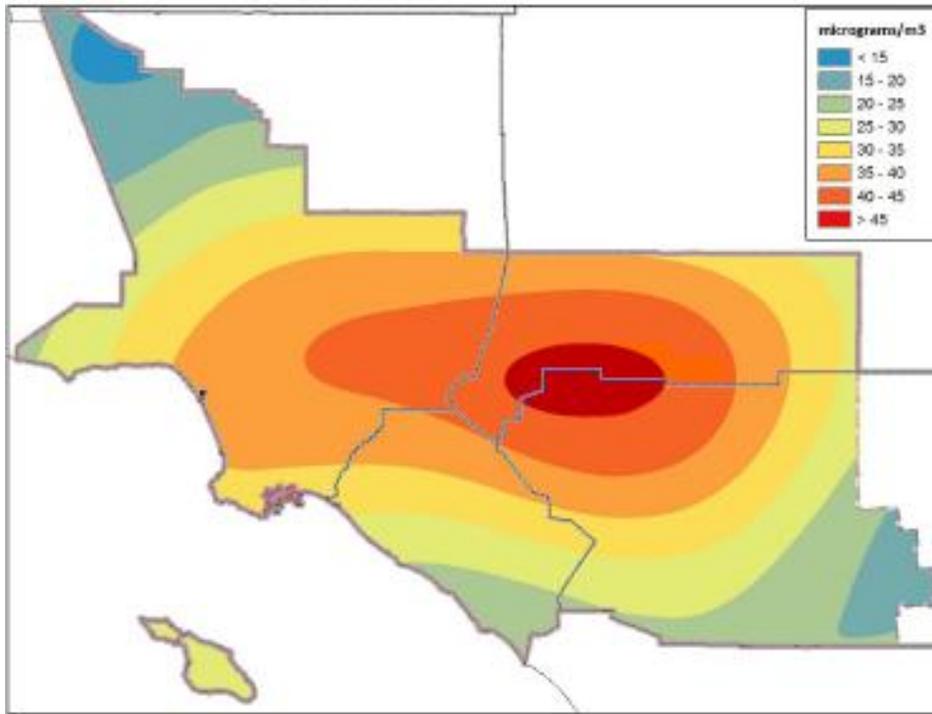


FIGURE V-5-27

2008 Base Year 24-Hour PM2.5 Design Concentrations ($\mu\text{g}/\text{m}^3$)

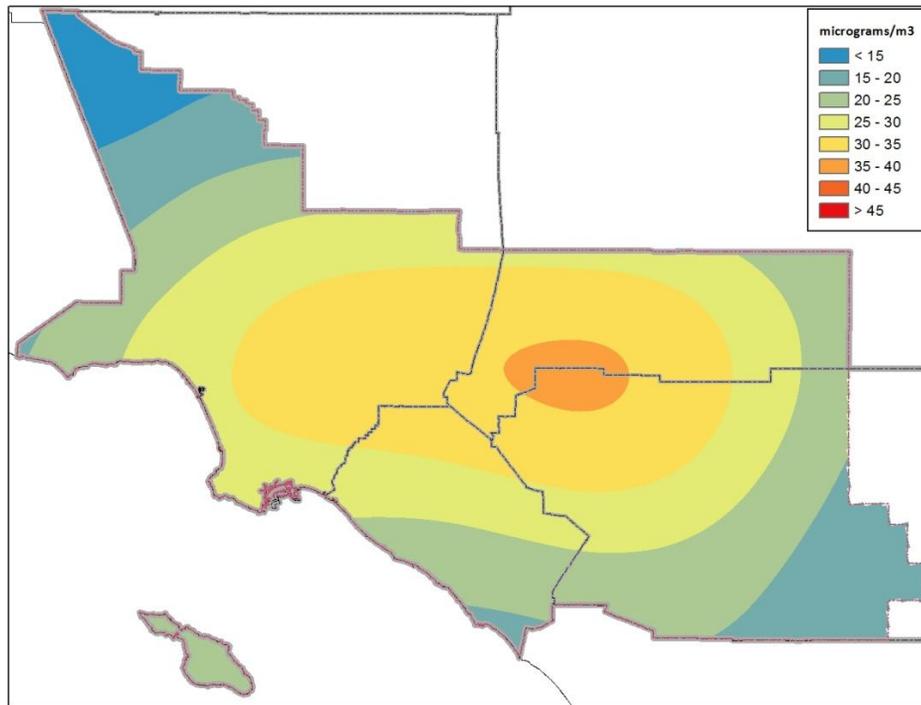
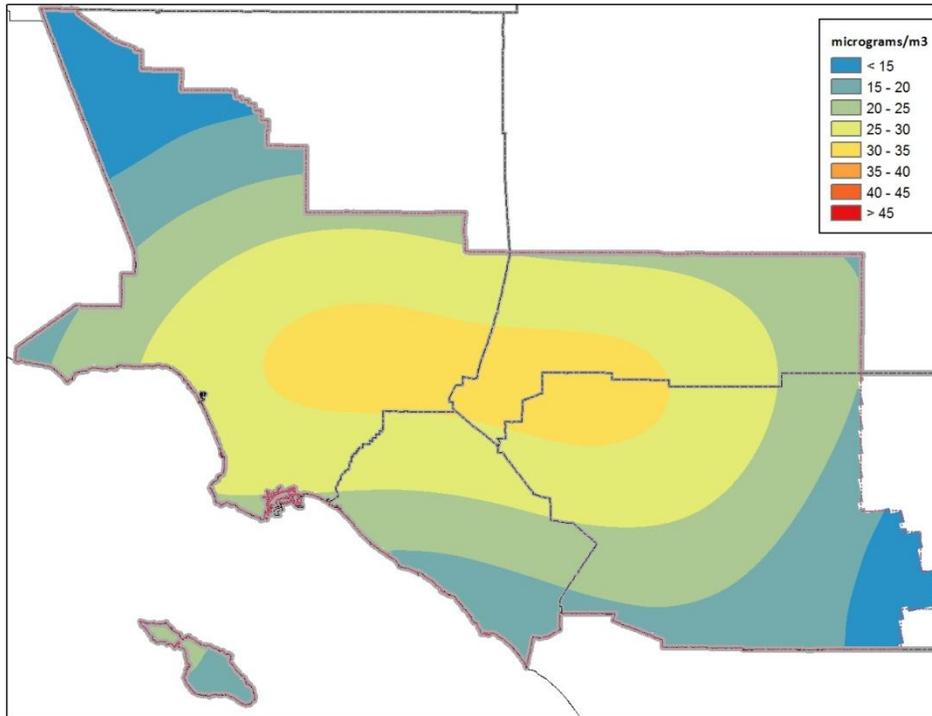


FIGURE V-5-28

2014 Baseline 24-Hour PM2.5 Design Concentrations ($\mu\text{g}/\text{m}^3$)

**FIGURE V-5-29**

2014 Controlled 24-Hour PM_{2.5} Design Concentrations (µg/m³)

Unmonitored Area Analysis

U.S. EPA modeling guidance requires that the attainment demonstration include an analysis that confirms that all grid cells in the modeling domain meet the federal standard. This “unmonitored area analysis” is essential since speciation monitoring is conducted at a limited number of sites in the modeling domain. Variance in the species profiles at selected locations coupled with the differing responses to emissions control scenarios are expected to result in spatially variable impacts to PM_{2.5} air quality in any grid cell. As described earlier in this chapter, speciation profiles from SASS sites in adjacent or collocated grid cells are used in the formal attainment demonstration for Mira Loma and also South Long Beach. With interpolation of the SASS speciation profiles, attainment demonstrations can be directly conducted for the remaining grid cells where FRM mass data has been collected over the 5-year period (2006-2010). To date, no specific test has been proposed by U.S. EPA to address testing attainment at grid cells where no speciated and/or FRM data is available. The form of the revised attainment test adds complication in that it requires assessing the impacts for 32 days per year, for five years, at each unmonitored grid cell.

The methodology used to assess the unmonitored grid cell impact follows. First, a subset of the full modeling domain covering the Basin was selected for the analysis. The western most grid column (70) was aligned with coastal Los Angeles. The eastern most column (100) touched Banning Pass, the southern boundary was located in row 45 in Northern San Diego, and the northern most row (65) corresponding to the northern portion of the San Fernando Valley extending across the San Gabriel and San Bernardino Mts. A review of the 24-hour PM_{2.5} FRM data and design values from sites located outside of this inner domain indicated that concentrations were significantly lower than in those observed in the primary non-attainment portion of the Basin.

The next task included spatial interpolation (1/r) of the six SASS speciation splits to define the split profiles for each grid cell. The split percentages were then multiplied by the simulation derived RRFs, for each of the four seasons. FRM data, based on every third day sampling from 21 Basin monitoring sites were extracted from the U.S. EPA's AQS database for each year of the 5-year period. The highest 8 concentrations sampled in each quarter were selected to generate a data set that included 160 days. The data for each day were then interpolated throughout the inner-domain using an inverse distance weighted scheme (1/r) to develop a matrix of grid specific 24-hour PM_{2.5} concentrations for all 160 days. Note that extraction of data on a frequency of every third day was selected so that there was consistency in the numbers of FRM data samples used in the analysis. In general, the number of valid yearly samples using the third day extraction was between 100-150 days, and thus allowed the analysis to focus on the projected 3rd highest value (of the 32 days evaluated) in each year as the 98th percentile value.

The interpolated FRM data were then multiplied by the seasonally sorted, RRF-interpolated species fractions to project the future year 24-hr PM_{2.5} distribution for each of the five years. The attainment calculation then tested the weighted 5-year average 98th percentile concentration at each grid. Table V-5-23 provides a summary of the unmonitored area analysis. Listed are the top 15 projected grid cell center concentrations for the 2014 controlled scenario and the respective 2008 interpolated center grid concentration. The second set of columns provides the list of grid cells with the maximum projected 2014 controlled 24-hour PM_{2.5} design value modeled as if every grid in the Basin had Mira Loma's species profile. This calculation was conducted to test the distance weighted interpolation hypothesis and the impacts of varying species profiles and RRFs.

The interpolated 2008 grid center design values and 2014 projected determined from the unmonitored area analysis lined up closely with the station design values. The 2014 controlled maximum projected 24-hour PM2.5 design of 31.2 $\mu\text{g}/\text{m}^3$ occurred at the center of the Mira Loma grid cell (89,58). Since no cell in the modeling domain was projected to have a 2014 controlled design value above that of cell (89,58), the Basin passes the unmonitored area portion of the 24-hour PM2.5 attainment demonstration.

This analysis demonstrates that the relative response to the control program is more effective in the Eastern Basin while portions of the western Basin do not exhibit the equivalent response to the implementation of the proposed control strategy.

Table V-5-23

Unmonitored Area Analysis

Grid I	Grid J	Interpolated 2008 Design	Projected 2014 Controlled Design
89	58	44.3	31.2
95	61	40.8	30.4
90	61	42.3	29.8
91	58	41.1	29.6
89	59	40.9	29.3
90	58	40.3	29.3
94	61	39.4	29.3
92	58	40.3	29.2
92	57	40.0	29.2
87	59	41.2	29.1
88	58	40.4	29.1
91	57	39.9	29.1
89	61	41.3	29.0
90	59	40.0	29.0
91	59	39.7	29.0

CEQA ALTERNATIVE SIMULATIONS

Table V-5-24 presents the projected 24-hour PM_{2.5} design values for the 2014 baseline, 2014 controlled and three CEQA Alternative emissions scenarios. For a description of the alternative scenarios, please see the 2012 Draft AQMP Draft Program Environmental Impact Report (PEIR). All of the CEQA alternative simulations demonstrate attainment of the 24-hour PM_{2.5} federal standard.

Table V-5-24

CEQA Alternative Simulated 24-Hour PM2.5 Design Values

	2014	2014 Controlled	Alt-12019	Alt-2: 2017	Alt-3: 2017
Mira Loma	37.3	34.3	33.6	34.5	35.0
Rubidoux	34.7	32.5	31.1	31.6	31.6
Fontana	35.6	32.9	33.1	33.7	32.4
Central LA	33.0	31.8	31.7	32.0	31.7
Anaheim	30.7	27.5	30.0	29.9	29.7
North Long Beach	30.5	28.3	30.2	30.1	30.0
South Long Beach	26.7	24.8	25.8	25.8	25.9

WEIGHT OF EVIDENCE DISCUSSION

The weight of evidence discussion focuses on the historical trends of 24-hour PM2.5 concentrations and key precursor emissions to provide justification and confidence that the Basin will meet the federal standard by 2014.

Figure V-5-30 depicts the long term trend of observed Basin 24-hour average PM2.5 design values with the CMAQ projected design value for 2014. Also superimposed on the graph is the linear best fit trend line for the observed 24-hour average PM2.5 design values. The observed trend depicts a steady 49 percent decrease in observed design value concentrations between 2001 and 2011. The rate of improvement is just under 4 $\mu\text{g}/\text{m}^3$ per year. If the trend is extended beyond 2011, the projection suggests attainment of the PM2.5 24-hour standard in 2013, one year earlier than determined by the attainment demonstration. While the straight-line future year approximation may be optimistic, it offers insight to effectiveness of the ongoing control program and is consistent with the attainment demonstration.

Figures V-5-31 depicts the long term trend of Basin NOx emissions for the same period. Figure V-5-32 provides the corresponding emissions trend for directly emitted PM2.5. Base year NOx inventories for 2002 (from the 2007 AQMP) and 2008 experienced a 31 percent reduction while directly emitted PM2.5 experienced a 19 percent reduction over the 6-year period. The Basin 24-hour average PM2.5 design value experienced a concurrent 27 percent reduction between 2002 and 2008.

The projected trend of NO_x emissions indicates that this PM_{2.5} precursor associated with the formation of nitrate will continue to be reduced through 2019 by an additional 48 percent. Similarly, the projected trend of directly emitted PM_{2.5} shows a more moderate reduction of 13 percent through 2019. However, as discussed in the 2007 AQMP and in a later section of this chapter, directly emitted PM_{2.5} is a more effective contributor to ambient PM_{2.5} than NO_x on a per ton emitted basis. While the projected NO_x and direct PM_{2.5} emissions trends decrease at a reduced rate between 2012 and 2019, it is clearly evident that the overall significant reductions will continue to result in lower nitrate and direct particulate contributions to 24-hour PM_{2.5} design values.

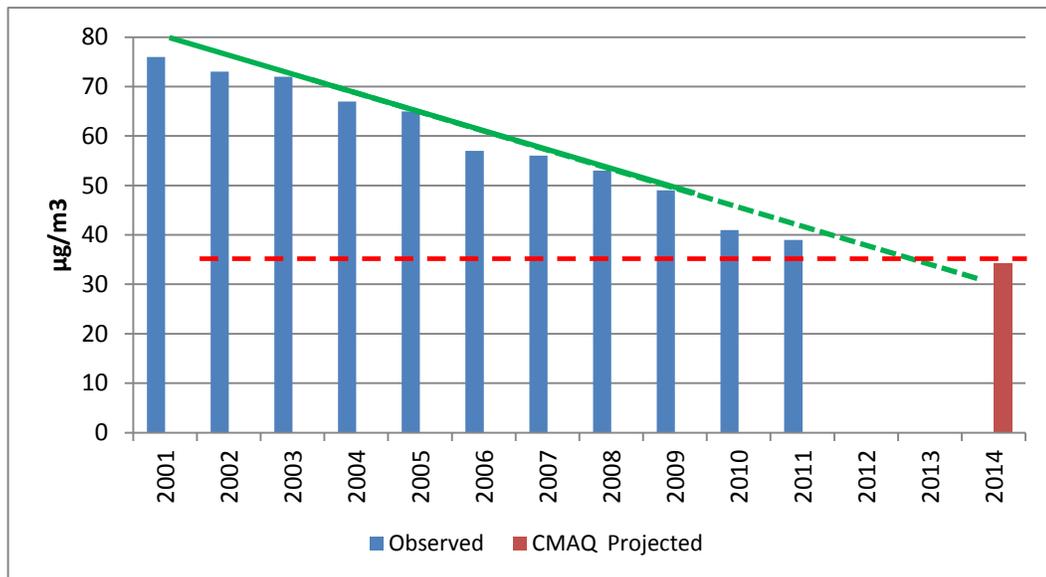


FIGURE V-5-30

Basin Observed and CMAQ Projected
 Future Year PM_{2.5} Design Concentrations (µg/m³)

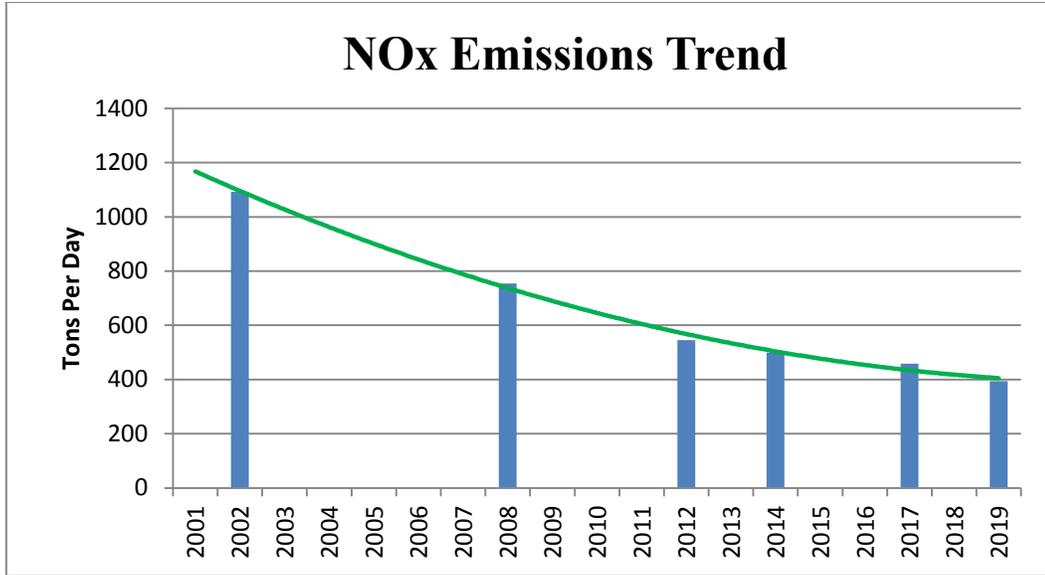


FIGURE V-5-31
Trend of Basin NOx Emissions

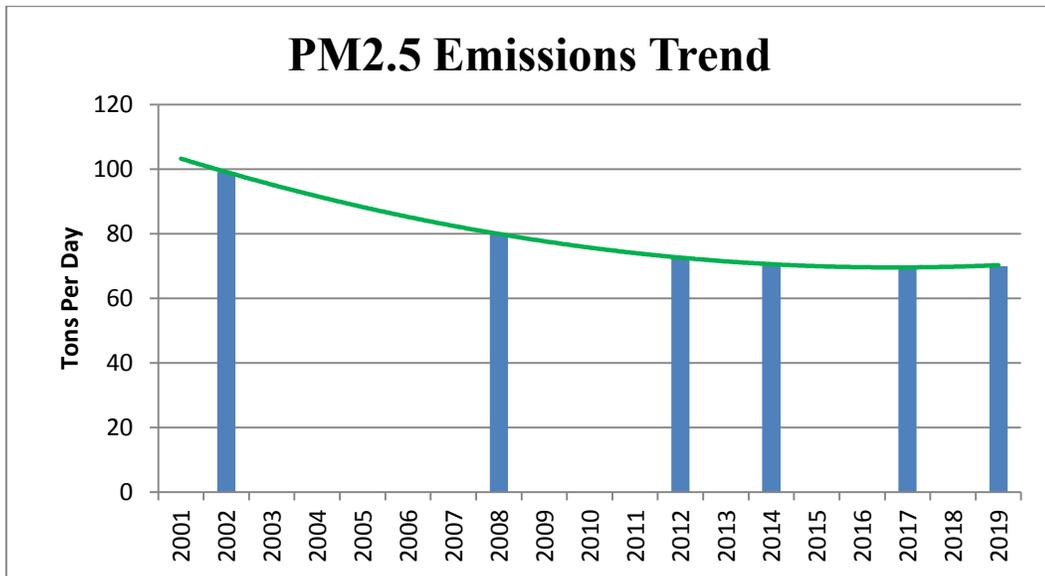


FIGURE V-5-32
Trend of Basin PM2.5 Emissions

SUMMARY AND CONTROL STRATEGY CHOICES

PM2.5 has five major emission types that contribute to the mass of the ambient aerosol including ammonia, NO_x, SO_x, VOC, and directly emitted PM2.5. Various combinations of reductions in these pollutants could all provide a path to clean air. The 24-hour PM2.5 attainment strategy presented in this Draft Final 2012 AQMP relies on a dual approach to first demonstrate attainment of the federal standard by 2019 and then focuses on controls that will be most effective in reducing PM2.5 to accelerate attainment to the earliest date possible. The 2007 AQMP control measures that have been implemented will result in substantial reductions of SO_x, direct PM2.5, VOC and NO_x emissions. Newly proposed short-term measures, discussed in Chapter 4 and Appendix IV of the 2012 Draft Final AQMP will provide additional regional emissions reductions targeting directly emitted PM2.5 and NO_x.

It is useful to assess the relative value of per ton precursor emission reductions considering the resulting ambient microgram per cubic meter improvements in PM2.5 air quality. As presented in the weight of evidence discussion, trends of PM2.5 and NO_x emissions suggest a direct response between lower emissions and improving air quality. The Final 2007 AQMP established a set of factors relating regional per ton precursor emissions reductions and the resulting ambient annual average PM2.5 improvements. The Draft Final 2012 AQMP CMAQ simulations provided a similar set of factors, but this time based on improvements to 24-hour PM2.5 levels. The analysis determined that VOC emissions reductions have the lowest return in terms of micrograms per cubic meter PM2.5 reduced per ton of emissions reductions, about one third of that of NO_x reductions. SO_x emissions reductions were about 8 times more effective than NO_x reductions. However, directly emitted PM2.5 emissions reductions were approximately 15 times more effective than NO_x reductions. It is important to note that the contribution of ammonia emissions is embedded as a component of the SO_x and NO_x factors since ammonium nitrate and ammonium sulfate are the resultant particulate species formed in the atmosphere. Table V-5-25 summarizes the relative importance of precursor emissions reductions to the resulting 24-hour PM2.5 air quality improvements. (A comprehensive discussion of the emission reduction factors is presented in Attachment 8 of this document).

Emissions reductions from existing programs and implementation of the 2012 AQMP PM2.5 control measures will result in projected 24-hour PM2.5 concentrations that meet the federal standard by 2014 at all locations in the Basin. Basin-wide curtailment of wood burning and open burning when the PM2.5 air quality is projected to exceed 30 $\mu\text{g}/\text{m}^3$ in Mira Loma will effectively accelerate attainment at Mira Loma from 2019 to 2014.

TABLE V-5-25

Relative Contributions of Precursor Emissions Reductions to 2014 Simulated Controlled Future-Year 24-hour PM2.5 Concentrations

Precursor (TPD)	PM2.5 Component ($\mu\text{g}/\text{m}^3$)	Standardized Contribution to Mass
VOC	Organic Carbon	Factor of 0.3
NOx	Nitrate	Factor of 1
SOx	Sulfate	Factor of 7.8
PM2.5	Elemental Carbon & Others	Factor of 14.8

CHAPTER 6

ADDITIONAL ANALYSES: UPDATED ANNUAL PM2.5 SIMULATIONS

Introduction

Annual PM2.5 Modeling Approach

Annual PM2.5

Future Annual PM2.5 Air Quality

CEQA Alternative Simulations

INTRODUCTION

As a component of the Draft Final 2012 AQMP, concurrent simulations were also conducted to update and assess progress towards the federal annual average PM_{2.5} standard given the new modeling platform and emissions inventory. This update provides a confirmation that the control strategy will continue to move air quality expeditiously towards attainment of the federal standards.

ANNUAL PM_{2.5} MODELING APPROACH

The Draft Final 2012 AQMP annual PM_{2.5} modeling employs the same approach to estimating the future year annual PM_{2.5} levels as was described in the 2007 AQMP attainment demonstration. Future year PM_{2.5} annual average air quality is determined using site and species specific quarterly averaged RRFs applied to the weighted quarterly average 2008 PM_{2.5} design values per U.S. EPA guidance documents.

In this application, CMAQ was used to simulate 2008 base year, 2014 base-line, and 2014 controlled annual average PM_{2.5} concentrations in the Basin. Projections of the annual average concentrations rely on the use of quarterly averaged PM_{2.5} levels, Quarterly average speciation profiles, and RRFs determined from quarterly average model simulation results. As with the 24-hour PM_{2.5} analysis, this analysis uses a 5-year weighted design value centered around 2008 (Table V-6-1). The future year design values reflect the weighted quarterly average concentration calculated from the projections of 5-years of days (20 quarters).

TABLE V-6-1

2008 Weighted Annual PM_{2.5} Design Values* ($\mu\text{g}/\text{m}^3$)

Monitoring Site	Annual*
Anaheim	13.1
Los Angeles	15.4
Fontana	15.7
North Long Beach	13.6
South Long Beach	13.2
Mira Loma	18.6
Rubidoux	16.7

* Calculated based on quarterly observed data between 2006 – 2010

ANNUAL PM_{2.5}

Annual average PM_{2.5} species concentrations at the six SASS sites are shown in Figure V-6-1. The lowest annual average PM_{2.5} concentration was observed at Anaheim and the highest annual average concentration was observed at Rubidoux. Sulfate shows small spatial variation, between 2 and 3 $\mu\text{g}/\text{m}^3$ at all sites. The highest sulfate concentration was observed at the South Long Beach and Long Beach sites. Ammonium and nitrate show the highest concentrations at Rubidoux and Fontana and the remaining sites show similar levels. Annual average concentrations also show that OC is the most abundant component, which is approximately equivalent to half of the total concentration. As measured by the SASS sampler, OC concentrations are believed to be uncertain as explained in Chapter 5 of this appendix.

Quarterly Average Data

As discussed in Chapter 5, U.S. EPA updated the 24-hour PM_{2.5} attainment test in June 2011. However, U.S. EPA has not recommended any updates to the annual PM_{2.5} attainment test described in Section 5.1 of the 2007 PM_{2.5} modeling guidance. Figures V-6-2 through V-6-7 show the 2008 unadjusted SASS data, processed for quarterly average concentrations from direct measurements of the chemical species at each site. In general, the third quarter is the highest at the inland sites of Fontana and Rubidoux. The sites in the western half of the Basin tend to have the highest average levels in the fourth quarter and to some extent the first quarter. With the exception of Fontana, the lowest observed average concentrations of PM_{2.5} were observed in the second quarter. In general, the second quarter tends to have the lowest concentrations due to spring storms and favorable atmospheric dispersion.

Secondary ammonium, nitrate and sulfate comprise between one-third and half of the total PM_{2.5} concentration. The species concentrations reflect seasonal weather patterns. Sulfate is highest in the third quarter and lowest in the first quarter while nitrate is highest in the first or fourth quarter and lowest in the second or third quarter. High nitrate concentrations in the fall or winter are caused by the favorable formation of ammonium nitrate under cool temperatures, high humidity and frequent nocturnal inversions. The higher values of sulfate typically occur under conditions of strong-elevated inversions and sea breeze transport toward inland, which is the characteristic of late spring and summer. The abundance of afternoon sunlight and

the persistence of morning fog and low clouds trigger both homogeneous and heterogeneous sulfate formation reactions to produce secondary sulfate.

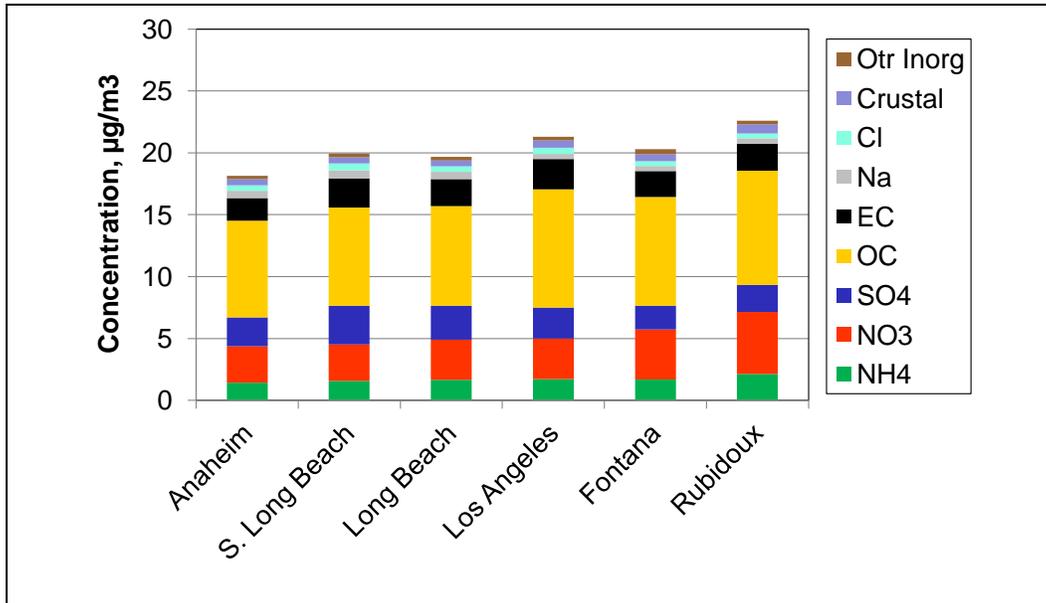


Figure V-6-1

Annual Average PM2.5 Species Concentrations at 6 SASS Sites (µg/m3)

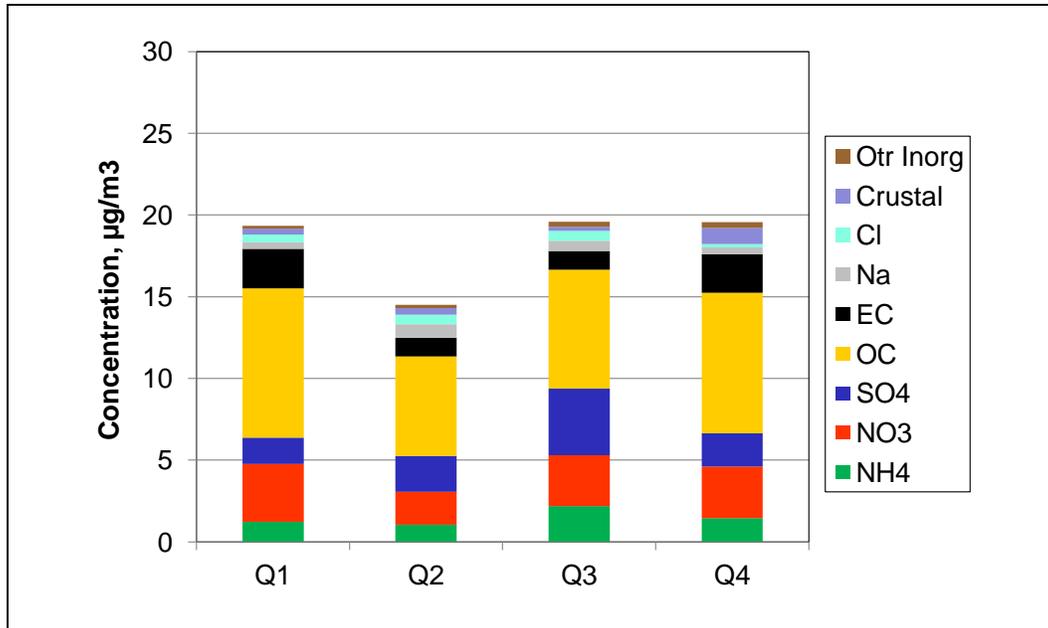


Figure V-6-2

PM2.5 Quarterly Average Species Concentrations ($\mu\text{g}/\text{m}^3$) at Anaheim

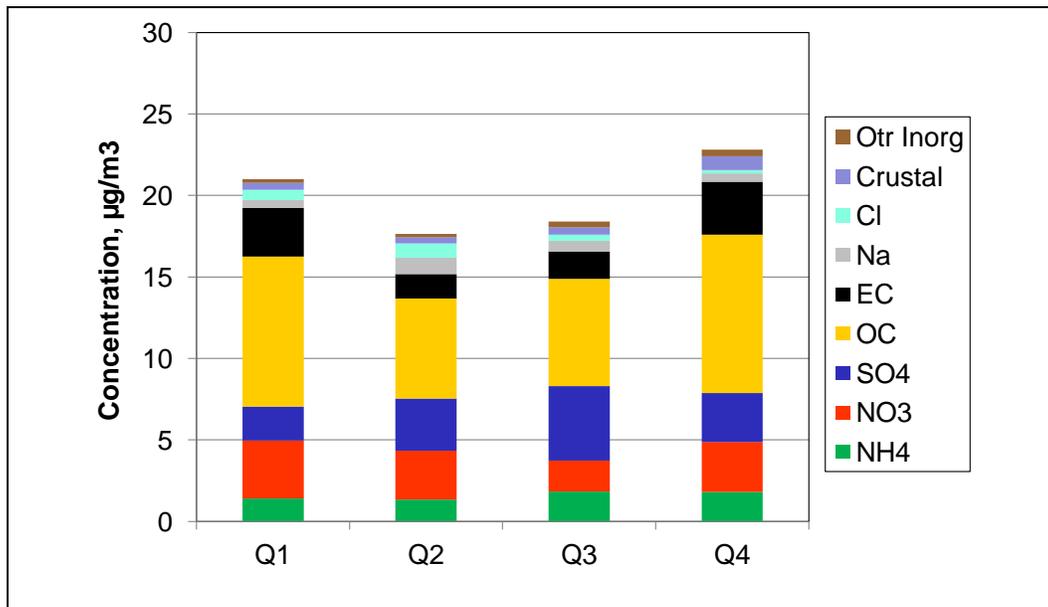


Figure V-6-3

PM2.5 Quarterly Average Species Concentrations ($\mu\text{g}/\text{m}^3$) at South Long Beach

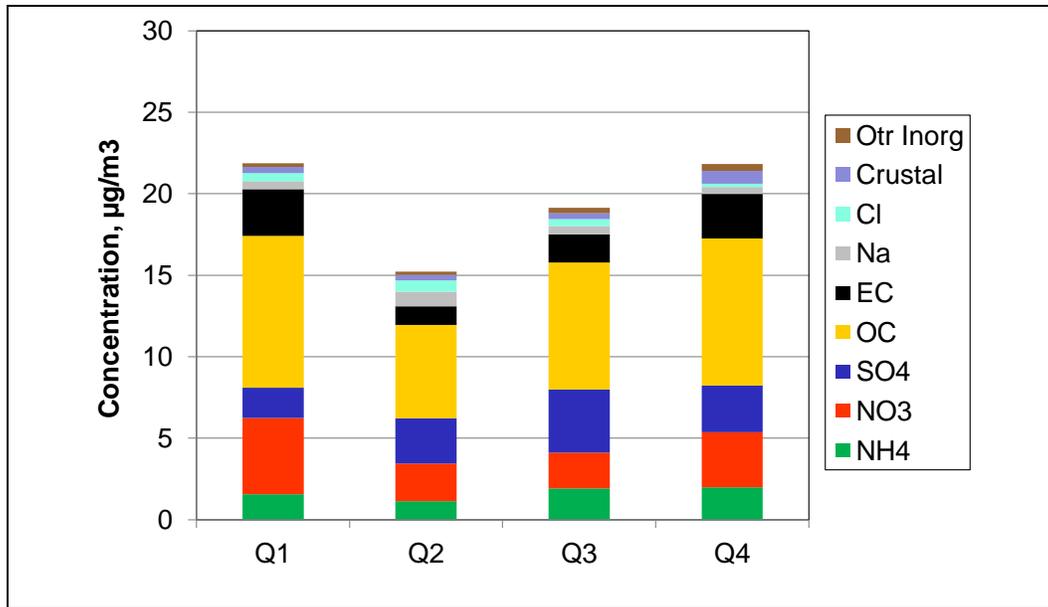


Figure V-6-4

PM2.5 Quarterly Average Species Concentrations (µg/m³) at Long Beach

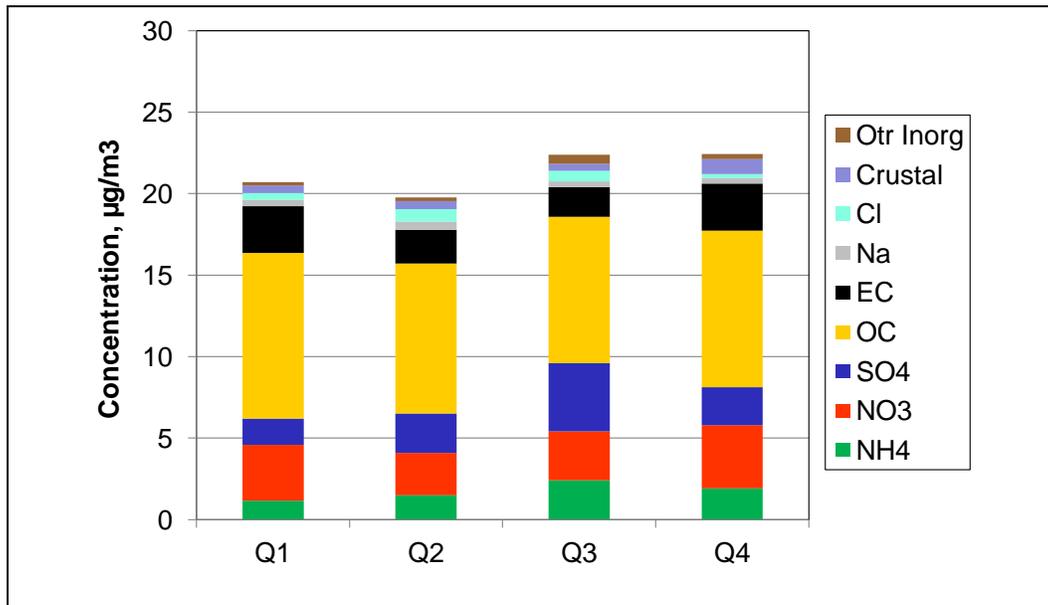


Figure V-6-5

PM2.5 Quarterly Average Species Concentrations (µg/m³) at Downtown Los Angeles

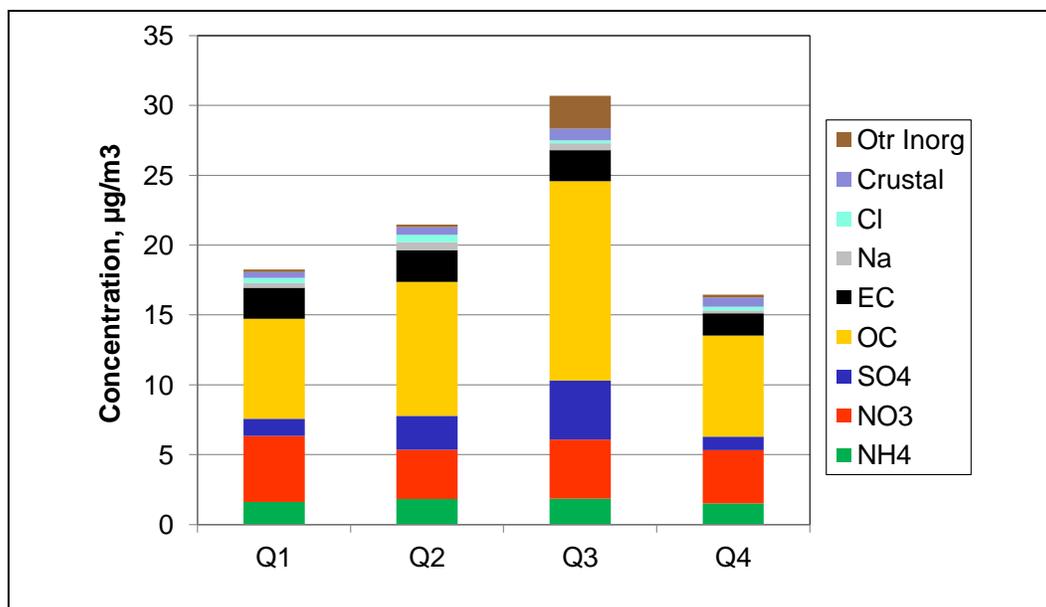


Figure V-6-6

PM2.5 Quarterly Average Species Concentrations ($\mu\text{g}/\text{m}^3$) at Fontana

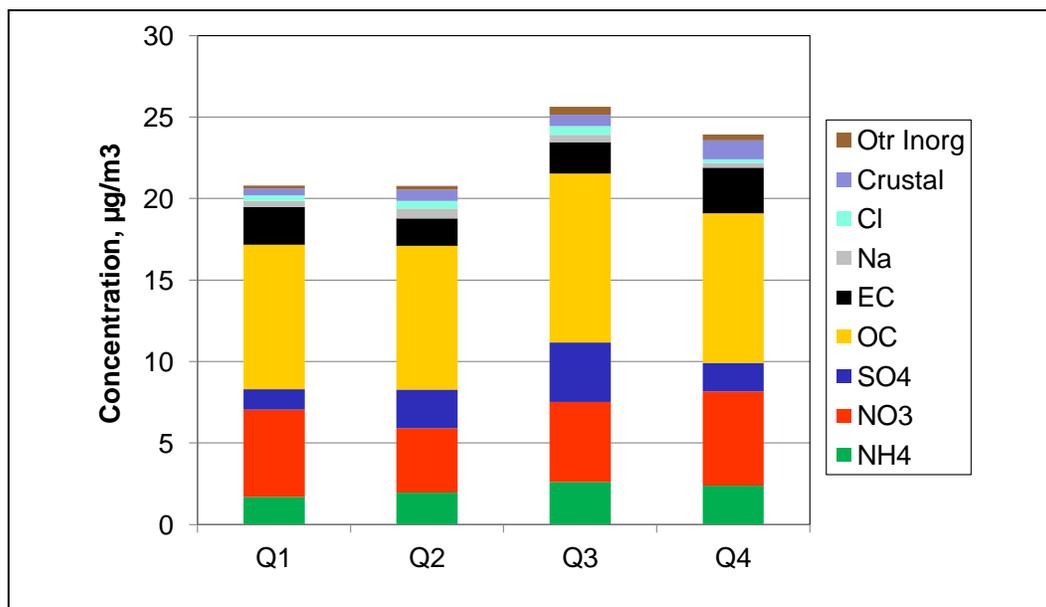


Figure V-6-7

PM2.5 Quarterly Average Species Concentrations ($\mu\text{g}/\text{m}^3$) at Rubidoux

OC comprises the greatest fraction of the mass measured in any quarter and any site and is approximately half of the total concentration in the first and fourth quarter due to poor dispersion from weak winds and low level inversions. However, OC concentrations measured with SASS sampler are believed to be highly uncertain and as a consequence are subject to the “Sandwich” method correction for component mass reconciliation. Figures V-6-8 through V-6-13 provide the corrected species fractions for each site and each quarter. Table V-6-2 lists annual and 5-year weighted quarterly average design values at each of the six SASS sites covering the period 2006 through 2010. Table V-6-3 lists the “Sandwich” applied 5-year weighted quarterly speciation FRM data for each station. As expected, the annual fractional contributions to the quarterly mass at each site differed from the “top-4” average.

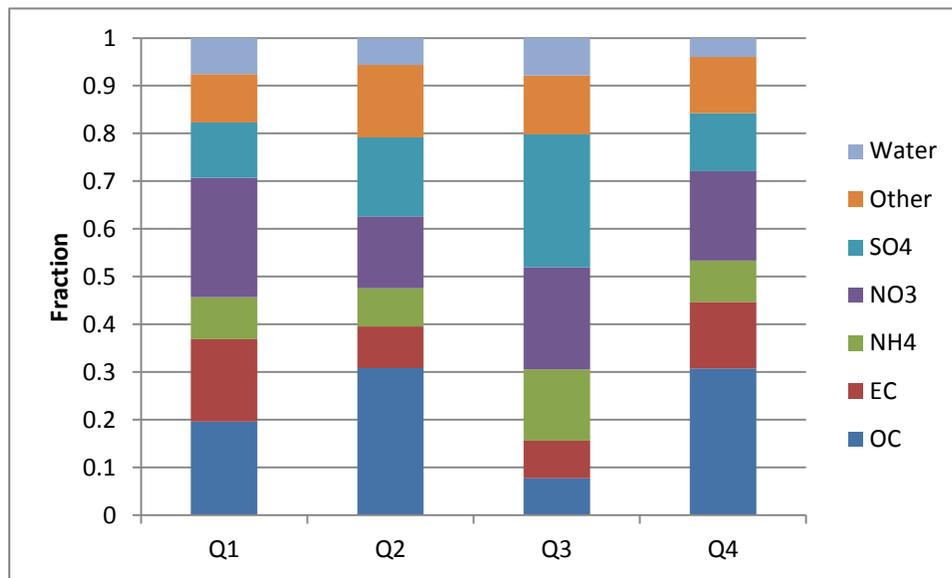


Figure V-6-8

2008 Anaheim quarterly PM2.5 species fractional splits after the “Sandwich” correction

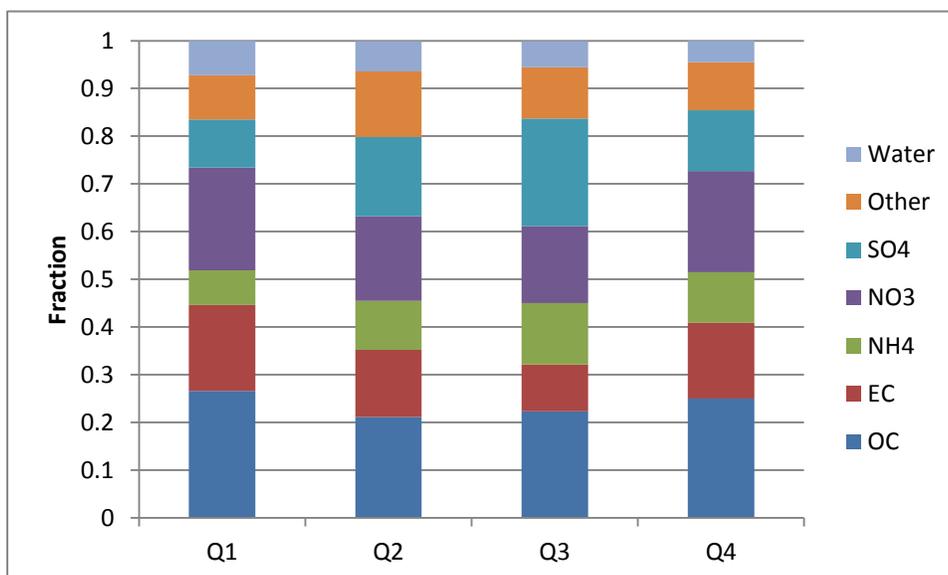


Figure V-6-9

2008 Los Angeles quarterly PM2.5 species fractional splits after the “Sandwich” correction

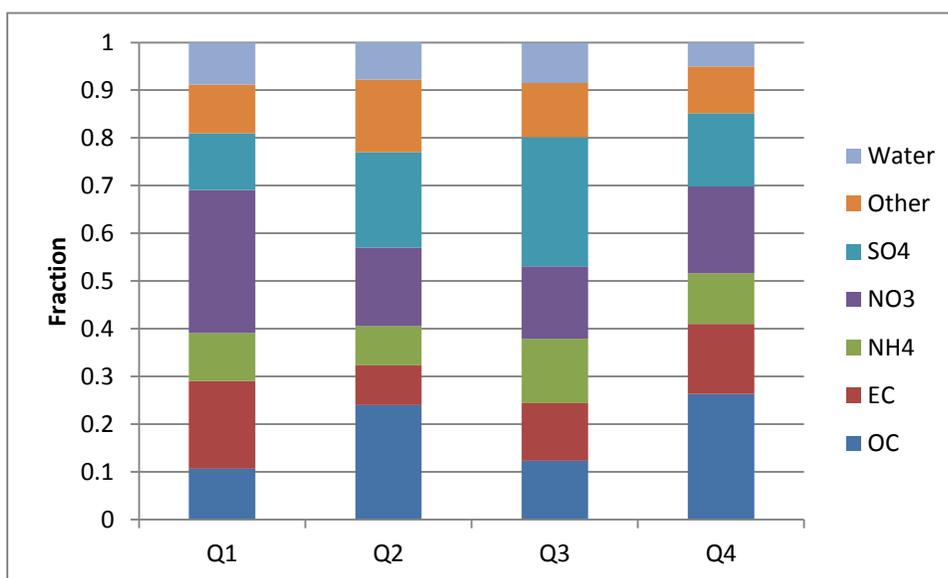


Figure V-6-10

2008 Long Beach quarterly PM2.5 species fractional splits after the “Sandwich” correction

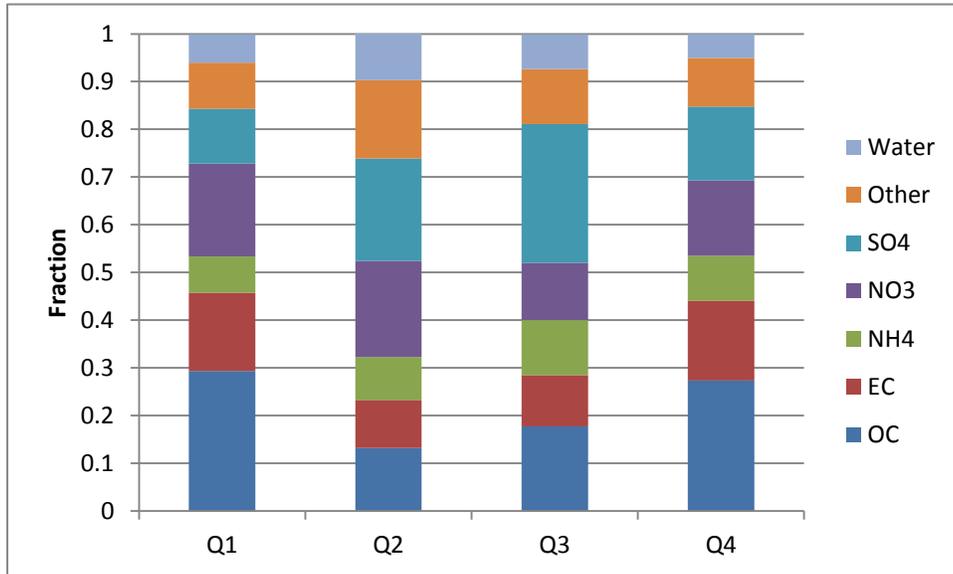


Figure V-6-11

2008 Downtown Long Beach quarterly PM2.5 species fractional splits after the "Sandwich" correction

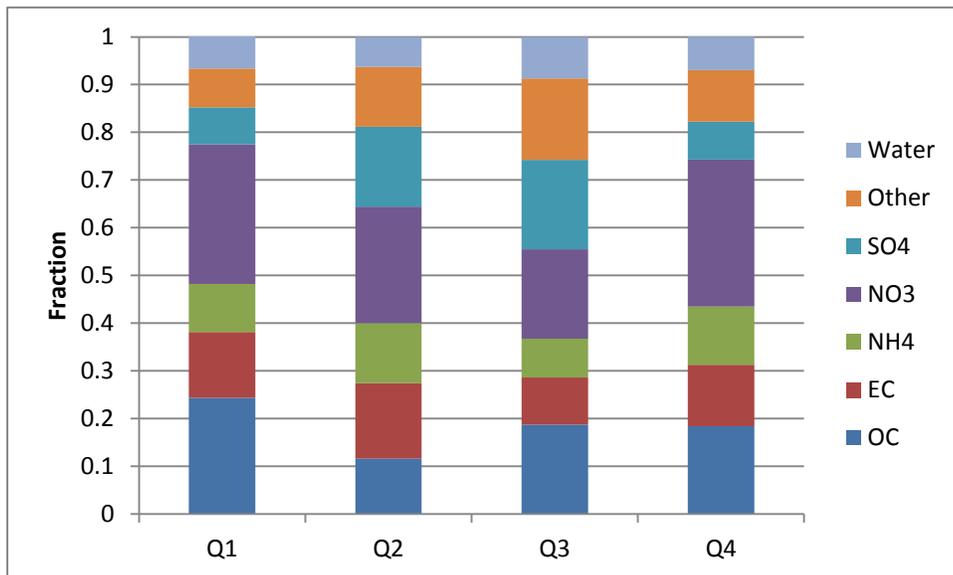


Figure V-6-12

2008 Fontana quarterly PM2.5 species fractional splits after the "Sandwich" correction

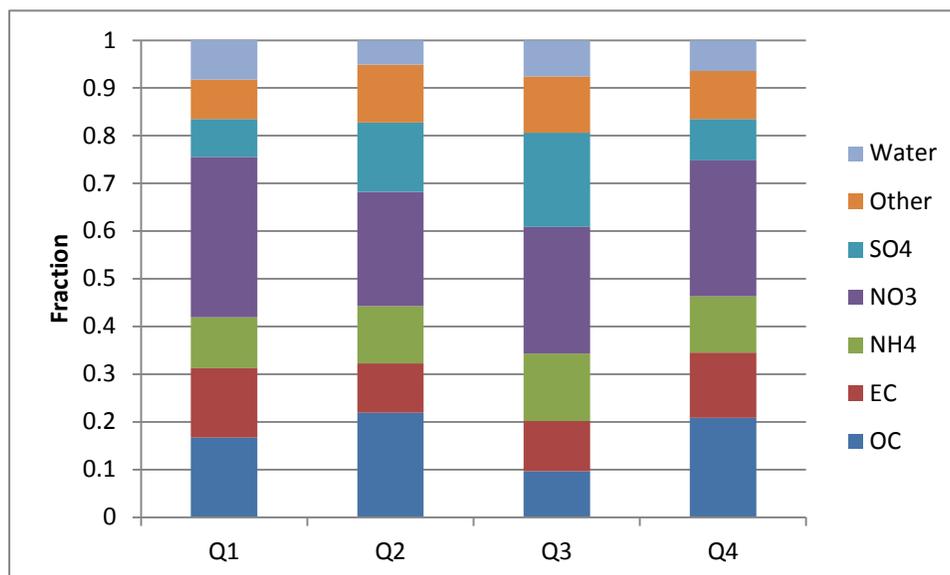


Figure V-6-13

2008 Rubidoux quarterly PM2.5 species fractional splits after the “Sandwich” correction

Table V-6-2

5-Year Weighted Annual and Quarterly PM2.5 Design Values (2006-2010)

Monitoring Site	Quarter 1 ($\mu\text{g}/\text{m}^3$)	Quarter 2 ($\mu\text{g}/\text{m}^3$)	Quarter 3 ($\mu\text{g}/\text{m}^3$)	Quarter 4 ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)
Anaheim	13.00	11.10	12.11	16.23	13.11
S. Long Beach	12.90	11.53	12.55	15.70	13.17
Long Beach	13.81	11.81	12.46	16.45	13.63
Los Angeles	14.34	14.37	15.71	16.94	15.34
Fontana	13.77	16.21	16.98	16.18	15.79
Mira Loma	16.88	18.00	18.06	21.07	18.50
Rubidoux	14.96	18.13	16.47	17.22	16.70

Table V-6-3

“Sandwich” Applied Quarterly Speciated FRM Data

Site		Mass	OC	EC	NH4	NO3	SO4	OTR	Water	Blank
Anaheim	1q	13.00	2.45	2.16	1.10	3.13	1.45	1.26	0.97	0.50
Anaheim	2q	11.10	3.27	0.92	0.85	1.60	1.75	1.61	0.60	0.50
Anaheim	3q	12.11	0.90	0.91	1.74	2.48	3.24	1.43	0.92	0.50
Anaheim	4q	16.23	4.84	2.19	1.36	2.95	1.91	1.86	0.62	0.50
Los Angeles	1q	14.34	3.68	2.50	1.00	2.98	1.40	1.28	1.00	0.50
Los Angeles	2q	14.37	2.94	1.95	1.42	2.47	2.29	1.91	0.88	0.50
Los Angeles	3q	15.71	3.40	1.49	1.96	2.45	3.43	1.63	0.84	0.50
Los Angeles	4q	16.94	4.11	2.61	1.74	3.49	2.10	1.65	0.74	0.50
Long Beach	1q	13.81	1.42	2.45	1.34	3.99	1.58	1.35	1.18	0.50
Long Beach	2q	11.81	2.72	0.94	0.93	1.86	2.26	1.72	0.89	0.50
Long Beach	3q	12.46	1.48	1.44	1.61	1.82	3.24	1.35	1.01	0.50
Long Beach	4q	16.45	4.20	2.34	1.69	2.91	2.44	1.57	0.79	0.50
Downtown LGB	1q	12.90	3.64	2.03	0.95	2.41	1.42	1.20	0.74	0.50
Downtown LGB	2q	11.53	1.46	1.11	0.99	2.22	2.37	1.81	1.08	0.50
Downtown LGB	3q	12.55	2.14	1.29	1.39	1.45	3.50	1.39	0.88	0.50
Downtown LGB	4q	15.70	4.16	2.54	1.43	2.40	2.35	1.55	0.77	0.50
Fontana	1q	13.77	3.23	1.83	1.34	3.88	1.03	1.08	0.89	0.50
Fontana	2q	16.21	1.83	2.48	1.98	3.83	2.63	1.97	0.99	0.50
Fontana	3q	16.98	3.09	1.63	1.34	3.09	3.08	2.82	1.43	0.50
Fontana	4q	16.18	2.89	2.02	1.91	4.83	1.24	1.70	1.10	0.50
Rubidoux	1q	14.96	2.42	2.10	1.55	4.86	1.14	1.20	1.20	0.50
Rubidoux	2q	18.13	3.87	1.82	2.12	4.22	2.56	2.14	0.90	0.50
Rubidoux	3q	16.47	1.55	1.68	2.26	4.23	3.16	1.88	1.21	0.50
Rubidoux	4q	17.22	3.49	2.29	1.97	4.76	1.45	1.68	1.08	0.50
Mira Loma	1q	16.88	2.74	2.38	1.76	5.50	1.29	1.36	1.36	0.50
Mira Loma	2q	18.00	3.84	1.80	2.11	4.19	2.54	2.12	0.89	0.50
Mira Loma	3q	18.06	1.70	1.84	2.48	4.65	3.48	2.06	1.34	0.50
Mira Loma	4q	21.07	4.30	2.82	2.42	5.86	1.78	2.07	1.32	0.50

Figure V-6-14 presents the ratio of the 24-hour to annual PM2.5 fractional species contributions averaged for the six SASS sites. In general, the 24-hour PM2.5 “others” category is consistently a smaller percentage than the annual PM2.5 “others” for all seasons. However total mass for the 24-hour episodes “others” category is a factor of 1.9 higher in concentration than the annual value. In contrast, both

ammonium and nitrate have higher fractions for the episodic 24-hour PM2.5 in all quarters except the third quarter when OC (primary and secondary) becomes the dominant constituent compared with the annual fraction. The episodic sulfate in the first quarter is a higher percentage than the annual but the ratio reverses for the final three quarters. This is consistent with the SOx OGV emissions profile presented in Chapter 4 of this appendix. On average, after the first quarter, daily SOx emissions increase dramatically so that the difference between episodic and a quarterly values for the annual PM2.5 show less contrast. Overall, the average concentrations of the top-4 average 24-hour PM2.5 concentrations for the secondary aerosol components were a factor of 2.4 higher than the quarterly annual concentrations. This illustrates the combined impact of secondary aerosol formation on episodic 24-hour PM2.5 levels.

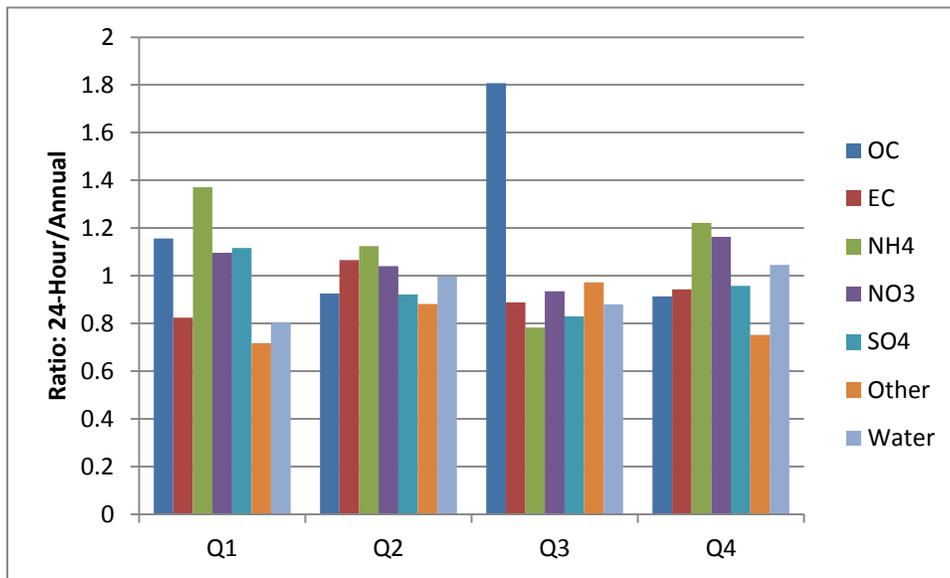


Figure V-6-14

2008 Six site SASS average quarterly ratio of 24-hour to annual species fractional contributions to PM2.5 after the “Sandwich” correction

FUTURE ANNUAL PM2.5 AIR QUALITY

The base-line projections for the annual state and federal standards are shown in Figure V-6-15. All areas will be in attainment of the federal annual standard (15 $\mu\text{g}/\text{m}^3$) by 2014. The base-line 2014 design value is projected to be 7 percent below

the federal standard. However, as shown in Figure V-6-15, the Draft Final 2012 AQMP does not achieve the California standard of $12 \mu\text{g}/\text{m}^3$ by 2014. Additional controls would be needed to attain this state standard at the Mira Loma station.

Tables V-6-4 through V-6-7 provide the projected future year PM_{2.5} annual design values by component species for 2014, 2019, 2023 and 2030 with proposed controls implemented. Projected PM_{2.5} levels indicate that the Basin will remain in attainment with the current standard. U.S. EPA has proposed lowering the annual PM_{2.5} standard to a range between 12 and $13 \mu\text{g}/\text{m}^3$. The latest attainment date for the Basin is likely to be 2023 (with a 5-year extension). Projected PM_{2.5} annual design concentrations for 2023 and 2030 are expected to be below the upper range of the new proposed standard, but would exceed the lower end of the range of $12 \mu\text{g}/\text{m}^3$ without additional controls.

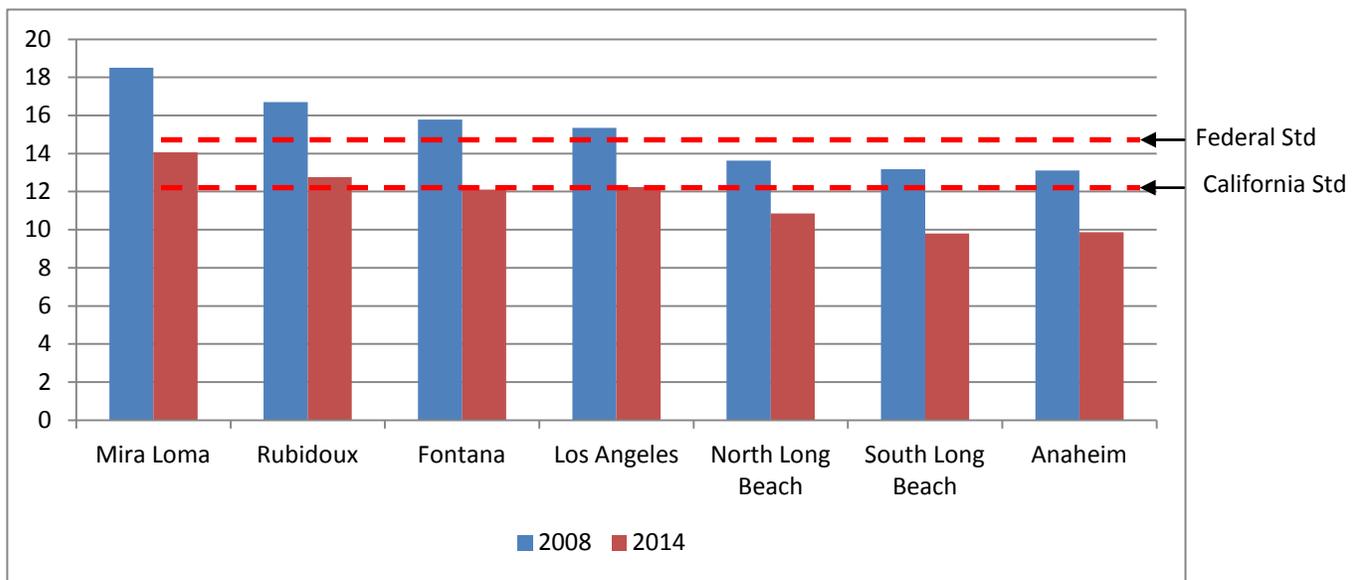


Figure V-6-15

Annual Average PM_{2.5} Design Concentrations:
2008 and 2014 Baseline

Table V-6-4

CMAQ 2014 Controlled Annual Design Predictions ($\mu\text{g}/\text{m}^3$)

Locations	NH ₄	NO ₃	SO ₄	OC	EC	Others	Water	Blank	Mass
Anaheim	0.8	2.1	1.0	2.1	0.9	1.4	0.5	0.5	9.2
S. Long Beach	0.8	2.0	1.2	2.0	1.0	1.3	0.7	0.5	9.4
Fontana	1.2	2.9	1.1	2.0	1.2	1.9	0.7	0.5	11.5
N. Long Beach	1.0	2.5	1.4	1.8	1.1	1.4	0.8	0.5	10.5
Los Angeles	1.2	2.5	1.4	2.9	1.3	1.6	0.7	0.5	11.9
Mira Loma	1.5	3.7	1.2	2.3	1.3	1.9	0.8	0.5	13.3
Rubidoux	1.4	3.3	1.3	2.2	1.2	1.7	0.7	0.5	12.1

Table V-6-5

CMAQ 2019 Controlled Annual Design Predictions ($\mu\text{g}/\text{m}^3$)

Locations	NH ₄	NO ₃	SO ₄	OC	EC	Others	Water	Blank	Mass
Anaheim	0.8	2.0	1.0	2.3	0.9	1.4	0.5	0.5	9.3
S. Long Beach	0.8	1.9	1.2	2.2	1.0	1.2	0.7	0.5	9.4
Fontana	1.1	2.6	1.3	2.3	1.2	1.8	0.7	0.5	11.4
N. Long Beach	1.0	2.4	1.4	1.9	1.1	1.3	0.8	0.5	10.4
Los Angeles	1.1	2.4	1.4	3.0	1.2	1.5	0.7	0.5	11.8
Mira Loma	1.4	3.3	1.4	2.6	1.3	2.0	0.8	0.5	13.3
Rubidoux	1.3	2.8	1.5	2.3	1.1	1.9	0.7	0.5	12.2

Table V-6-6

CMAQ 2023 Controlled Annual Design Predictions ($\mu\text{g}/\text{m}^3$)

Locations	NH4	NO3	SO4	OC	EC	Others	Water	Blank	Mass
Anaheim	0.7	1.7	1.1	2.2	0.8	1.5	0.5	0.5	9.0
S. Long Beach	0.8	1.8	1.2	2.2	0.9	1.3	0.6	0.5	9.2
Fontana	1.0	2.1	1.4	2.2	1.2	1.9	0.6	0.5	11.0
N. Long Beach	1.0	2.3	1.4	1.9	1.0	1.4	0.8	0.5	10.2
Los Angeles	1.0	2.1	1.5	3.0	1.1	1.6	0.6	0.5	11.4
Mira Loma	1.2	2.7	1.6	2.6	1.3	2.1	0.6	0.5	12.7
Rubidoux	1.2	2.3	1.7	2.3	1.1	2.0	0.6	0.5	11.7

Table V-6-7

CMAQ 2030 Controlled Annual Design Predictions ($\mu\text{g}/\text{m}^3$)

Locations	NH4	NO3	SO4	OC	EC	Others	Water	Blank	Mass
Anaheim	0.7	1.6	1.2	2.3	0.8	1.5	0.5	0.5	9.1
S. Long Beach	0.8	1.7	1.4	2.3	0.9	1.4	0.6	0.5	9.5
Fontana	1.0	1.9	1.6	2.3	1.2	2.1	0.7	0.5	11.3
N. Long Beach	1.0	2.1	1.6	1.9	1.0	1.4	0.7	0.5	10.2
Los Angeles	1.0	2.0	1.6	3.0	1.1	1.6	0.7	0.5	11.4
Mira Loma	1.2	2.4	1.8	2.7	1.3	2.3	0.7	0.5	13.0
Rubidoux	1.2	2.1	2.0	2.4	1.1	2.2	0.6	0.5	12.0

CEQA ALTERNATIVE SIMULATIONS

Table V-6-8 presents the projected annual PM2.5 design values for the 2014 controlled and three CEQA alternative emissions scenarios. Complete descriptions of the CEQA alternative scenarios can be found in the Draft PEIR for the Draft 2012 AQMP. All of the CEQA alternative simulations demonstrate attainment of the 24-hour PM2.5 federal standard.

Table V-6-8

CEQA Alternative Simulated Annual PM2.5 Design Values

	2014 Controlled	Alt-1: 2019	Alt-2: 2017	Alt-3: 2017
Anaheim	9.2	9.3	9.3	8.8
S. Long Beach	9.4	9.4	9.4	9.1
Fontana	11.5	11.4	11.4	10.7
N. Long Beach	10.5	10.4	10.4	10.1
Los Angeles	11.9	11.8	11.8	11.1
Mira Loma	13.3	13.3	13.0	12.4
Rubidoux	12.1	12.2	11.9	11.2

CHAPTER 7

Additional Analyses: Updating 8-Hour Ozone Projections

Introduction

Ozone Representativeness

Base-Year Model Performance Evaluation

Ozone Modeling Approaches

Future Ozone Air Quality

Looking Beyond 2023

INTRODUCTION

The 2007 AQMP provided a comprehensive 8-hour ozone analysis that demonstrated future year attainment of the 1997 federal ozone standard (80 ppb) by 2023 with implementation of short-term measures and CAA Section 182(e)(5) long term emissions reductions. The analysis concluded that NO_x emissions needed to be reduced approximately 76 percent and VOC emissions reduced approximately 22 percent from the 2023 baseline in order to demonstrate attainment. The 2023 baseline VOC and NO_x summer planning emissions inventories included 536 and 506 TPD, respectively.

As presented in Chapter 3 of the Draft Final 2012 AQMP, 2023 baseline emissions of both precursor pollutants are estimated to be lower than those 2023 baseline established in the 2007 AQMP. The Draft Final 2012 AQMP baseline VOC and NO_x summer planning emissions for 2023 have been revised to 434 and 313 TPD, respectively. The emissions revision incorporated changes made to the on-road truck and off-road equipment categories resulting from recent CARB rulemaking. The new emissions inventory also reflects the impact of the economic slowdown and revisions to regional growth estimates. As a consequence, it is important to revisit the baseline projections for 2023 to investigate what impact the inventory revision had on the ozone attainment demonstration and equally important, what is the impact to the size of the proposed long term NO_x emissions reduction commitment.

OZONE REPRESENTATIVENESS

As a component of the PM_{2.5} attainment demonstration, the CMAQ modeling provided Basin-wide ozone air quality simulations for each hour in 2008. Past ozone attainment demonstrations evaluated a set of days characterized by restrictive meteorology or episodes occurring during concurrent intensive field programs. Of great importance, these episode periods needed to be rated in terms of how representative they were relative to the ozone standard being evaluated. For the now revoked 1-hour ozone standard, the attainment demonstration focused on a limited number of days closely matching the annual design value. Typically, the analysis addressed less than 5 days of simulations. The 2007 AQMP was the first to address the 8-hour ozone standard and the use of RRFs in the future year ozone projection. To provide a robust characterization of the RRFs for use in the attainment demonstration, the analysis simulated 36 days. The ozone modeling guidance recommends that a minimum of 5-days of simulations meeting modeling acceptance

criteria are used in a future year RRF calculation, but also recommends incorporating as many days as possible to fully capture both the meteorological variations in the ozone season and the response to different daily emissions profiles.

This update to the future year ozone projection focuses on 91 days of ozone air quality observed during June through August 2008. During this period, seven well defined multiday ozone episodes occurred in the Basin with 75 total days having daily Basin-wide maximum concentrations of 80 ppb or higher. More importantly, when assessed for a normalized meteorological ozone episode potential using a regression based weighting covering 30-years of data (1998-2010), as summarized in the 2003 AQMP, 8 days during the 2008 period were ranked above the 95th percentile in the long term distribution of potentials, and another 19 were ranked between the 90th and 94th percentile.

Figure V-7-1 depicts the time series of the daily Basin maximum and the Crestline (the Basin design station) daily maximum 8-hour ozone air quality during the three month period in 2008. The seven primary meteorological episodes which occur primarily between mid June and August are highlighted in the figure. It is important to note that the analysis not only focused on the seven periods or Crestline specifically. All station days meeting the acceptance criteria for calculating a daily RRF were included in the analysis. Several locations in the San Bernardino and Riverside Valleys exhibit similar transport and daily patterns of ozone formation as Crestline. The peak Basin 2008 8-hour average ozone concentration was observed at Santa Clarita on August 2nd with a value of 131 ppb along a distinctly different transport route.

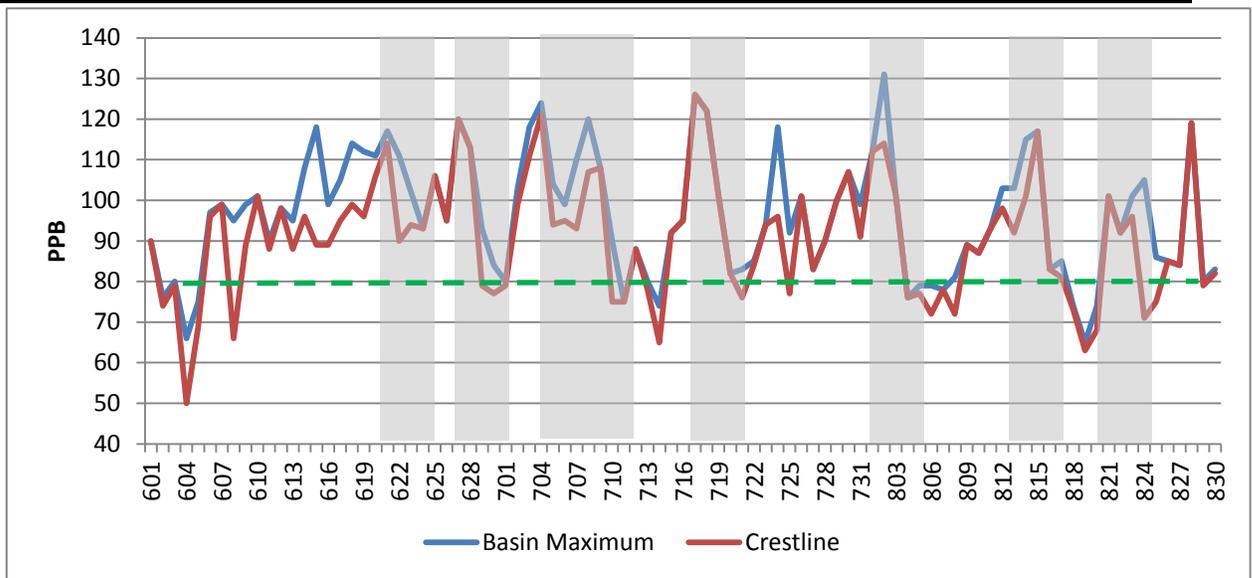


FIGURE V-7-1

Observed Basin and Crestline Daily Maximum 8-Hr Average Ozone Concentrations: June 1 through August 31, 2008. (Shaded areas indicate multiple day regional ozone episodes).

Overall, the 91 day period provides a robust description of the 2008 ozone-meteorological season. Table V-7-1 lists the number of days each Basin station exceeded the 8-hour ozone standard during the June through August 2008 period. Also listed in Table V-7-1 are the 2008, 5-year weighted design values used in the future year ozone projections.

TABLE V-7-1

2008 Basin Weighted Design Values* and Number of Days Daily Maximum Concentrations Exceeded 80 ppb

Station	2008 5-Year Weighted Design (ppb)	Number of Days in 2008 with Observed 8-Hr Average Maximum Ozone > 80 ppb
Azusa	94	16
Burbank	88	10
Reseda	94	16
Pomona	97	19
Pasadena	90	7
Santa Clarita	101	41
Glendora	106	26

Rubidoux	101	39
Perris	104	47
Lake Elsinore	99	39
Banning Airport	102	49
Upland	106	31
Crestline	116	66
Fontana	107	36
San Bernardino	109	46
Redlands	109	50

*Stations having design values greater than 80 ppb

BASE-YEAR OZONE MODEL PERFORMANCE EVALUATION

For the CMAQ performance evaluation the modeling domain is separated into nine sub-regions or zones. Figure V-7-2 depicts the sub-regional zones used for base-year simulation performance. The different zones present unique air quality profiles. In previous ozone modeling attainment demonstrations using a smaller modeling domain, the number and size of the zones were different. Seven zones represented the Basin and portions of Ventura County, the Mojave Desert and the Coachella Valley.

For the current analysis the Basin is represented by three of the zones: Zone 3 – the San Fernando Valley, Zone 4 – the Eastern San Gabriel, Riverside and San Bernardino Valleys, and Zone 5 – the Los Angeles and Orange County emissions source areas. Of the three areas, Zone 4 represents the Basin maximum ozone concentrations and the primary downwind impact zone. As such, the priority in evaluating model performance is focused on Zone 4. Zone 9 includes the Coachella Valley portion of the Salton Sea Air Basin.

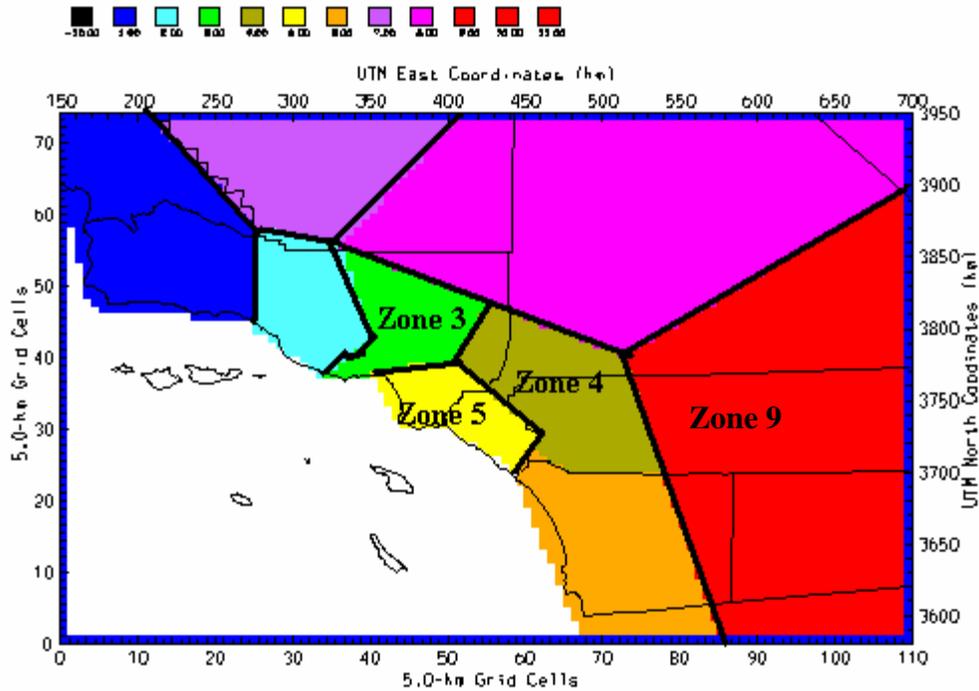


FIGURE V-7-2
Performance Evaluation Zones

Statistical Evaluation

The statistics used to evaluate 1-hour average CMAQ ozone performance do not change from previous AQMPs and include the following:

<u>Statistic for O₃</u>	<u>Criteria (%)</u>	<u>Comparison Basis</u>
Normalized Gross Bias	≤ ±15	Paired in space and time
Normalized Gross Error	≤ 35	Paired in space (+2 grid cells) and time
Peak Prediction Accuracy	≤ ± 20	Unpaired in space and time

The same statistics are applied to the 8-hour average ozone.

The base year average regional model performance for June through August 2008 for Zones 3, 4, and 5 are presented in Tables V-7-2 to V-7-7 for days when Basin maximum 8-hour ozone levels were at least 85 ppb. Base year 8-hour ozone performance statistics for Zone 9 in the downwind Coachella Valley portions of the Salton Sea Air Basin are provided in Table V-7-8. Performance statistics are

presented for observed concentrations of 60 ppb or greater. Data for 1- and 8-hour average ozone concentrations for the sub regional peak concentrations are both provided in the tables.

The CMAQ ozone simulations generally meet the 1-hour average unpaired peak and normalized error model performance goal in all three zones on most days. Normalized bias tended to be negative, particularly in June. Zone-5 however showed a tendency for over prediction in all three months. Zone 4 displayed the best unpaired peak performance with 54 out of 58 days meeting the 20 percent criteria. Unpaired peak performance in Zones 3 and 5 lagged, with only 76 and 79 percent of the days meeting the criteria. Overall, the 8-hour average evaluation was slightly better, however observed 8-hour ozone did not exceed the 60 ppb threshold for inclusion in the analysis on more days in Zone 5.

Table V-7-2

June 2008 Base Year 1-Hour Average Ozone Performance for Days When Regional 8-Hour Maximum \geq 85 ppb

Date	Zone 3					Zone 4					Zone 5				
	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)
601	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
602	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
603	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
604	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
605	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
606	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
607	106	77.7	0.73	-26	26	113	106.4	0.94	-10	12	80	84.6	1.06	2	14
608	97	100.6	1.04	2	17	119	124.4	1.05	-4	14	64	96.7	1.51	34	34
609	123	81.3	0.66	-23	23	114	100.5	0.88	-16	18	84	85.1	1.01	1	11
610	123	97.5	0.79	-3	9	105	113.6	1.08	0	10	85	86.5	1.02	11	13
611	95	96.8	1.02	12	13	105	110.4	1.05	-6	10	65	77.7	1.20	8	10
612	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
613	95	101.8	1.07	9	11	113	117.2	1.04	8	15	70	82.2	1.17	6	9
614	102	97.8	0.96	12	13	117	117.7	1.01	0	13	78	84.3	1.08	10	11
612	123	91.1	0.74	-7	12	119	111.4	0.94	-12	13	96	98	1.02	6	12
616	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
617	111	84.8	0.76	-30	30	123	88.3	0.72	-35	35	83	70.6	0.85	-25	26
618	116	100.7	0.87	-19	25	122	97.9	0.80	-37	39	94	79.3	0.84	-14	17
619	87	92	1.06	-17	25	162	123.2	0.76	-18	20	118	106.9	0.91	0	22
620	95	108.1	1.14	5	18	152	135.8	0.89	-2	18	110	111.1	1.01	11	15
621	111	98.2	0.88	-10	20	176	128.9	0.73	-13	16	114	106.3	0.93	0	13
622	122	106.9	0.88	-19	20	156	149.9	0.96	-1	19	107	115.1	1.08	4	12
623	123	92.6	0.75	-29	29	123	135.9	1.10	11	21	107	121.9	1.14	13	19
624	123	79.2	0.64	-27	27	111	99.4	0.90	-9	12	78	75.1	0.96	-10	15
625	105	90.9	0.87	-1	10	111	109.7	0.99	1	19	61	78.3	1.28	21	21
626	86	92.7	1.08	0	8	122	109.6	0.90	-8	16	65	75.2	1.16	1	8
627	88	104.6	1.19	21	21	103	114	1.11	2	19	67	80.9	1.21	13	13
628	93	81.7	0.88	-5	7	133	120.9	0.91	-7	17	67	82.9	1.24	4	11
629	88	82.4	0.94	-7	10	130	111.3	0.86	-21	21	92	80.8	0.88	-9	11

*Normalized bias and normalized error calculated for hours where observations > 60 ppb

Table V-7-3

July 2008 Base Year 1-Hour Average Ozone Performance for Days When Regional 8-Hour Maximum \geq 85 ppb

Date	Zone 3					Zone 4					Zone 5				
	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)
701	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
702	127	87.5	0.69	-12	14	124	106.8	0.86	-12	15	81	84.7	1.05	6	10
703	138	90.6	0.66	-20	21	149	143.6	0.96	2	16	100	98.6	0.99	4	18
704	110	79.9	0.73	-27	27	150	137.6	0.92	-17	21	116	97.9	0.84	-19	20
705	111	95.7	0.86	-5	23	116	122.8	1.06	-2	19	103	94.9	0.92	3	19
706	107	104.1	0.97	-7	11	110	125.8	1.14	12	18	94	107.1	1.14	23	23
707	105	106.3	1.01	-12	13	128	102.1	0.80	-25	26	85	95.7	1.13	14	15
708	123	109.5	0.89	-9	14	138	104.5	0.76	-17	19	70	81.4	1.16	12	12
709	113	104.9	0.93	-1	13	132	149.2	1.13	13	29	65	103.8	1.60	32	32
710	97	114.2	1.18	21	23	121	130.4	1.08	13	33	---	---	---	---	---
711	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
712	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
713	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
714	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
715	92	84.9	0.92	-2	16	108	102.7	0.95	-2	13	65	77.8	1.20	14	14
716	101	92.1	0.91	-1	16	114	125.2	1.10	7	17	62	90.9	1.47	24	24
717	116	82.7	0.71	-17	23	140	114.2	0.82	0	13	66	77.5	1.17	12	14
718	113	101.9	0.90	-12	20	144	138.1	0.96	11	18	67	95.1	1.42	32	32
719	111	97.4	0.88	3	9	120	131.9	1.10	13	18	78	99.9	1.28	30	30
720	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
721	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
722	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
723	93	96.2	1.03	16	16	110	120.2	1.09	2	13	65	87.6	1.35	16	17
724	128	123.1	0.96	10	15	139	144	1.04	10	20	84	93.4	1.11	16	17
725	103	98.6	0.96	-5	15	122	123.2	1.01	7	18	71	104.4	1.47	35	35
726	96	92.3	0.96	2	17	117	125.4	1.07	14	20	69	84.2	1.22	12	12
727	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
728	80	80.2	1.00	-2	9	99	96.3	0.97	-7	14	---	---	---	---	---
729	81	90.4	1.12	8	9	108	98.7	0.91	-6	15	---	---	---	---	---
730	101	97.1	0.96	5	12	119	110.6	0.93	-5	13	---	---	---	---	---
731	109	105.4	0.97	-4	8	121	107.3	0.89	-8	13	76	83.2	1.09	-3	7

*Normalized bias and normalized error calculated for hours where observations > 60 ppb

Table V-7-4

August 2008 Base Year 1-Hour Average Ozone Performance for Days When Regional 8-Hour Maximum \geq 85 ppb

Date	Zone 3					Zone 4					Zone 5				
	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)
801	131	104.1	0.79	-14	16	138	121.5	0.88	-9	13	93	93.2	1.00	9	15
802	150	102.1	0.68	-25	26	141	148.7	1.05	1	22	104	107.1	1.03	15	18
803	110	99	0.90	-6	10	114	125.3	1.10	4	13	94	101.2	1.08	13	13
804	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
805	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
806	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
807	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
808	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
809	88	74.5	0.85	-10	10	110	92.8	0.84	-3	10	62	69.2	1.12	-11	11
810	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
811	94	93.6	1.00	13	17	110	126.4	1.15	11	19	60	88.7	1.48	18	18
812	122	98.7	0.81	-7	13	126	119.4	0.95	-2	15	75	87	1.16	4	11
813	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
814	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
815	102	99.2	0.97	0	6	131	115.9	0.88	-8	15	60	73.5	1.23	-15	15
816	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
817	82	78.8	0.96	-4	7	105	106.8	1.02	2	13	72	76.1	1.06	1	7
818	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
819	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
820	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
821	95	91	0.96	2	12	110	116.9	1.06	20	28	---	---	---	---	---
822	82	87.4	1.07	12	12	106	125	1.18	17	25	---	---	---	---	---
823	78	104.4	1.34	17	19	125	123.6	0.99	1	17	87	96.1	1.10	8	13
824	92	106.6	1.16	0	13	137	130.1	0.95	-7	22	99	116.8	1.18	25	27
825	108	97	0.90	6	22	112	120.3	1.07	11	21	79	94.8	1.20	18	18
826	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
827	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
828	117	95.1	0.81	-6	9	131	119.3	0.91	-11	14	66	79.6	1.21	10	10
829	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
830	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
831	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

*Normalized bias and normalized error calculated for hours where observations > 60 ppb

Table V-7-5

June 2008 Base Year 8-Hour Average Ozone Performance for Days When Regional 8-Hour Maximum \geq 85 ppb

Date	Zone 3					Zone 4					Zone 5				
	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)
601	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
602	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
603	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
604	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
605	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
606	87.5	63.9	0.73	-24	24	96.1	90.2	0.94	-14	2	70.4	76.2	1.08	2	15
607	84.5	83.6	0.99	1	16	99.6	92.9	0.93	-10	4	---	---	---	---	---
608	95.2	67.5	0.71	-21	21	92.5	78	0.84	-22	8	68.4	70.6	1.03	-6	8
609	101	86.2	0.85	4	7	88	94	1.07	-3	1	68.2	75.3	1.1	7	7
610	75.5	80.9	1.07	13	13	101.5	94.3	0.93	-13	3	58.2	67.3	1.16	---	---
611	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
612	78.5	85.6	1.09	11	11	98.2	99.1	1.01	3	6	---	---	---	---	---
613	86.2	90.4	1.05	13	13	95.5	97.9	1.03	-4	6	64.1	75.4	1.18	11	11
614	100.9	77	0.76	-6	12	108.9	101	0.93	-15	2	82.4	83	1.01	4	6
612	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
616	99.1	73.6	0.74	-25	25	98	75.5	0.77	-40	25	71	62.7	0.88	-38	38
617	93.6	76.2	0.81	-18	20	105.2	77.2	0.73	-40	25	80.2	68.7	0.86	-15	17
618	61.9	74.2	1.2	0	12	114.9	96	0.84	-22	10	82.9	97.8	1.18	2	9
619	74.8	86.1	1.15	9	9	111.1	105.3	0.95	-6	6	93.9	98.5	1.05	14	15
620	79.8	74.4	0.93	-10	10	111.6	103.4	0.93	-15	4	104.2	94.5	0.91	-2	8
621	95.1	78.5	0.83	-18	18	117.2	127.3	1.09	-4	5	92.4	97.6	1.06	4	8
622	92.2	77.6	0.84	-23	23	111.4	117.9	1.06	5	10	90.1	99	1.1	13	17
623	102.6	64.8	0.63	-26	26	94.8	88.2	0.93	-17	5	64.8	65	1	-14	14
624	82.6	76.5	0.93	-5	7	90.2	91	1.01	-13	7	---	---	---	---	---
625	79.1	77.1	0.97	-2	5	106.9	93.8	0.88	-14	9	---	---	---	---	---
626	74.6	89	1.19	22	22	95	97.5	1.03	-4	11	---	---	---	---	---
627	86.5	77.4	0.89	-5	6	120.9	102.5	0.85	-14	8	60.2	68.6	1.14	-4	4
628	69.9	72.5	1.04	-2	7	113.6	88.7	0.78	-26	12	76.4	70.2	0.92	-9	9
629	72.1	72.9	1.01	0	5	93.8	101	1.08	-5	0	71.9	69.8	0.97	-3	7
630	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

*Normalized bias and normalized error calculated for hours where observations > 60 ppb

Table V-7-6

July 2008 Base Year 8-Hour Average Ozone Performance for Days When Regional 8-Hour Maximum \geq 85 ppb

Date	Zone 3					Zone 4					Zone 5				
	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)
701	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
702	101.5	73.9	0.73	-15	17	103.6	90.8	0.88	-17	4	65.1	74.6	1.15	7	7
703	108	70.9	0.66	-19	19	118.4	123.5	1.04	-2	5	80.5	91.1	1.13	0	16
704	90.8	68.2	0.75	-24	24	124.6	105.8	0.85	-25	12	95.2	84.9	0.89	-16	17
705	87.6	79.1	0.9	-6	13	104.1	106.9	1.03	-7	6	89	77.9	0.88	0	10
706	92.2	88.3	0.96	-5	8	99.1	108.1	1.09	5	8	81.1	92.3	1.14	21	21
707	92.1	82.7	0.9	-7	9	110.4	85.5	0.77	-29	16	71.4	80.2	1.12	2	2
708	102.9	87.4	0.85	-8	10	120	90.8	0.76	-23	10	---	---	---	---	---
709	81.2	80.6	0.99	7	11	108.4	114.9	1.06	4	22	---	---	---	---	---
710	78	105.8	1.36	27	27	90.5	110.4	1.22	0	16	---	---	---	---	---
711	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
712	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
713	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
714	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
715	68	69.3	1.02	2	2	92.4	89.8	0.97	-11	5	---	---	---	---	---
716	82	72.6	0.89	-12	12	95.1	106.7	1.12	0	8	---	---	---	---	---
717	97.1	66.9	0.69	-23	24	126	99.4	0.79	-7	5	---	---	---	---	---
718	100.8	81	0.8	-12	16	122.8	117.8	0.96	3	7	---	---	---	---	---
719	89.5	86.4	0.97	6	9	101.1	111.4	1.1	8	11	---	---	---	---	---
720	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
721	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
722	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
723	74.6	79.5	1.07	15	15	94.9	99.9	1.05	-3	2	---	---	---	---	---
724	99.9	100.6	1.01	6	8	118.8	118.9	1	5	12	67.6	77.4	1.14	7	7
725	90.1	79.7	0.88	-3	8	92.4	102.3	1.11	3	9	---	---	---	---	---
726	77.6	78.4	1.01	1	8	101	102.4	1.01	5	12	---	---	---	---	---
727	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
728	62.9	68.4	1.09	5	5	90.8	79.7	0.88	-16	7	---	---	---	---	---
729	69	78.6	1.14	13	13	100	83	0.83	-18	8	---	---	---	---	---
730	84.9	81.3	0.96	2	7	107.1	90.3	0.84	-11	7	---	---	---	---	---
731	96.8	85.6	0.88	1	7	99.2	95.1	0.96	-12	2	62	71.6	1.15	-5	5

*Normalized bias and normalized error calculated for hours where observations > 60 ppb

Table V-7-7

August 2008 Base Year 8-Hour Average Ozone Performance for Days When Regional 8-Hour Maximum \geq 85 ppb

Date	Zone 3					Zone 4					Zone 5				
	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)
801	102	81.4	0.8	-11	12	112.2	98.4	0.88	-15	3	71	75.7	1.07	-2	2
802	131.1	83	0.63	-23	23	114.1	110.1	0.96	-5	7	84	90.2	1.07	15	15
803	96.4	87.8	0.91	-3	8	101.6	107.3	1.06	0	7	75.4	88.1	1.17	13	13
804	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
805	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
806	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
807	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
808	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
809	59.9	62	1.04	---	---	89.6	77.4	0.86	-9	1	43.5	56.9	1.31	---	---
810	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
811	76	78.4	1.03	5	5	93.8	100.1	1.07	6	8	45.8	69.3	1.51	---	---
812	96	79.4	0.83	0	12	103	94.9	0.92	-7	6	60.2	77.6	1.29	18	18
813	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
814	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
815	83.9	81.1	0.97	-2	4	118	92.3	0.78	-14	4	50.3	62.1	1.23	---	---
816	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
817	71.4	69.4	0.97	-2	4	85.9	92.2	1.07	-5	1	60	64.7	1.08	---	---
818	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
819	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
820	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
821	82.2	74.8	0.91	1	8	101.8	98.7	0.97	8	17	45.9	78.9	1.72	---	---
822	71.4	76.9	1.08	15	15	92.9	106.6	1.15	11	18	51.2	71	1.39	---	---
823	66.6	88.7	1.33	28	28	101.1	101.7	1.01	-4	8	67.5	76.4	1.13	3	3
824	75.6	92.4	1.22	11	12	105.8	105.7	1	-12	7	79	100.1	1.27	24	24
825	86.1	76.4	0.89	-1	15	79.4	96.7	1.22	7	10	55.5	78.8	1.42	---	---
826	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
827	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
828	85.1	76.6	0.9	-4	5	119	94.9	0.8	-15	5	53.6	68.3	1.27	---	---
829	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
830	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
831	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

*Normalized bias and normalized error calculated for hours where observations > 60 ppb

Table V-7-8

Coachella Valley Zone-9 Base Year 8-Hour Average Ozone Performance for Days When Regional 8-Hour Maximum \geq 85 ppb

Date	June					July					August				
	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)
1	---	---	---	---	---	---	---	---	---	---	90.5	68.1	0.75	-21	21
2	---	---	---	---	---	88.1	66.6	0.76	-16	16	70.1	63.3	0.9	-10	10
3	---	---	---	---	---	85.6	77.9	0.91	1	9	---	---	---	---	---
4	---	---	---	---	---	55.2	67.1	1.22	-2	11	---	---	---	---	---
5	---	---	---	---	---	62.8	66.2	1.05	-4	4	---	---	---	---	---
6	97.5	68.7	0.7	-22	22	68	70.5	1.04	-16	16	---	---	---	---	---
7	77.4	74.4	0.96	-10	10	65.2	61.3	0.94	-14	14	---	---	---	---	---
8	70.5	54.7	0.78	-19	19	83.5	65.4	0.78	-27	27	---	---	---	---	---
9	80.2	67.4	0.84	-11	12	---	---	---	---	---	66.1	72	1.09	-3	3
10	88.1	81.1	0.92	-9	9	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	80	72.9	0.91	-2	7
12	74.4	76.9	1.03	4	6	---	---	---	---	---	80.5	75.3	0.94	-8	9
13	81.9	56.4	0.69	-24	24	---	---	---	---	---	---	---	---	---	---
14	99.2	67.7	0.68	-25	25	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	82.9	71.8	0.87	-11	11	96.2	74.5	0.77	-15	15
16	80.9	71.2	0.88	-15	15	90.1	77.6	0.86	-14	14	---	---	---	---	---
17	71.4	75.2	1.05	-4	9	94.4	74.8	0.79	-15	15	74.2	83.7	1.13	6	7
18	91.9	69.6	0.76	-19	19	87.1	76.7	0.88	-8	11	---	---	---	---	---
19	83.6	64	0.77	-8	9	---	---	---	---	---	---	---	---	---	---
20	90.8	69.9	0.77	-19	19	---	---	---	---	---	---	---	---	---	---
21	75.5	82.1	1.09	10	15	---	---	---	---	---	70.5	68.3	0.97	-1	5
22	63.2	77.6	1.23	25	25	---	---	---	---	---	74.9	65.1	0.87	-11	12
23	75	70.8	0.94	-10	10	79.9	72.2	0.9	-7	7	62.2	73.8	1.19	3	4
24	76.8	73.6	0.96	-11	12	84.6	81.6	0.96	6	8	---	---	---	---	---
25	101.2	78.2	0.77	-19	19	65.5	73.8	1.13	10	10	---	---	---	---	---
26	93.9	81.5	0.87	-16	16	63.2	64.4	1.02	4	4	---	---	---	---	---
27	81.6	62.7	0.77	-21	21	---	---	---	---	---	---	---	---	---	---
28	78.1	63.6	0.81	-24	24	79	75.6	0.96	-5	5	74.1	71.5	0.96	-6	9
29	81.5	71	0.87	-14	14	84.8	78	0.92	-13	13	---	---	---	---	---
30	---	---	---	---	---	87.1	68.4	0.79	-22	22	---	---	---	---	---
31	---	---	---	---	---	82.5	75.9	0.92	-16	17	---	---	---	---	---

*Normalized bias and normalized error calculated for hours where observations > 60 ppb

Graphical Evaluation

Figures V-7-3 through V-7-8 show the diurnal trends of observed and predicted 8-hour ozone for the each day from June 1 through August 31, 2008 for six stations following a transport route from the coastal area of the Basin to inland Crestline and Banning. Supplemental diurnal observed and predicted 8-hour ozone for all remaining air quality sites are provided as Attachment 3 to this appendix. In general, the coastal-metropolitan areas of the Basin show reasonable agreement between observed and predicted diurnal distributions for June but as observations trend well below 80 ppb in July and August, the performance shifts to over prediction. The San Gabriel and San Bernardino Valley sites are relatively unbiased with mixed but reasonably good performance – over predicting on some days while displaying the reverse on others. Performance at Crestline displays a slight bias towards under prediction but several peak days are well characterized. Banning is the eastern most Basin site and furthest removed from the main source of NOx emissions. Ozone predictions at Banning track the peak concentrations well but nighttime NOx scavenging is not well represented in the simulations.

Figure V-7-9 depicts the scatter plots of observed and predicted 8-hour daily maximum ozone for Zones 3, 4 and 5 merged for the three months. A minimum observed threshold of 60 ppb is used in the data selection. V-7-10 provides the same scatter plot for Zone 9. The general tendency is for peak prediction to fall within 10 percent of the centerline perfect fit. Zone 9 tends to exhibit under prediction.

Overall, it is important to note that the effects of prediction biases or errors are mitigated by the use of relative response factors for the attainment analysis.

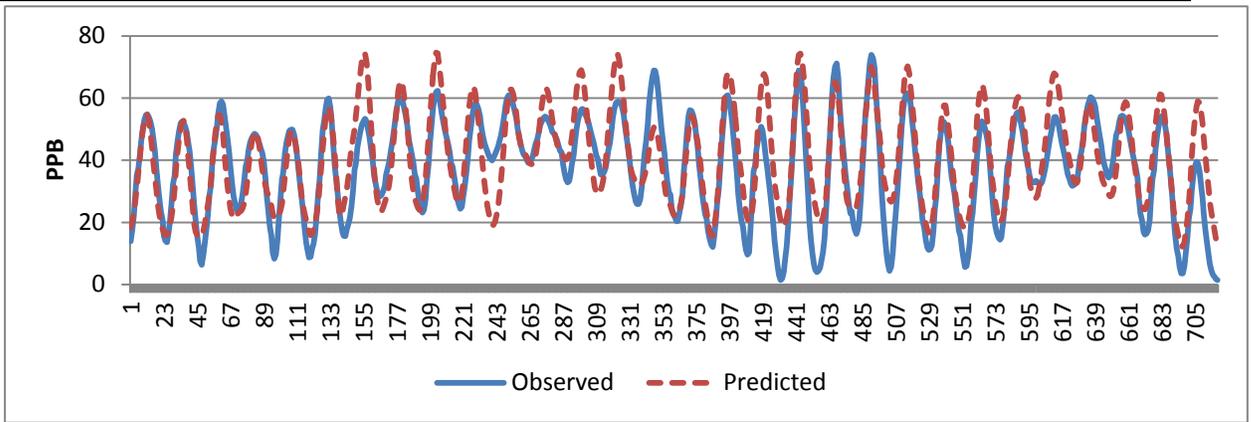


Figure V-7-3a

Time Series of Observed Vs. Predicted 8-Hour West Los Angeles Ozone: June, 2008

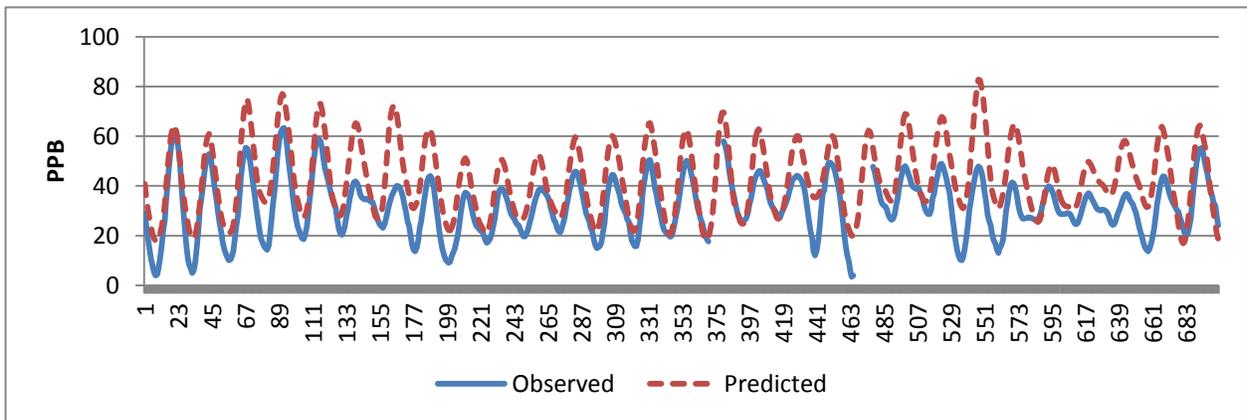


Figure V-7-3b

Time Series of Observed Vs. Predicted 8-Hour West Los Angeles Ozone: July, 2008

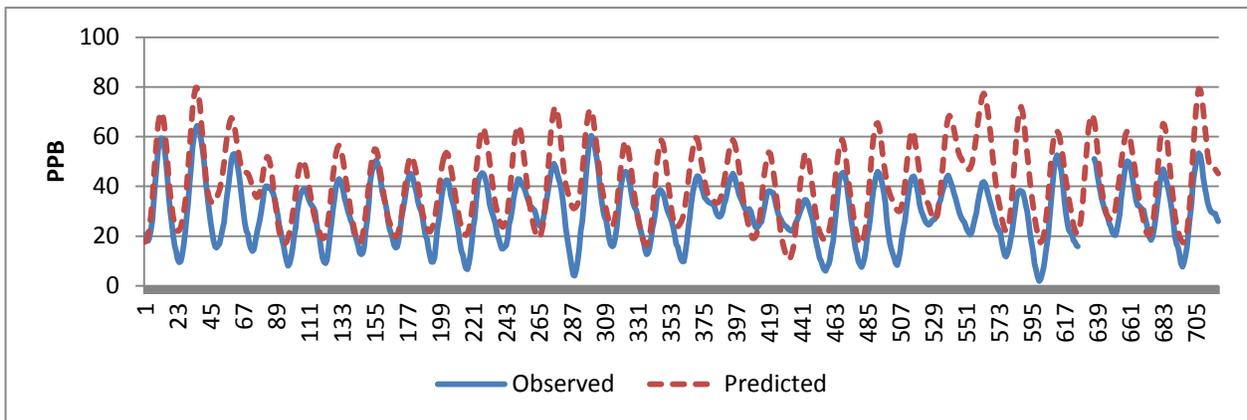


Figure V-7-3c

Time Series of Observed Vs. Predicted 8-Hour West Los Angeles Ozone: August, 2008

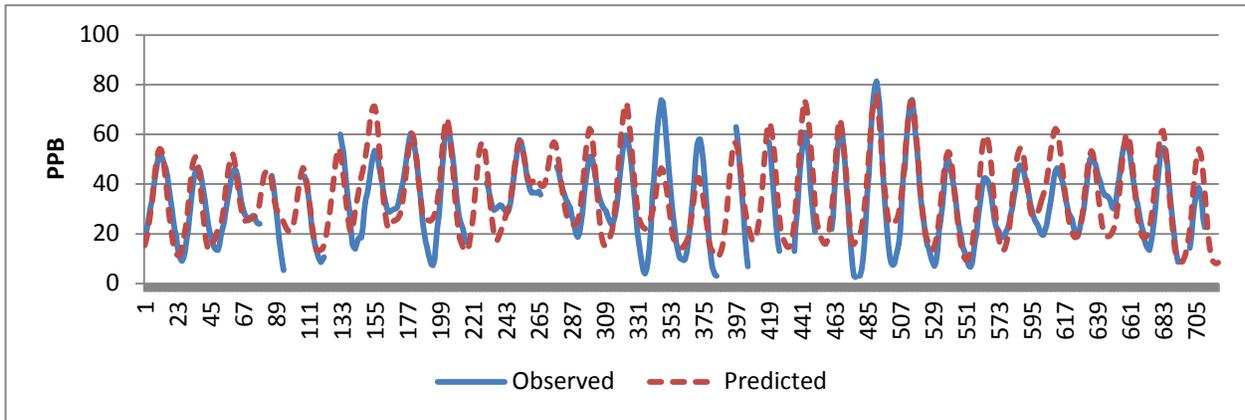


Figure V-7-4a

Time Series of Observed Vs.Predicted 8-Hour Los Angeles Ozone: June, 2008

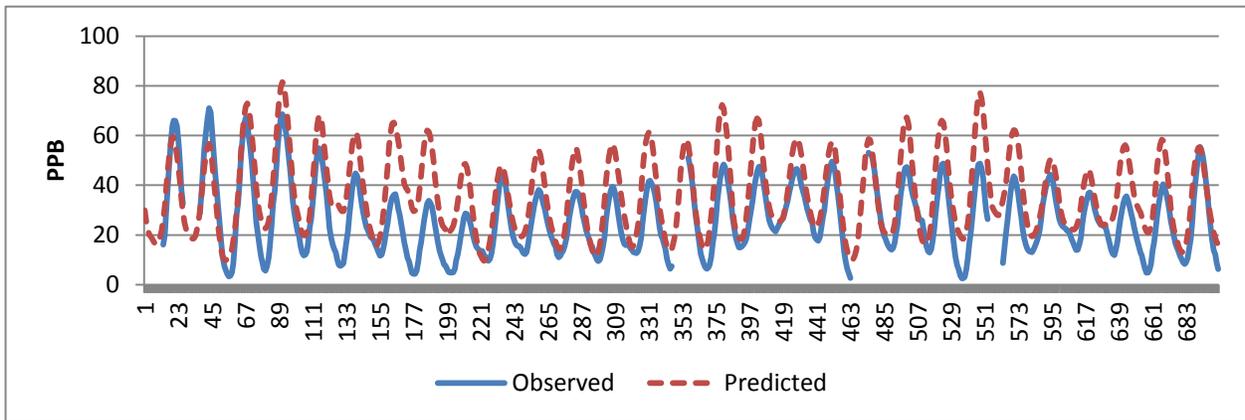


Figure V-7-4b

Time Series of Observed Vs.Predicted 8-Hour Los Angeles Ozone: July, 2008

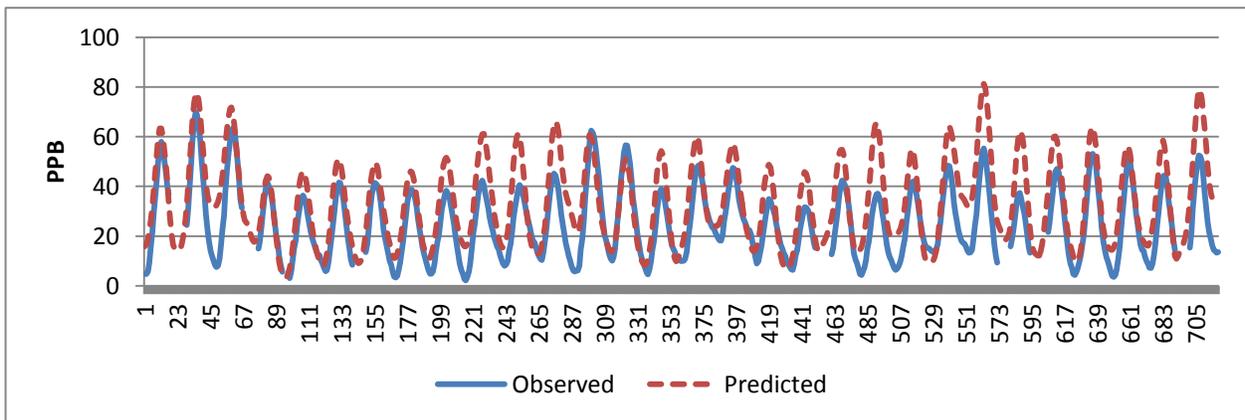


Figure V-7-4c

Time Series of Observed Vs.Predicted 8-Hour Los Angeles Ozone: August, 2008

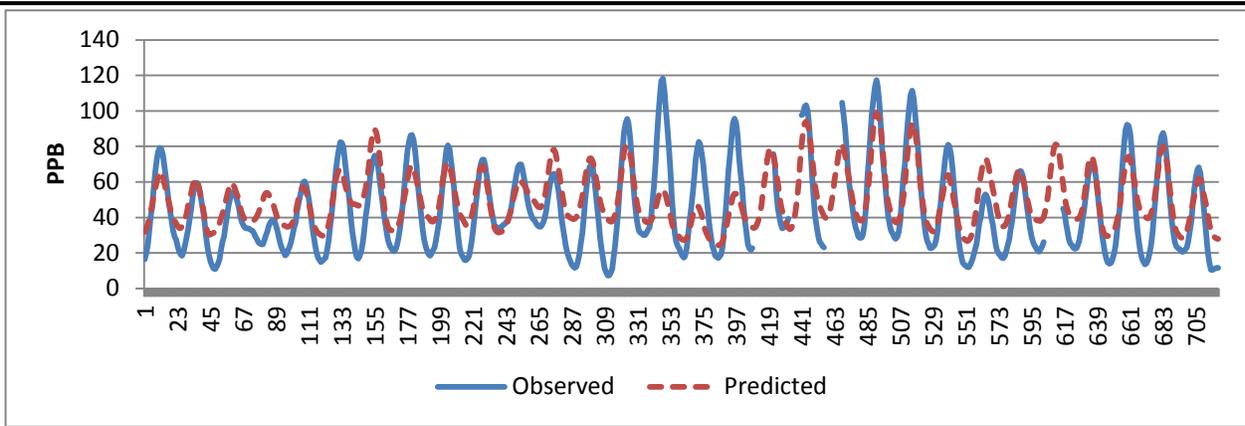


Figure V-7-5a

Time Series of Observed Vs. Predicted 8-Hour Glendora Ozone: June, 2008

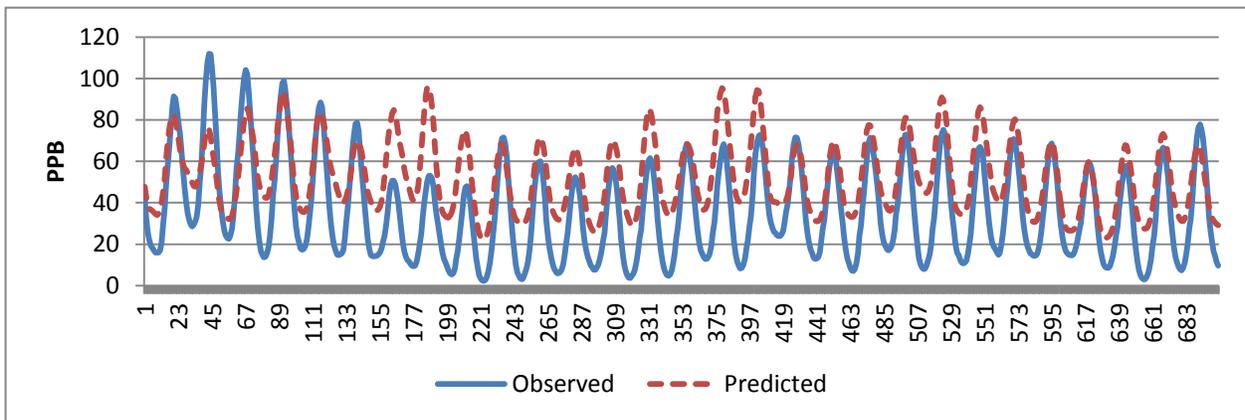


Figure V-7-5b

Time Series of Observed Vs. Predicted 8-Hour Glendora Ozone: July, 2008

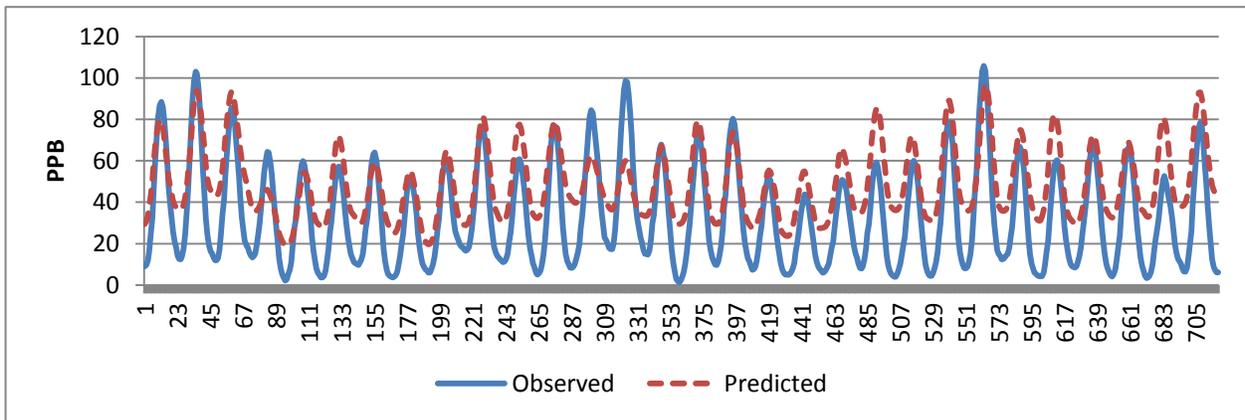


Figure V-7-5c

Time Series of Observed Vs. Predicted 8-Hour Glendora Ozone: August, 2008

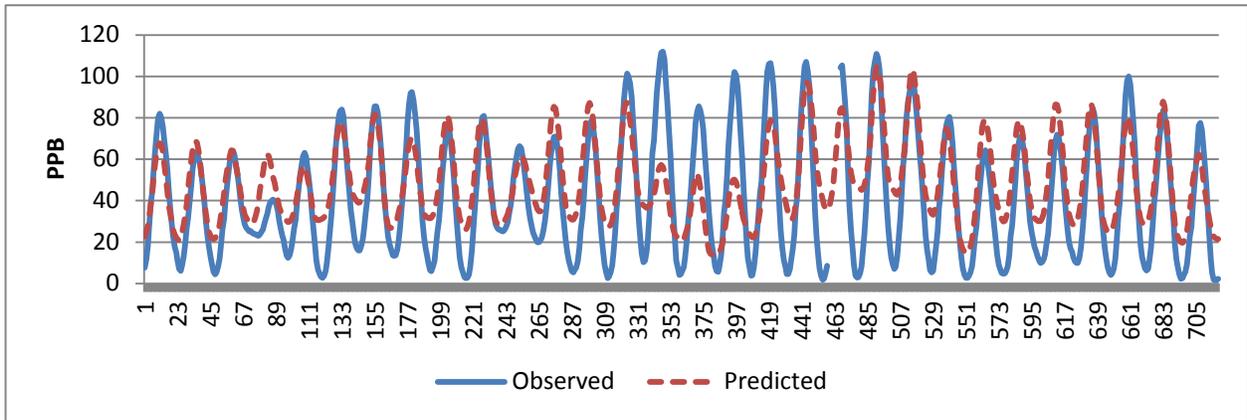


Figure V-7-6a

Time Series of Observed Vs.Predicted 8-Hour Fontana Ozone: June, 2008

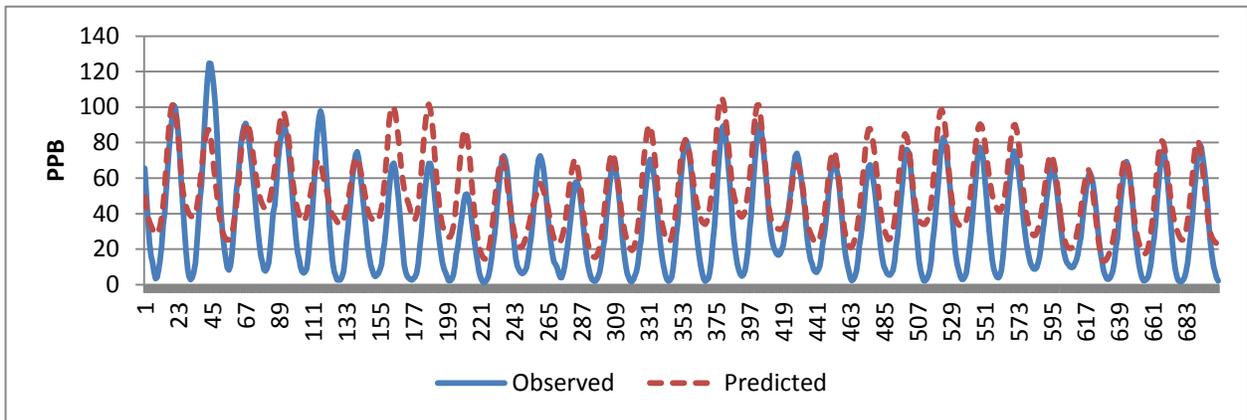


Figure V-7-6b

Time Series of Observed Vs.Predicted 8-Hour Fontana Ozone: July, 2008

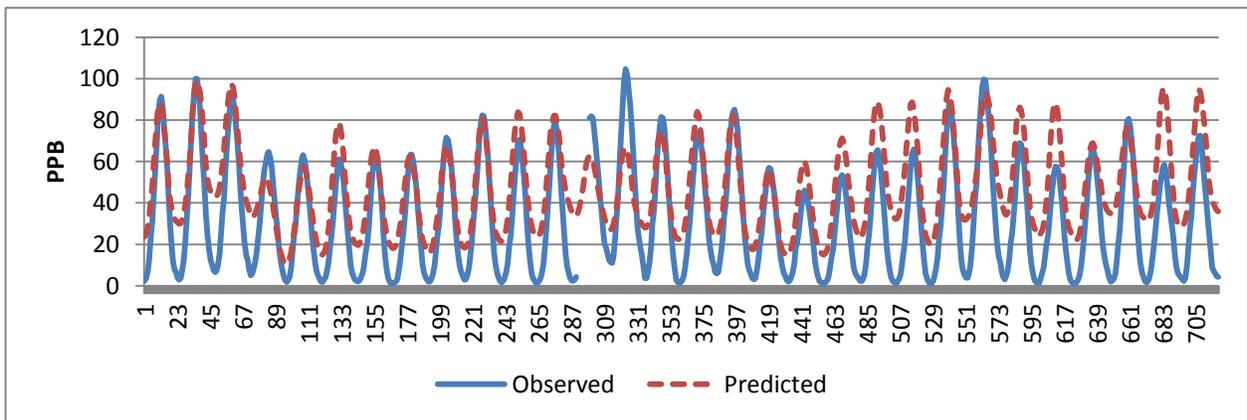


Figure V-7-6c

Time Series of Observed Vs.Predicted 8-Hour Fontana Ozone: August, 2008

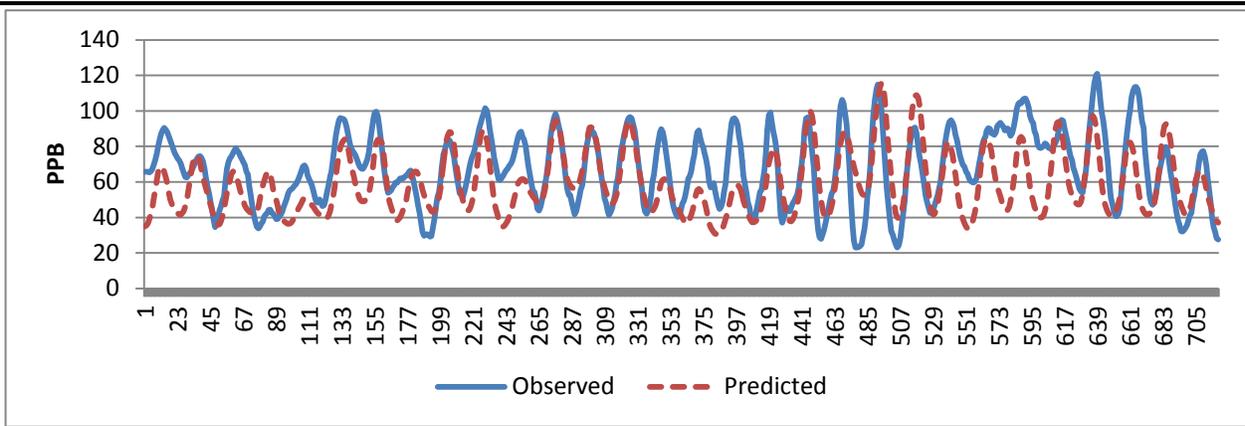


Figure V-7-7a

Time Series of Observed Vs.Predicted 8-Hour Crestline Ozone: June, 2008

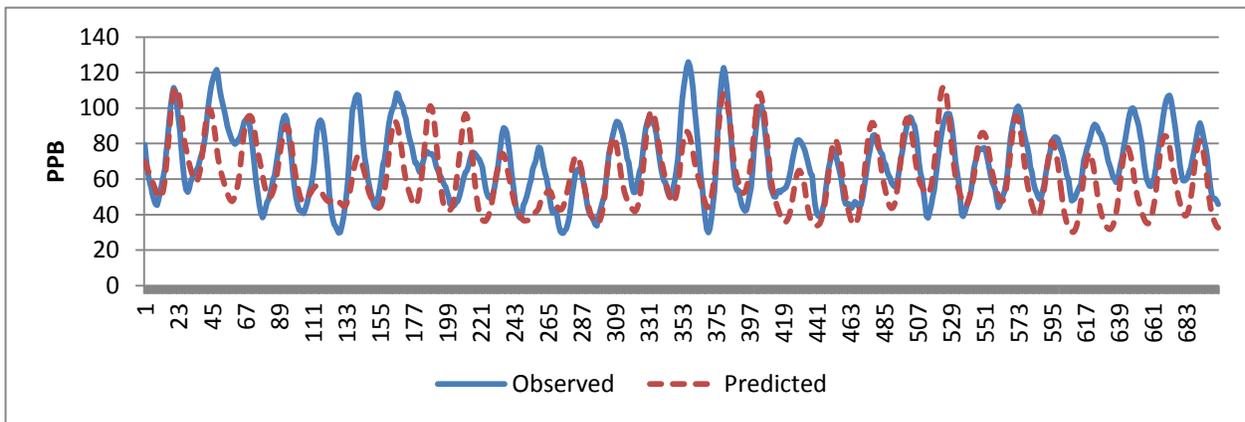


Figure V-7-7b

Time Series of Observed Vs.Predicted 8-Hour Crestline Ozone: July, 2008

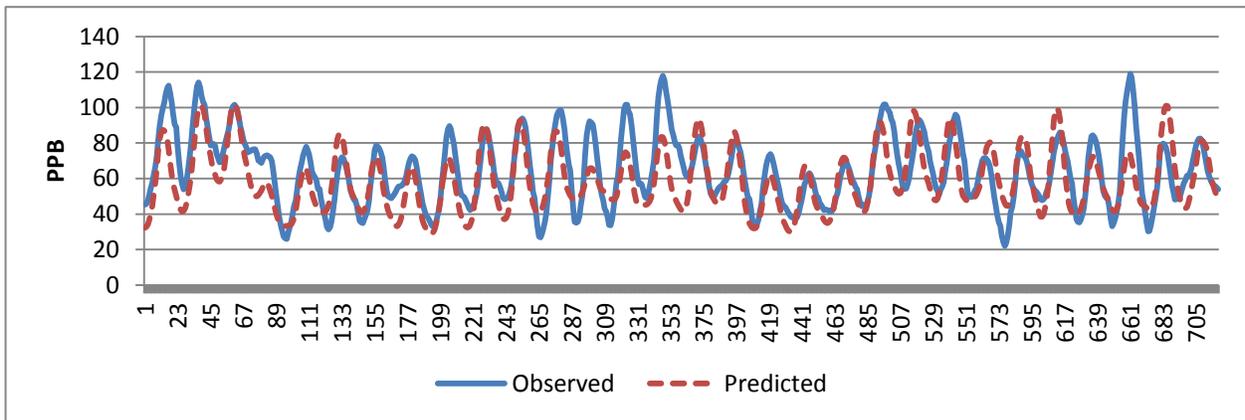


Figure V-7-7c

Time Series of Observed Vs.Predicted 8-Hour Crestline Ozone: August, 2008

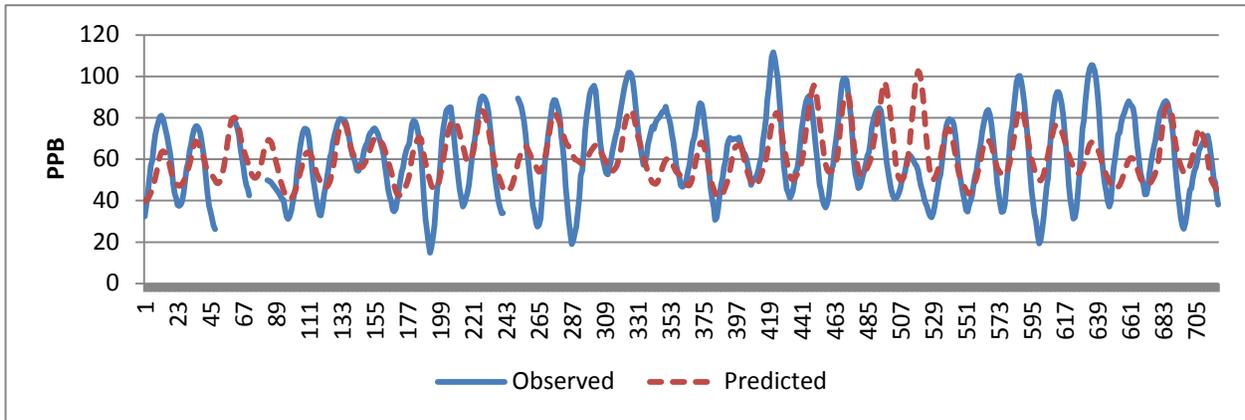


Figure V-7-8a

Time Series of Observed Vs.Predicted 8-Hour Banning Ozone: June, 2008

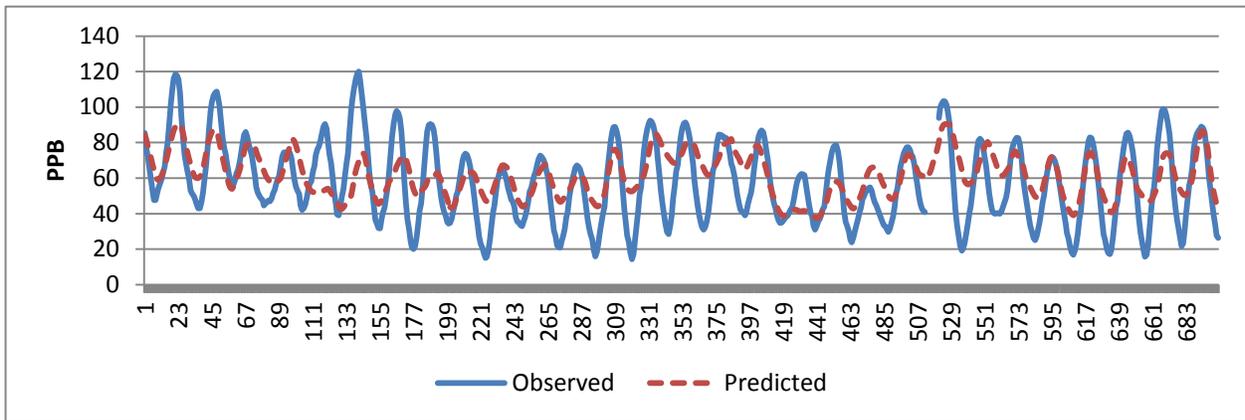


Figure V-7-8b

Time Series of Observed Vs.Predicted 8-Hour Banning Ozone: July, 2008

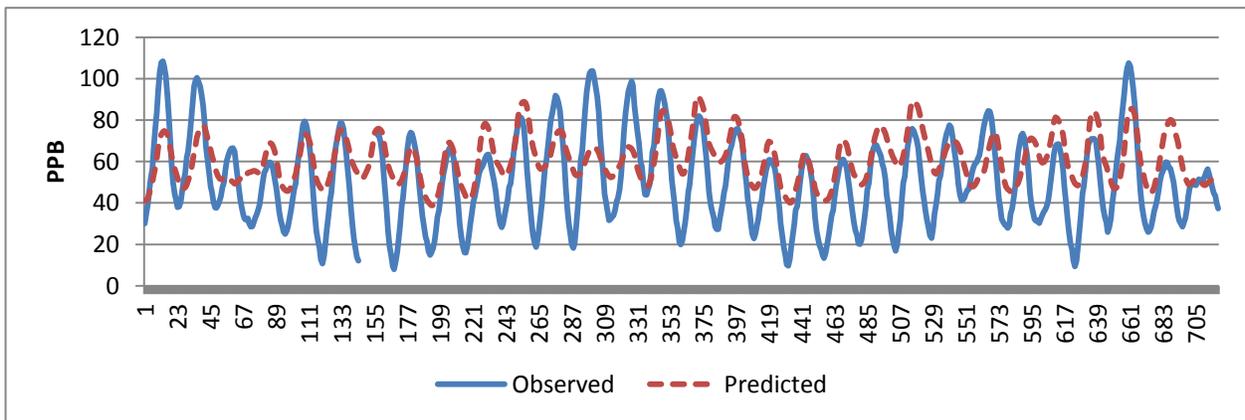


Figure V-7-8c

Time Series of Observed Vs.Predicted 8-Hour Banning Ozone: August, 2008

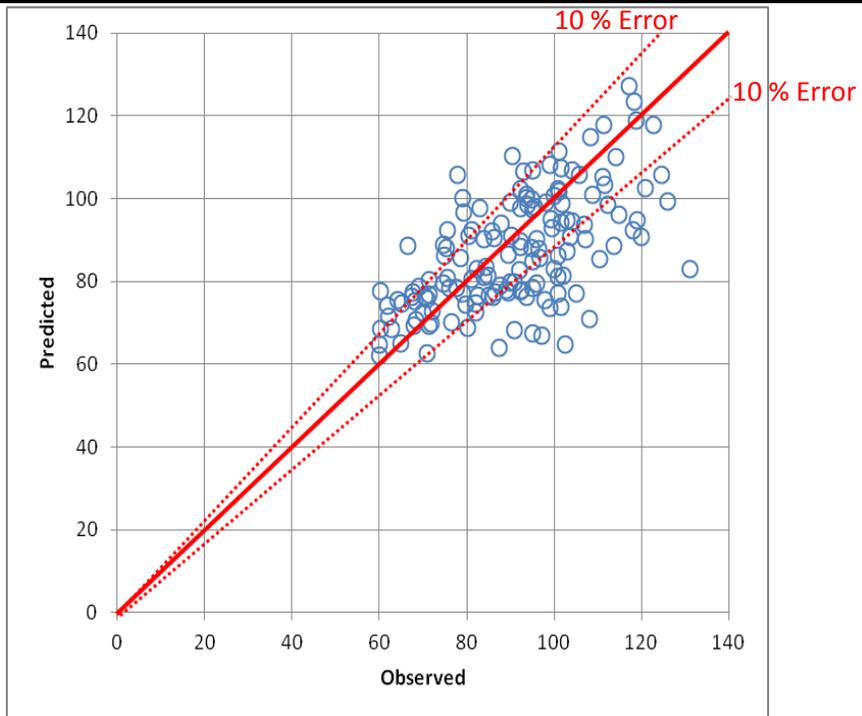


Figure V-7-9

Observed Vs. Predicted 8-Hour Sub Regional Ozone Maximums: Zones 3, 4 and 5 Combined

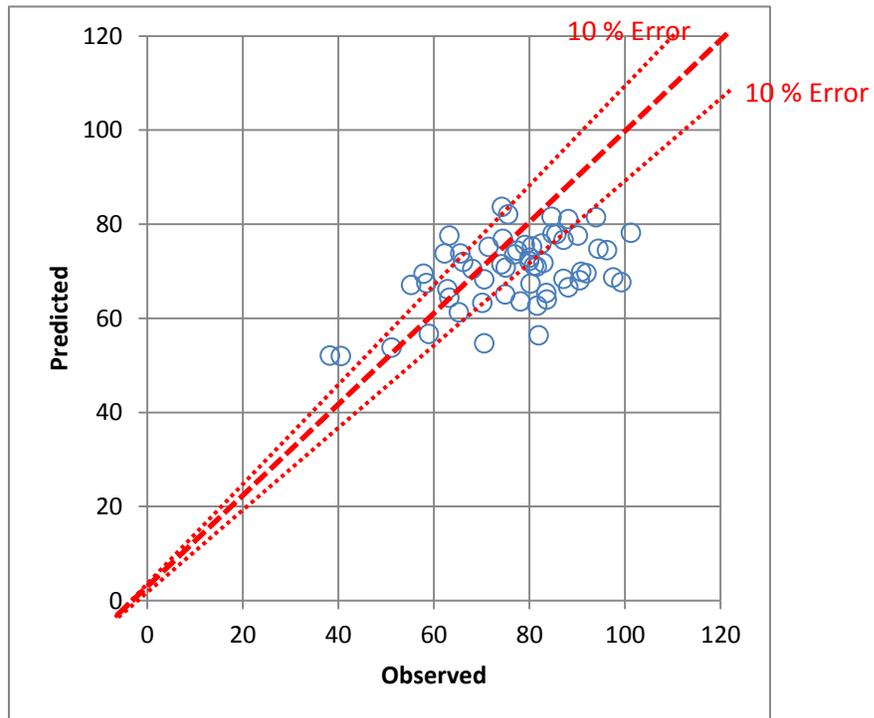


Figure V-7-10

Observed Vs. Predicted 8-Hour Sub Regional Ozone Maximums: Zones 9

OZONE MODELING APPROACH

The ozone modeling approach used in this update follows the same criteria employed for the 2007 AQMP attainment demonstration. Briefly, the set of 91 days from June 1 through August 30, 2008 were simulated as a subset of the annual PM_{2.5} simulations, and were analyzed to determine daily 8-hour average maximum ozone for the 2008 and 2023 emissions inventories. A separate 2023 simulation was conducted to assess future year ozone with VOC and NO_x emissions specified at the levels defined by the 2007 AQMP attainment demonstration carrying capacity (420 TPD VOC and 114 TPD NO_x). Finally, a set of simulations with incremental VOC and NO_x emissions reductions from 2023 baseline emissions was generated to create ozone isopleths for each station in the Basin. The ozone isopleths provide updated guidance for the formulation of the future control strategies, particularly in light of the challenge of demonstrating attainment with the current 75 ppb standard in a SIP to be submitted to U.S. EPA in 2015.

The ozone RRFs were calculated using the ratio methodology described for the PM_{2.5} modeling. Individual station day inclusion in the analysis was determined by three basic criteria: (1) the observed ozone concentration had to be \pm 30 percent of the station's weighted design value; (2) the absolute prediction accuracy of the base 2008 simulation for that day was required to be within 20 percent; and (3) the observed daily maximum concentration needed to be greater than 84 ppb. The criteria were designed to eliminate extreme values from entering the analysis and to only focus on station days where model performance met the long standing criteria for acceptance used in previous attainment demonstrations. Finally, only station days where ozone exceeded the 84 ppb threshold established to demonstrate attainment to the 1997 ozone standard as specified in the U.S. EPA Modeling Attainment Guidance Document were included in the analysis.

FUTURE OZONE AIR QUALITY

Table V-7-9 summarizes the results of the updated ozone simulations. Included in the table are the 2023 ozone baseline and 2023 controlled ozone projections from the 2007 AQMP ozone attainment demonstration modeling analysis approved by U.S. EPA as part of the SIP. The Draft Final 2012 AQMP base year ozone simulations reflect the changes made to the 2023 base year inventory. The Draft Final 2012 AQMP summer planning inventory has a higher ratio between VOC and NO_x emissions (1.39 vs. 1.05) although total tonnages of both precursor emissions are lower than presented in the 2007 AQMP. The higher VOC to NO_x ratio is indicative of a more reactive pollutant mix with average projected ozone design concentrations 9 percent higher than previously projected. One implication of this simulation is that moderate VOC emissions

reductions in the years between 2014 and 2023 will benefit regional ozone concentrations. Yet, the projected 2023 baseline design value of 108 PPB continues to exceed the federal standard by 35 percent. With the implementation of the Draft Final 2012 AQMP short term control measures and the Section 185(e)(5) long-term control measures, (defined in this update as the difference between the Draft Final 2012 AQMP 2023 baseline VOC and NO_x emissions and the corresponding 2007 AQMP ozone attainment demonstration carrying capacity for the Basin), projected regional ozone design values closely match those defined in the 2007 AQMP ozone attainment demonstration. Regardless, it will still require a 64 percent reduction in NO_x emissions and an additional 3 percent reduction in VOC emissions to attain the 1997 ozone standard. With controls in place, the updated analysis corroborates the approved 2007 AQMP ozone attainment demonstration in that it is expected that all stations in the Basin will meet the federal 8-hour ozone standard.

The east Basin stations in the San Bernardino Valley continue to have among the highest projected 8-hour controlled design values for this update. The 2023 controlled ozone design value at Glendora is also projected to exceed 80 ppb. Glendora, Upland, Fontana and San Bernardino are downwind receptors along the primary wind transport route that moves precursor emissions and developing ozone eastward by the daily sea breeze. The higher projected design value at Glendora reflects the higher VOC to NO_x ratio observed in the baseline inventory relative to the 2007 AQMP 2023 baseline inventory. The 2023 controlled design at Glendora for the Draft Final 2012 AQMP actually represents a greater response to emissions reductions than in the 2007 AQMP attainment demonstration. Future year projections of ozone for this update along the northerly transport route through the San Fernando Valley indicate that the ozone design value in the Santa Clarita Valley will be approximately 15 percent below the standard.

TABLE V-7-9

Model-Predicted 8-Hour Ozone Concentrations (ppb)

Location	2007 Ozone SIP 2023 Baseline Design	2007 Ozone SIP 2024 Controlled Design	Draft Final 2012 AQMP Updated 2023* Baseline Design	Draft Final 2012 AQMP Updated* 2024 Controlled Design
Azusa	82	80**	95	77
Burbank	86	70**	88	72
Reseda	86	68	90	73
Pomona	85	75	100	80
Pasadena	78	74**	92	76
Santa Clarita	95	74	94	73
Glendora	91	79	107	84
Riverside	92	78	100	77
Perris	94	78***	88	66
Lake Elsinore	80	64	85	66
Banning	88	70	94	73
Upland	92	78	106	83
Crestline	100	83	107	81
Fontana	97	81	104	81
San Bernardino	92	78	108	83
Redlands	98	81	103	77

* Informational purpose only based on preliminary emissions inventories.

** Based on the city-station specific RRF's determined from the 19 episode day average.

*** Based on the average of the RRF's determined from the stations meeting the criteria having more than 5 episode days.

Spatial Projections of 8-Hour Ozone Design Values

The spatial distribution of ozone design values for the 2008 base year is shown in Figure V-7-11. Future year ozone air quality projections for 2024 with and without implementation of all control measures are presented in Figures V-7-12 and V-7-13. The predicted ozone concentrations will be significantly reduced in the future years in all parts of the Basin with the implementation of proposed control measures in the South Coast Air Basin.

Coachella Valley

The results of the CMAQ 8-hour ozone simulations conducted for 2014 and 2019 also indicate that the two Coachella sites, Palm Springs and Indio will meet the federal standard by the 2019 attainment date. The projected 2018 8-hour ozone design for the Coachella Valley portion of the Salton Sea Air Basin will be 84 ppb.

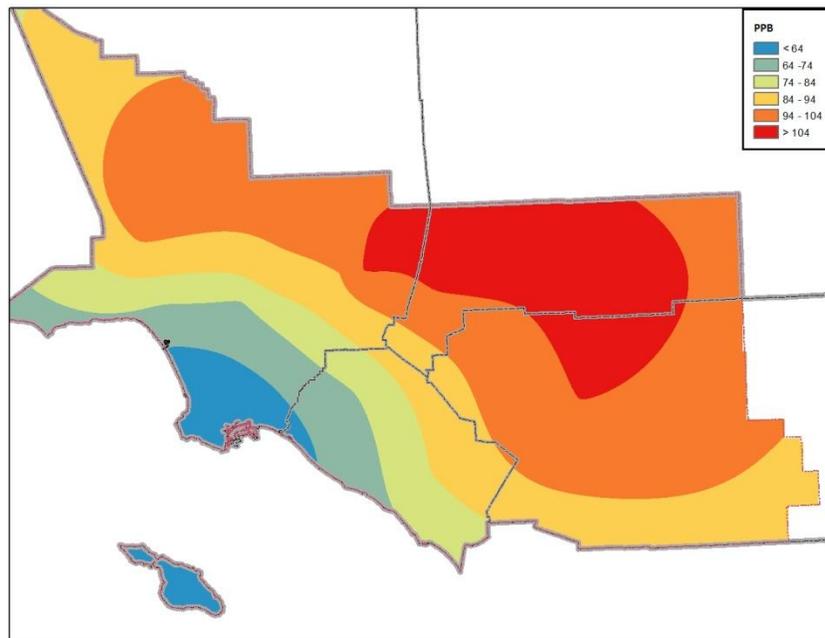


FIGURE V-7-11
2008 Baseline 8-Hour Ozone Design Concentrations (ppb)

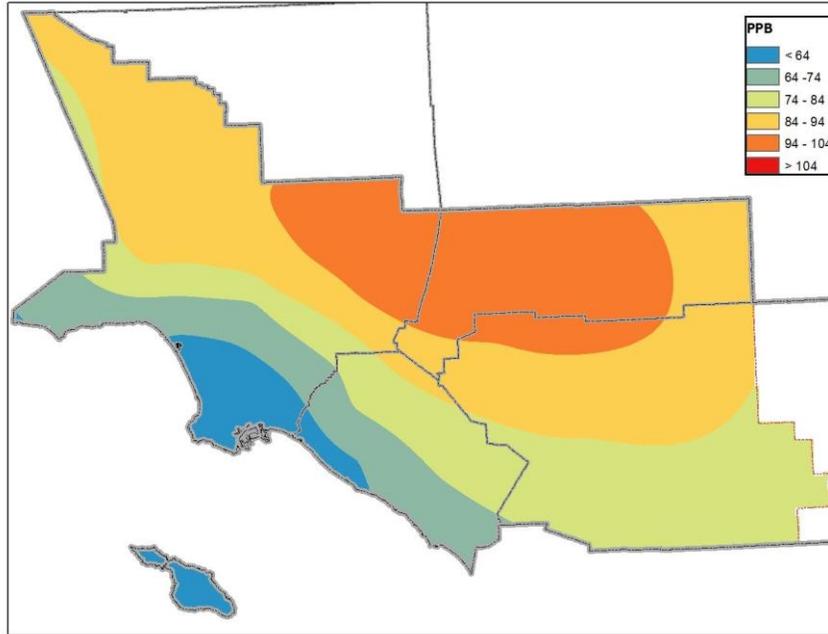


FIGURE V-7-12

Model-Predicted 2024 Baseline 8-Hour Ozone Design Concentrations (ppb)

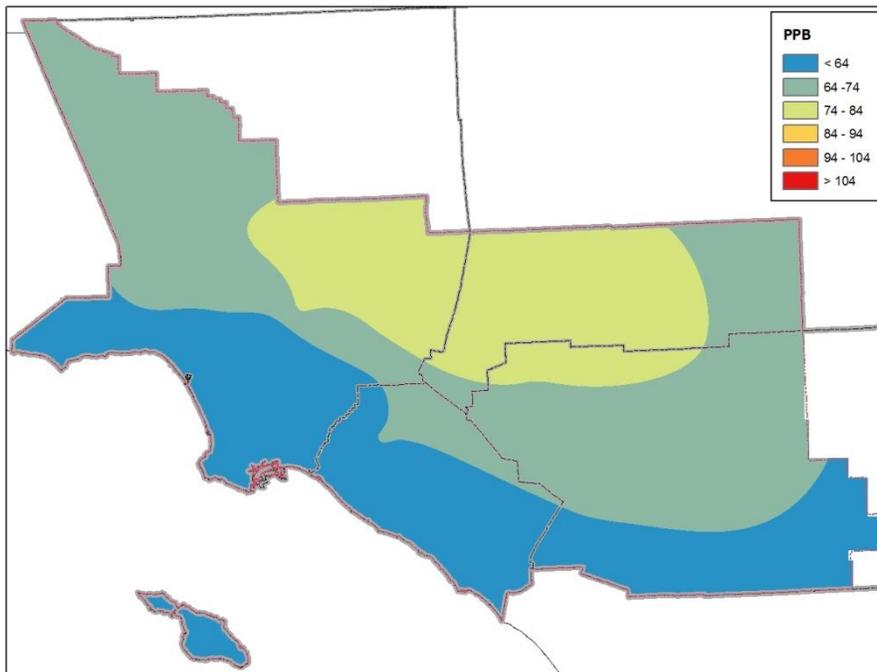


FIGURE V-7-13

Model-Predicted 2024 Controlled 8-Hour Ozone Design Concentrations (ppb)

LOOKING BEYOND 2023

The 2006 8-hour ozone standard is 75 ppb. The 2007 AQMP was focused on attainment of the 1997 8-hour ozone standard of 80 ppb. As of the writing of this document, the 2006 8-hour ozone implementation rule has not been finalized by U.S. EPA. The likely attainment date for Basin attainment of the 75 ppb standard is 2032. It is important to consider how much additional emissions reductions will be required for future attainment of this new standard. Figure V-7-14 provides the ozone isopleth for Crestline generated from the set of ozone simulations conducted during this analysis. Relying on the NOx heavy control strategy, it is projected that a reduction of NOx emissions exceeding 70 percent of the 2023 baseline (313 TPD) will be required to meet the 75 ppb standard. Additional NOx reductions will be required if the 8-hour ozone standard is lowered beyond 75 ppb.

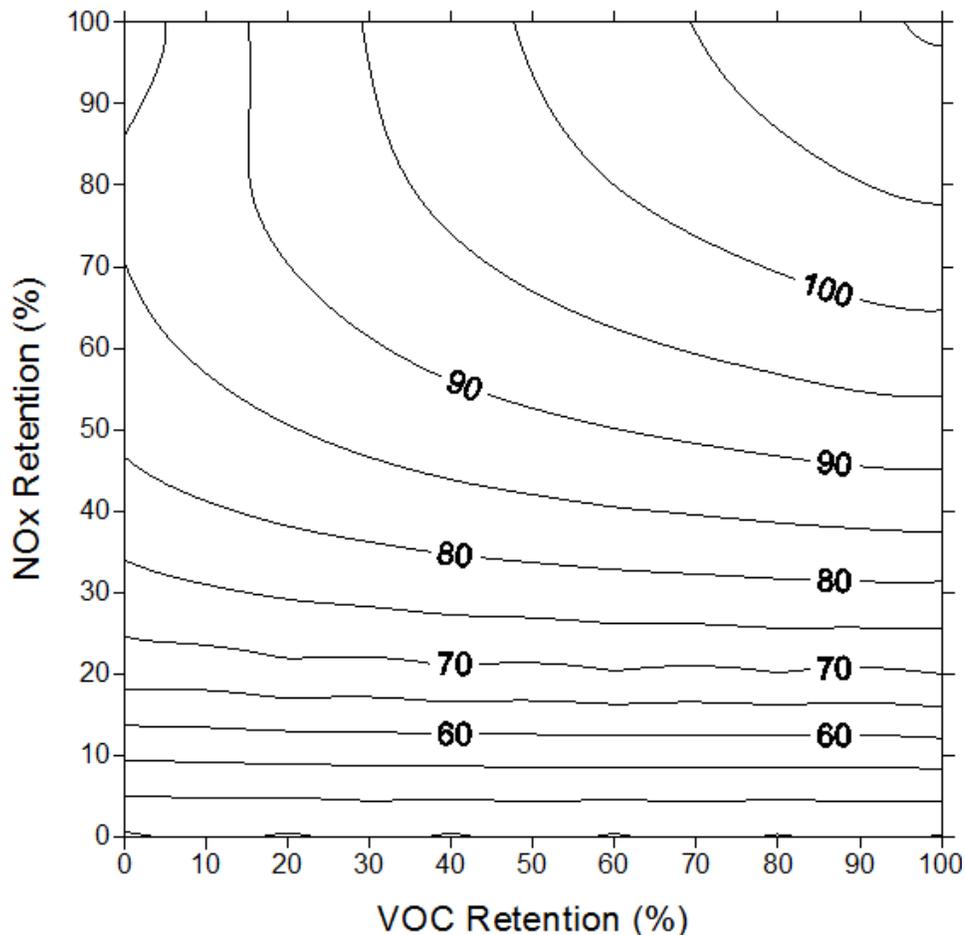


Figure V-7-14
2023 Crestline 8-Hour Ozone Isopleth

CHAPTER 8

SUMMARY AND CONCLUSIONS

Comparison to State and Federal Standards

COMPARISON TO STATE AND FEDERAL STANDARDS

Figure V-8-1 shows the 2008 observed and 2014 model-predicted regional peak concentrations for 24-hour average and annual PM_{2.5} as percentages of the most stringent federal standard. The federal 24-hour and annual PM_{2.5} standards are predicted to be attained in 2014 with implementation of the Draft Final 2012 AQMP control measures. The California annual PM_{2.5} standard will not be attained before 2019. (see Figure V-8-2).

The challenge of attaining the proposed revision to the federal annual PM_{2.5} standard will depend on the final selection of a standard threshold at a value between 12 and 13 $\mu\text{g}/\text{m}^3$.

Given the changes made to the modeling platform, the number of episodes evaluated, and the distinct changes in the projected Draft Final 2012 AQMP 2023 baseline inventory, projected 8-hour ozone design values with implementation of the short and long term controls are very consistent with those presented in the 2007 AQMP attainment demonstration. Again, an approximate 65 percent reduction in NO_x emissions in 2023 will be required to meet the 1997 8-hour ozone standard of 80 ppb by 2024. More reductions will be required to meet the 2006 8-hour ozone standard by 2032.

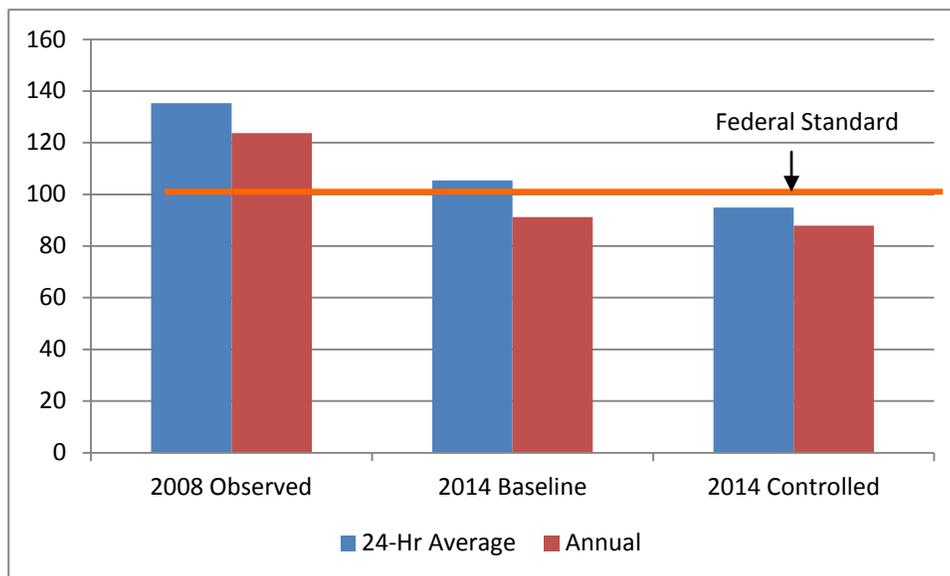


FIGURE V-8-1

Projection of Future Air Quality in the Basin as a percentage of the federal standards.

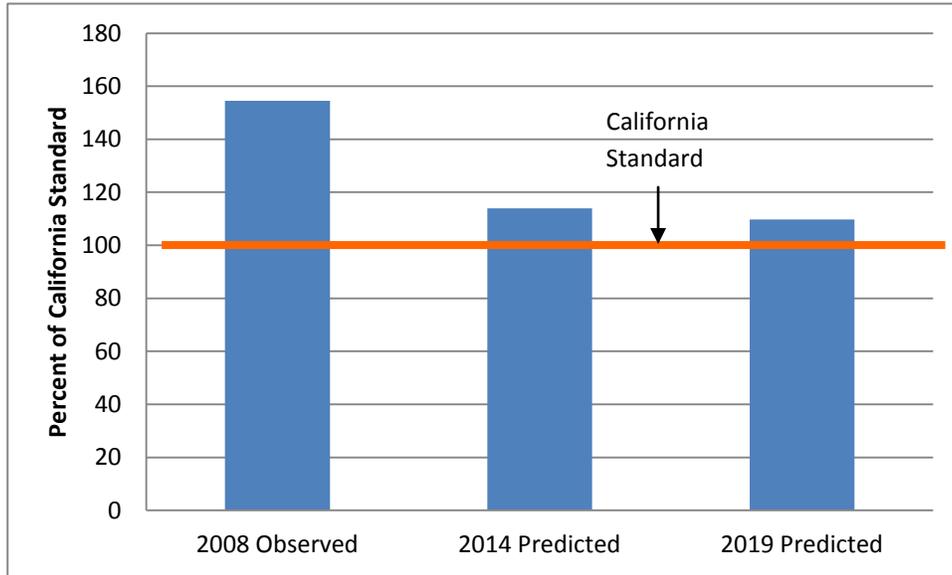


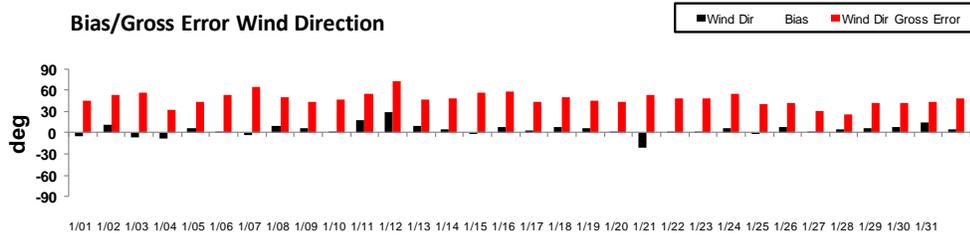
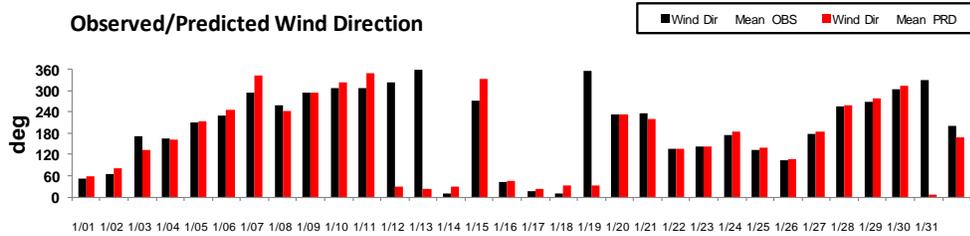
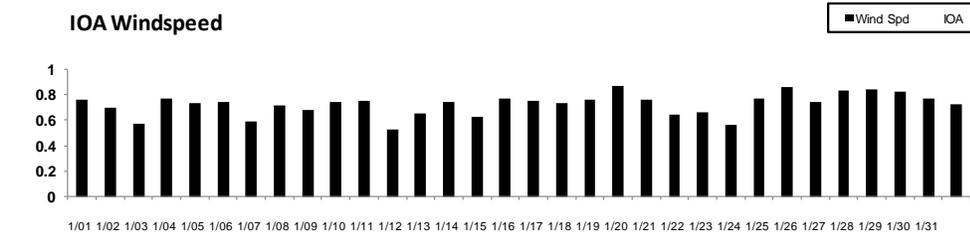
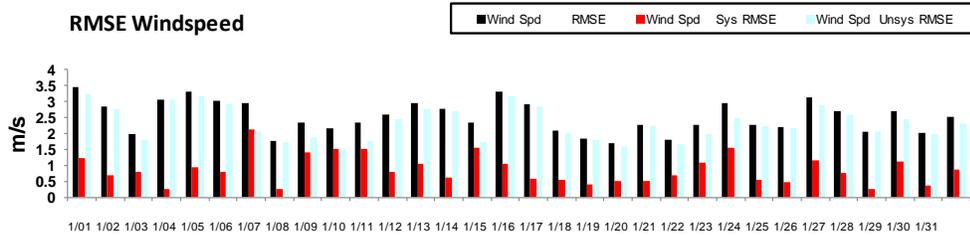
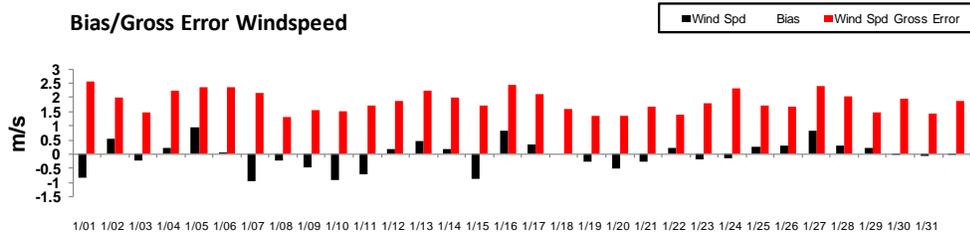
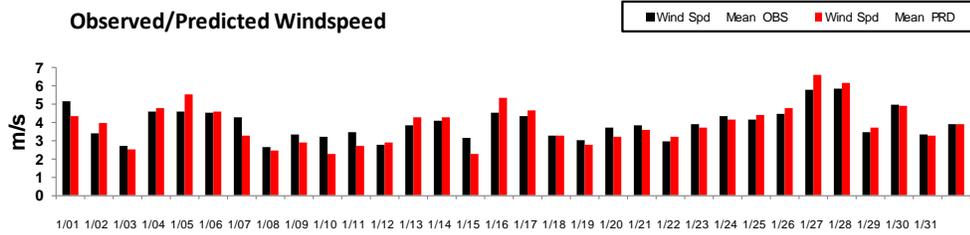
FIGURE V-8-2

Projection of Future PM_{2.5} in the Basin as a percentage of the California state standard

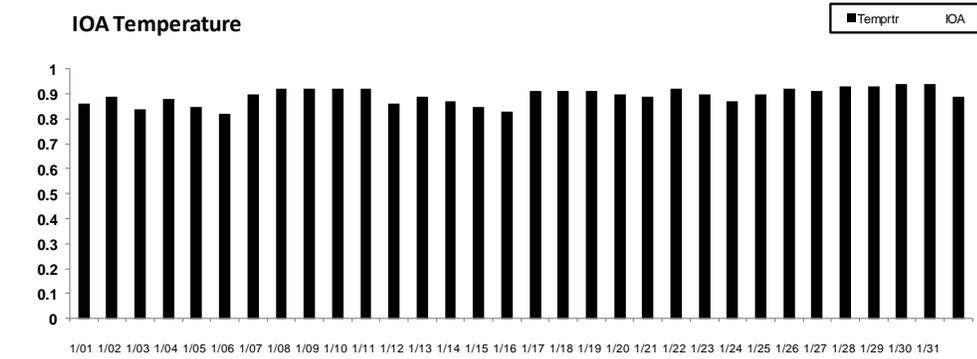
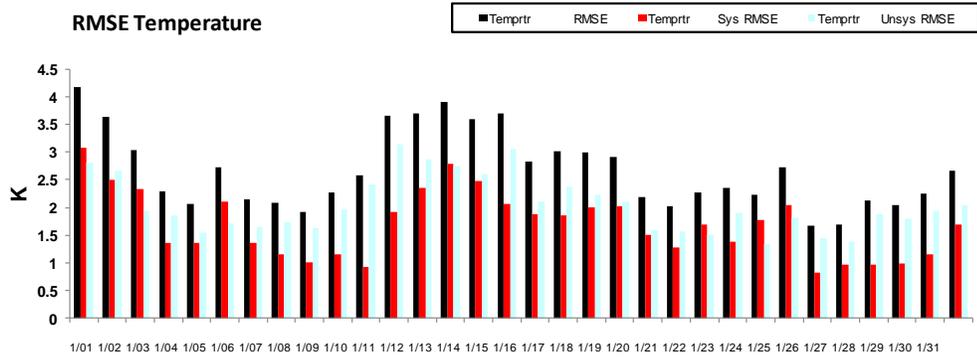
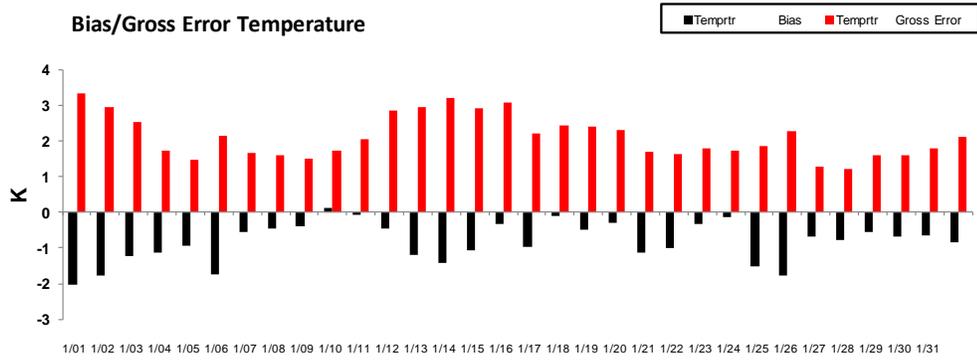
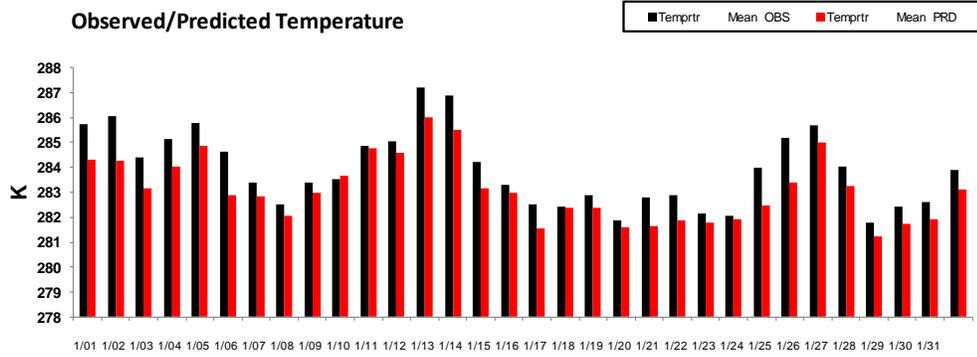
Attachment 1

WRF METSTAT Model Graphical Performance Statistics

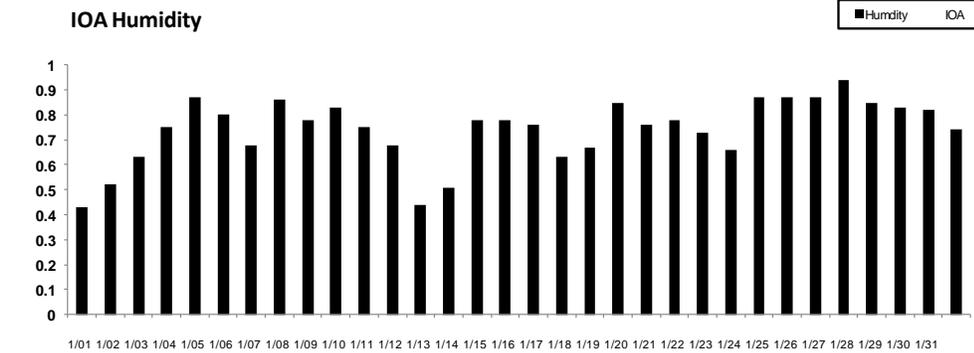
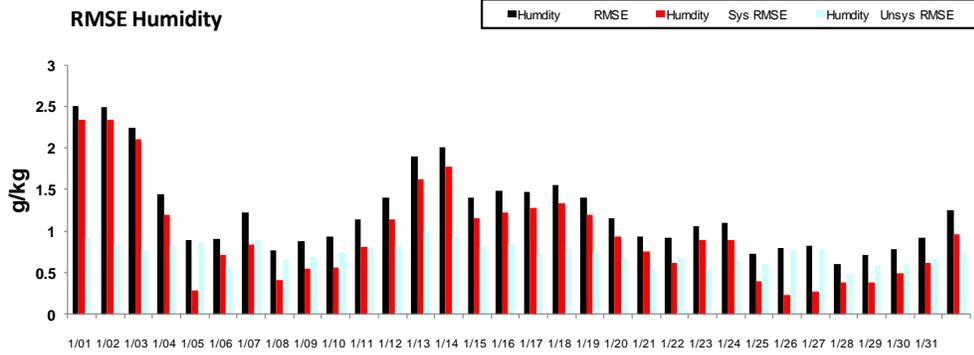
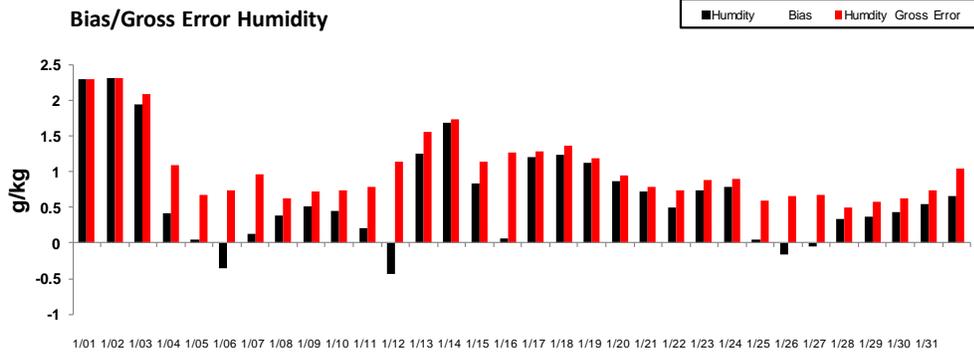
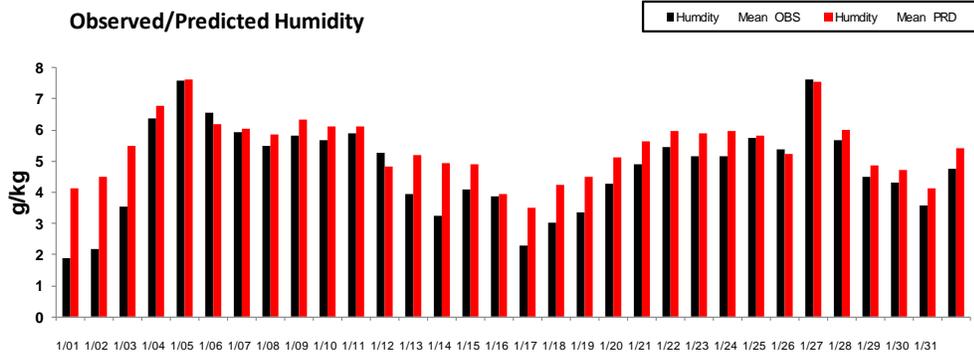
January Wind Speed & Direction



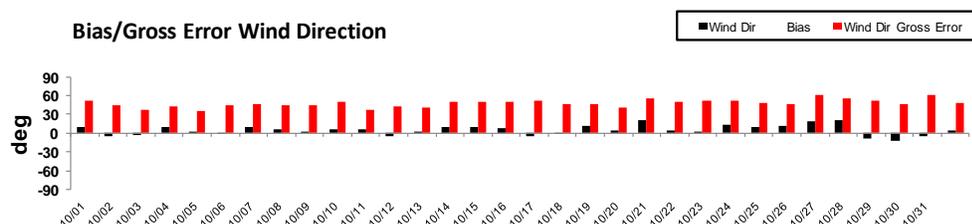
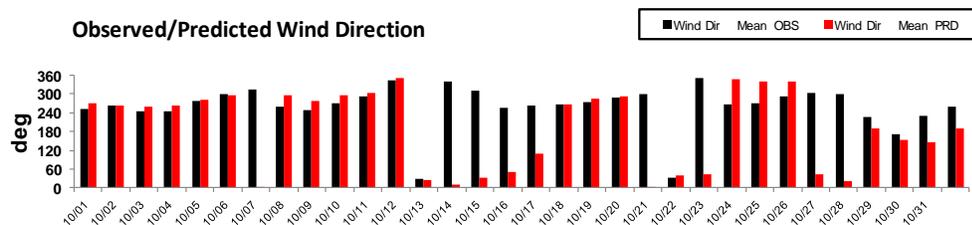
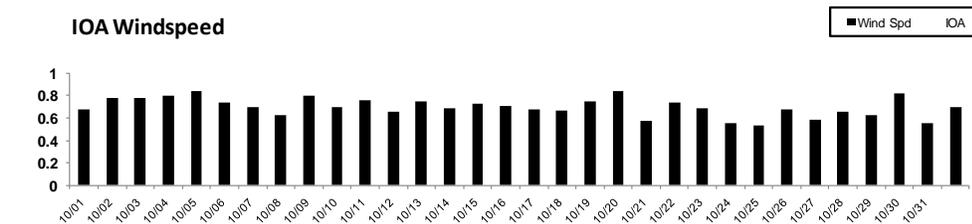
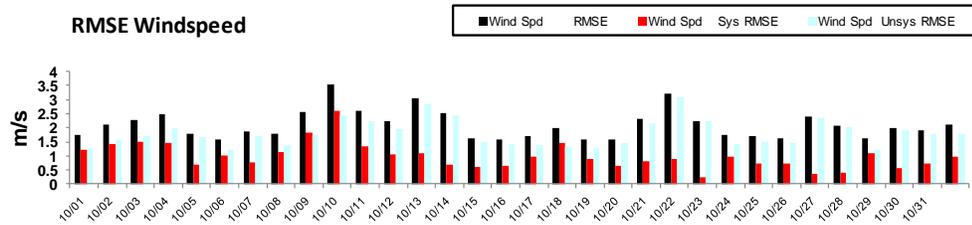
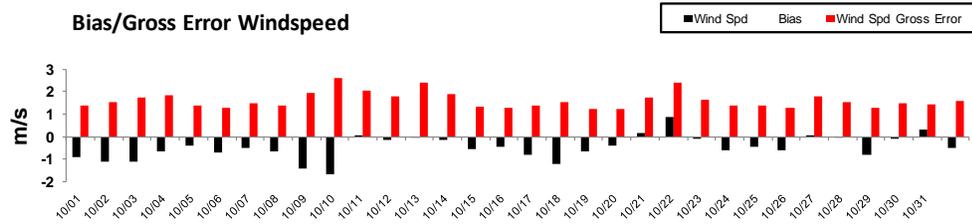
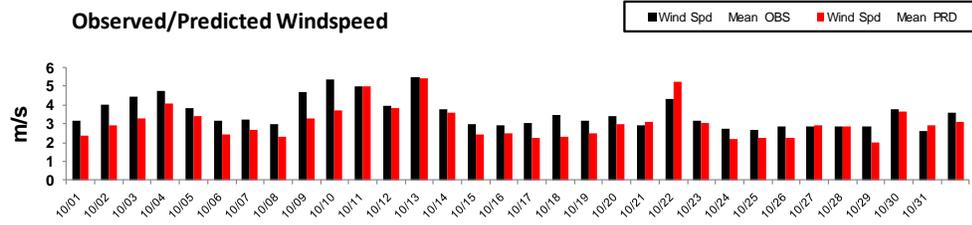
January Temperature



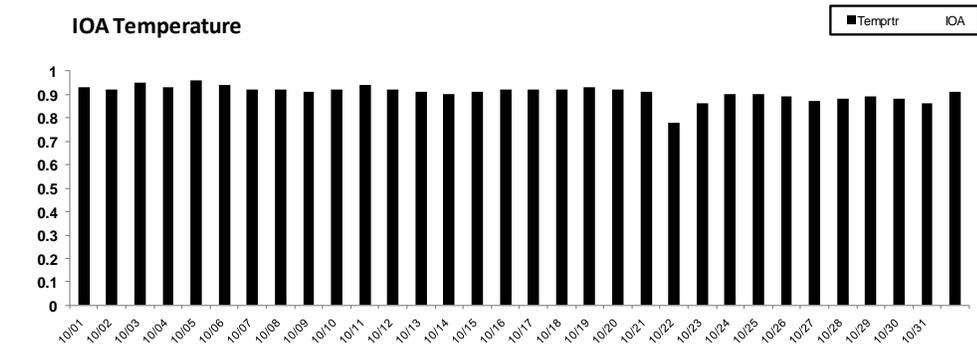
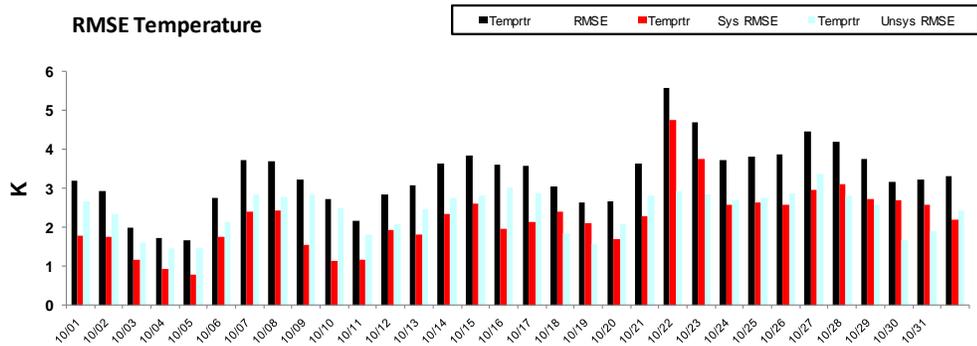
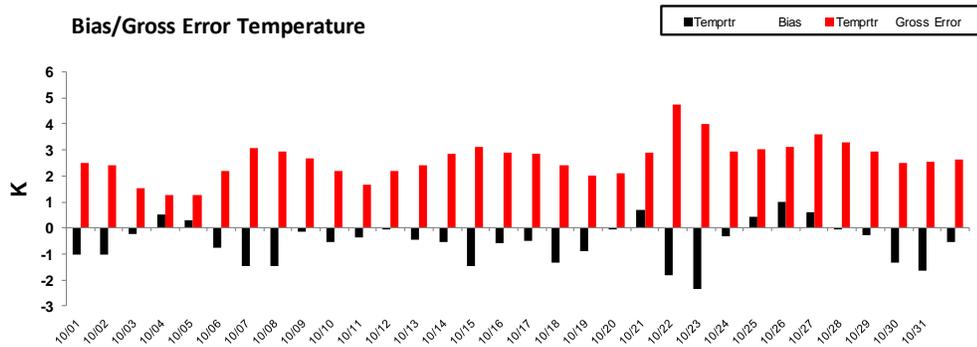
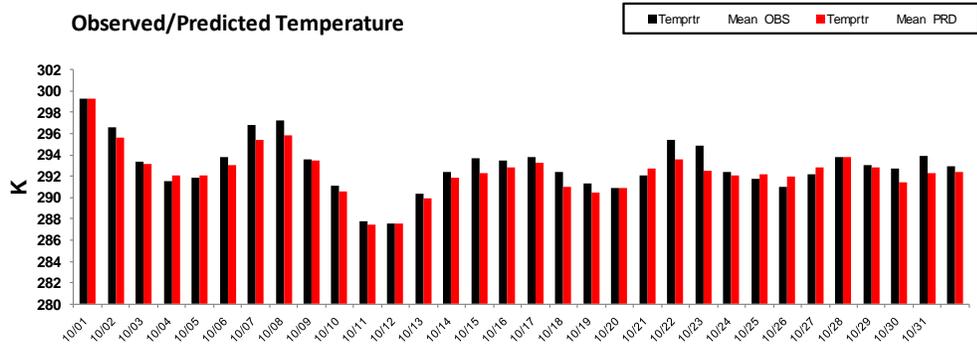
January Humidity



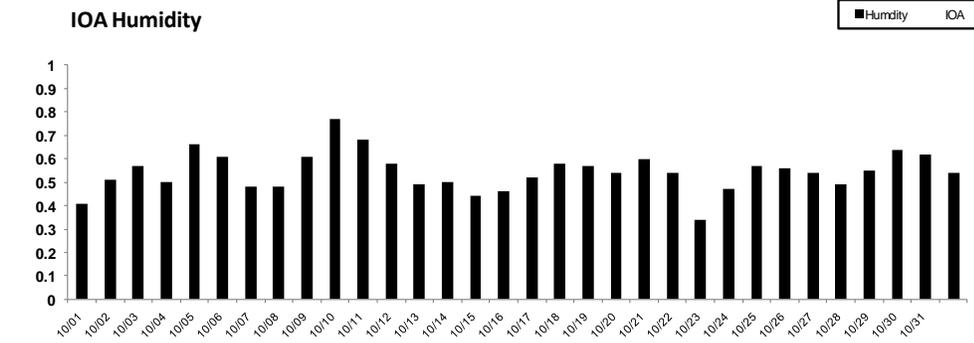
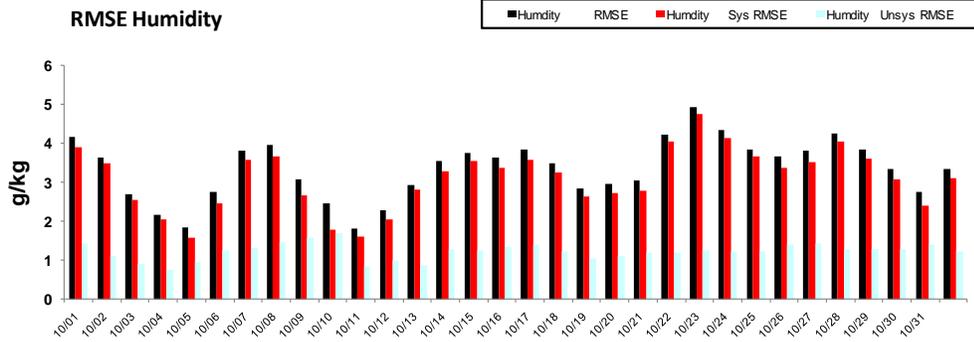
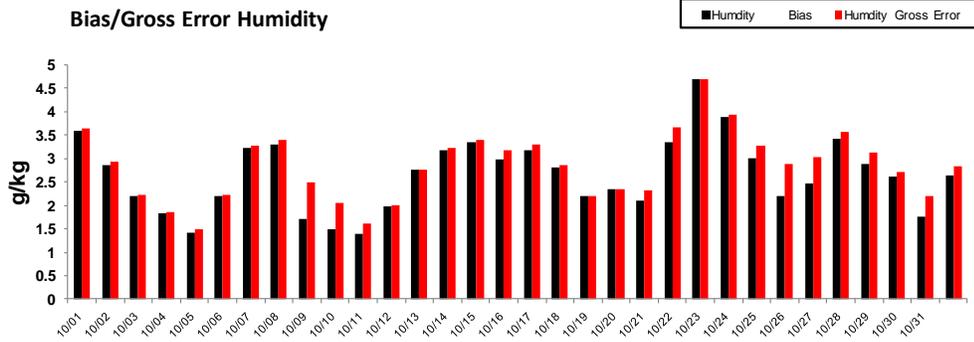
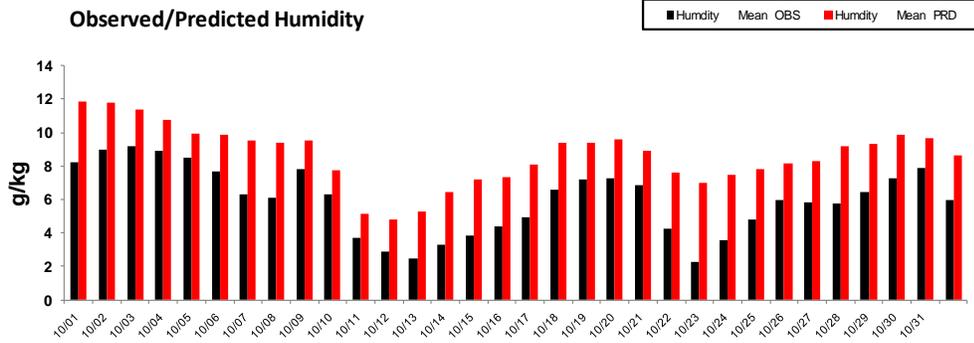
October Wind



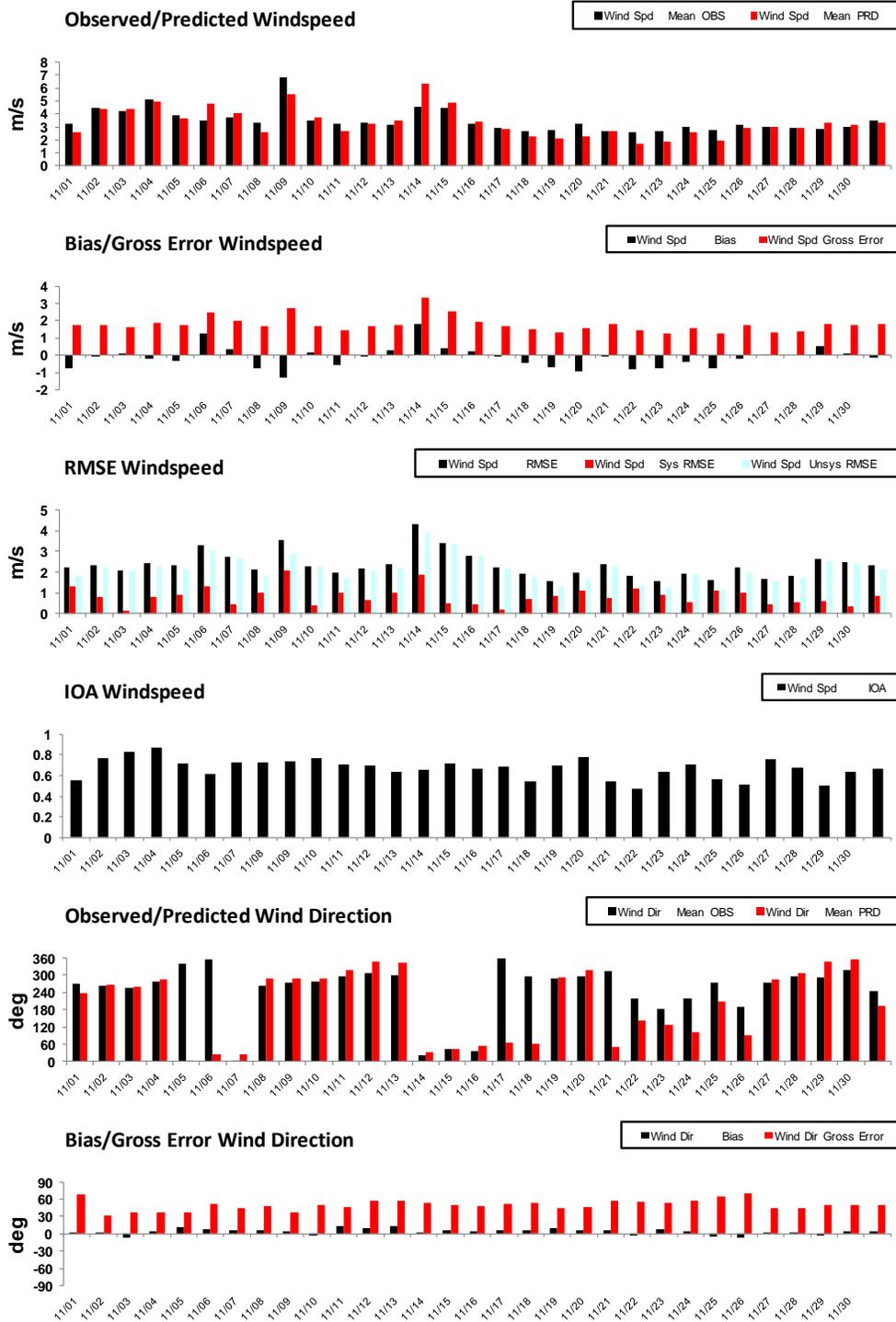
October Temperature



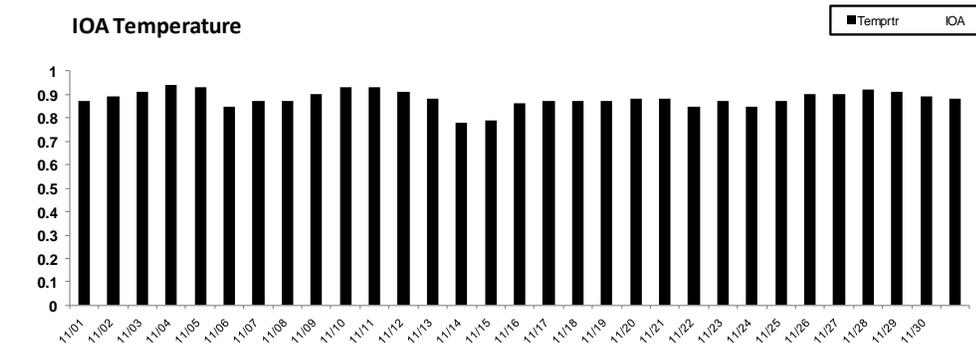
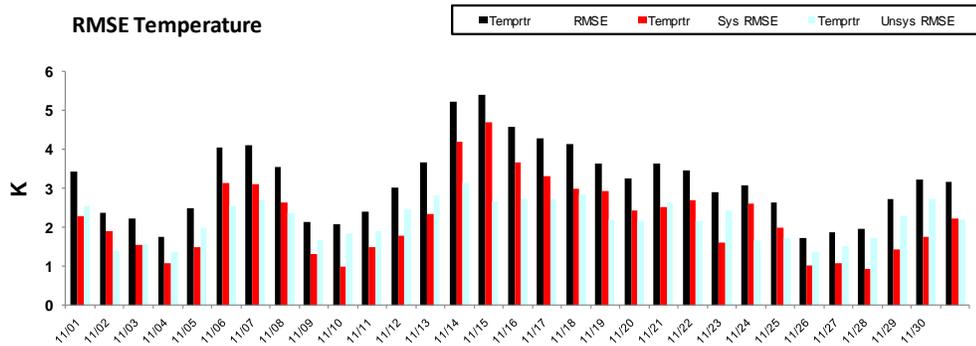
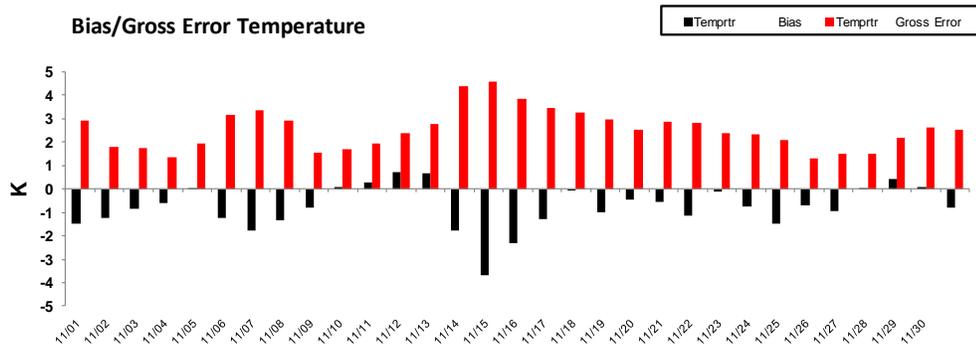
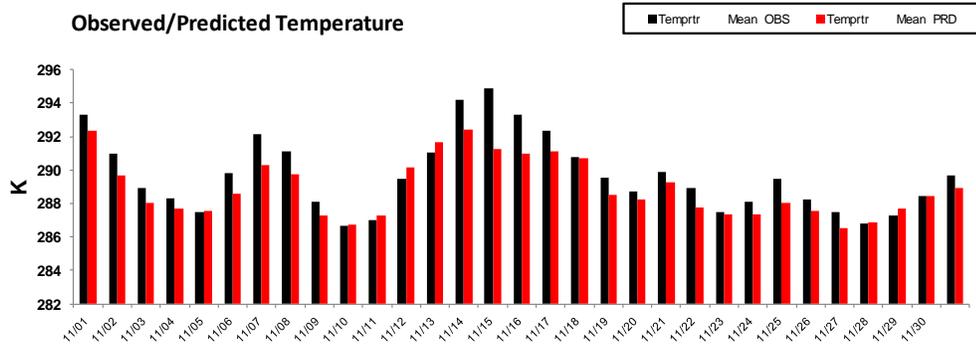
October Humidity



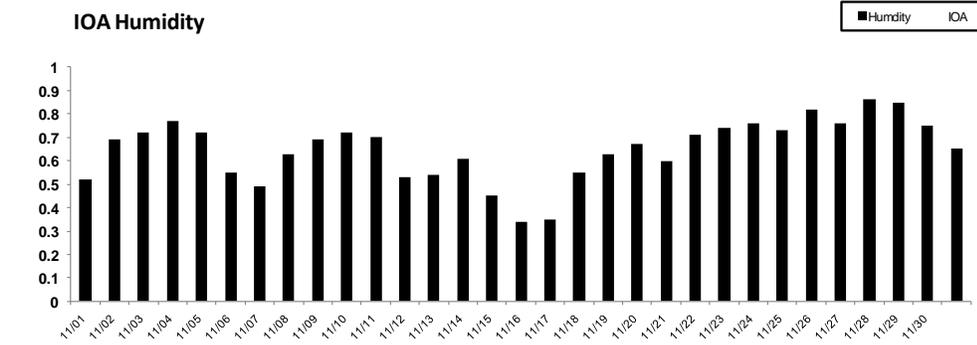
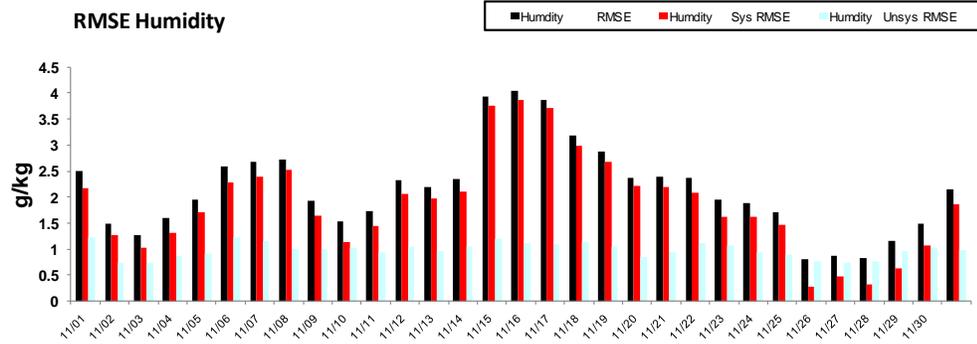
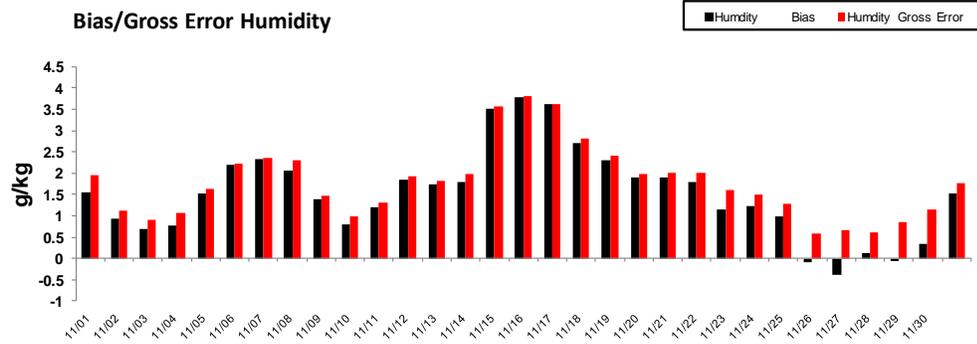
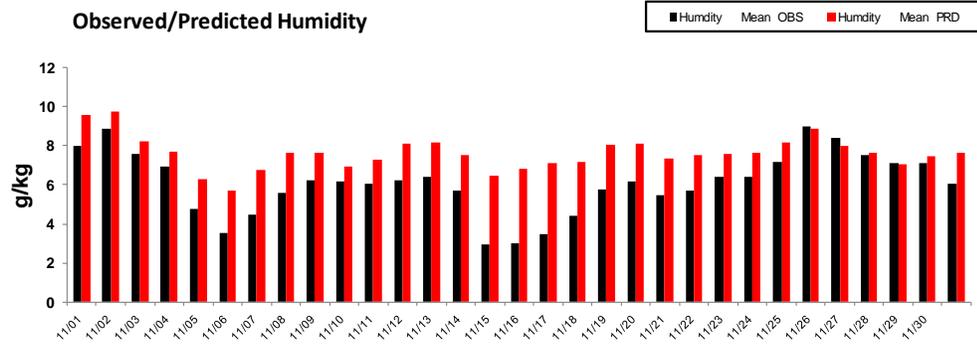
November Winds



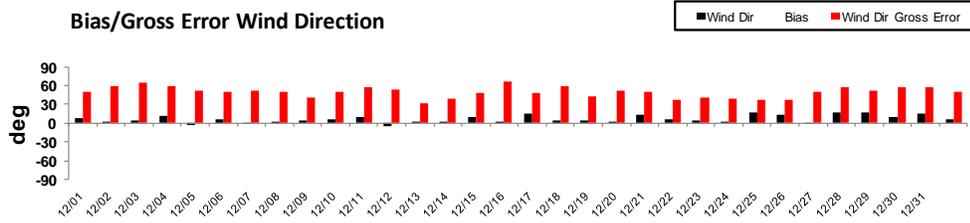
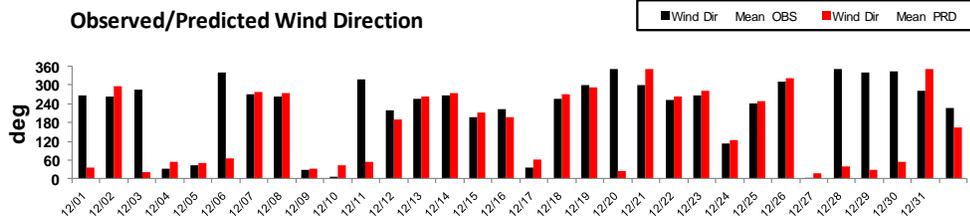
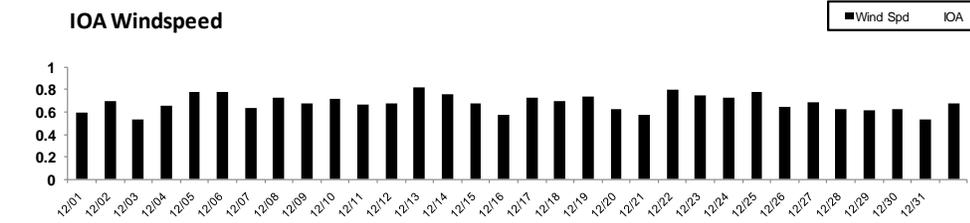
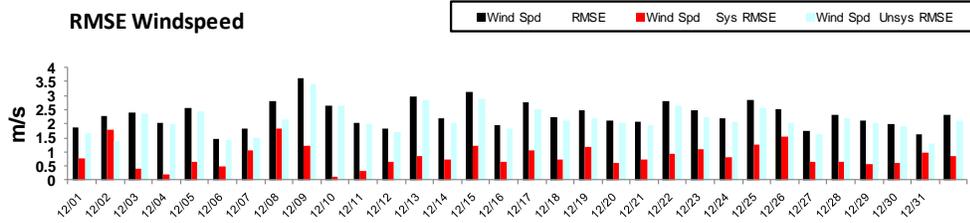
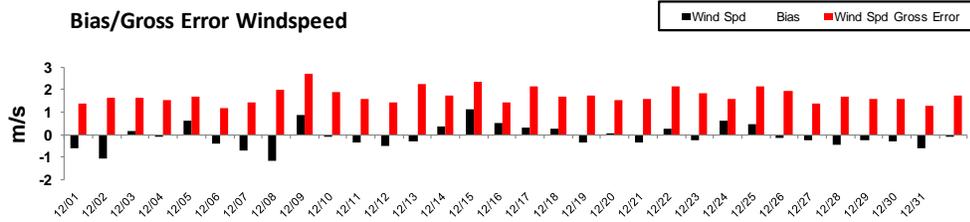
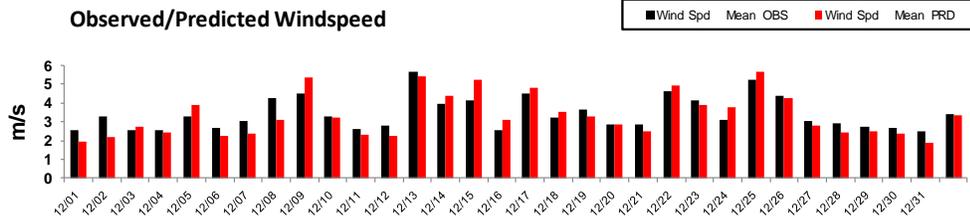
November Temperature



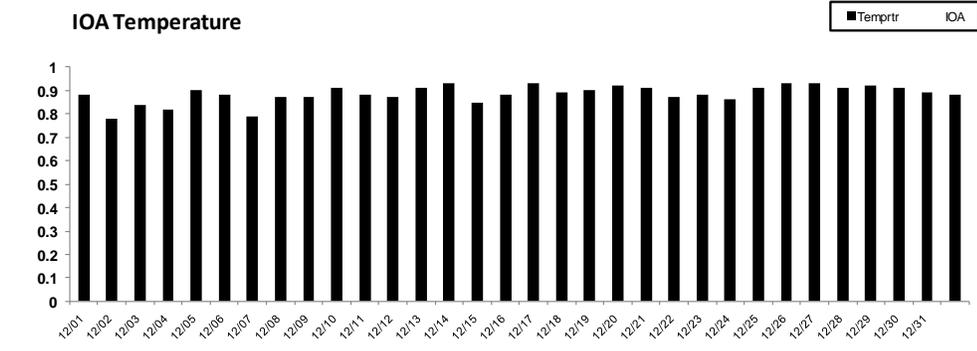
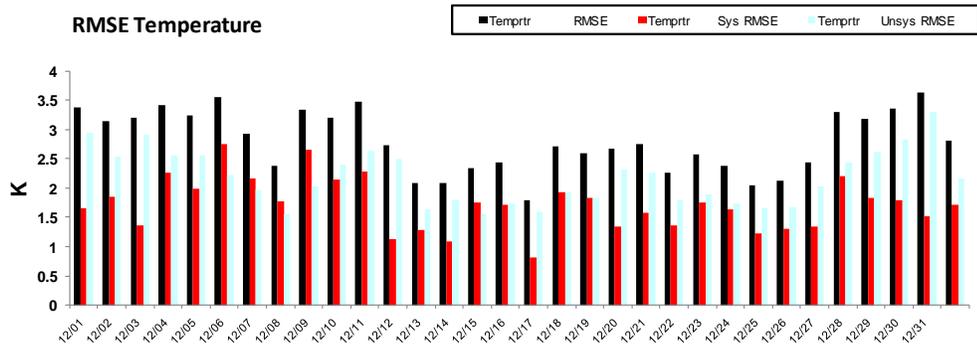
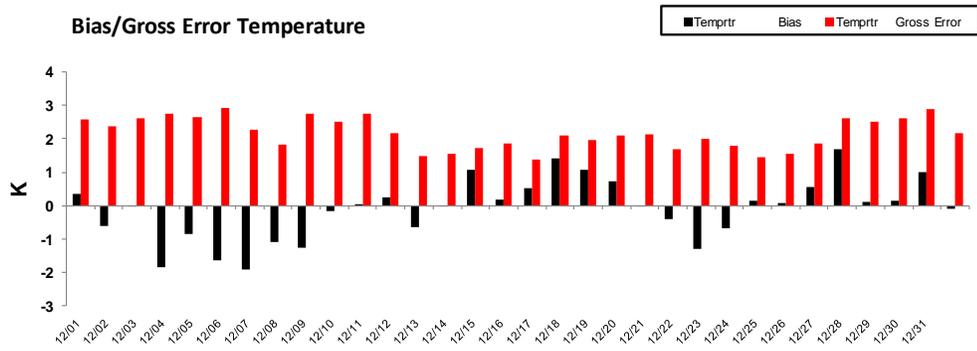
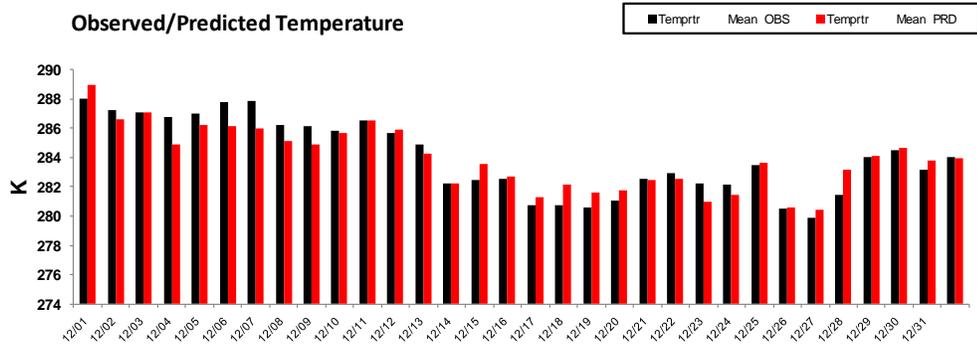
November Humidity



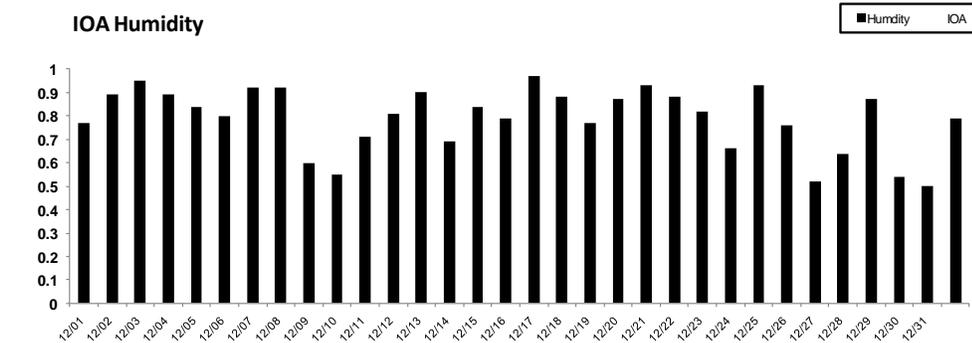
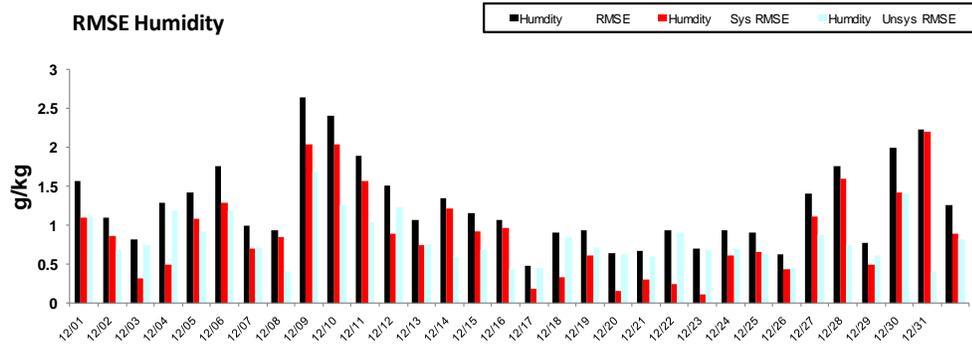
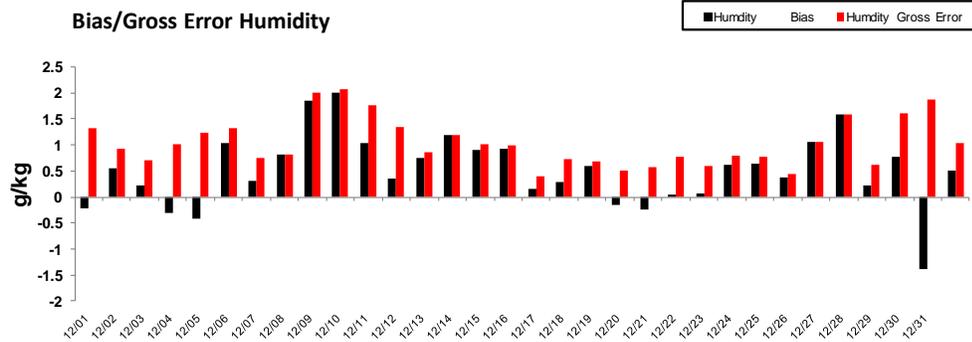
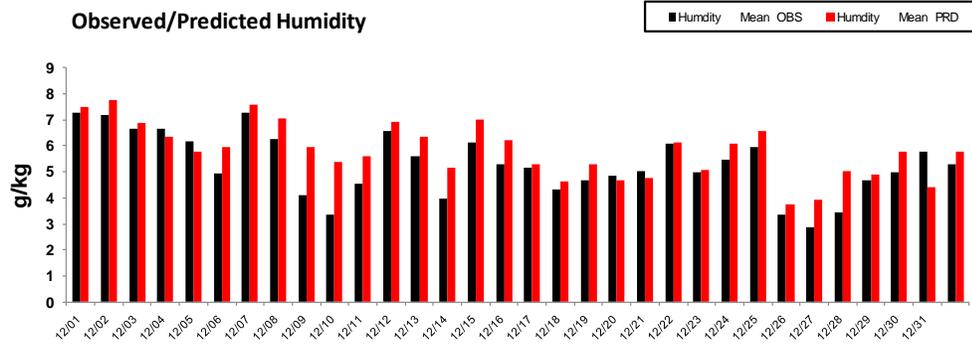
December Winds



December Temperature



December Humidity



Attachment 2

Quarterly CMAQ 24-Hour PM_{2.5} Model Performance

Quarter 1

(One Cell Analysis)

	Mean_Obs	Mean_CMAQ	Mean_Bias	Mean_Err	NormMeanBias	NormMeanErr
Mass						
anah	14.02	13.58	-0.73	3.49	-0.05	0.25
cela	16.44	24.50	7.17	7.33	0.44	0.45
lgbh	16.08	19.29	3.10	4.23	0.19	0.26
lbdt	18.76	20.11	1.54	4.32	0.08	0.23
font	16.60	13.37	-5.08	5.79	-0.31	0.35
rivr	16.43	13.65	-3.27	4.16	-0.20	0.25
OC						
anah	6.70	2.16	-4.54	4.54	-0.68	0.68
cela	7.69	4.72	-2.97	2.97	-0.39	0.39
lgbh	6.72	2.65	-4.07	4.07	-0.61	0.61
lbdt	6.93	2.87	-4.06	4.06	-0.59	0.59
font	6.16	1.53	-4.58	4.58	-0.74	0.74
rivr	6.84	1.52	-5.32	5.32	-0.78	0.78
EC						
anah	2.31	1.19	-1.12	1.17	-0.48	0.51
cela	2.82	2.47	-0.35	0.69	-0.12	0.25
lgbh	2.64	1.68	-0.96	1.12	-0.36	0.43
lbdt	2.95	1.96	-0.99	1.17	-0.34	0.40
font	2.60	1.00	-1.56	1.57	-0.60	0.60
rivr	2.34	0.93	-1.42	1.45	-0.60	0.62
NH4						
anah	1.26	1.54	0.28	0.45	0.22	0.36
cela	1.25	2.35	1.10	1.10	0.88	0.88
lgbh	1.56	2.36	0.80	1.26	0.51	0.81
lbdt	1.42	2.36	1.04	1.11	0.73	0.78
font	1.98	1.73	-0.09	0.54	-0.04	0.27
rivr	1.79	1.88	0.09	0.54	0.05	0.30
NO3						
anah	3.72	3.18	-0.37	1.06	-0.10	0.29
cela	3.53	5.07	1.54	1.80	0.43	0.51
lgbh	4.49	3.72	-0.77	2.00	-0.17	0.44
lbdt	3.53	3.40	0.00	1.24	0.00	0.35
font	5.55	4.76	-0.29	1.72	-0.05	0.31
rivr	5.55	5.07	-0.48	1.93	-0.09	0.35
SO4						
anah	1.75	1.41	-0.28	0.50	-0.16	0.29
cela	1.77	2.02	0.25	0.45	0.14	0.26
lgbh	1.99	3.18	1.19	1.38	0.60	0.69
lbdt	2.22	3.49	1.43	1.55	0.64	0.70
font	1.45	0.87	-0.53	0.56	-0.37	0.39
rivr	1.31	0.97	-0.34	0.58	-0.26	0.44

Quarter 2

(One Cell Analysis)

	Mean_Obs	Mean_CMAQ	Mean_Bias	Mean_Err	NormMeanBias	NormMeanErr
Mass						
anah	13.76	11.01	-2.41	3.27	-0.18	0.24
cela	15.09	18.94	4.32	4.67	0.29	0.31
lgbh	14.12	15.13	1.68	3.78	0.12	0.27
lbdt	15.45	16.15	2.20	3.77	0.14	0.24
font	14.99	11.73	-3.69	5.57	-0.25	0.37
rivr	16.88	11.10	-5.96	6.79	-0.35	0.40
OC						
anah	4.34	1.42	-2.91	2.91	-0.67	0.67
cela	6.74	3.31	-3.43	3.43	-0.51	0.51
lgbh	4.47	1.70	-2.77	2.77	-0.62	0.62
lbdt	4.46	2.01	-2.41	2.41	-0.54	0.54
font	6.92	1.19	-5.74	5.74	-0.83	0.83
rivr	6.43	1.10	-5.33	5.33	-0.83	0.83
EC						
anah	1.02	0.86	-0.17	0.38	-0.16	0.37
cela	1.97	1.72	-0.25	0.57	-0.13	0.29
lgbh	1.21	1.15	-0.05	0.42	-0.04	0.35
lbdt	1.44	1.39	0.00	0.57	0.00	0.40
font	2.13	0.92	-1.21	1.21	-0.57	0.57
rivr	1.62	0.74	-0.88	0.90	-0.54	0.56
NH4						
anah	1.05	1.22	0.17	0.37	0.16	0.35
cela	1.50	1.76	0.26	0.59	0.17	0.39
lgbh	1.09	1.90	0.81	0.83	0.75	0.76
lbdt	1.31	1.93	0.68	0.82	0.52	0.62
font	1.85	1.41	-0.44	0.95	-0.24	0.52
rivr	2.03	1.48	-0.55	0.99	-0.27	0.49
NO3						
anah	1.94	2.28	0.34	0.98	0.18	0.51
cela	2.63	3.61	0.99	1.44	0.38	0.55
lgbh	2.17	2.26	0.01	0.44	0.01	0.20
lbdt	2.80	1.87	-0.87	1.17	-0.31	0.42
font	3.61	3.35	-0.26	2.03	-0.07	0.56
rivr	4.03	3.60	-0.43	1.67	-0.11	0.41
SO4						
anah	2.30	1.47	-0.82	1.37	-0.36	0.59
cela	2.56	1.80	-0.76	0.88	-0.30	0.35
lgbh	2.81	3.41	0.72	1.18	0.26	0.42
lbdt	3.19	3.87	0.82	1.36	0.26	0.43
font	2.56	1.11	-1.45	1.45	-0.57	0.57
rivr	2.54	1.08	-1.46	1.46	-0.58	0.58

Quarter 3

(One Cell Analysis)

	Mean_Obs	Mean_CMAQ	Mean_Bias	Mean_Err	NormMeanBias	NormMeanErr
Mass						
anah	15.23	15.15	1.05	5.68	0.07	0.37
cela	20.01	25.04	5.03	8.36	0.25	0.42
lgbh	15.30	18.40	3.07	4.32	0.20	0.28
lbdt	16.87	19.86	3.03	5.74	0.18	0.34
font	21.17	17.66	-2.65	6.21	-0.13	0.29
rivr	19.30	19.85	0.51	6.82	0.03	0.35
OC						
anah	5.28	1.51	-3.62	3.62	-0.69	0.69
cela	6.76	3.97	-2.72	2.72	-0.40	0.40
lgbh	5.73	1.83	-3.84	3.84	-0.67	0.67
lbdt	5.03	2.13	-2.90	2.90	-0.58	0.58
font	9.73	1.60	-8.17	8.17	-0.84	0.84
rivr	7.22	1.43	-5.82	6.03	-0.81	0.84
EC						
anah	1.07	0.90	-0.06	0.21	-0.05	0.20
cela	1.81	1.92	0.12	0.54	0.07	0.30
lgbh	1.72	1.29	-0.41	0.65	-0.24	0.38
lbdt	1.82	1.52	-0.30	0.64	-0.16	0.35
font	2.45	1.28	-1.19	1.19	-0.49	0.49
rivr	1.77	0.95	-0.83	0.97	-0.47	0.55
NH4						
anah	2.00	2.20	0.28	0.60	0.14	0.30
cela	2.40	2.80	0.40	0.84	0.17	0.35
lgbh	2.14	2.54	0.40	0.79	0.19	0.37
lbdt	1.97	2.60	0.64	0.93	0.33	0.48
font	2.11	2.31	0.38	0.64	0.18	0.30
rivr	2.85	3.17	0.31	1.24	0.11	0.43
NO3						
anah	2.79	4.12	1.52	1.93	0.54	0.69
cela	2.98	5.19	2.23	2.55	0.75	0.86
lgbh	2.09	2.14	0.15	0.78	0.07	0.38
lbdt	1.70	1.84	0.09	1.04	0.05	0.61
font	4.46	5.46	1.70	2.80	0.38	0.63
rivr	5.38	8.36	2.78	4.00	0.52	0.74
SO4						
anah	3.86	2.58	-1.19	1.30	-0.31	0.34
cela	4.26	3.21	-1.07	1.58	-0.25	0.37
lgbh	4.14	5.39	1.37	1.52	0.33	0.37
lbdt	4.67	6.11	1.40	1.70	0.30	0.36
font	4.03	1.91	-1.84	1.84	-0.46	0.46
rivr	3.76	1.81	-1.94	1.94	-0.52	0.52

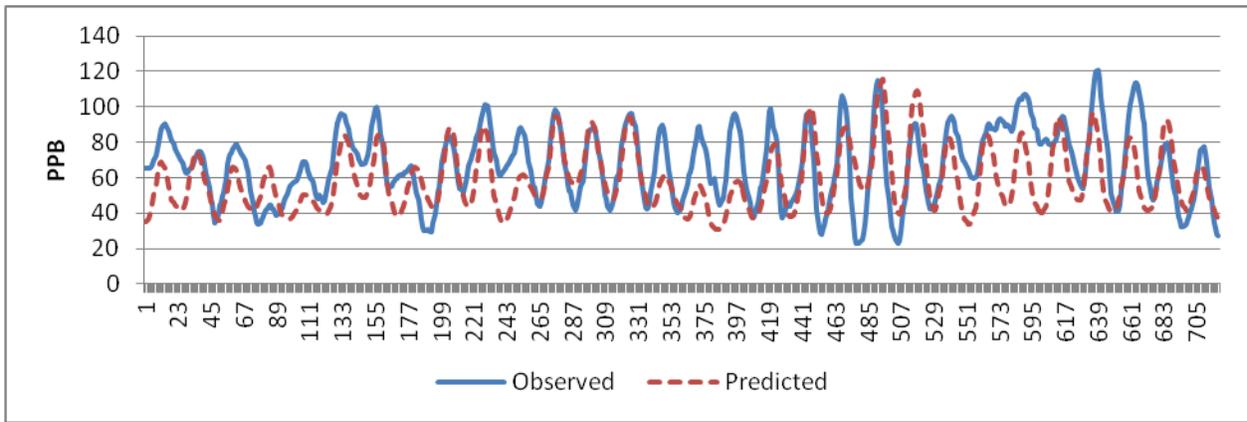
Quarter 4

(One Cell Analysis)

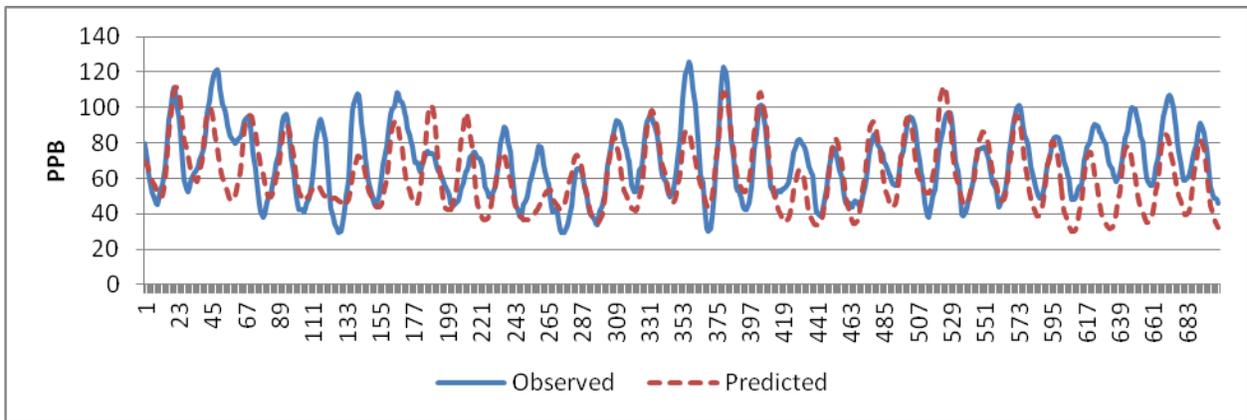
	Mean_Obs	Mean_CMAQ	Mean_Bias	Mean_Err	NormMeanBias	NormMeanErr
Mass						
anah	17.30	18.34	-0.19	5.09	-0.01	0.29
cela	18.71	26.56	7.85	10.53	0.42	0.56
lgbh	19.13	23.18	6.47	6.54	0.34	0.34
lbdt	19.86	25.17	8.66	8.66	0.44	0.44
font	12.87	11.39	-2.92	5.39	-0.23	0.42
rivr	20.05	13.57	-5.69	7.16	-0.28	0.36
OC						
anah	6.70	3.00	-3.87	3.87	-0.58	0.58
cela	7.39	5.52	-1.86	2.00	-0.25	0.27
lgbh	6.63	3.00	-3.52	3.54	-0.53	0.53
lbdt	6.87	3.41	-3.27	3.46	-0.48	0.50
font	5.57	1.62	-4.14	4.14	-0.74	0.74
rivr	6.92	1.84	-4.97	4.97	-0.72	0.72
EC						
anah	2.35	1.64	-0.79	1.01	-0.33	0.43
cela	2.89	2.91	0.02	0.60	0.01	0.21
lgbh	2.65	2.02	-0.56	1.13	-0.21	0.43
lbdt	2.99	2.41	-0.51	1.30	-0.17	0.43
font	1.59	1.04	-0.70	0.80	-0.44	0.50
rivr	2.70	1.12	-1.51	1.55	-0.56	0.57
NH4						
anah	1.36	2.02	0.30	0.75	0.22	0.55
cela	1.93	2.20	0.28	1.22	0.14	0.63
lgbh	1.85	2.95	1.26	1.34	0.68	0.72
lbdt	2.02	3.08	1.34	1.62	0.66	0.80
font	1.50	1.18	-0.45	0.81	-0.30	0.54
rivr	2.29	1.59	-0.60	1.12	-0.26	0.49
NO3						
anah	3.05	3.89	0.38	1.53	0.13	0.50
cela	3.87	4.47	0.60	2.49	0.15	0.64
lgbh	3.27	3.99	0.98	1.65	0.30	0.50
lbdt	3.37	3.76	0.94	1.79	0.28	0.53
font	3.81	2.80	-1.27	2.10	-0.33	0.55
rivr	5.78	3.71	-1.73	2.81	-0.30	0.49
SO4						
anah	1.94	2.14	-0.40	0.86	-0.20	0.44
cela	2.33	2.13	-0.19	1.14	-0.08	0.49
lgbh	2.70	4.45	1.96	2.21	0.73	0.82
lbdt	3.09	5.08	2.33	2.46	0.75	0.80
font	0.98	0.91	-0.26	0.35	-0.27	0.36
rivr	1.76	1.20	-0.46	0.82	-0.26	0.47

Attachment 3

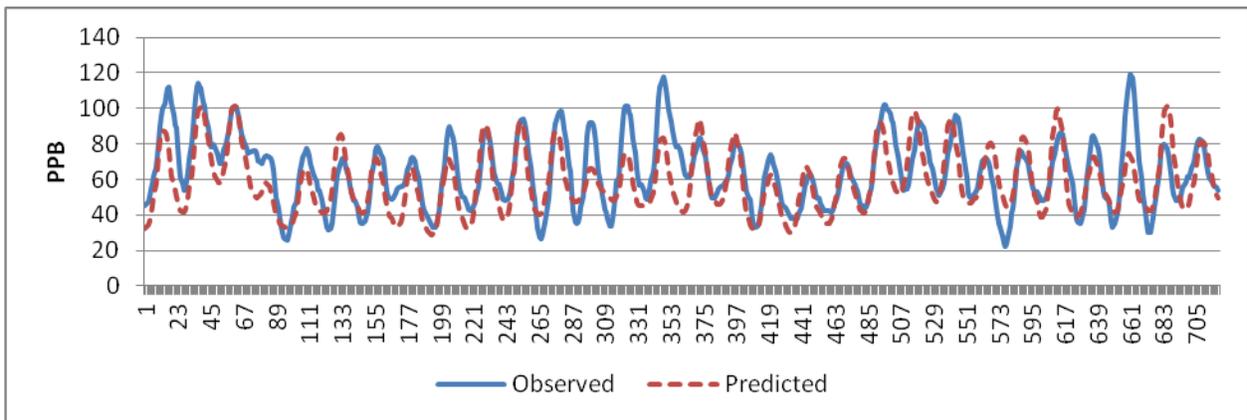
Time Series of Observed Vs. Predicted 8-Hour Ozone



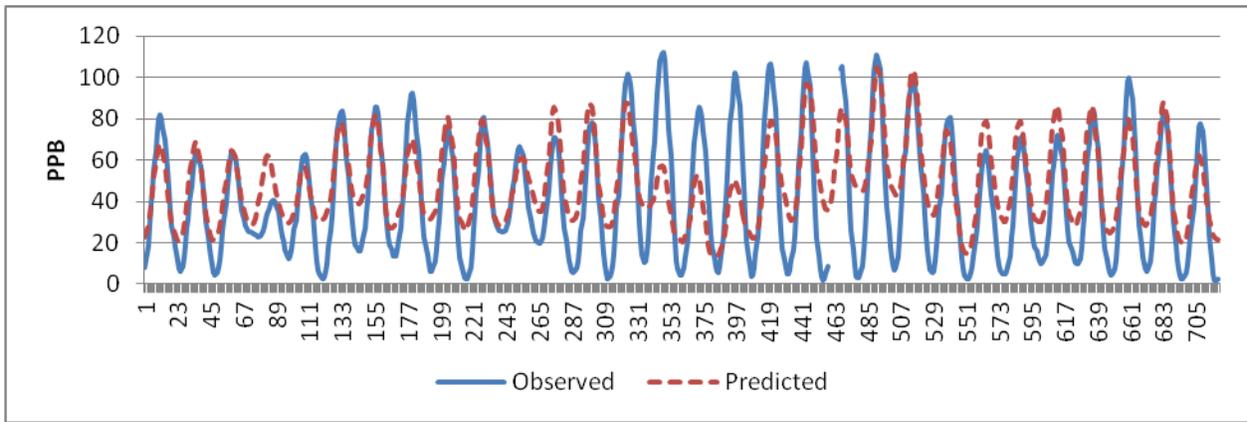
Time Series of Observed Vs.Predicted 8-Hour Crestline Ozone: June, 2008



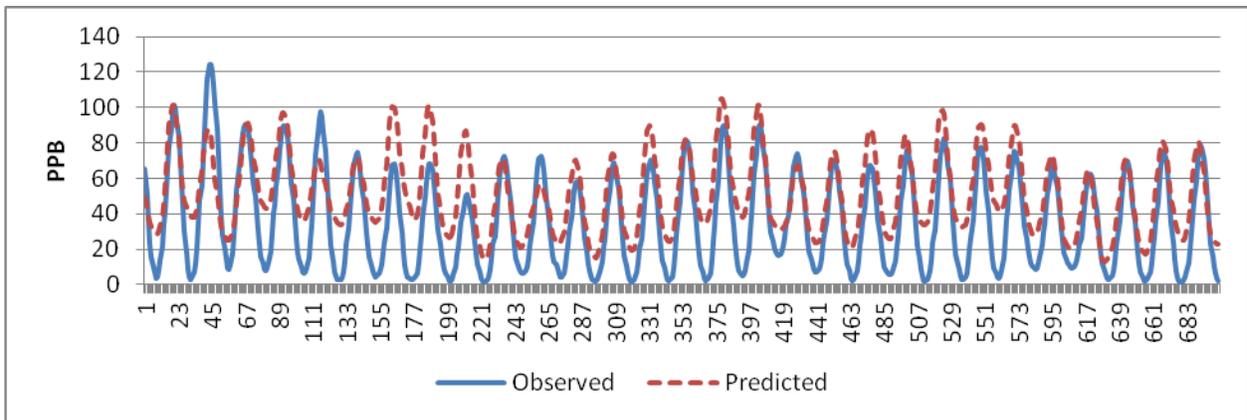
Time Series of Observed Vs.Predicted 8-Hour Crestline Ozone: July, 2008



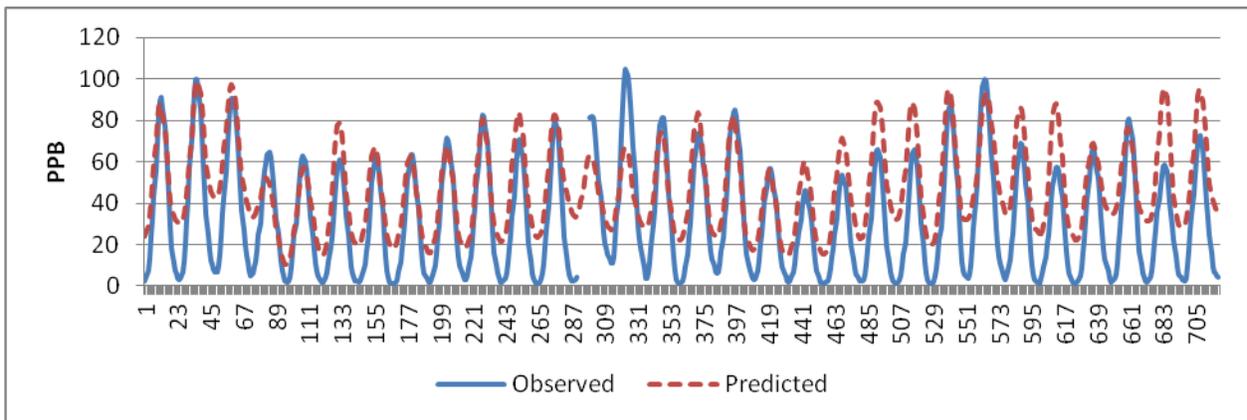
Time Series of Observed Vs.Predicted 8-Hour Crestline Ozone: August, 2008



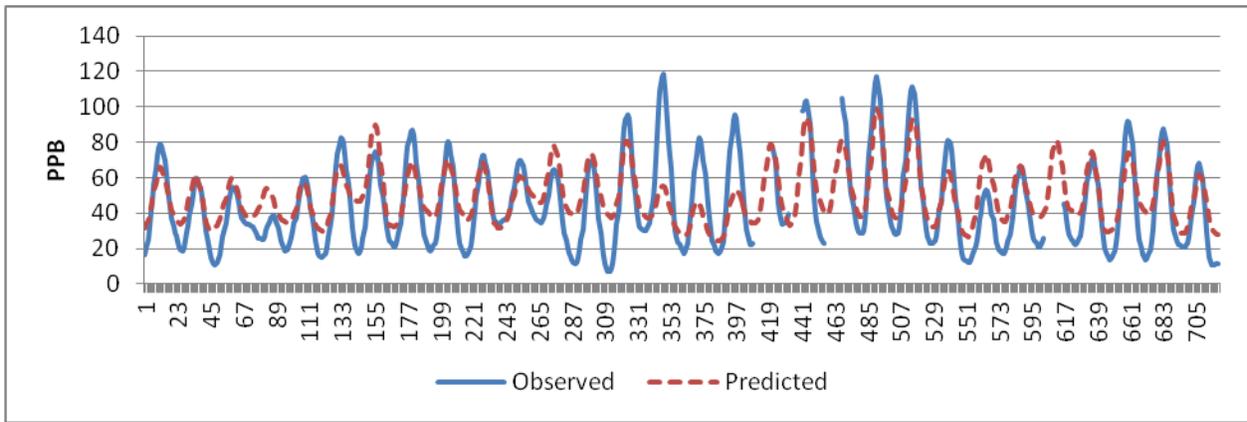
Time Series of Observed Vs.Predicted 8-Hour Fontana Ozone: June, 2008



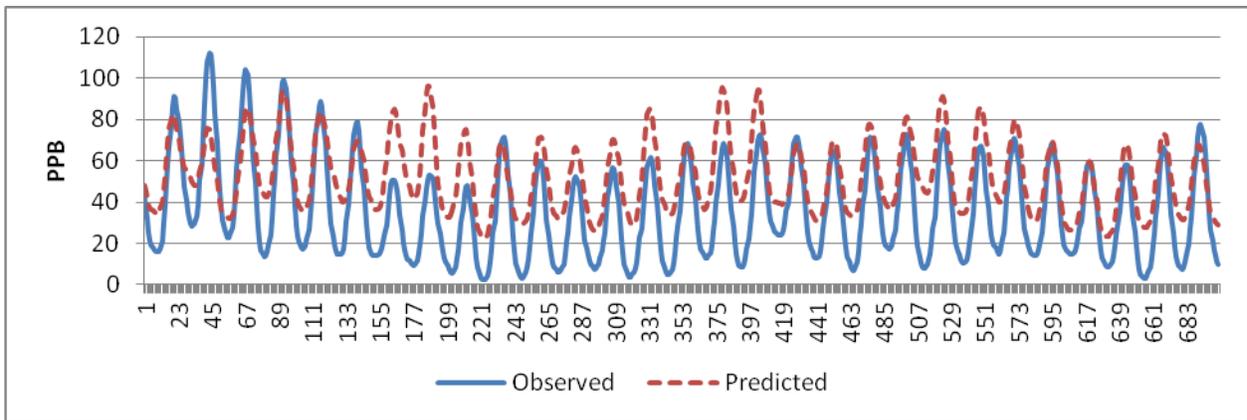
Time Series of Observed Vs.Predicted 8-Hour Fontana Ozone: July, 2008



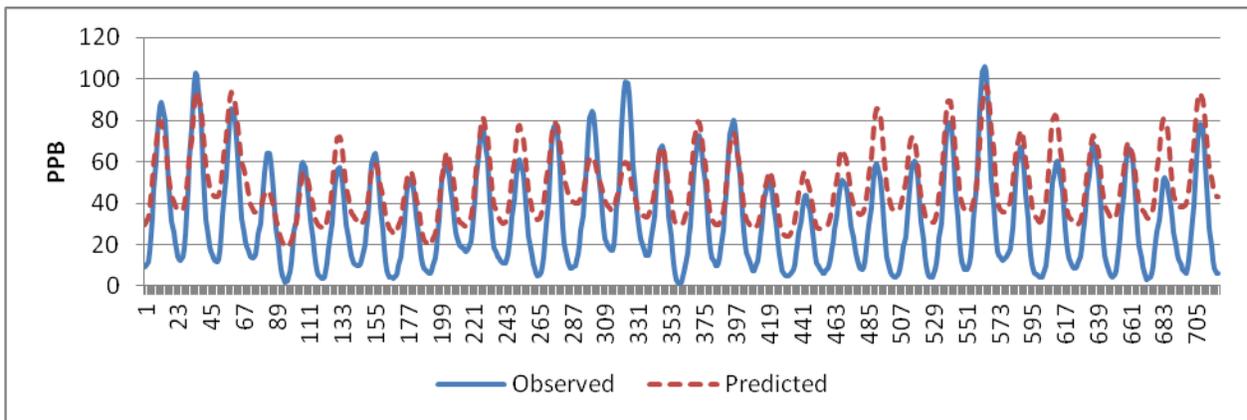
Time Series of Observed Vs.Predicted 8-Hour Fontana Ozone: August, 2008



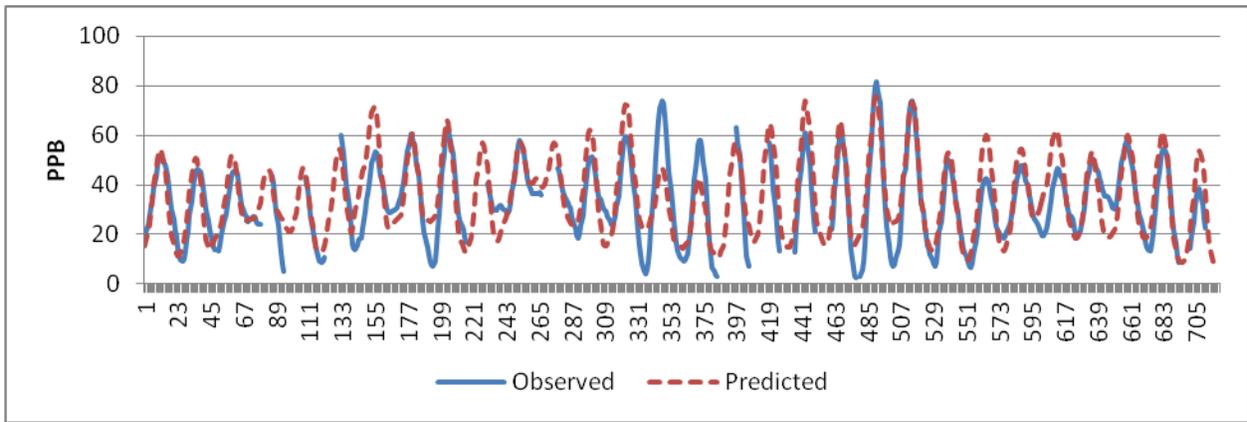
Time Series of Observed Vs.Predicted 8-Hour Glendora Ozone: June, 2008



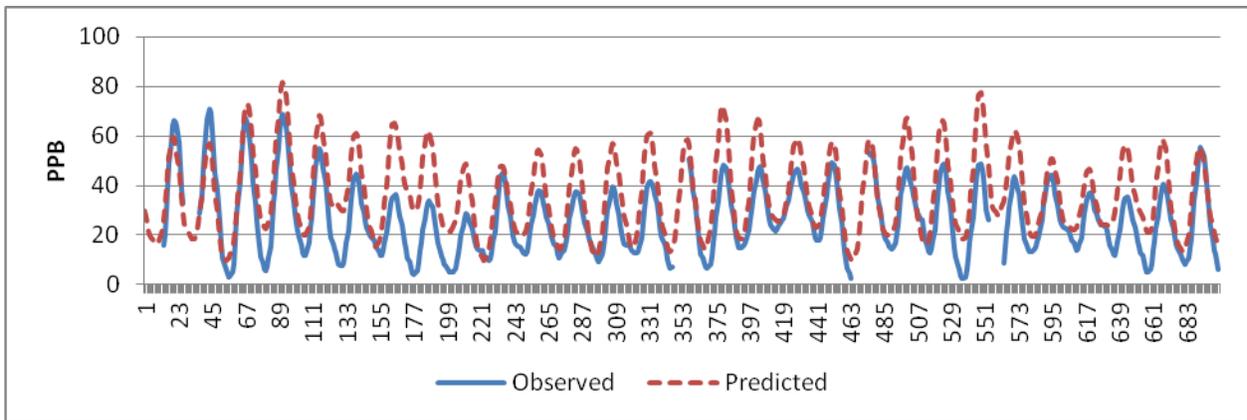
Time Series of Observed Vs.Predicted 8-Hour Glendora Ozone: July, 2008



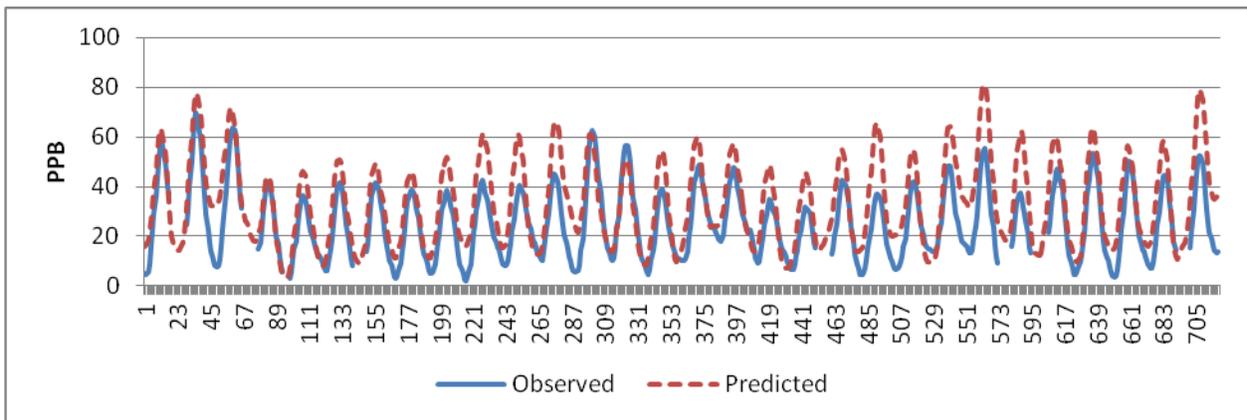
Time Series of Observed Vs.Predicted 8-Hour Glendora Ozone: August, 2008



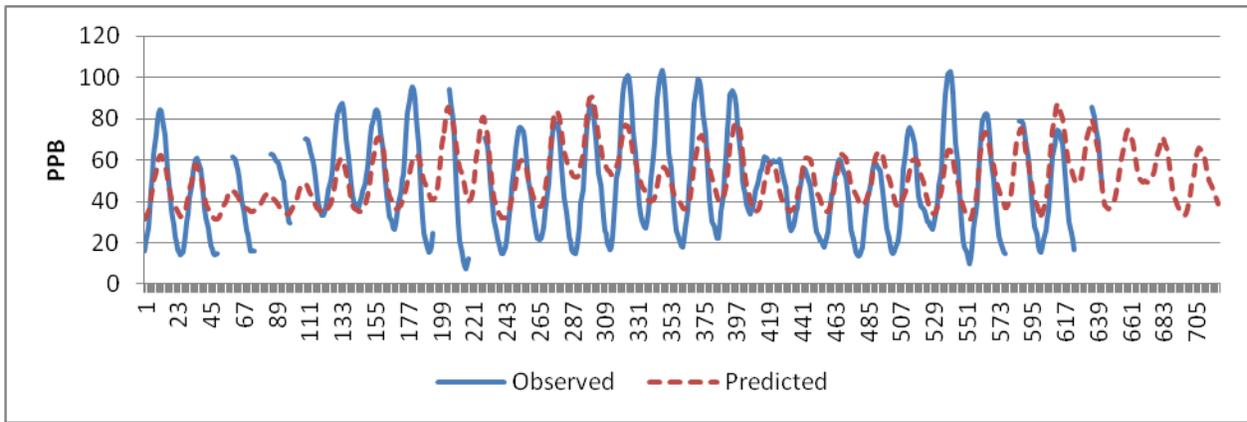
Time Series of Observed Vs.Predicted 8-Hour Los Angeles Ozone: June, 2008



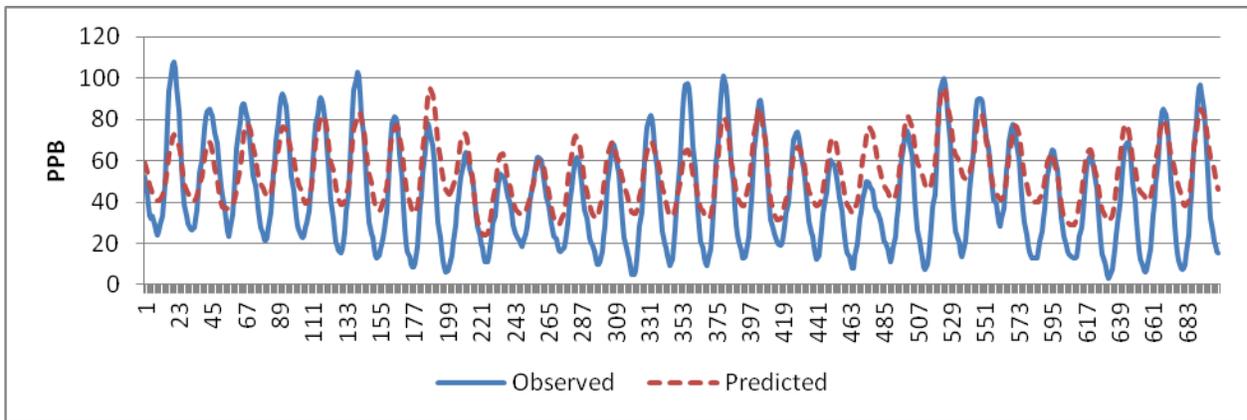
Time Series of Observed Vs.Predicted 8-Hour Los Angeles Ozone: July, 2008



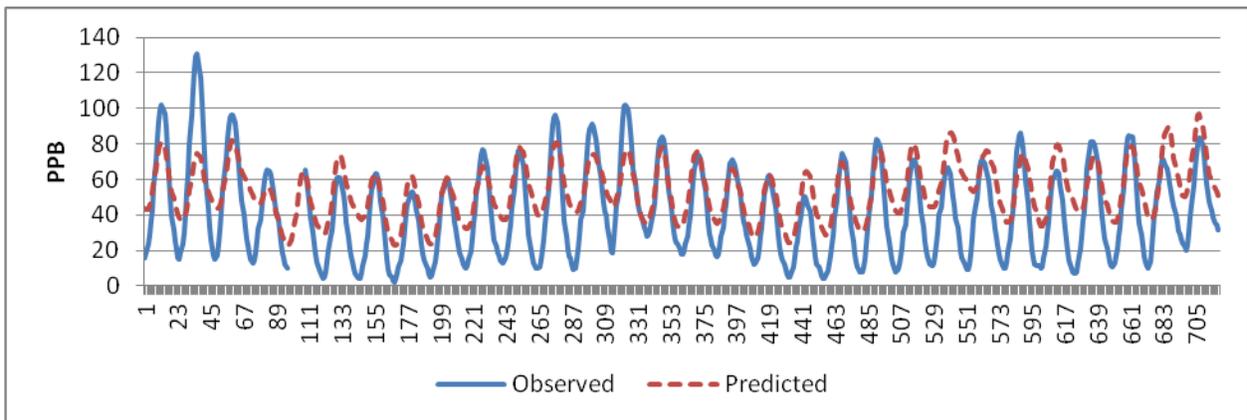
Time Series of Observed Vs.Predicted 8-Hour Los Angeles Ozone: August, 2008



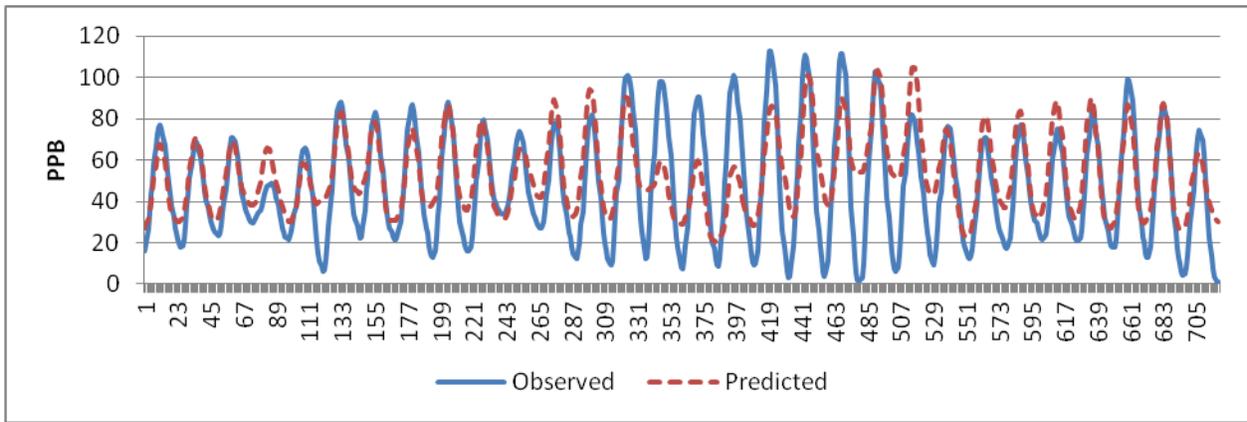
Time Series of Observed Vs.Predicted 8-Hour Santa Clarita Ozone: June, 2008



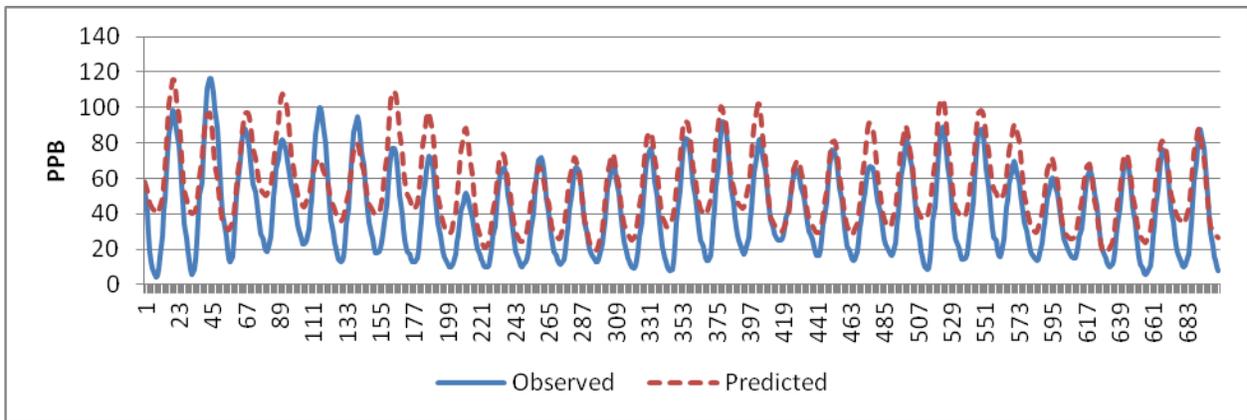
Time Series of Observed Vs.Predicted 8-Hour Santa Clarita Ozone: July, 2008



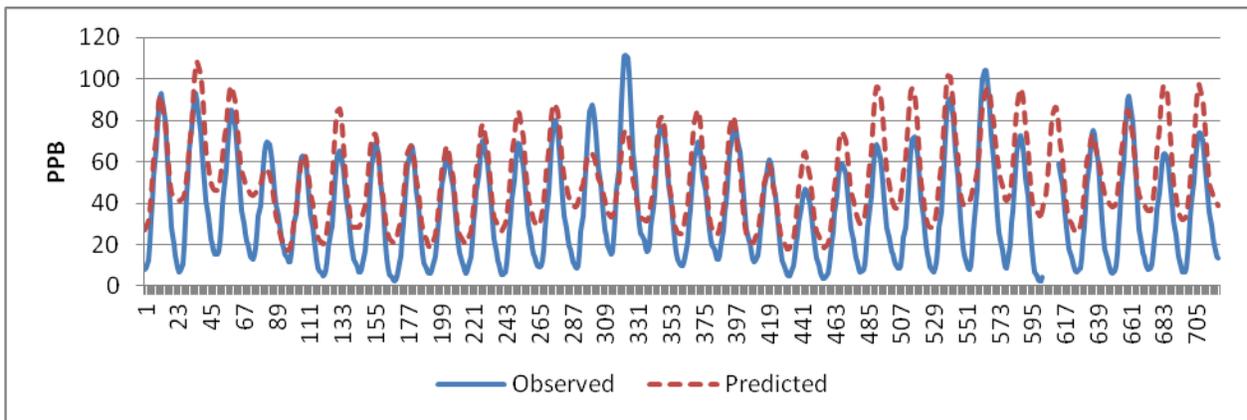
Time Series of Observed Vs.Predicted 8-Hour Santa Clarita Ozone: August, 2008



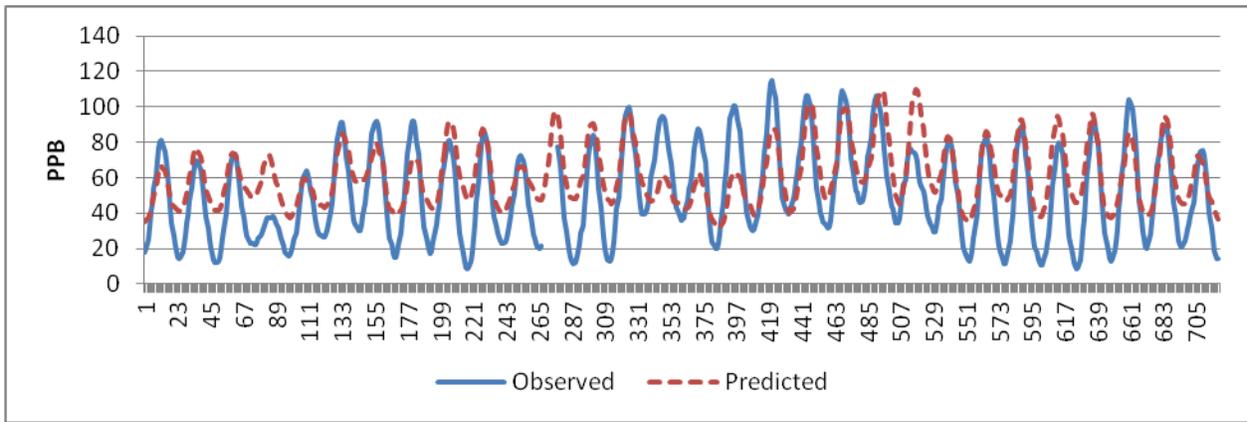
Time Series of Observed Vs.Predicted 8-Hour Rubidoux Ozone: June, 2008



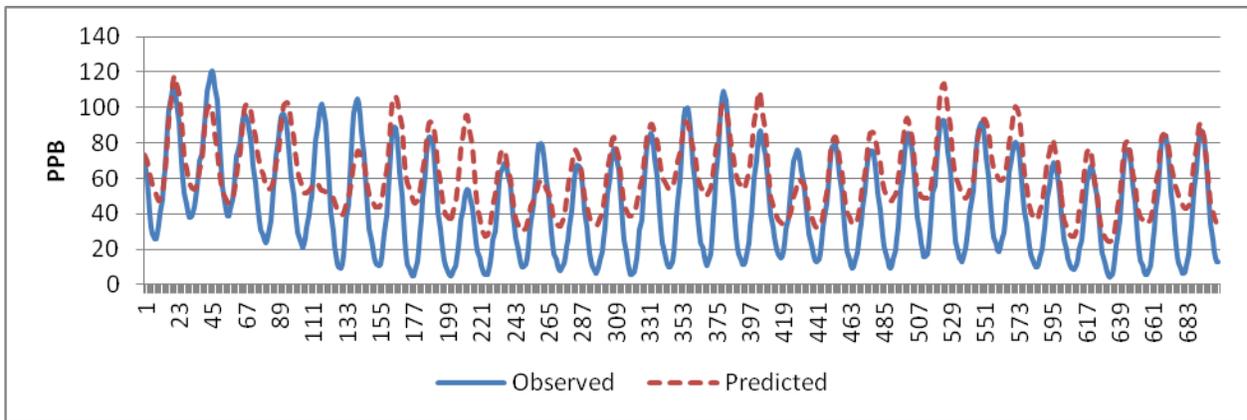
Time Series of Observed Vs.Predicted 8-Hour Rubidoux Ozone: July, 2008



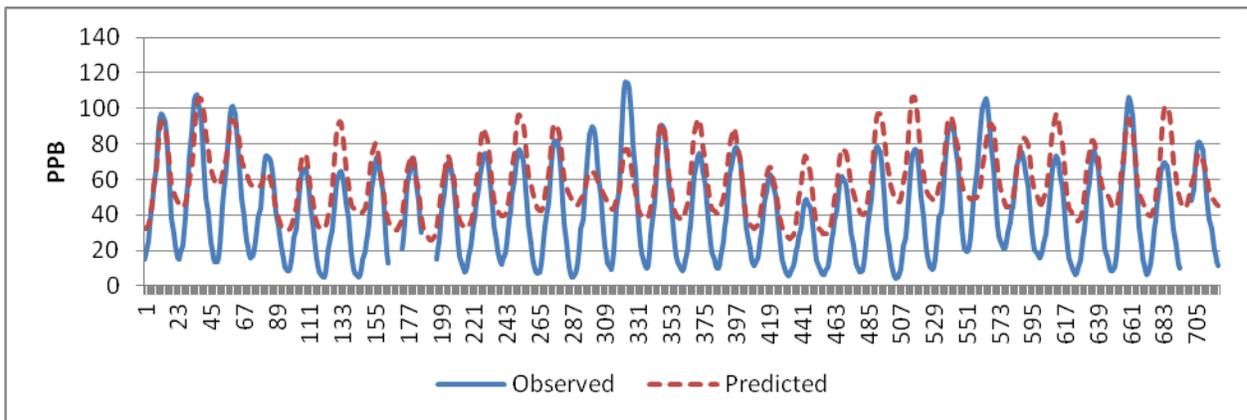
Time Series of Observed Vs.Predicted 8-Hour Rubidoux Ozone: August, 2008



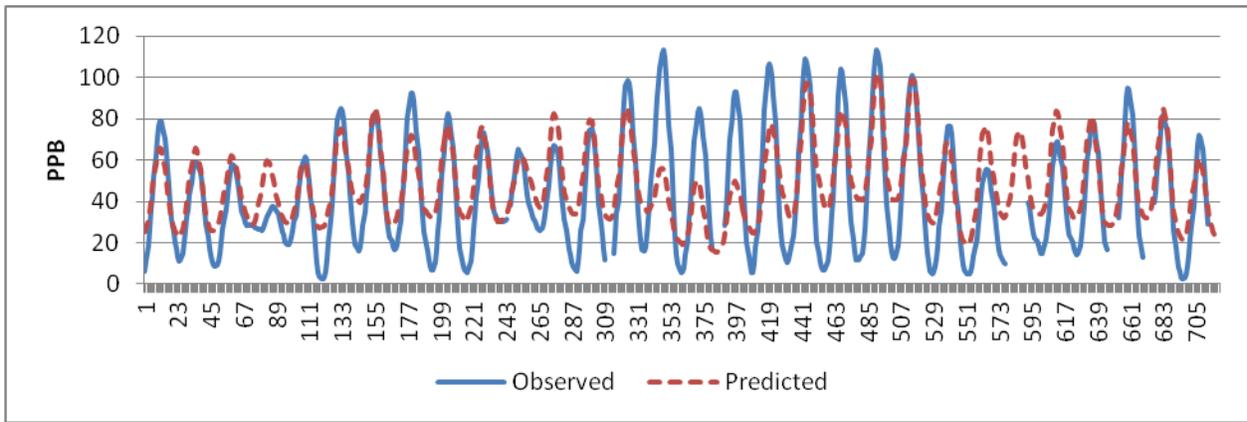
Time Series of Observed Vs.Predicted 8-Hour Redlands Ozone: June, 2008



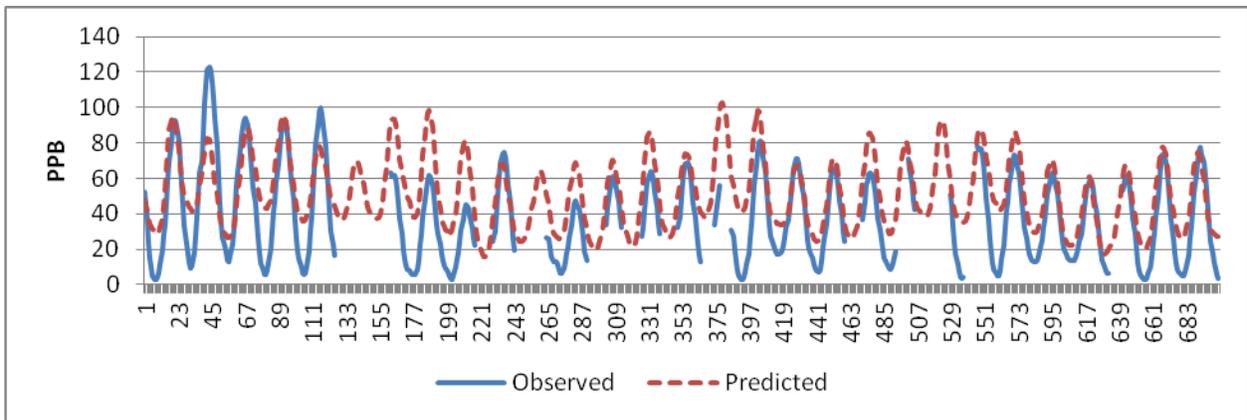
Time Series of Observed Vs.Predicted 8-Hour Redlands Ozone: July, 2008



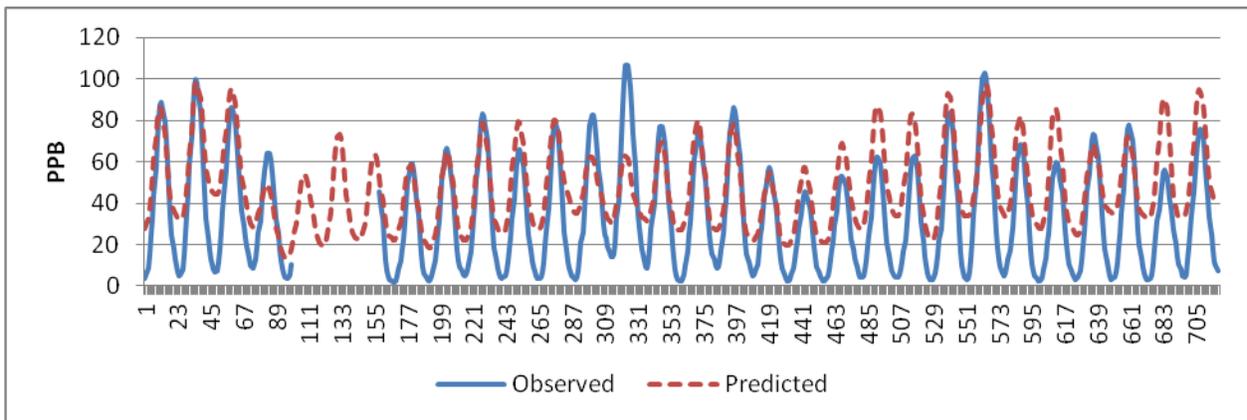
Time Series of Observed Vs.Predicted 8-Hour Redlands Ozone: August, 2008



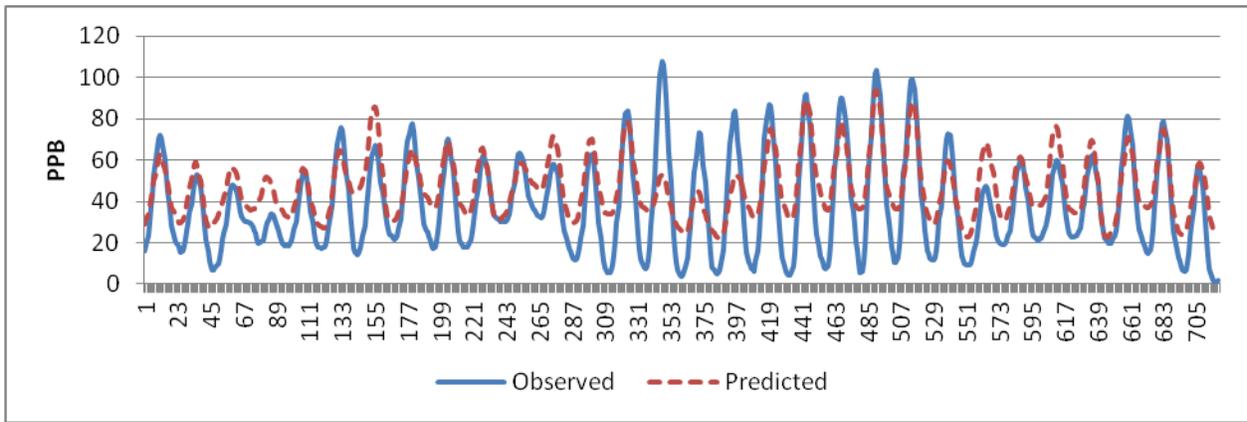
Time Series of Observed Vs.Predicted 8-Hour Upland Ozone: June, 2008



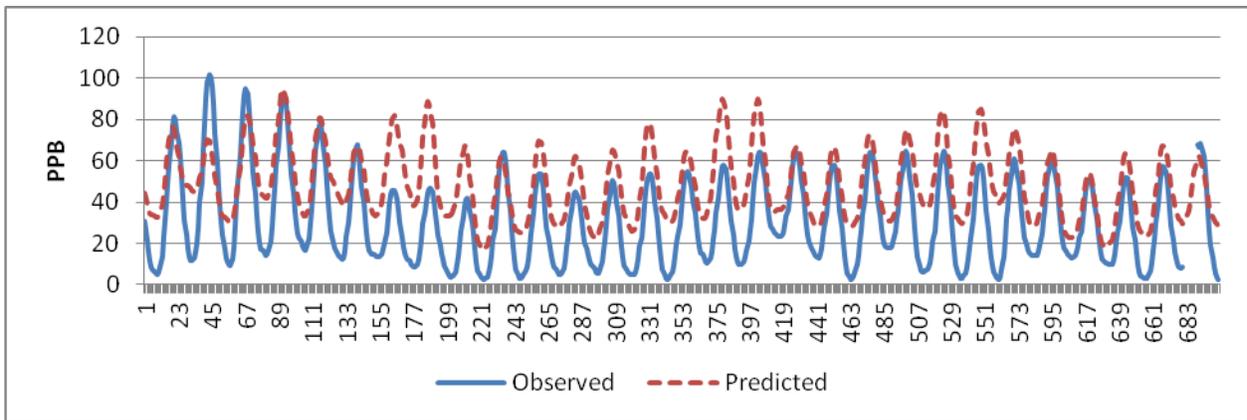
Time Series of Observed Vs.Predicted 8-Hour Upland Ozone: July, 2008



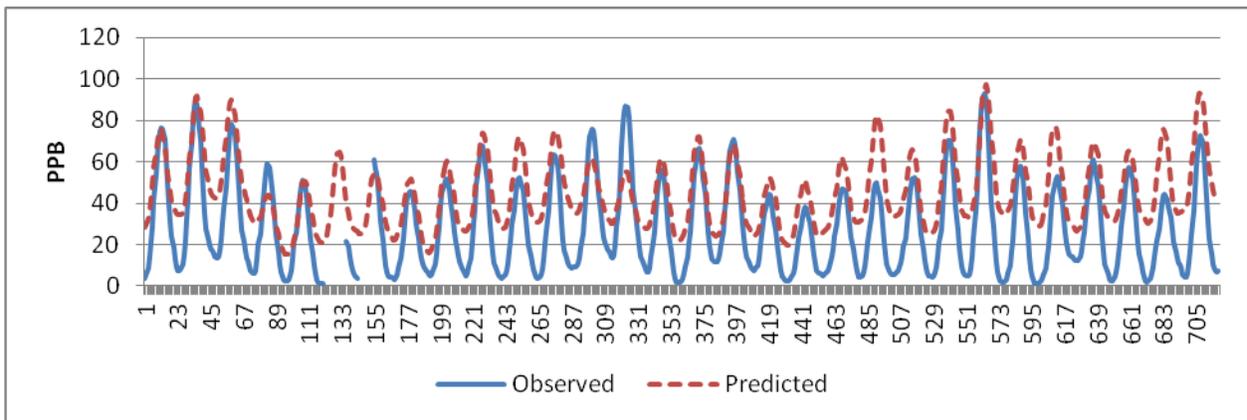
Time Series of Observed Vs.Predicted 8-Hour Upland Ozone: August, 2008



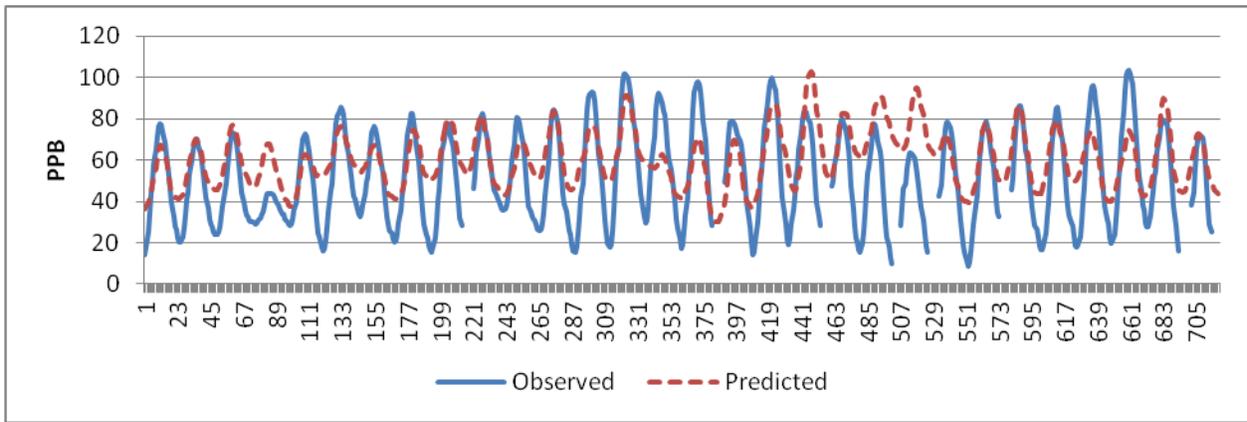
Time Series of Observed Vs.Predicted 8-Hour Azusa Ozone: June, 2008



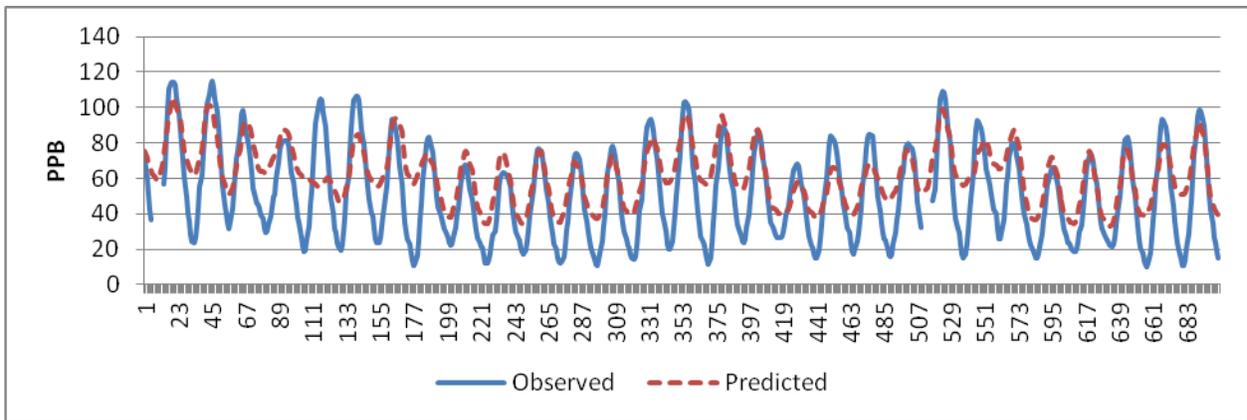
Time Series of Observed Vs.Predicted 8-Hour Azusa Ozone: July, 2008



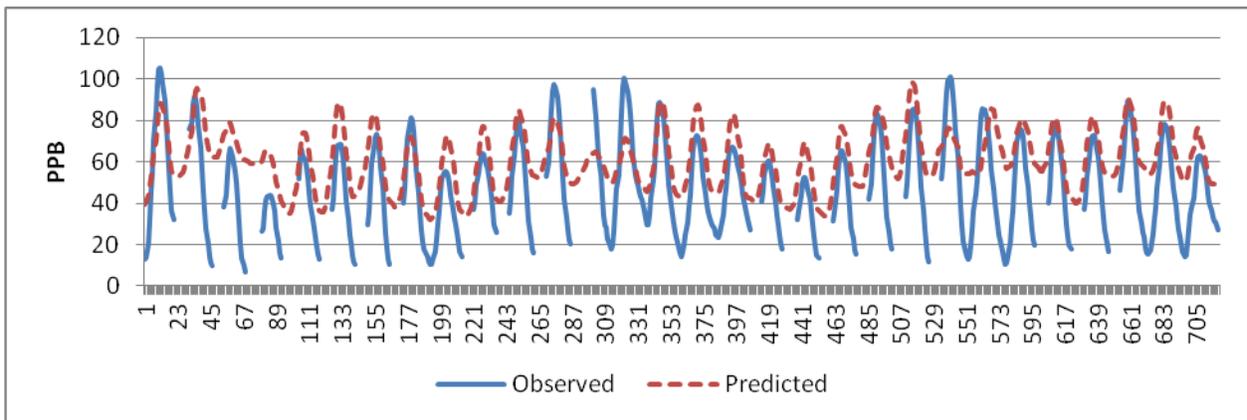
Time Series of Observed Vs.Predicted 8-Hour Azusa Ozone: August, 2008



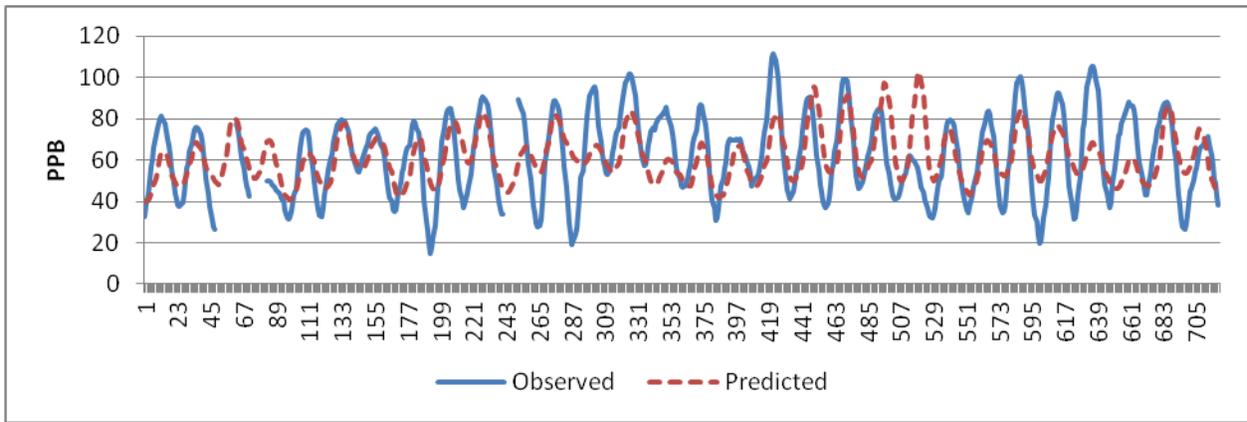
Time Series of Observed Vs.Predicted 8-Hour Perris Ozone: June, 2008



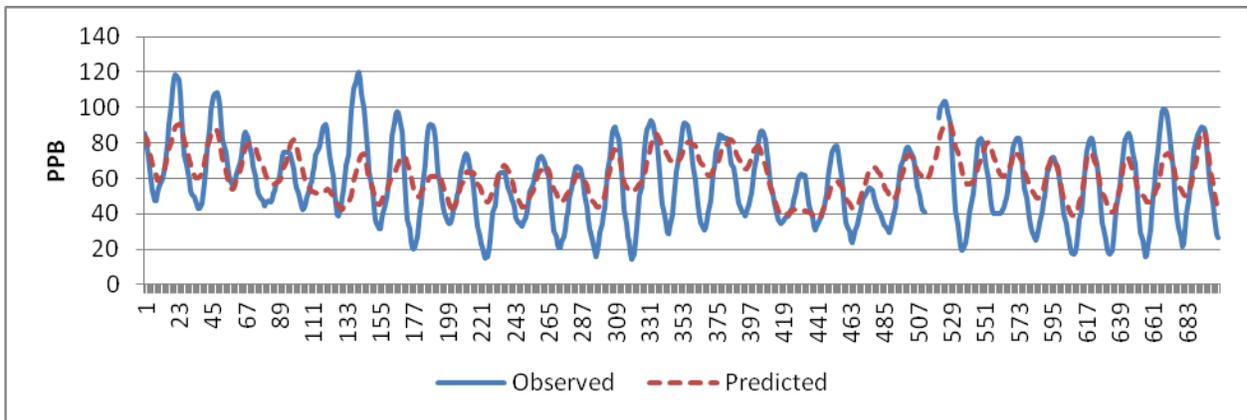
Time Series of Observed Vs.Predicted 8-Hour Perris Ozone: July, 2008



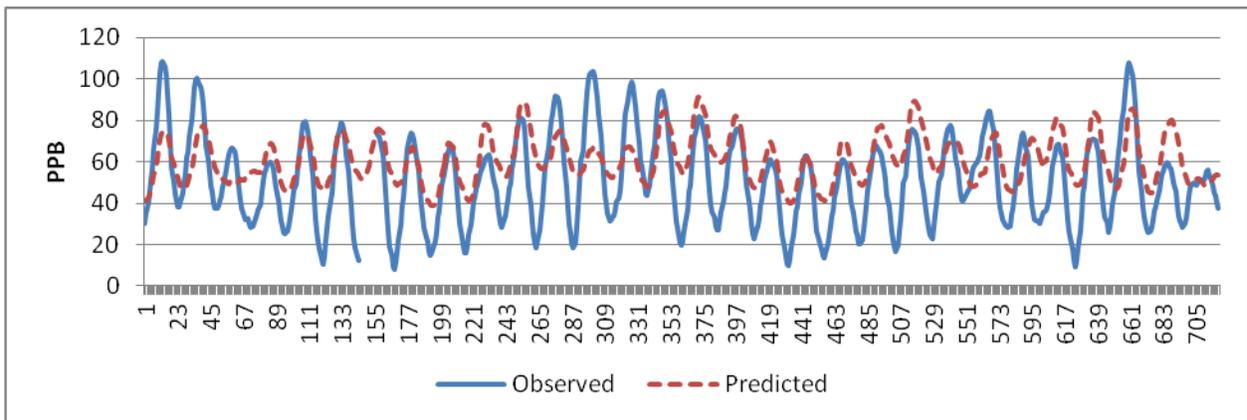
Time Series of Observed Vs.Predicted 8-Hour Perris Ozone: August, 2008



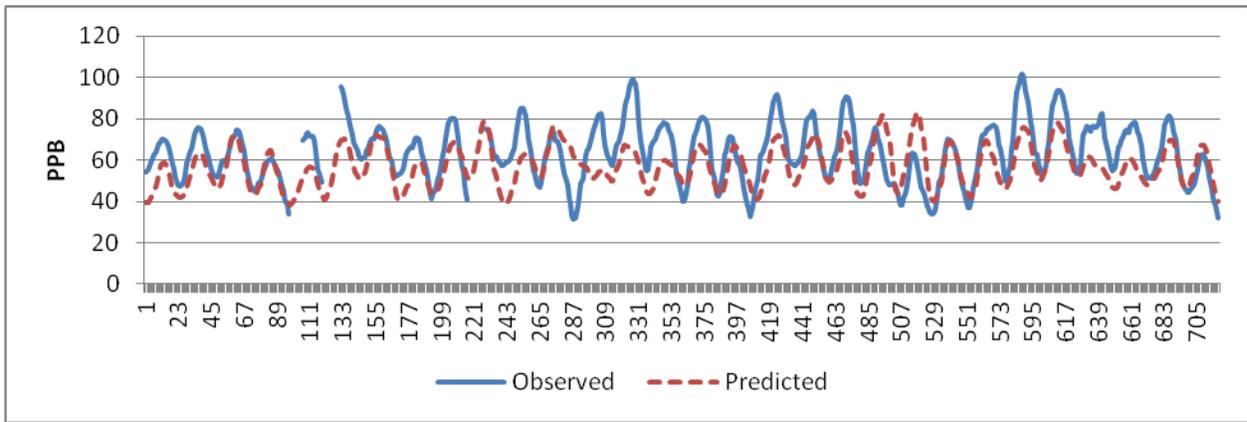
Time Series of Observed Vs.Predicted 8-Hour Banning Ozone: June, 2008



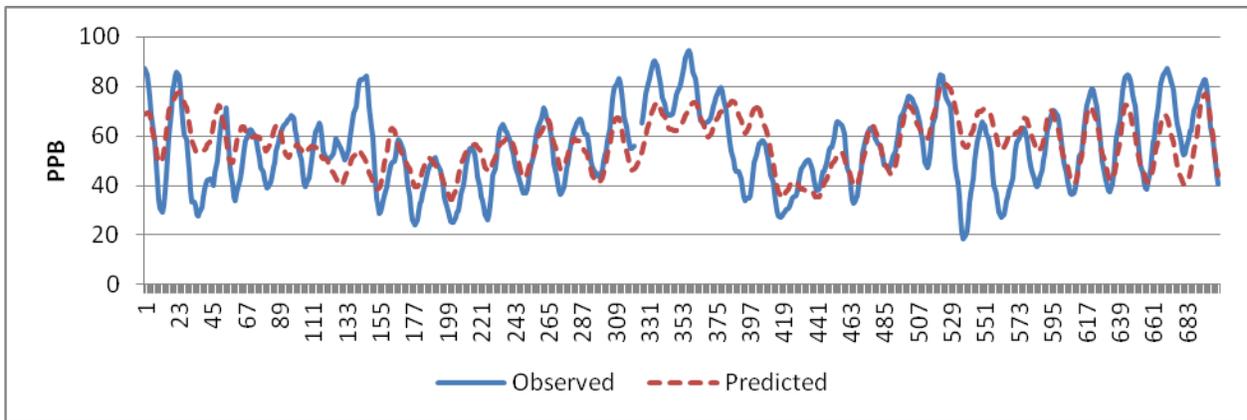
Time Series of Observed Vs.Predicted 8-Hour Banning Ozone: July, 2008



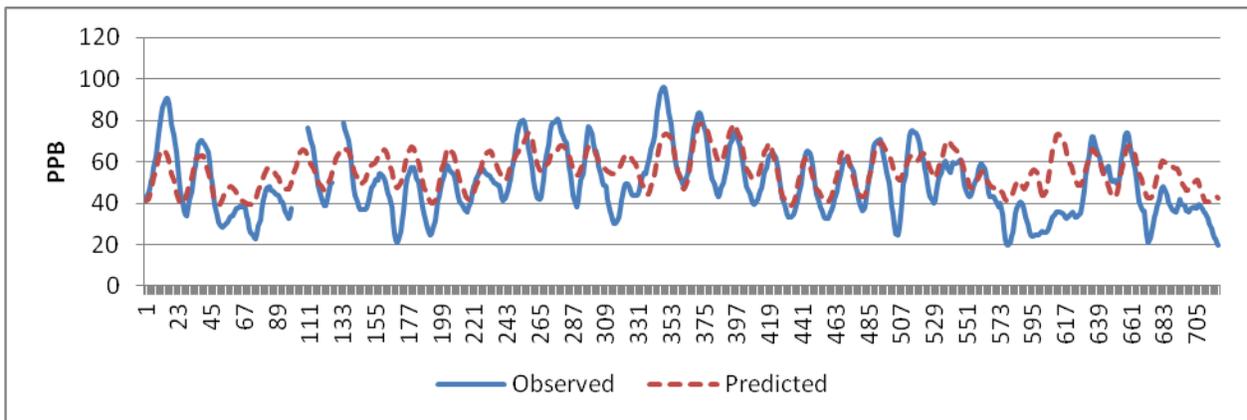
Time Series of Observed Vs.Predicted 8-Hour Banning Ozone: August, 2008



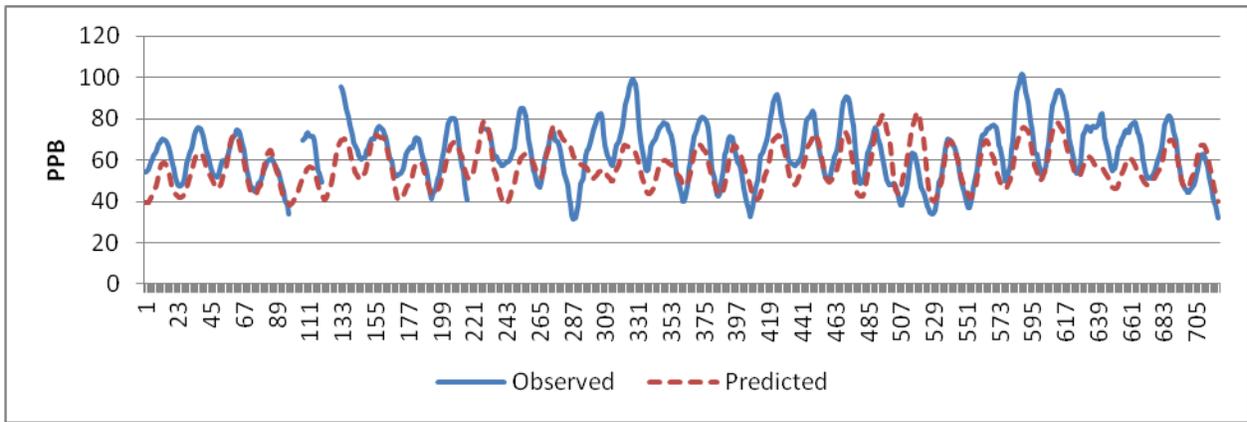
Time Series of Observed Vs.Predicted 8-Hour Palm Springs Ozone: June, 2008



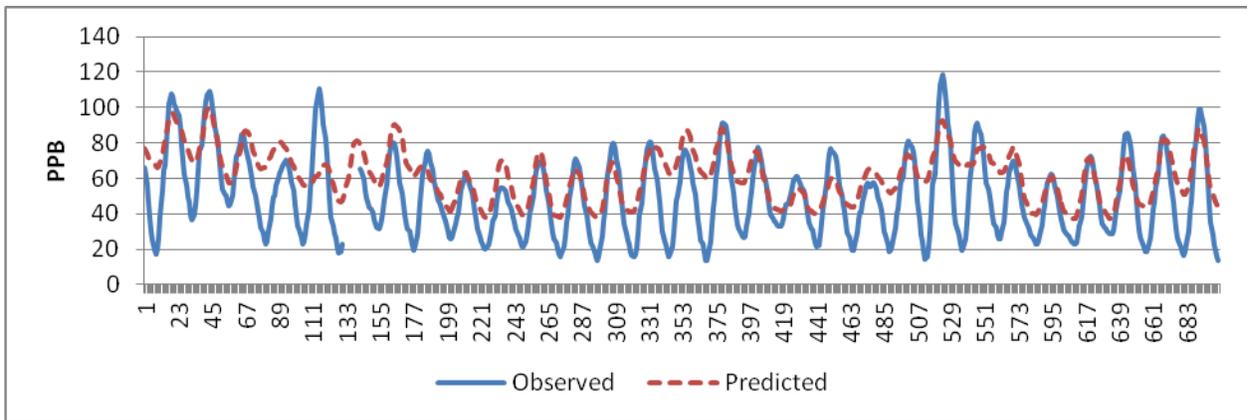
Time Series of Observed Vs.Predicted 8-Hour Palm Springs Ozone: July, 2008



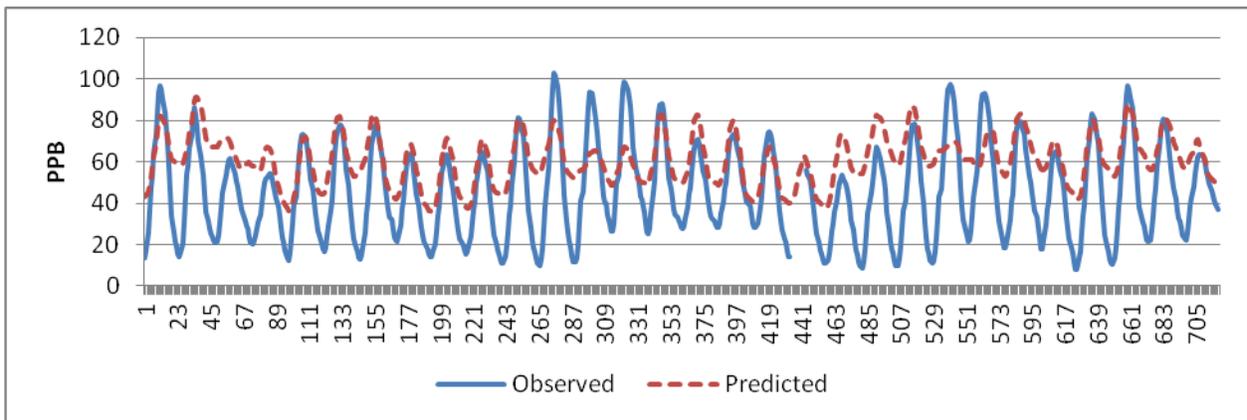
Time Series of Observed Vs.Predicted 8-Hour Palm Springs Ozone: August, 2008



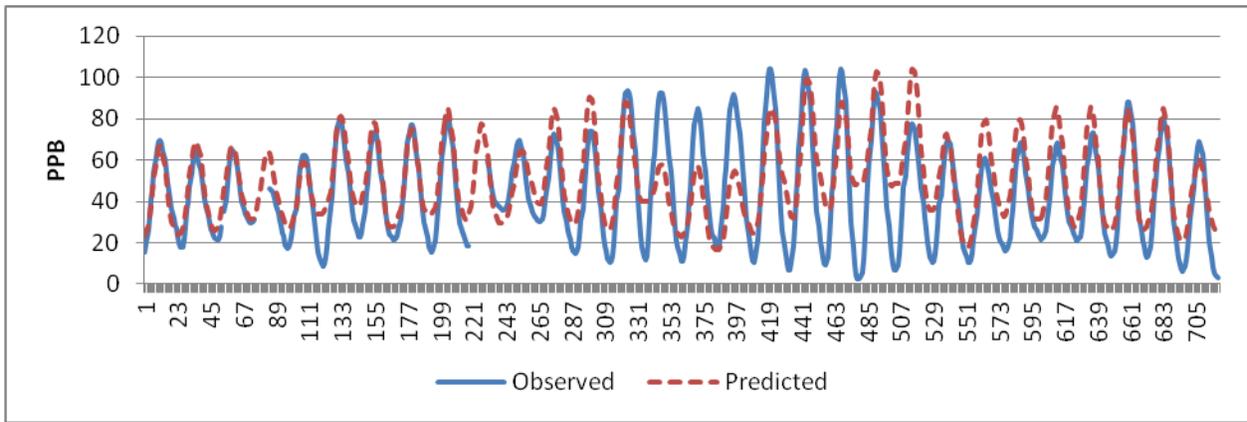
Time Series of Observed Vs.Predicted 8-Hour Lake Elsinore Ozone: June, 2008



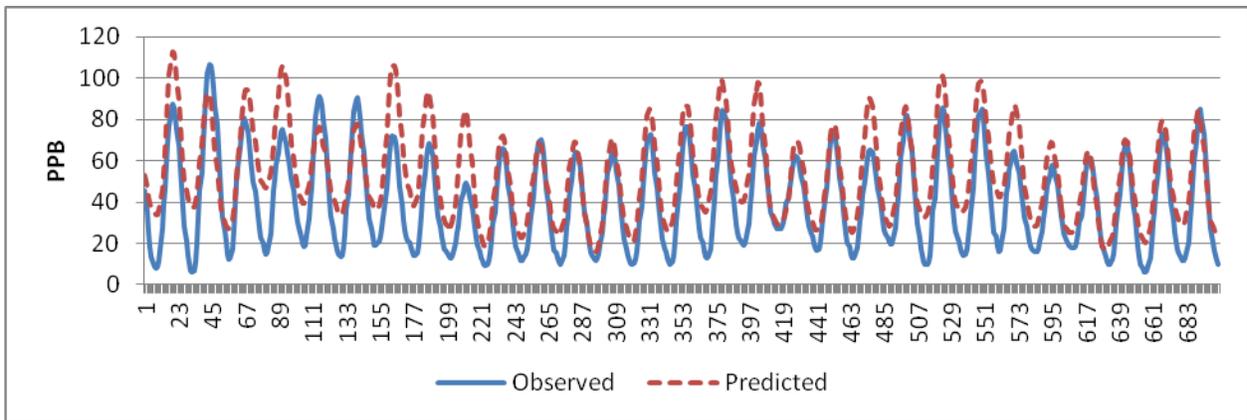
Time Series of Observed Vs.Predicted 8-Hour Lake Elsinore Ozone: July, 2008



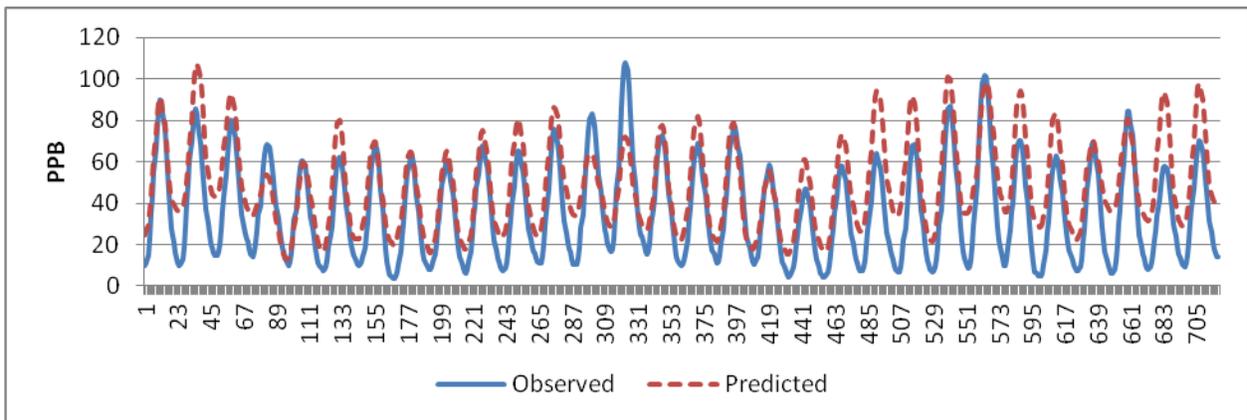
Time Series of Observed Vs.Predicted 8-Hour Lake Elsinore Ozone: August, 2008



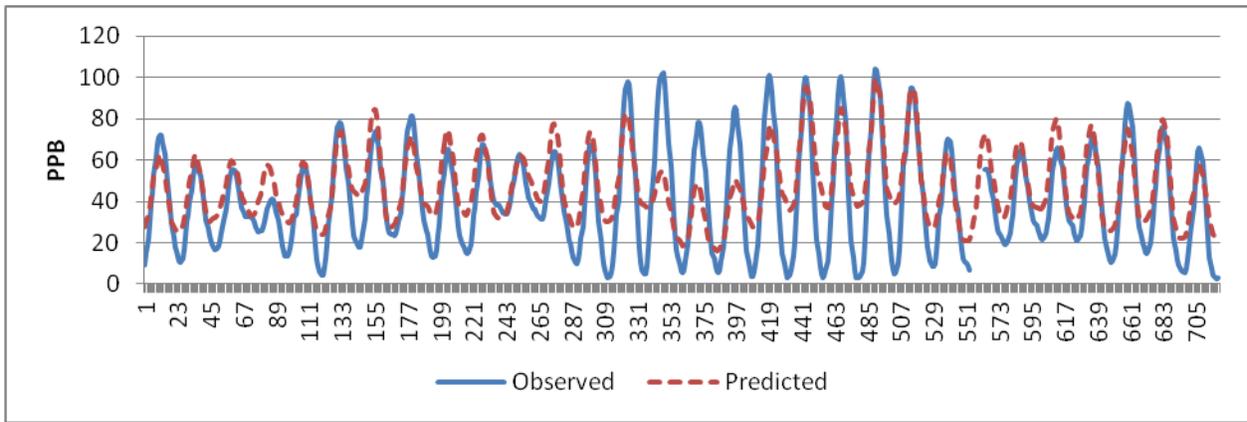
Time Series of Observed Vs.Predicted 8-Hour Mira Loma Ozone: June, 2008



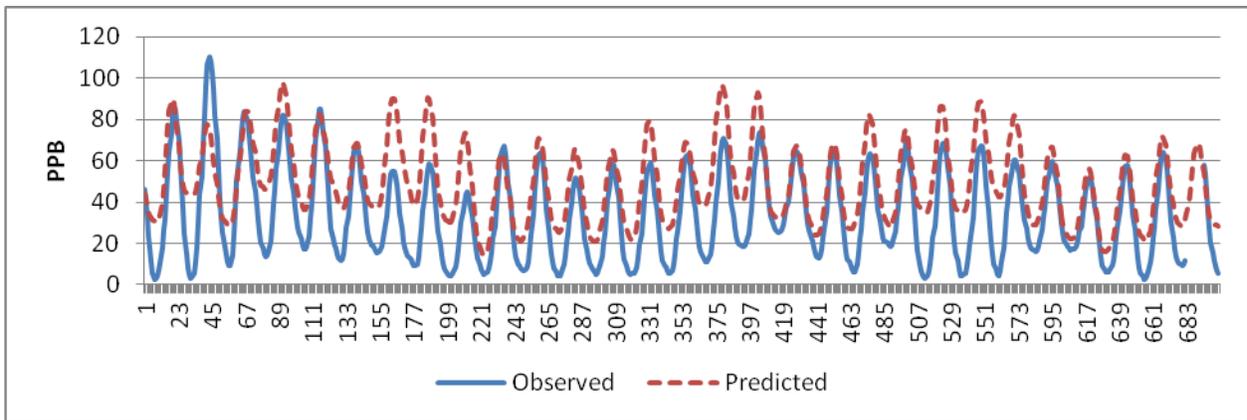
Time Series of Observed Vs.Predicted 8-Hour Mira Loma Ozone: July, 2008



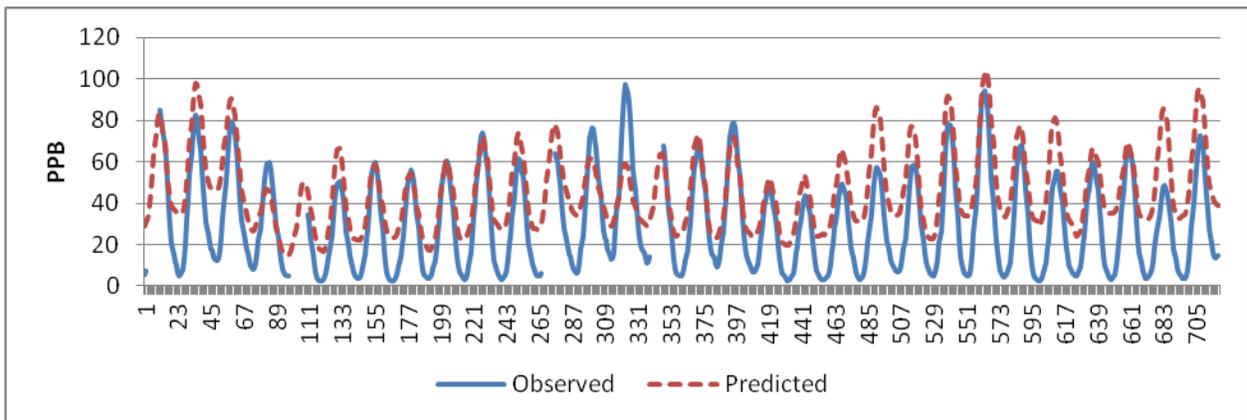
Time Series of Observed Vs.Predicted 8-Hour Mira Loma Ozone: August, 2008



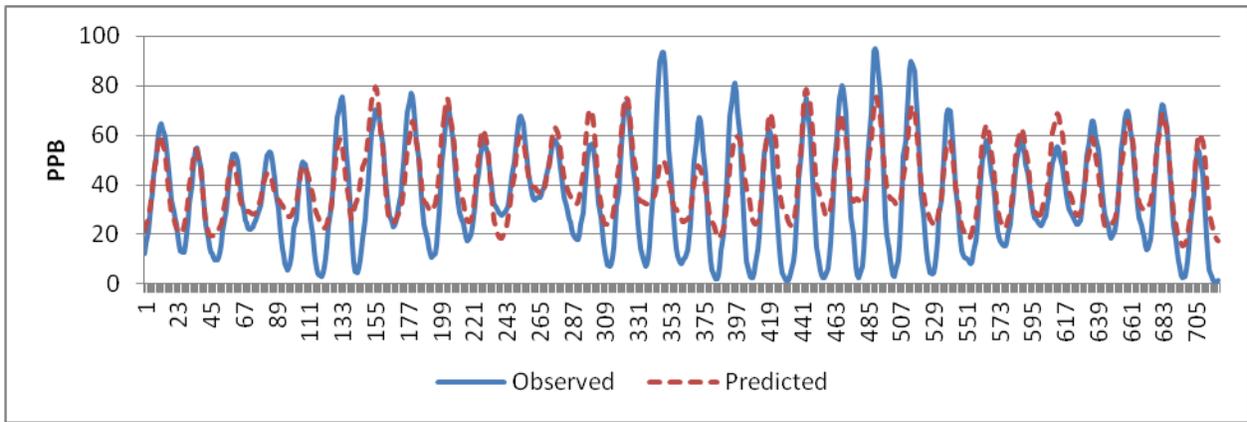
Time Series of Observed Vs.Predicted 8-Hour Pomona Ozone: June, 2008



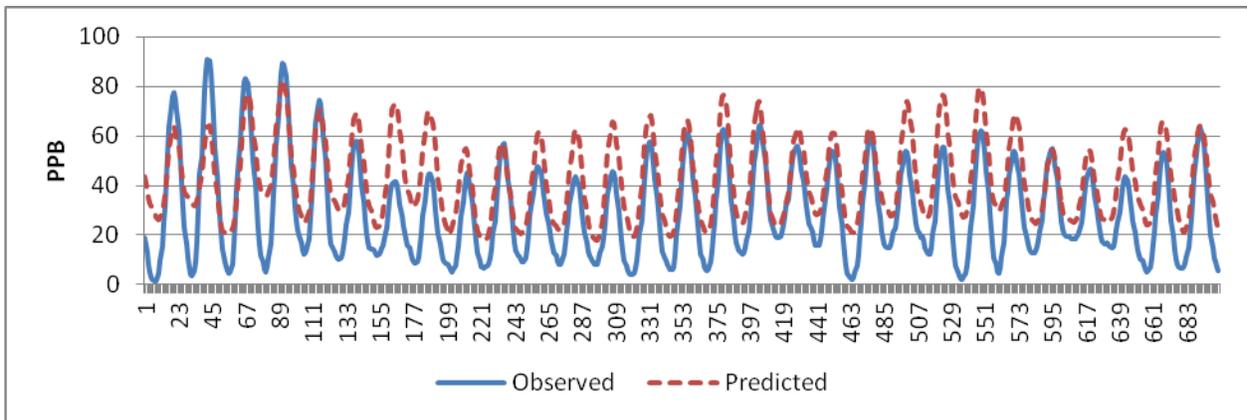
Time Series of Observed Vs.Predicted 8-Hour Pomona Ozone: July, 2008



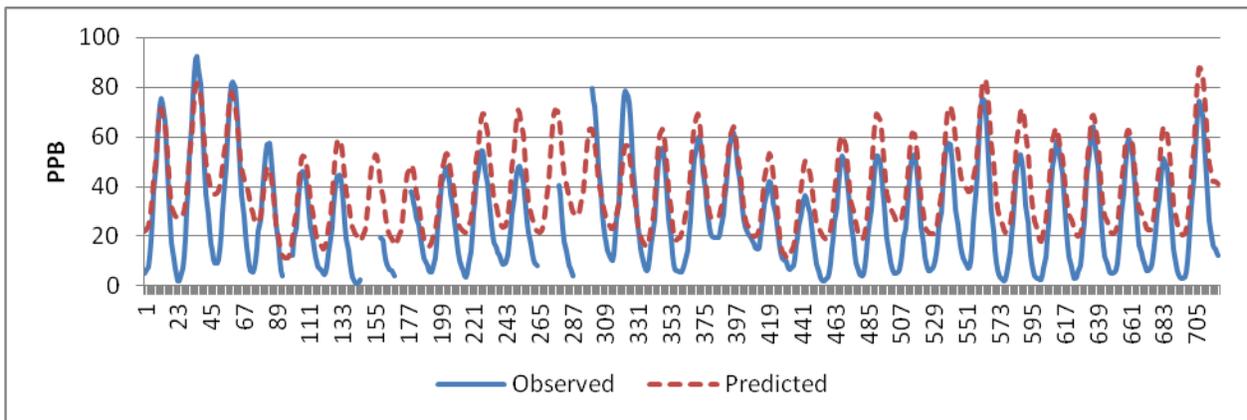
Time Series of Observed Vs.Predicted 8-Hour Pomona Ozone: August, 2008



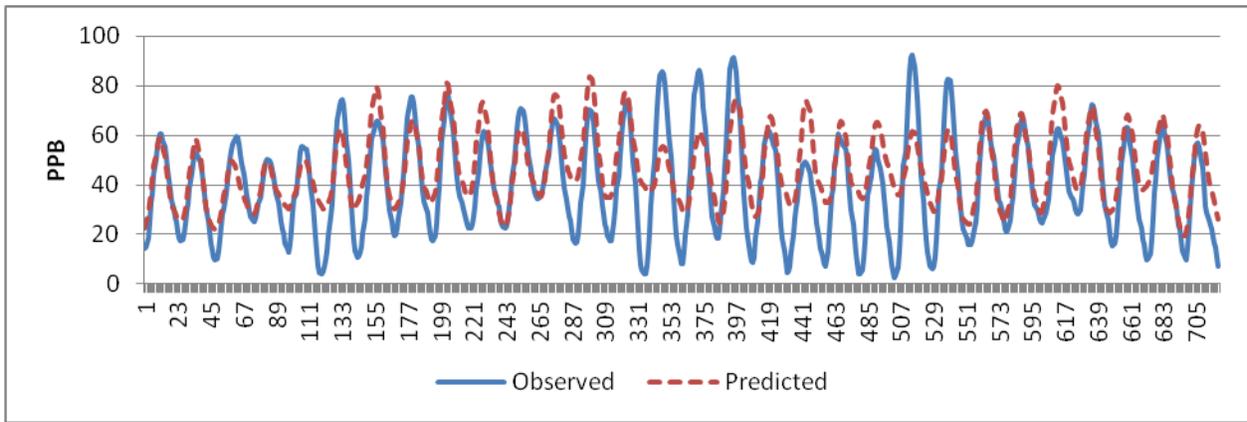
Time Series of Observed Vs.Predicted 8-Hour Burbank Ozone: June, 2008



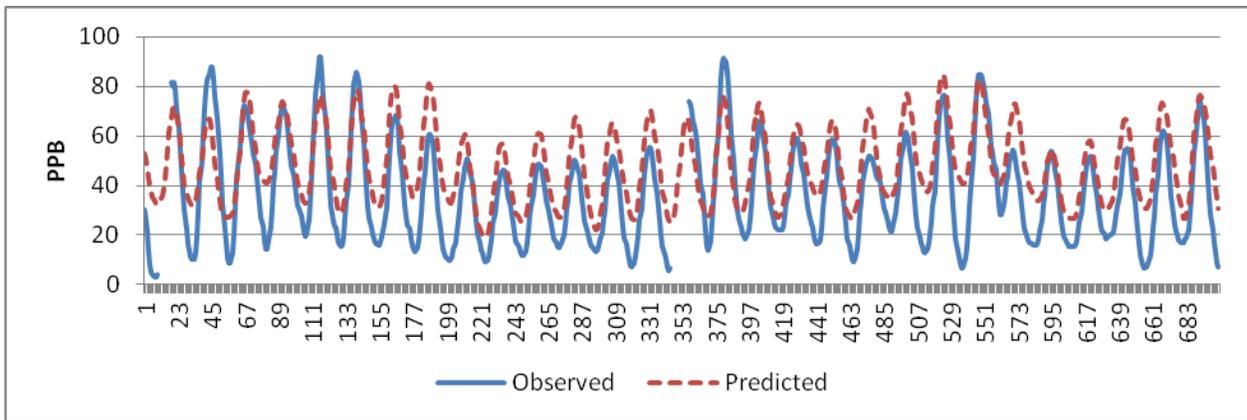
Time Series of Observed Vs.Predicted 8-Hour Burbank Ozone: July, 2008



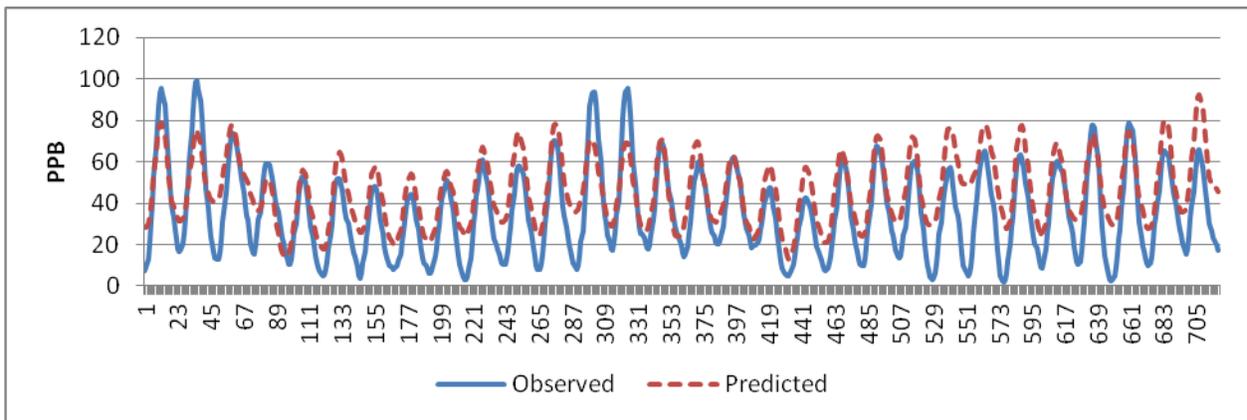
Time Series of Observed Vs.Predicted 8-Hour Burbank Ozone: August, 2008



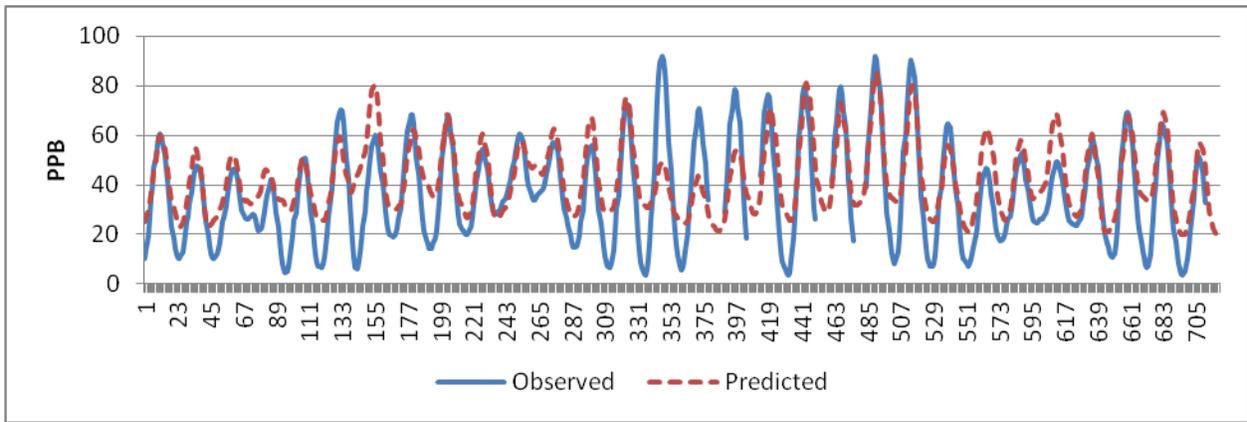
Time Series of Observed Vs.Predicted 8-Hour Reseda Ozone: June, 2008



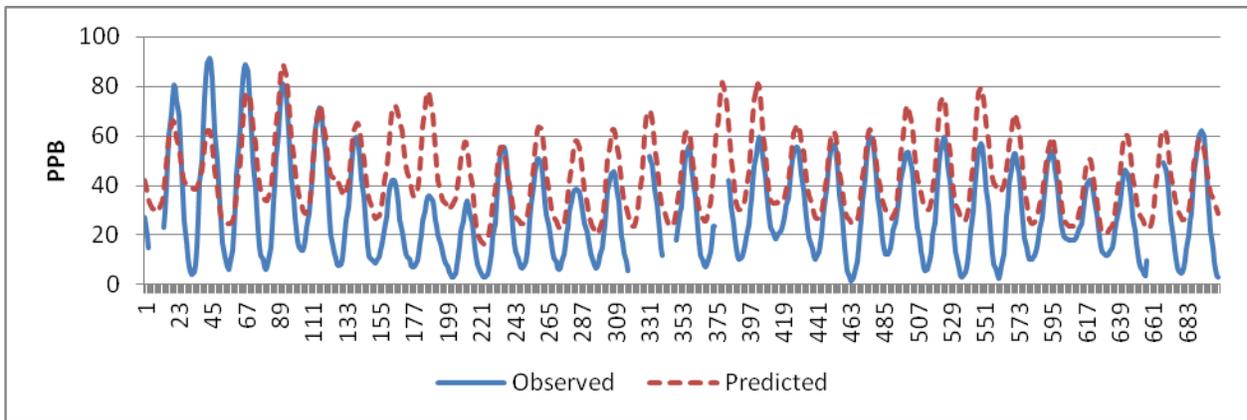
Time Series of Observed Vs.Predicted 8-Hour Reseda Ozone: July, 2008



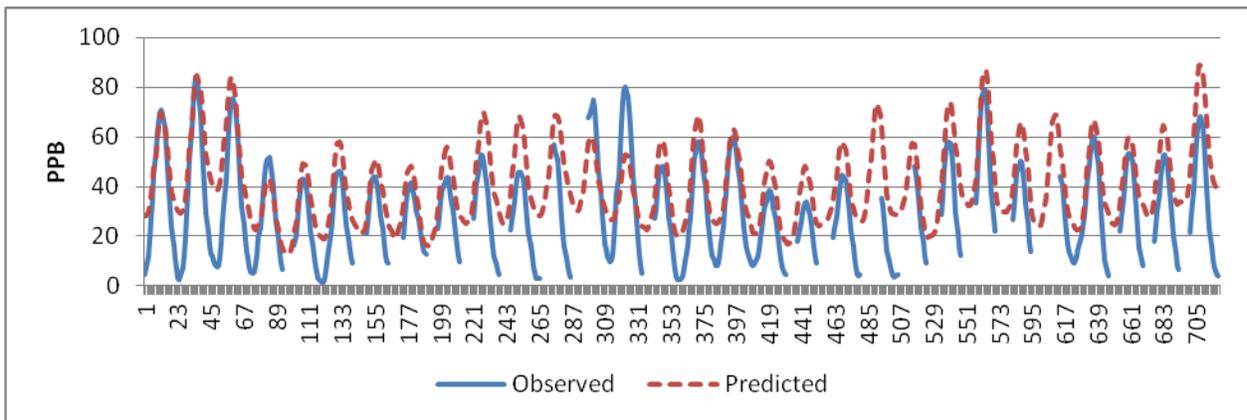
Time Series of Observed Vs.Predicted 8-Hour Reseda Ozone: August, 2008



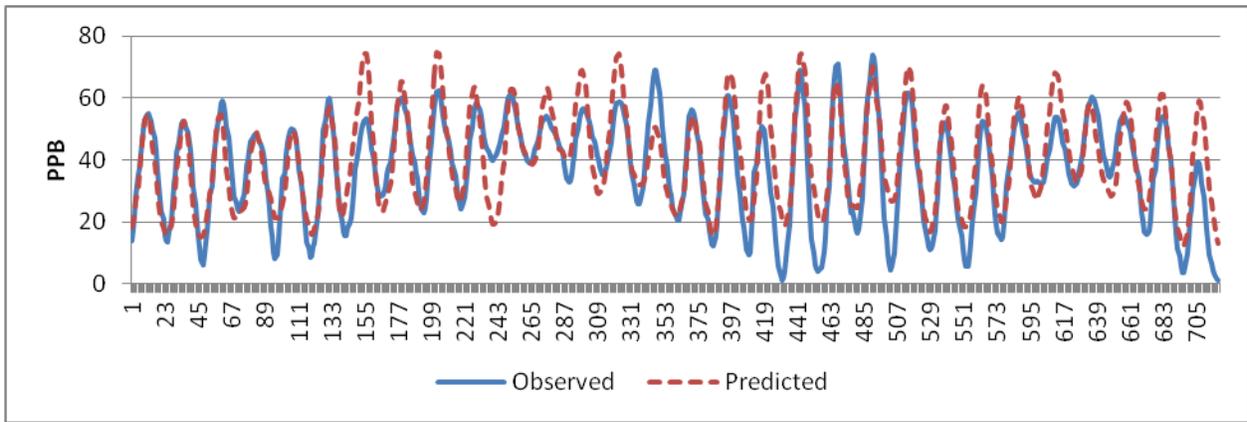
Time Series of Observed Vs.Predicted 8-Hour Pasadena Ozone: June, 2008



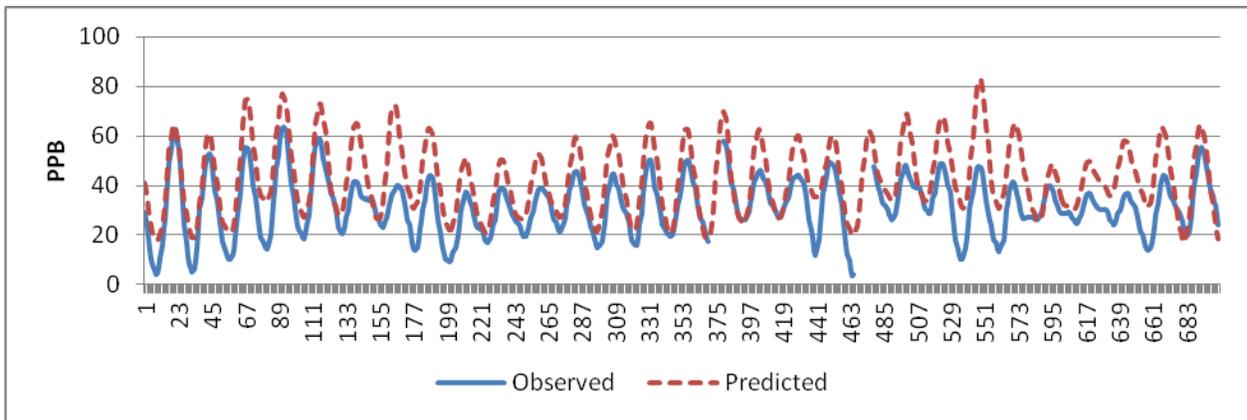
Time Series of Observed Vs.Predicted 8-Hour Pasadena Ozone: July, 2008



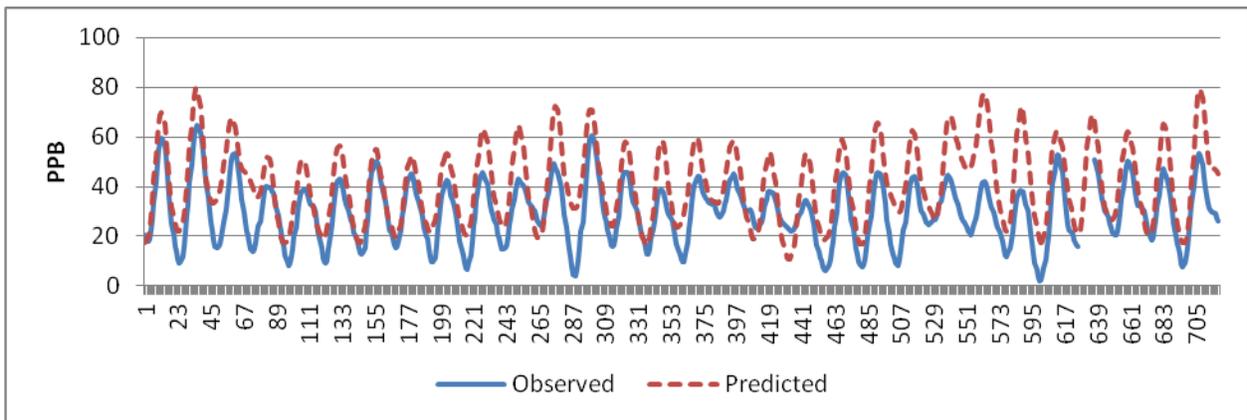
Time Series of Observed Vs.Predicted 8-Hour Pasadena Ozone: August, 2008



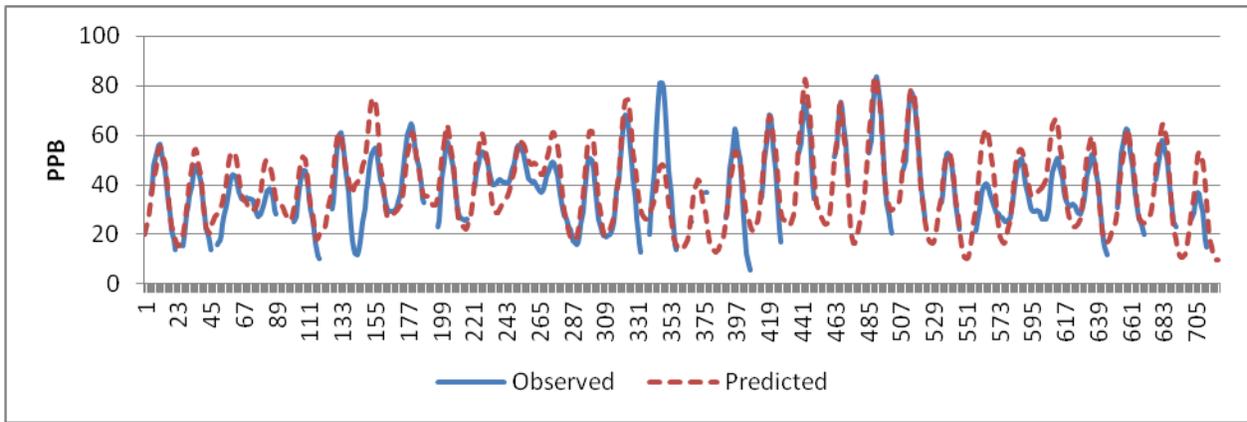
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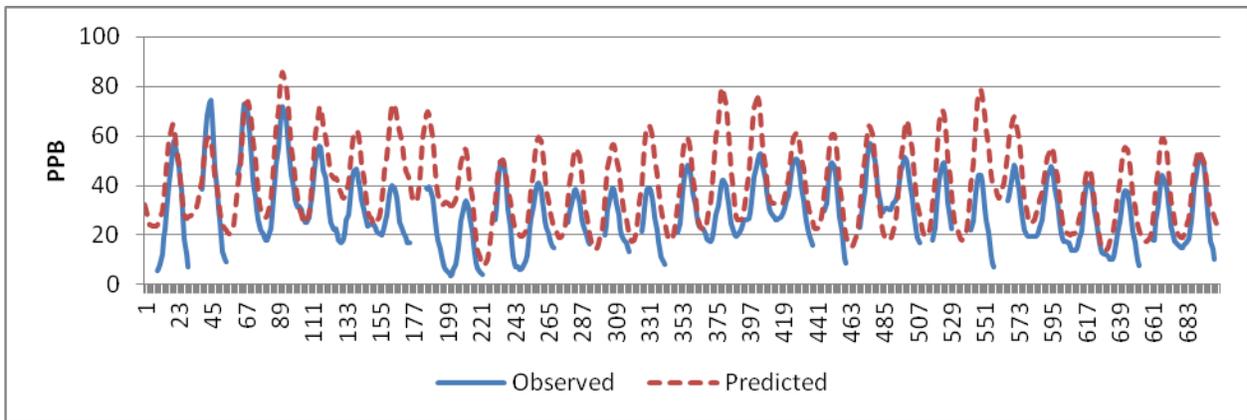
Time Series of Observed Vs.Predicted 8-Hour West Los Angeles Ozone: July, 2008



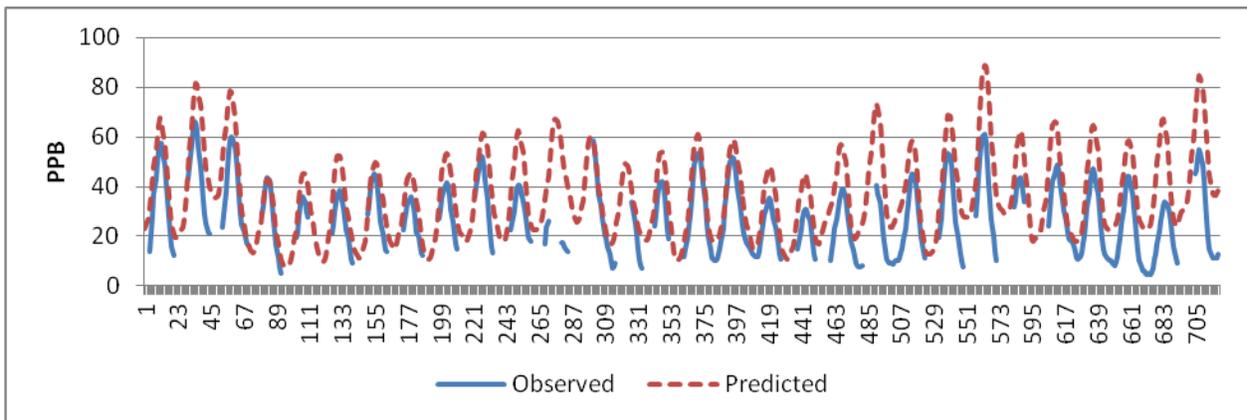
Time Series of Observed Vs.Predicted 8-Hour West Los Angeles Ozone: August, 2008



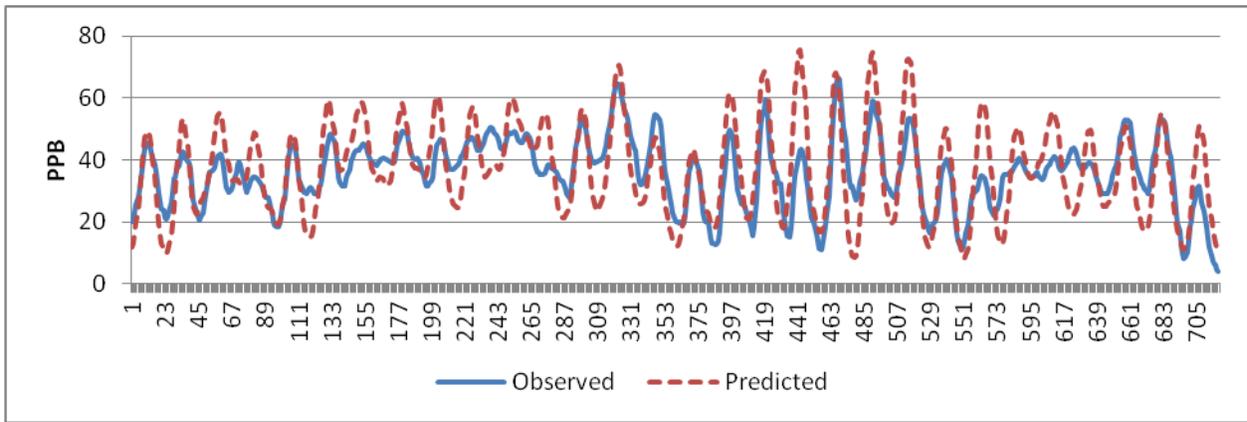
Time Series of Observed Vs.Predicted 8-Hour Pico Rivera Ozone: June, 2008



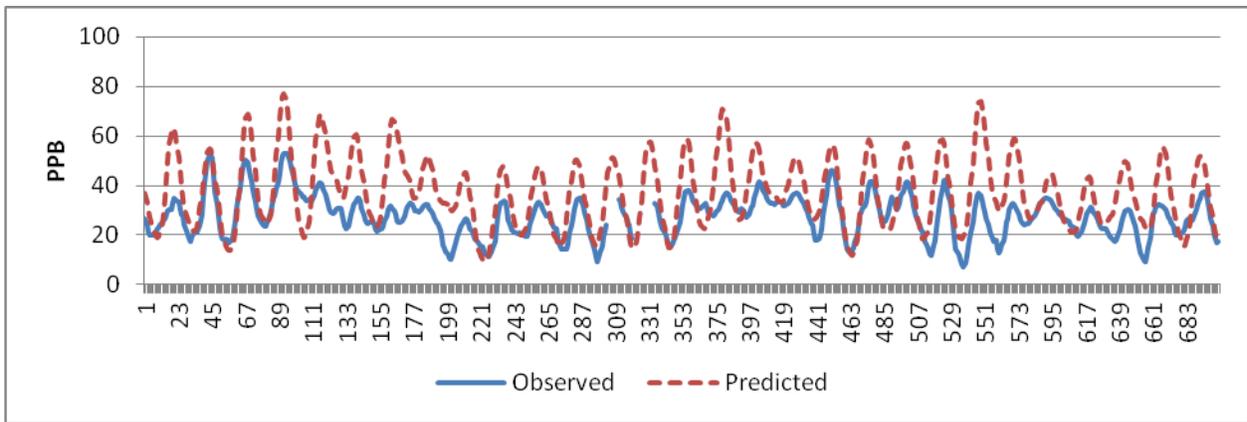
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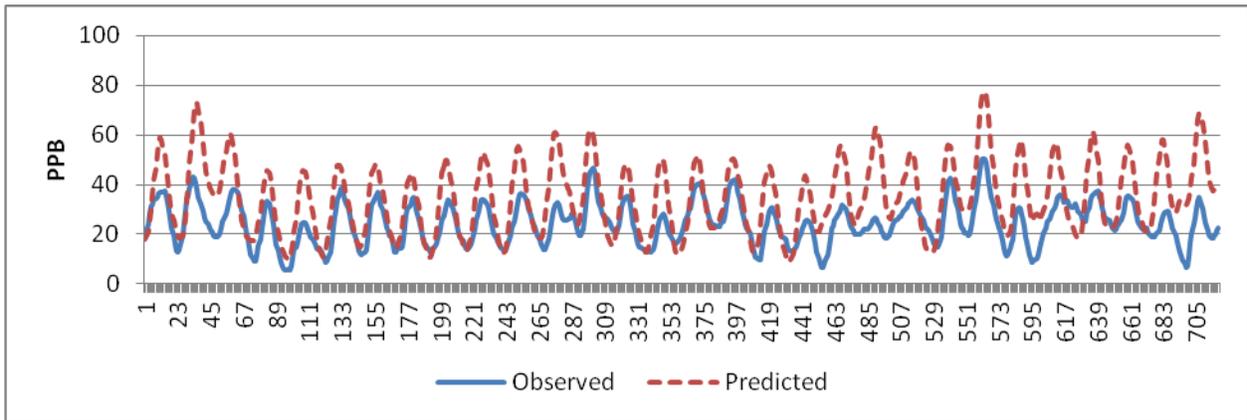
Time Series of Observed Vs.Predicted 8-Hour Pico Rivera Ozone: August, 2008



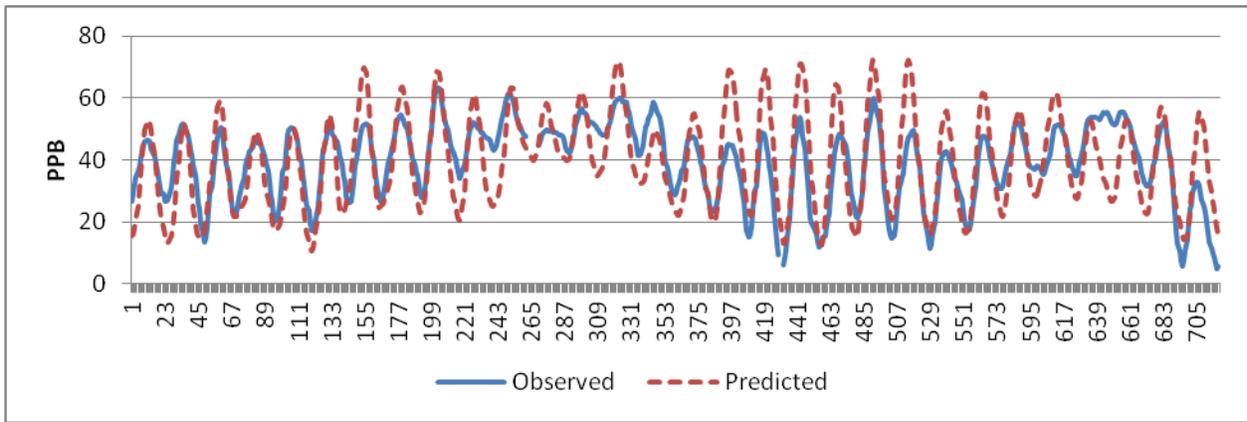
Time Series of Observed Vs.Predicted 8-Hour Long Beach Ozone: June, 2008



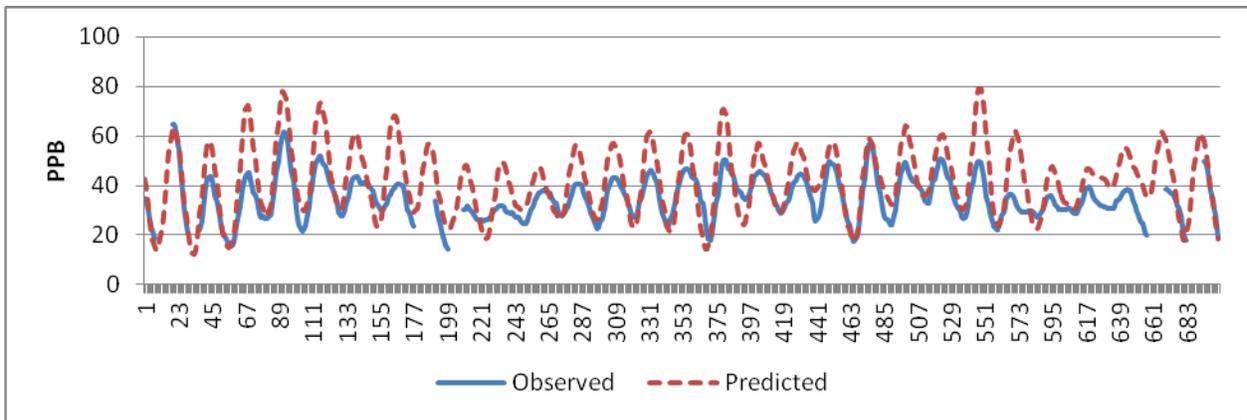
Time Series of Observed Vs.Predicted 8-Hour Long Beach Ozone: July, 2008



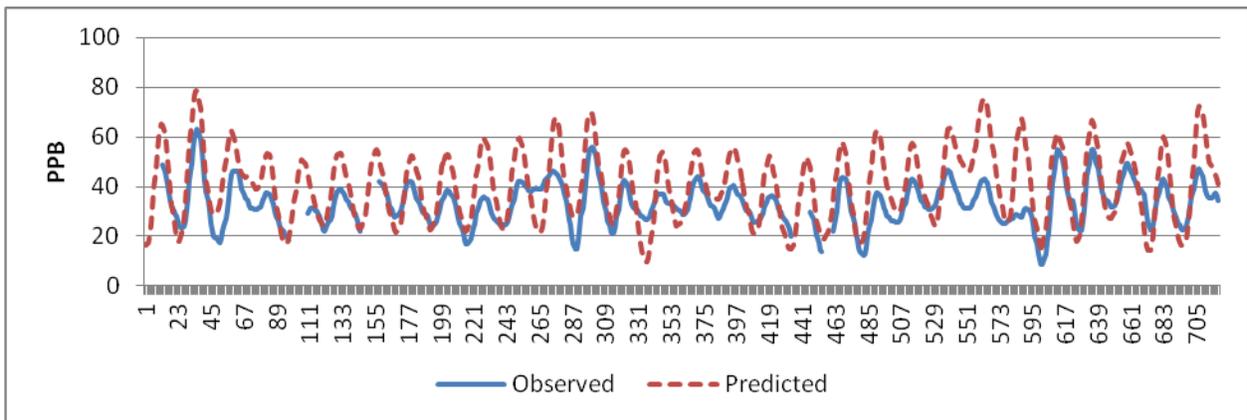
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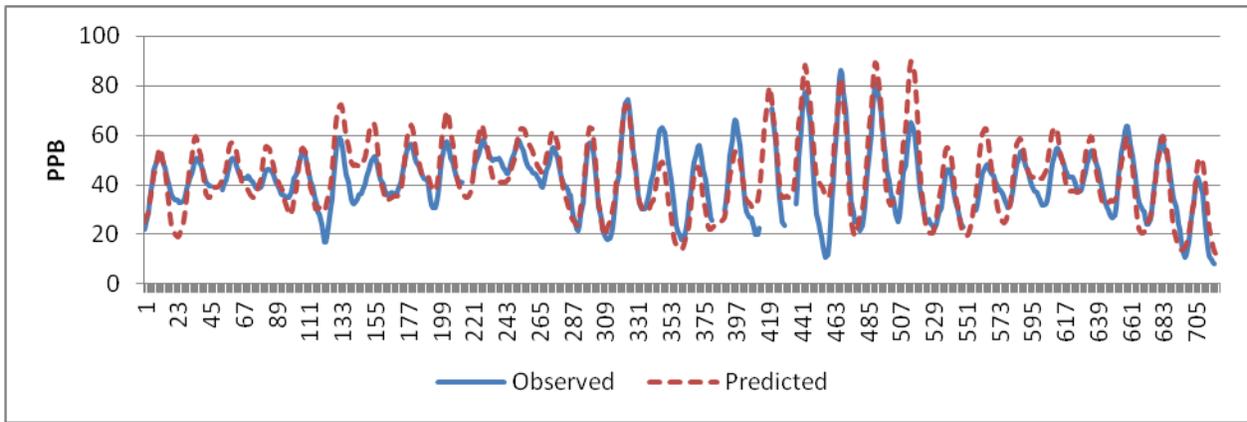
Time Series of Observed Vs.Predicted 8-Hour Los Angeles Airport Ozone: June, 2008



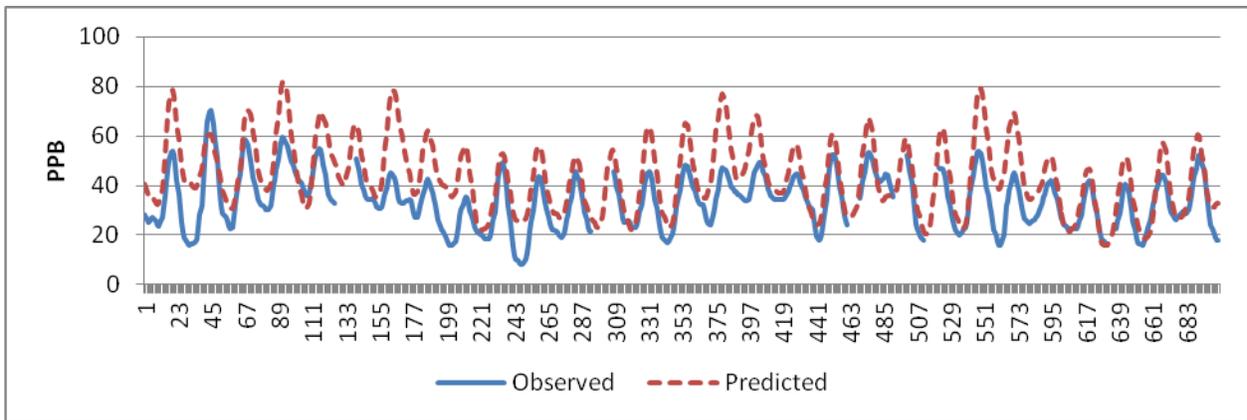
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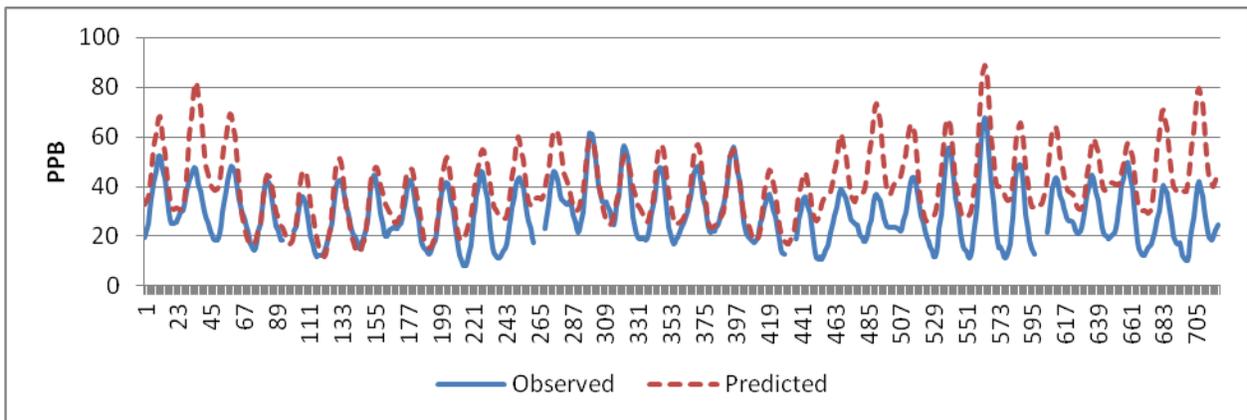
Time Series of Observed Vs.Predicted 8-Hour Los Angeles Airport Ozone: August, 2008



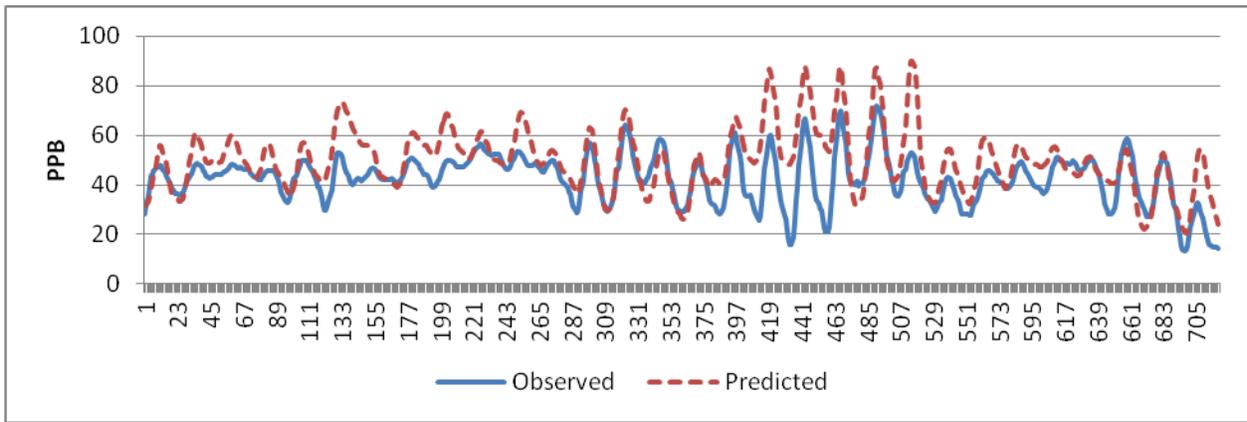
Time Series of Observed Vs.Predicted 8-Hour Anaheim Ozone: June, 2008



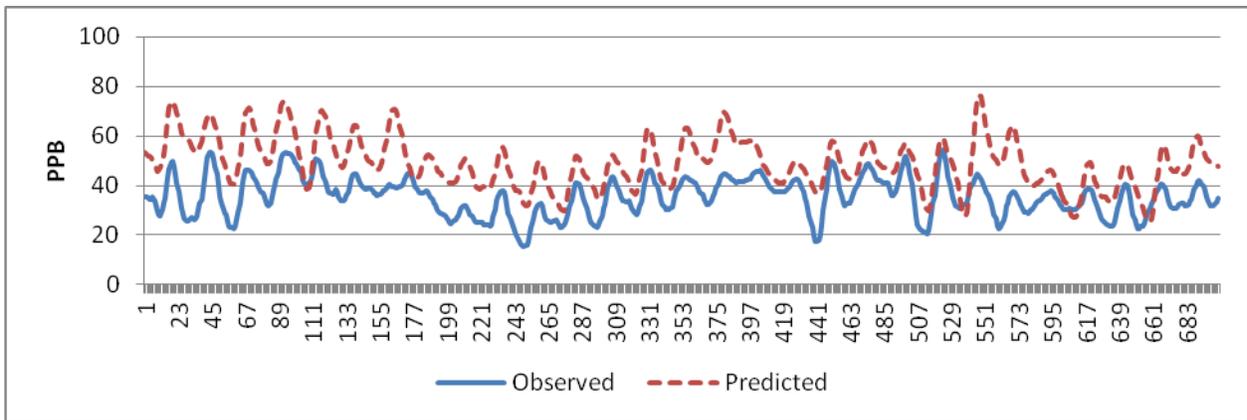
Time Series of Observed Vs.Predicted 8-Hour Anaheim Ozone: July, 2008



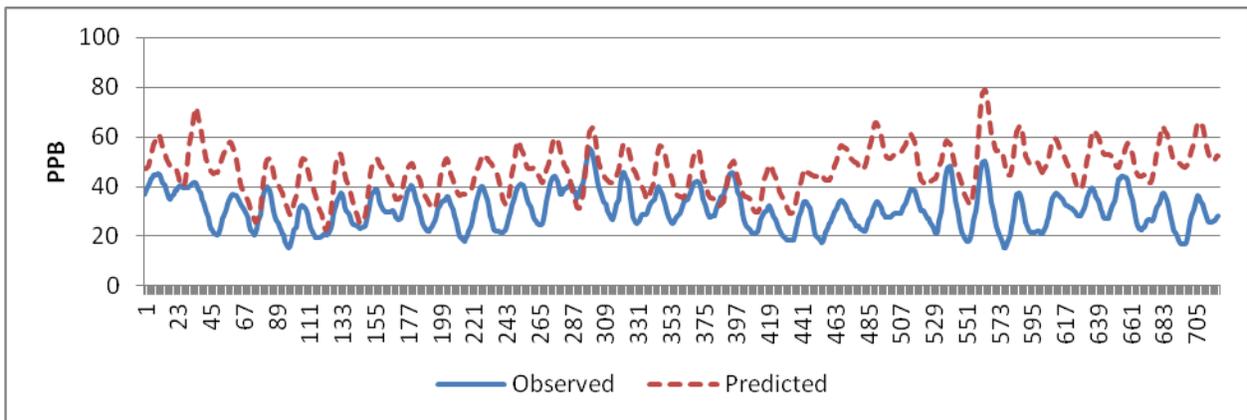
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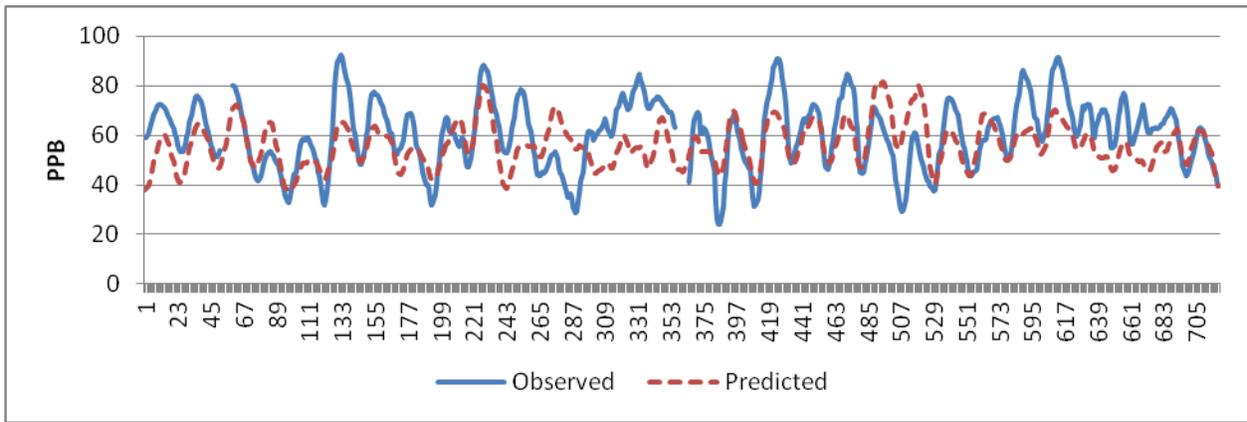
Time Series of Observed Vs.Predicted 8-Hour Costa Mesa Ozone: June, 2008



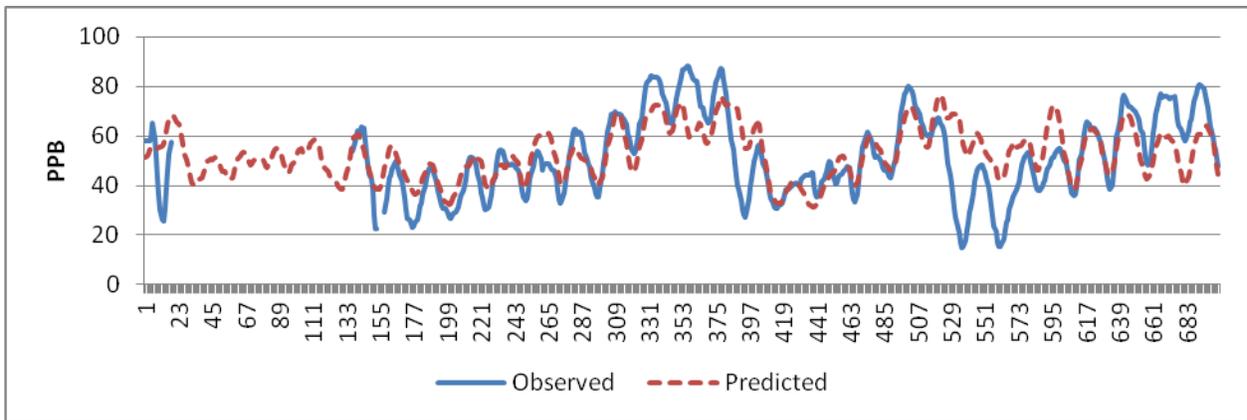
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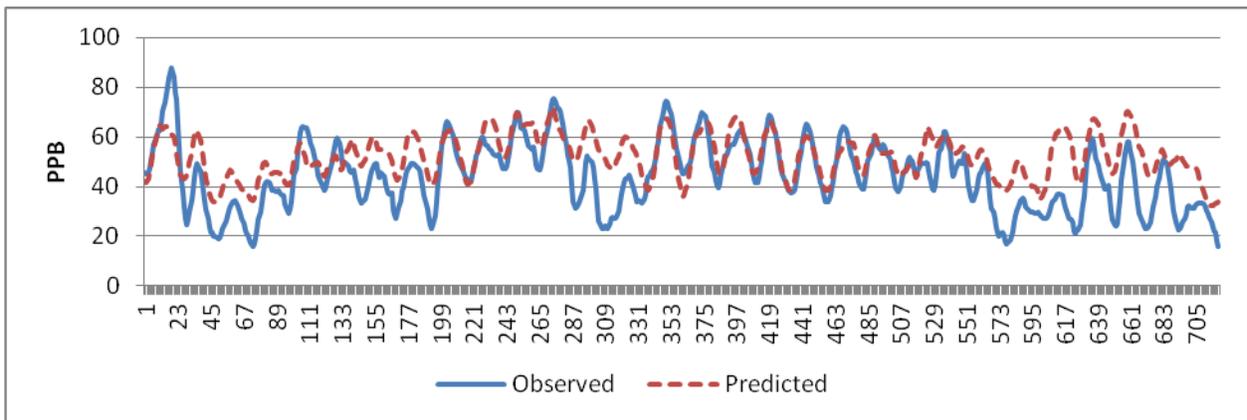
Time Series of Observed Vs.Predicted 8-Hour Costa Mesa Ozone: August, 2008



Time Series of Observed Vs.Predicted 8-Hour Indio Ozone: June, 2008



Time Series of Observed Vs.Predicted 8-Hour Indio Ozone: July, 2008



Time Series of Observed Vs.Predicted 8-Hour Indio Ozone: August, 2008

Attachment 4

Draft CEPA Source Level Emissions Reduction Summary
for 2014: Annual Average Inventory

Run Date: 8/7/2012 10:35:49 AM
(PC-CEPA V4.4 / October 2008)
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Year 2014 Emission Reductions Excluding Natural Sources by Control Measure
in the South Coast Air Basin (Annual Average Inventory - Tons/Day)

(A) Reductions Without Overlapping/Double-Counting With Other Control Measures (1)

Measure	Name	(Reductions - Tons/Day)						
		VOC	NOx	CO	SOx	PM10	PM2.5	NH3
CMB-01A	Reclaim NOx Reduction Phase I	0.00	2.00	0.00	0.00	0.00	0.00	0.00
CTS-01	Architectural Coatings [VOC]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CTS-02	Misc. Coatings, Adhesives, Solvents & Lubricants [VOC]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CTS-03	Mold Release[VOC]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FUG-02	LPG Transfer and Dispensing [VOC]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FUG-03	Fugitive Emissions [VOC]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFRD-01	SOON [NOX]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFRD-02	Locomotives [NOx,PM]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFRD-03	Passenger Locomotives [NOx,PM]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grand Total (Net)		0.00	2.00	0.00	0.00	0.00	0.00	0.00

Year 2014 Emission Reductions Excluding Natural Sources by Control Measure in the South Coast Air Basin (Annual Average
Inventory - Tons/Day)

(B) Reductions With Overlapping/Double-Counting With Other Control Measures (2)

Measure	Name	(Reductions - Tons/Day)						
		VOC	NOx	CO	SOx	PM10	PM2.5	NH3
CMB-01A	Reclaim NOx Reduction Phase I	0.00	2.00	0.00	0.00	0.00	0.00	0.00
CMB-03	Commercial Space Heating [Nox]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CTS-01	Architectural Coatings [VOC]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CTS-02	Misc. Coatings, Adhesives, Solvents & Lubricants [VOC]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CTS-03	Mold Release[VOC]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FUG-02	LPG Transfer and Dispensing [VOC]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FUG-03	Fugitive Emissions [VOC]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFRD-01	SOON [NOX]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFRD-02	Locomotives [NOx,PM]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFRD-03	Passenger Locomotives [NOx,PM]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grand Total (with potential overlapping)		0.00	2.00	0.00	0.00	0.00	0.00	0.00

- (1) Emission reductions for individual measures were estimated based on the sequence of listing contained here. When the sequence changes, reductions from each measure could be affected, but the net total remain the same. The purpose of this table is to estimate total emission reductions without overlapping or double-counting between measures.
- (2) Emission reductions for individual measures were estimated in the absence of other measures. Therefore, the sequence of listing does not affect the reduction estimates. The purpose of this table is to provide emission reduction estimates for Appendix IV control measure summary tables as well as cost effectiveness analysis.
- (3) Mobility Adjustment includes TCM-01, ATT-01, ATT-02, ATT-05 and adjustments are reflected in the CEPA baseline beyond year 2000.

Attachment 5

Draft CEPA Source Level Emissions Reduction Summary
for 2023: Annual Average Inventory

Run Date: 7/6/2012 5:44:45 PM

(PC-CEPA V4.4 / October 2008)

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Year 2023 Emission Reductions Excluding Natural Sources by Control Measure
 in the South Coast Air Basin (Annual Average Inventory - Tons/Day)

(A) Reductions Without Overlapping/Double-Counting With Other Control Measures (1)

Measure	Name	(Reductions - Tons/Day)						
		VOC	NOx	CO	SOx	PM10	PM2.5	NH3
CMB-01A	Reclaim NOx Reduction Phase I	0.00	2.00	0.00	0.00	0.00	0.00	0.00
CMB-01B	Reclaim NOx Reduction Phase II	0.00	1.00	0.00	0.00	0.00	0.00	0.00
CTS-01	Architectural Coatings [VOC]	2.21	0.00	0.00	0.00	0.00	0.00	0.00
CTS-02	Misc. Coatings, Adhesives, Solvents & Lubricants [VOC]	1.00	0.00	0.00	0.00	0.00	0.00	0.00
CTS-03	Mold Release[VOC]	0.83	0.00	0.00	0.00	0.00	0.00	0.00
FUG-02	LPG Transfer and Dispensing [VOC]	1.00	0.00	0.00	0.00	0.00	0.00	0.00
FUG-03	Fugitive Emissions [VOC]	1.00	0.00	0.00	0.00	0.00	0.00	0.00
OFRD-01	SOON [NOX]	0.00	7.47	0.00	0.00	0.00	0.00	0.00
OFRD-02	Locomotives [NOx,PM]	0.00	12.71	0.00	0.00	0.35	0.32	0.00
OFRD-03	Passenger Locomotives [NOx,PM]	0.00	2.96	0.00	0.00	0.07	0.06	0.00
Grand Total (Net)		6.04	26.31	0.00	0.00	0.41	0.38	0.00

Year 2023 Emission Reductions Excluding Natural Sources by Control Measure in the South Coast Air Basin (Annual Average
 Inventory - Tons/Day)

(B) Reductions With Overlapping/Double-Counting With Other Control Measures (2)

Measure	Name	(Reductions - Tons/Day)						
		VOC	NOx	CO	SOx	PM10	PM2.5	NH3
CMB-01A	Reclaim NOx Reduction Phase I	0.00	2.00	0.00	0.00	0.00	0.00	0.00
CMB-01B	Reclaim NOx Reduction Phase II	0.00	1.00	0.00	0.00	0.00	0.00	0.00
CMB-03	Commercial Space Heating [Nox]	0.00	0.18	0.00	0.00	0.00	0.00	0.00
CTS-01	Architectural Coatings [VOC]	2.21	0.00	0.00	0.00	0.00	0.00	0.00
CTS-02	Misc. Coatings, Adhesives, Solvents & Lubricants [VOC]	1.00	0.00	0.00	0.00	0.00	0.00	0.00
CTS-03	Mold Release[VOC]	0.83	0.00	0.00	0.00	0.00	0.00	0.00
FUG-02	LPG Transfer and Dispensing [VOC]	1.00	0.00	0.00	0.00	0.00	0.00	0.00
FUG-03	Fugitive Emissions [VOC]	1.00	0.00	0.00	0.00	0.00	0.00	0.00
OFRD-01	SOON [NOX]	0.00	7.47	0.00	0.00	0.00	0.00	0.00
OFRD-02	Locomotives [NOx,PM]	0.00	12.71	0.00	0.00	0.35	0.32	0.00
OFRD-03	Passenger Locomotives [NOx,PM]	0.00	2.96	0.00	0.00	0.07	0.06	0.00
Grand Total (with potential overlapping)		6.04	26.31	0.00	0.00	0.41	0.38	0.00

- (1) Emission reductions for individual measures were estimated based on the sequence of listing contained here. When the sequence changes, reductions from each measure could be affected, but the net total remain the same. The purpose of this table is to estimate total emission reductions without overlapping or double-counting between measures.
- (2) Emission reductions for individual measures were estimated in the absence of other measures. Therefore, the sequence of listing does not affect the reduction estimates. The purpose of this table is to provide emission reduction estimates for Appendix IV control measure summary tables as well as cost effectiveness analysis.
- (3) Mobility Adjustment includes TCM-01, ATT-01, ATT-02, ATT-05 and adjustments are reflected in the CEPA baseline beyond year 2000.

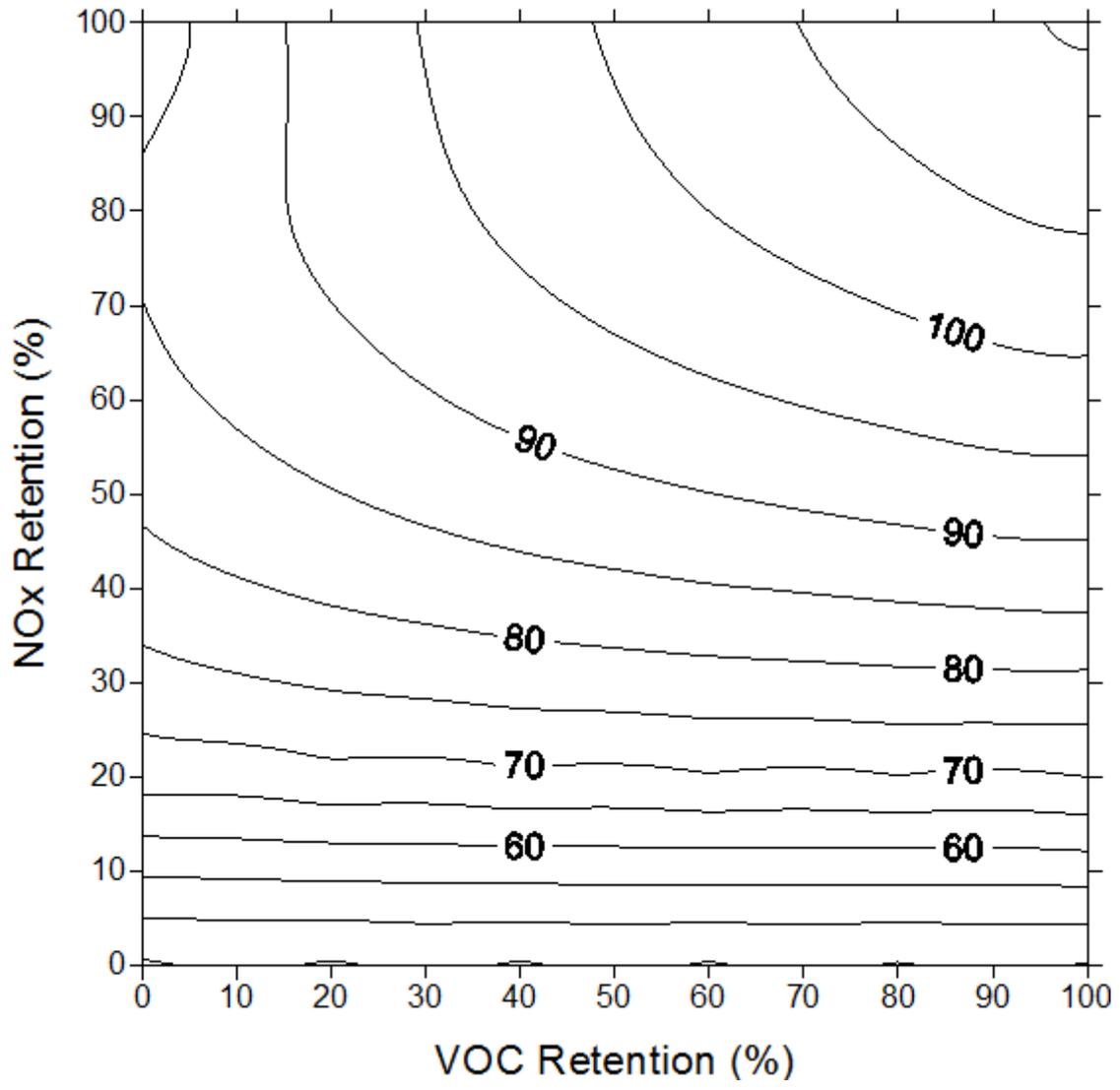
Attachment 6

CAMx Modeling (To Be Provided)

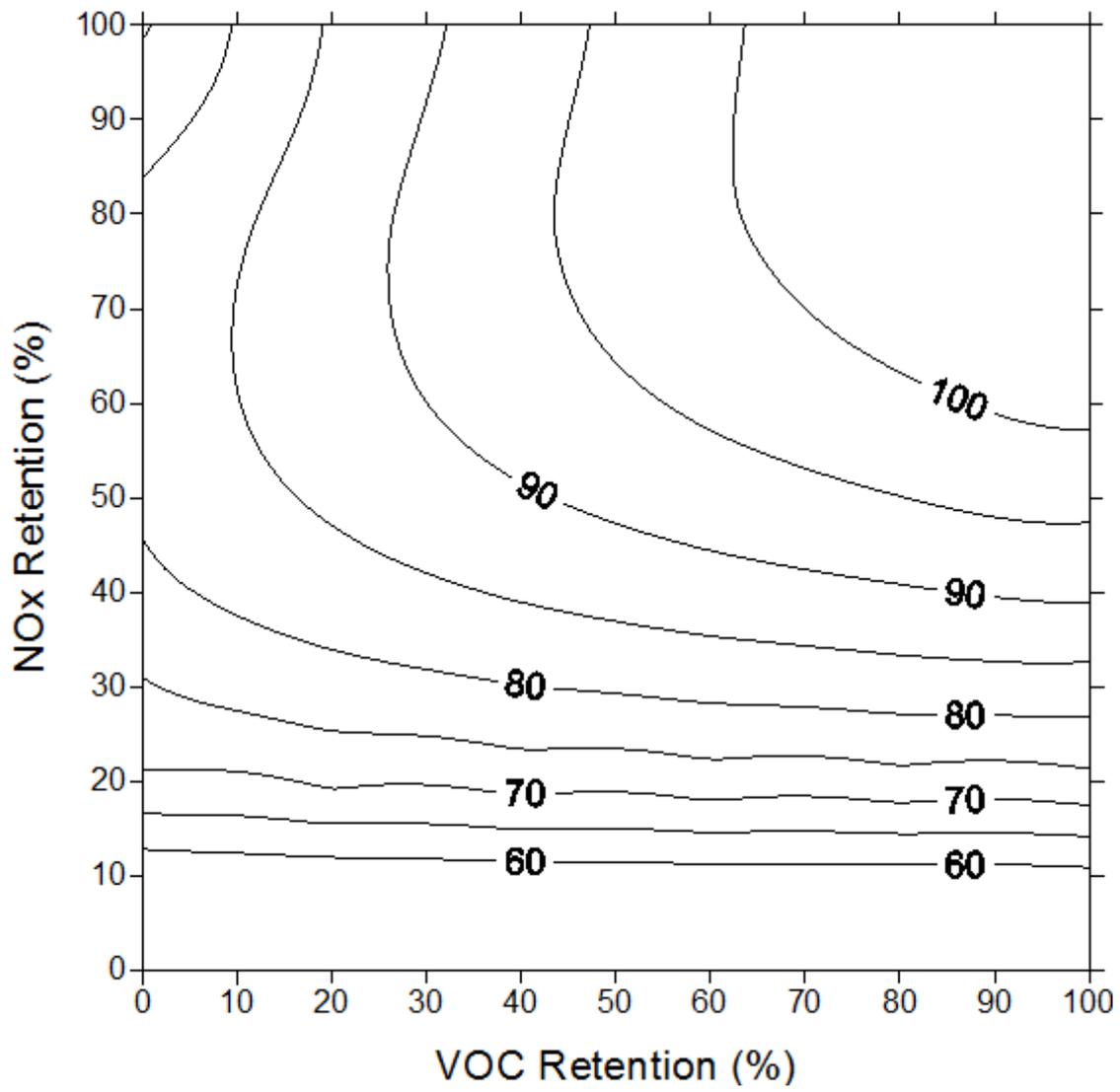
Attachment 7

2023 8-Hour Ozone Isopleths

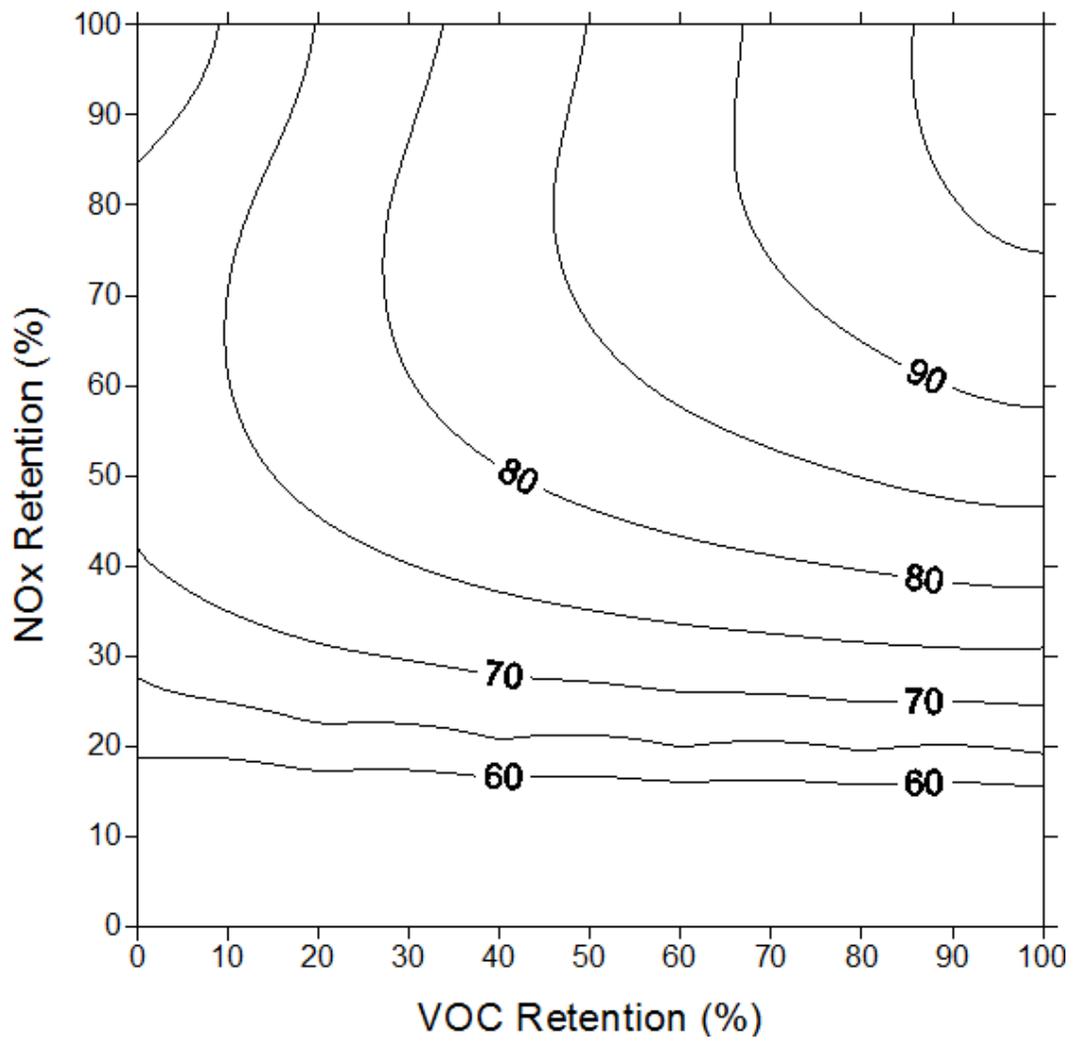
The ozone isopleths, commonly referred as Empirical Kinetics Modeling Approach (EKMA) plots show ozone concentrations predicted under a given combination of VOC and NO_x emissions. The upper right corner represents the projected VOC and NO_x emissions in 2023 with full implementation of all adopted control measures (baseline). Moving down and left on each figure corresponds to relative emissions reductions of NO_x (down) and VOC (left). The lines within each figure represent the ozone design value at that location for a given amount of NO_x and VOC. The shape of the EKMA plots are different at different locations in the Basin due to the complex photochemical reactions involved in ozone formation. These O₃ isopleths are an important tool to provide guidance in the choice of control strategies by indicating the amount of reductions needed to meet the current and future air quality standards.



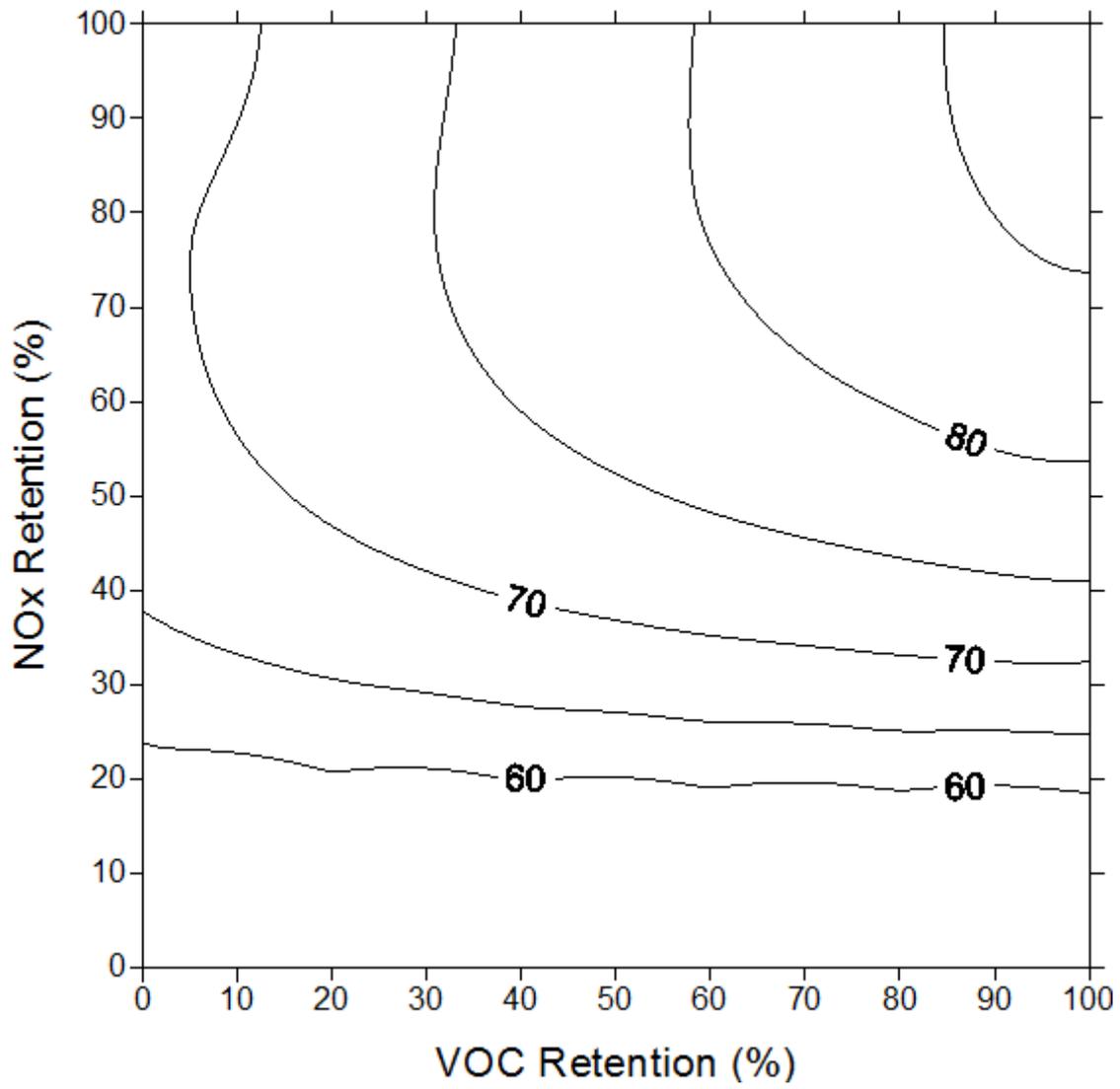
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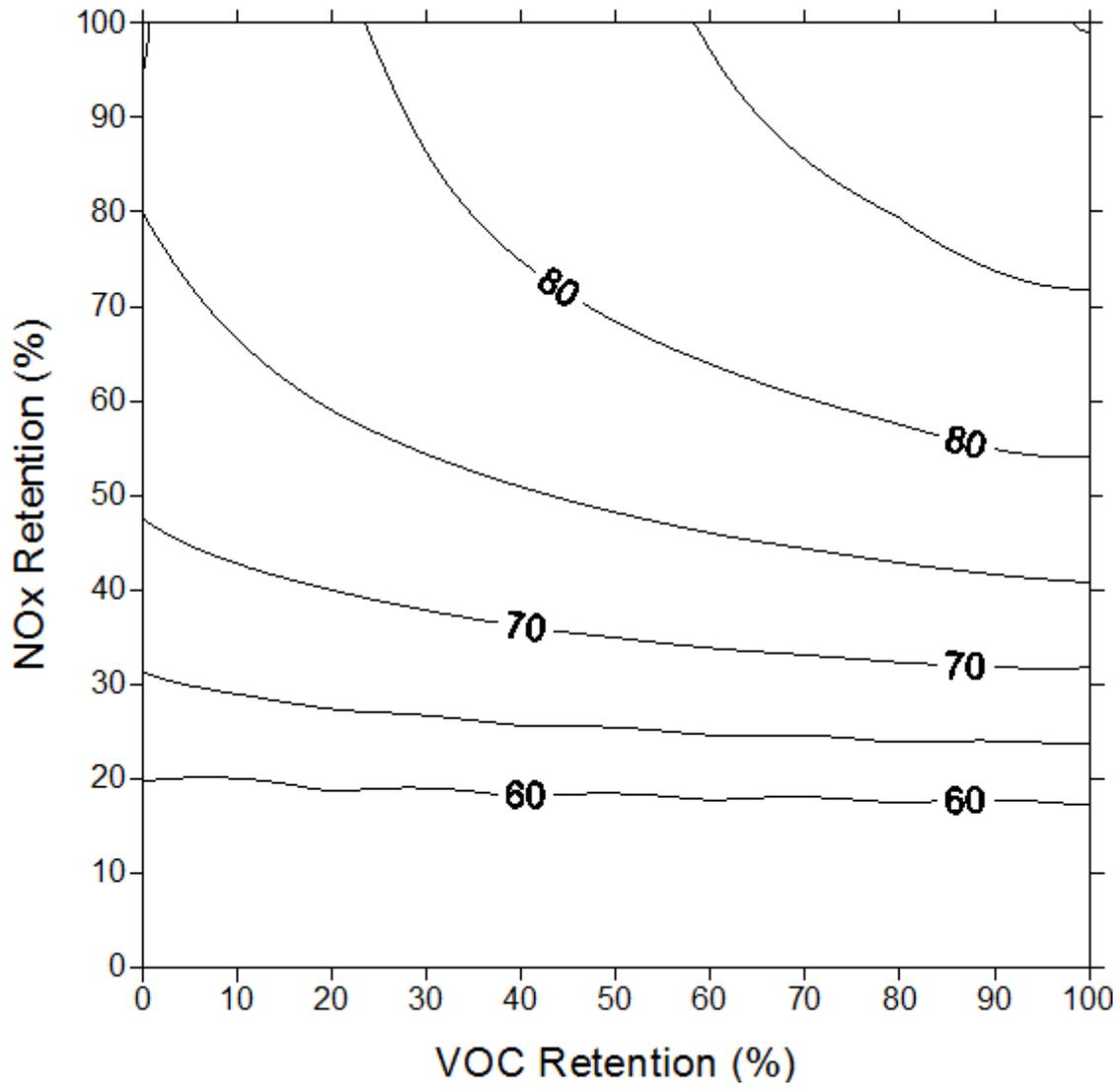
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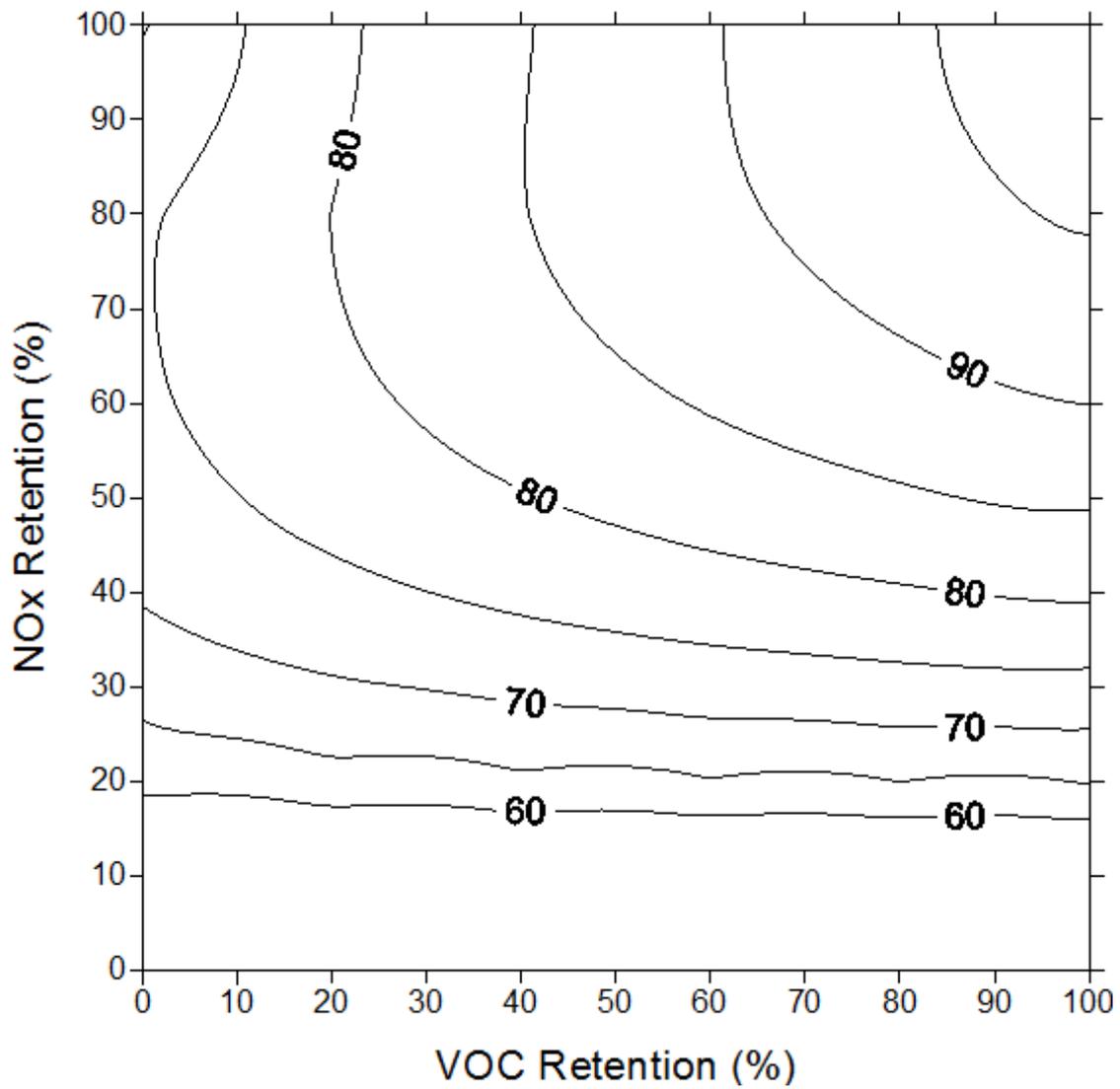
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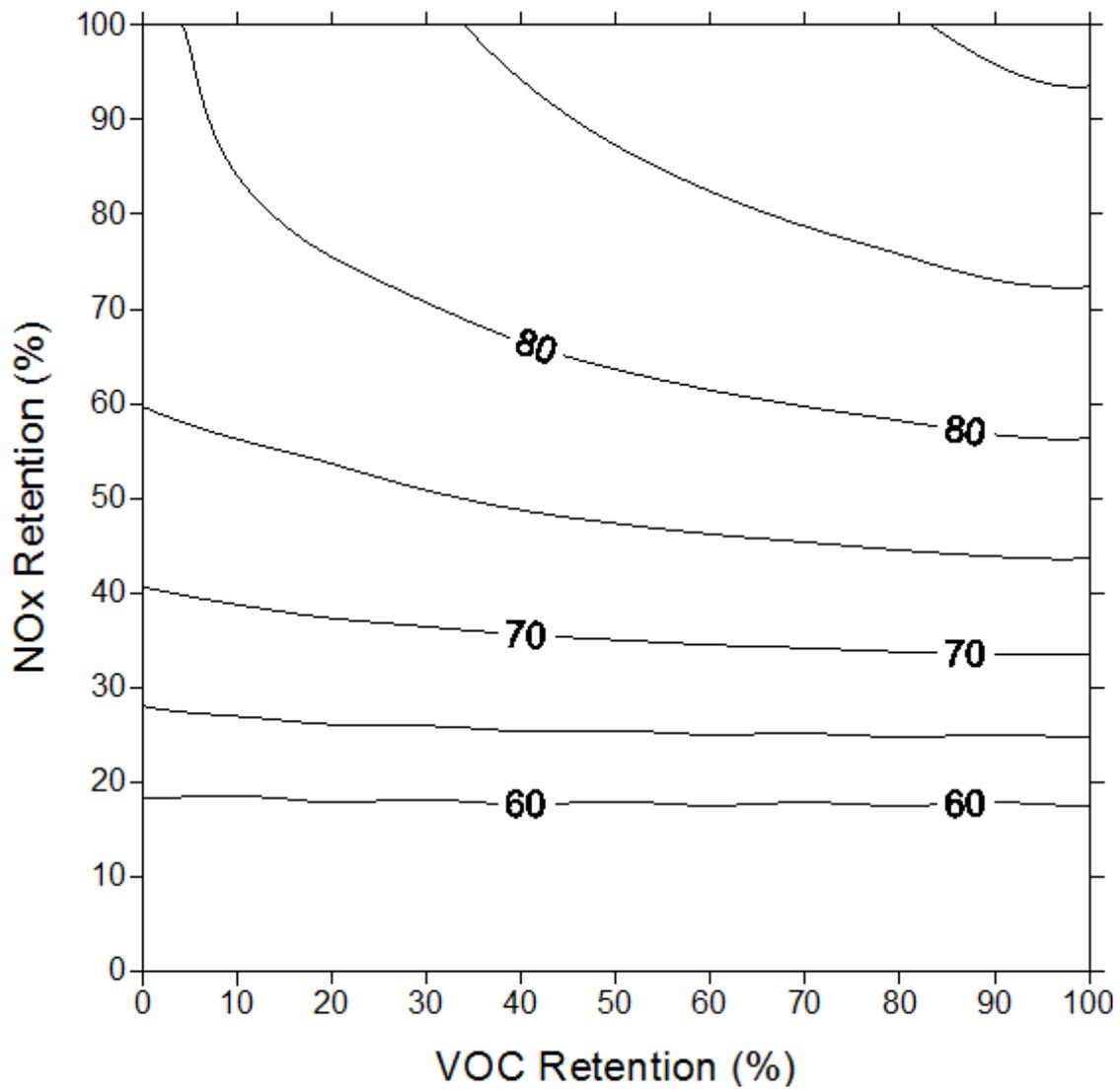
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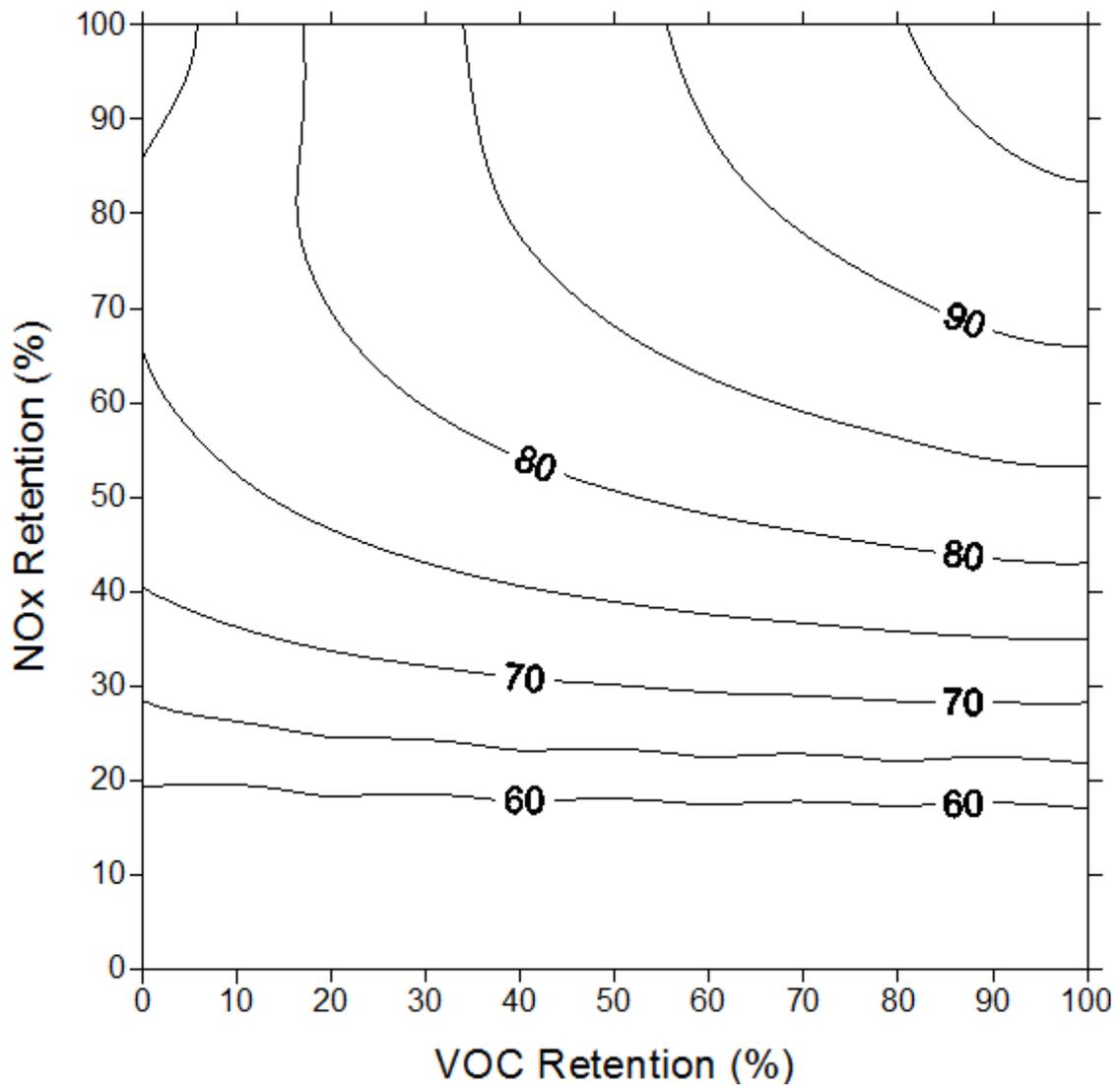
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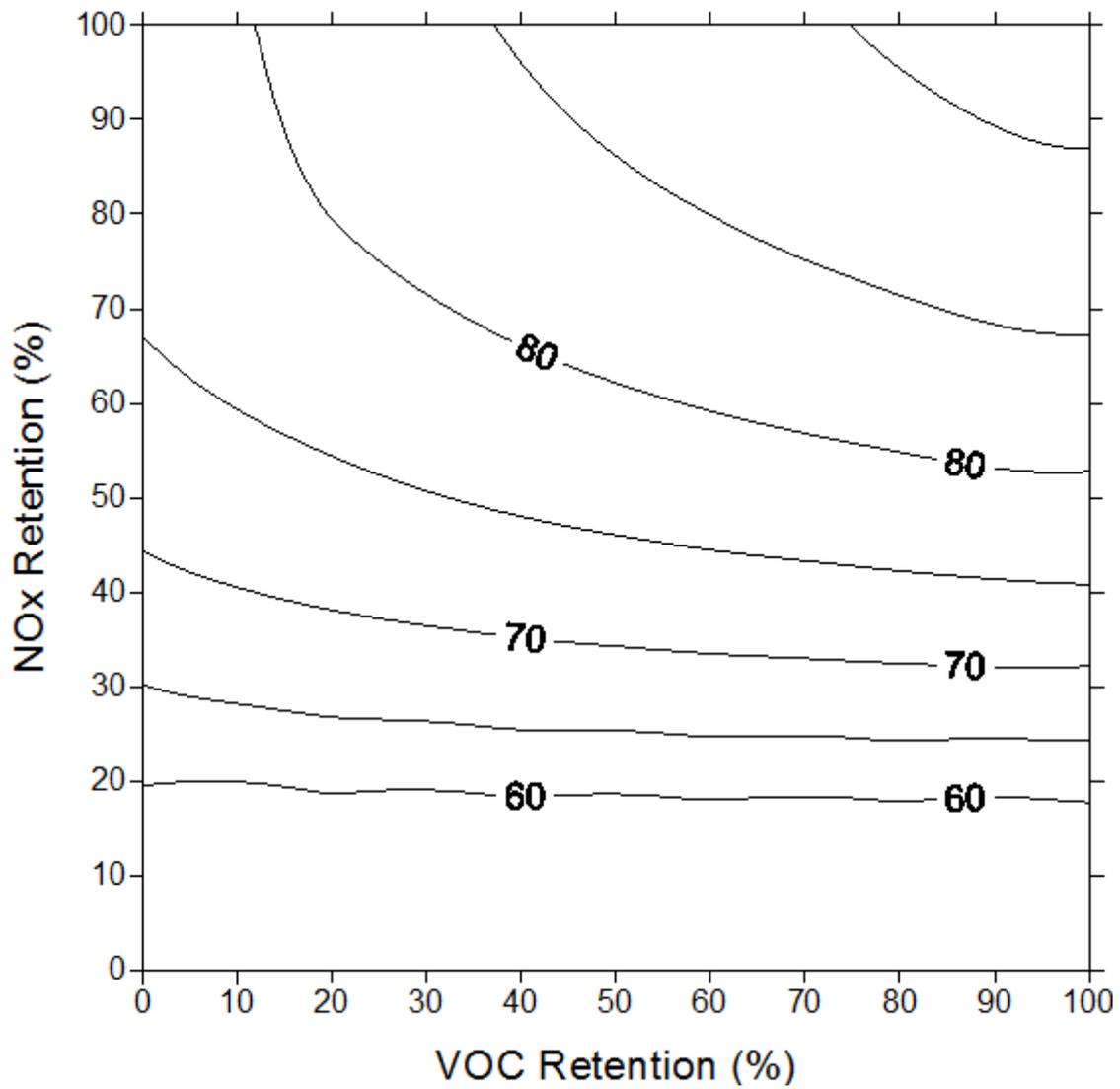
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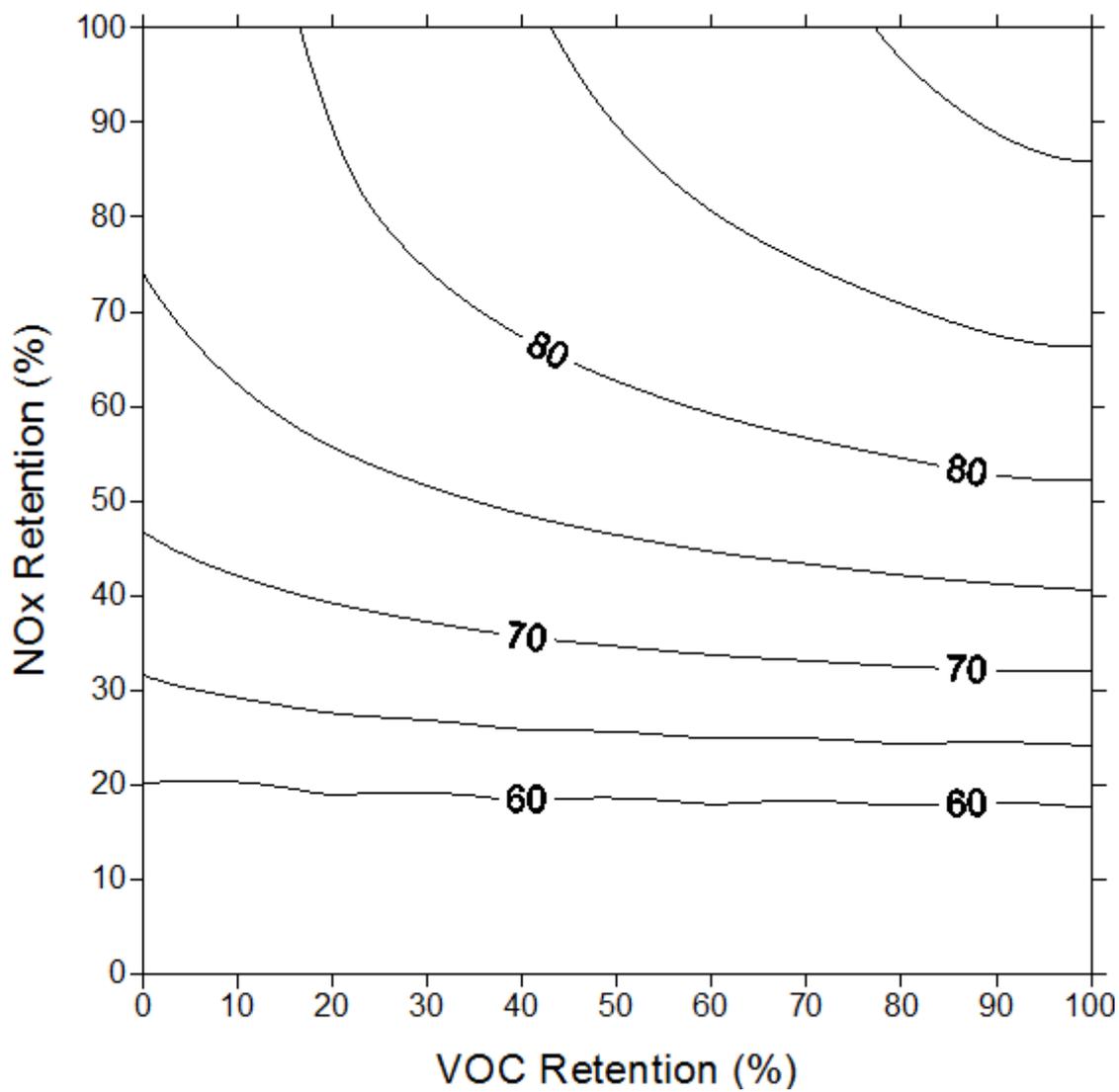
2023 Santa Clarita 8-Hour Ozone Isopleth



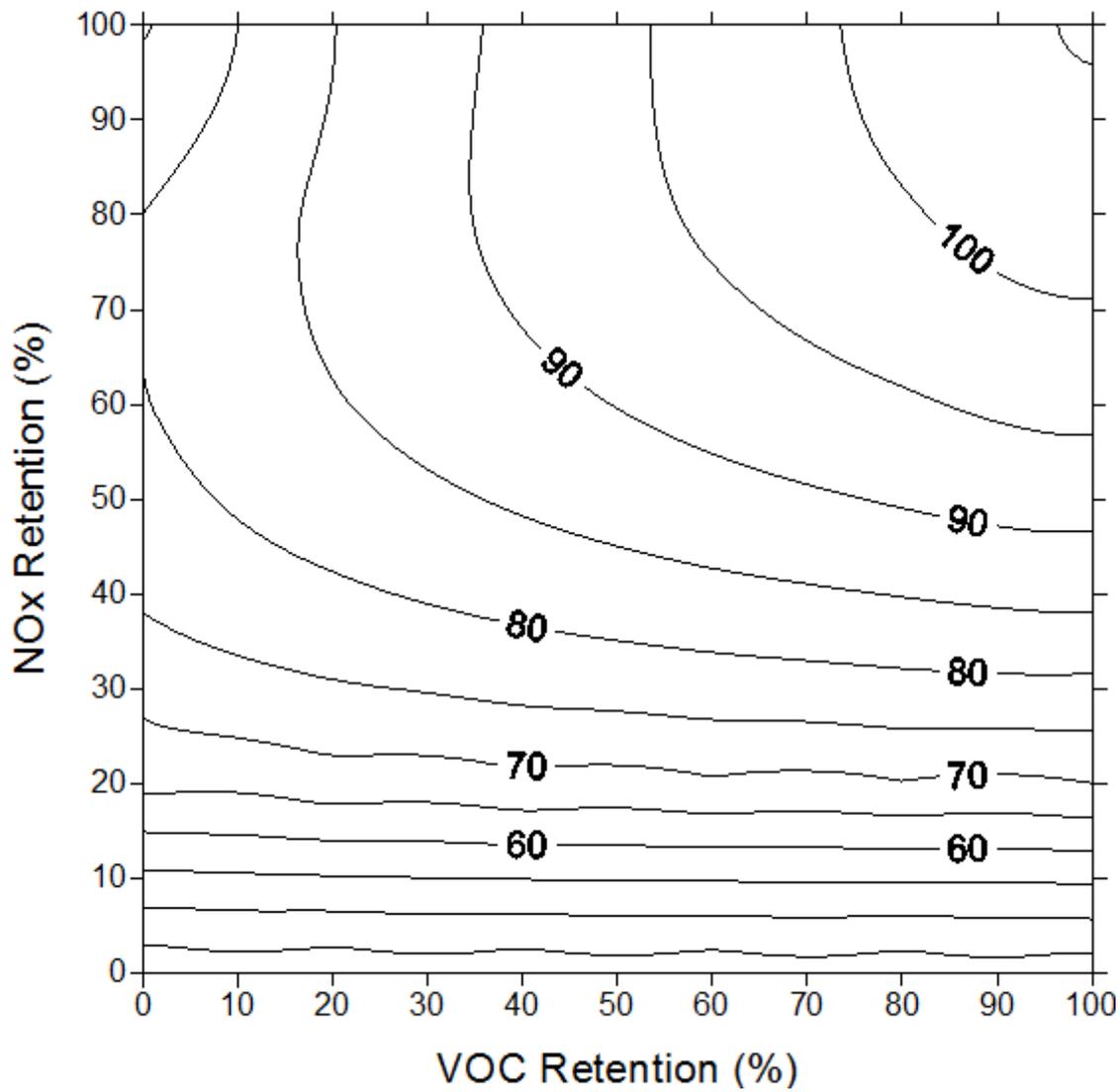
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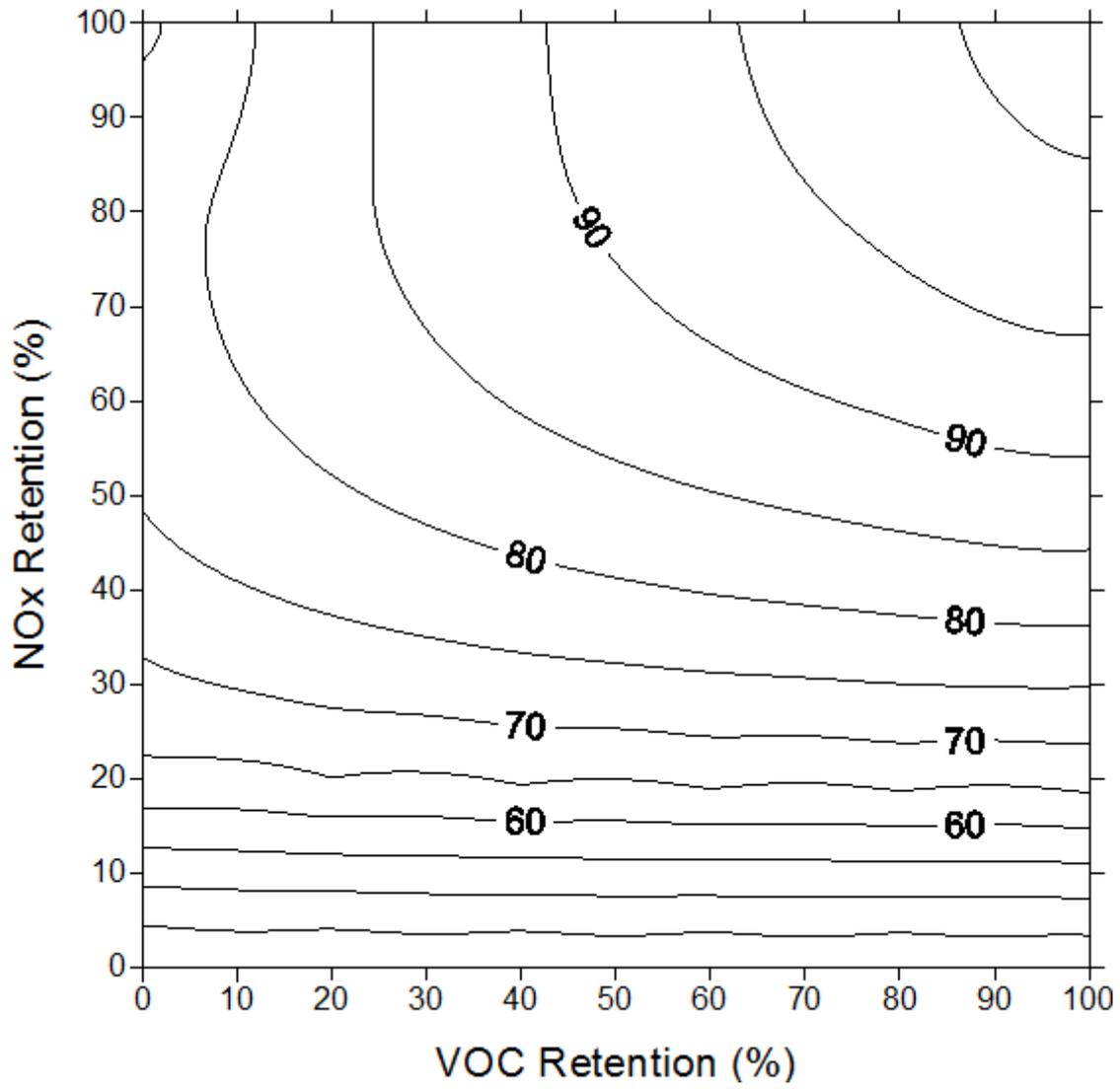
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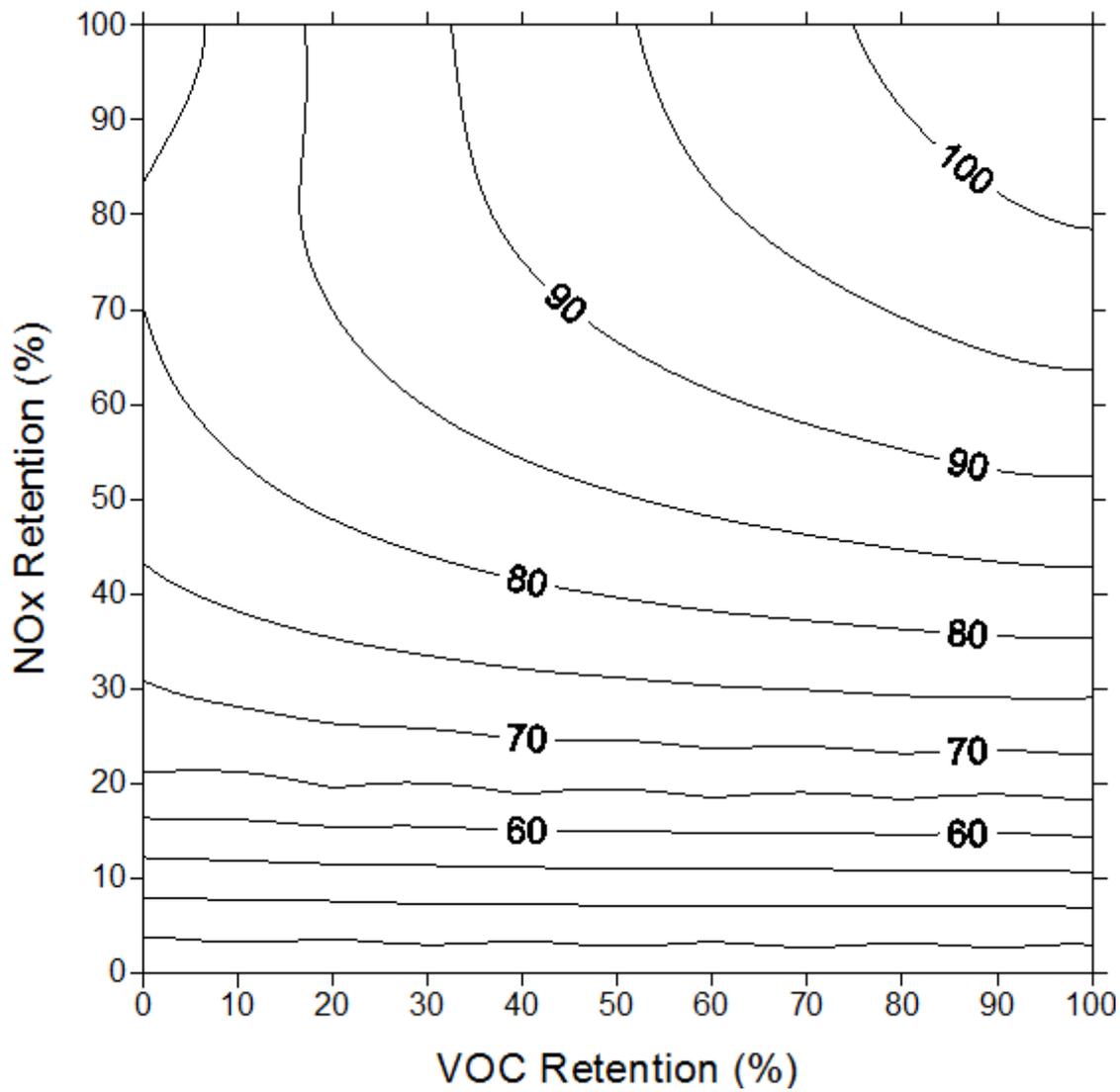
2023 Banning 8-Hour Ozone Isopleth



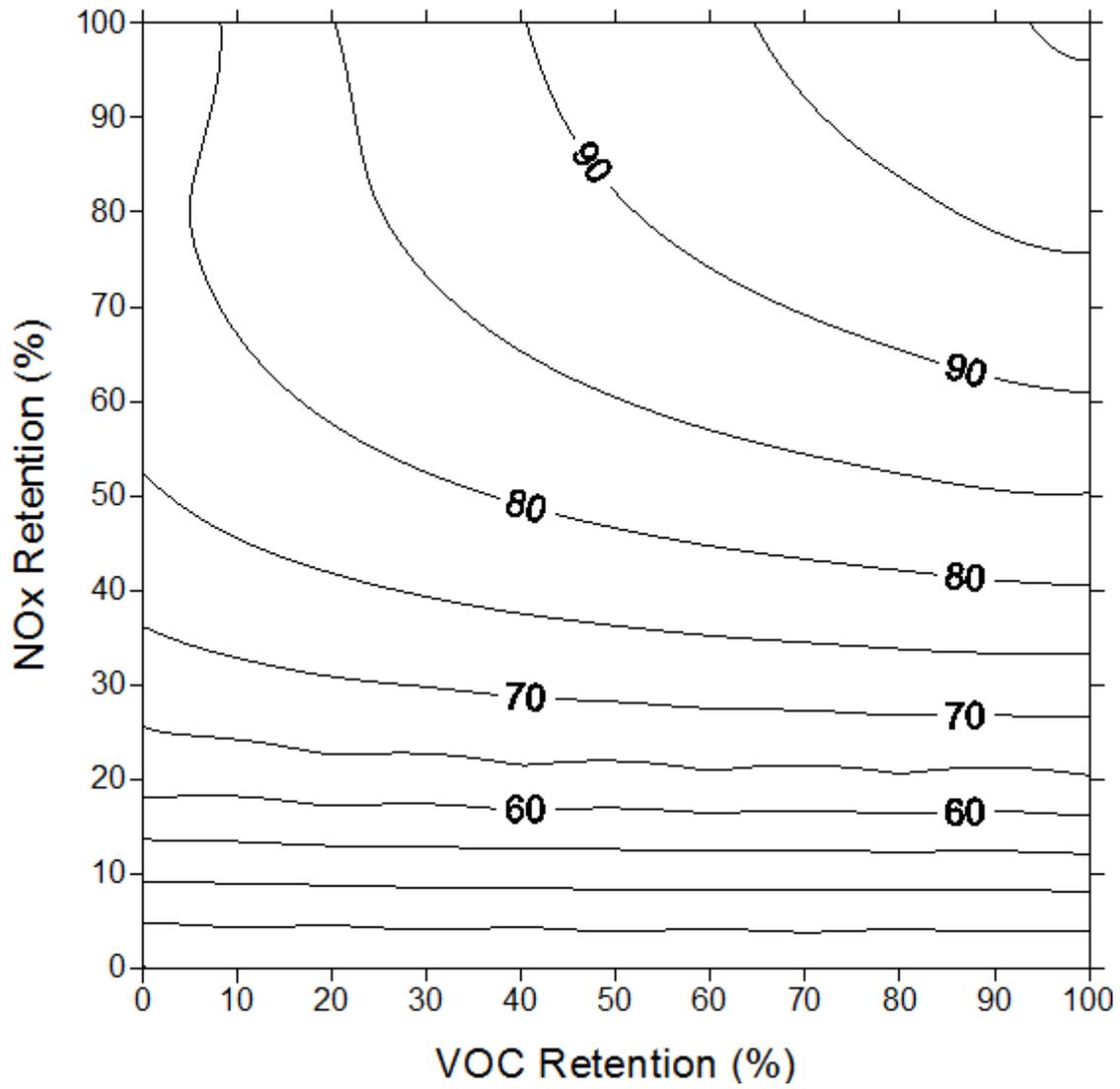
2023 Upland 8-Hour Ozone Isopleth



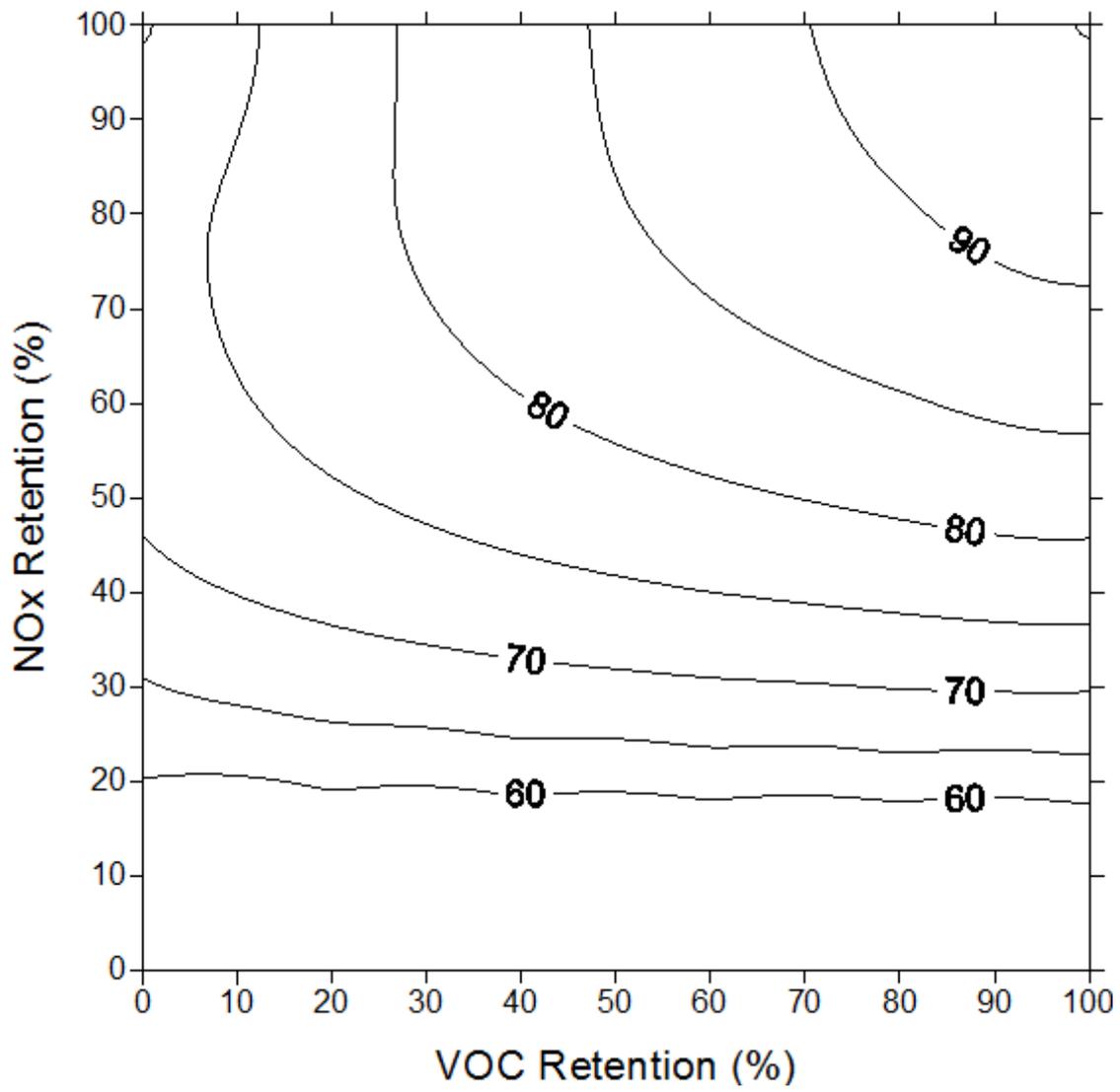
2023 Fontana 8-Hour Ozone Isopleth



2023 San Bernardino 8-Hour Ozone Isopleth



2023 Redlands 8-Hour Ozone Isopleth



2023 Miraloma 8-Hour Ozone Isopleth

Attachment-8

Relative Contributions of Precursor Emissions Reductions to Simulated Controlled Future-Year 24-hour PM_{2.5} Concentrations

Relative Contributions of Precursor Emissions Reductions to Simulated Controlled Future-Year 24-hour PM2.5 Concentrations

The concept of establishing relative weights of precursor emissions to simulated reductions in predicted PM2.5 was introduced in the 2007 AQMP. The procedure estimated per ton reductions of the five main contributing emissions to corresponding regional reductions of PM2.5 species concentrations. The five major precursors that contribute to the development of the ambient PM2.5 aerosol include ammonia, NOx, SOx, VOC, and directly emitted PM2.5. The contribution of ammonia emissions was embedded as a component of the SOx and NOx factors since ammonium nitrate and ammonium sulfate are the resultant particulates formed in the ambient chemical process. Various combinations of reductions in these pollutants could all provide a path to clean air.

In the 2007 AQMP the relative weights of the precursor emissions to reductions in PM2.5 species concentrations were calculated on a regional basis. Overall emissions reductions from the base year (2005) to the controlled 2014 emissions scenario were divided into the respective projected species concentration reductions averaged for a set of representative air quality stations distributed throughout the Basin. The analysis did not focus directly on the site reporting the maximum observed PM2.5 impact (Riverside-Rubidoux). The Final 2007 AQMP established a set of factors to relate regional per ton precursor emissions reductions to PM2.5 air quality improvements based on the annual average concentration. One TPD reduction of NOx was projected to reduce regional annual PM2.5 by 0.00345 $\mu\text{g}/\text{m}^3$. The Basin averaged conversion factors resulting from this analysis were submitted as part of the 2007 SIP (Appendix C, of the CARB staff report, "PM2.5 Reasonable Further Progress Calculations"¹) and approved by U.S. EPA. The normalized-equivalent NOx emissions conversion factors for annual PM2.5 in 2014 were as follows: VOC: 0.43, NOx: 1.0, directly emitted PM2.5: 9.86 and SOx: 15.03.

The Draft Final 2012 AQMP provides a similar set of factors, but this time directed at 24-hour PM2.5 based on the 2012 CMAQ simulation results for the precursor emission reductions from 2008 to the controlled 2014 scenario. The projected reductions in 24-hour PM2.5 component species concentrations from implementation

¹ <http://www.arb.ca.gov/planning/sip/2007sip/southcoast/staffrepappc.pdf>

of the control strategy in 2014 were averaged for six regionally representative locations having speciated data. These sites included Riverside-Rubidoux, downtown Los Angeles, Fontana, Long Beach, South Long Beach and Anaheim.

Riverside-Rubidoux was the historic PM_{2.5} maximum concentration location in the Basin (annual and 24-hour) and is located less than 8 km downwind of the Mira Loma monitoring station. Rubidoux and Mira Loma share a common emissions profile that is dominated by local dairy emissions coupled with mobile source emissions reflecting both freeway traffic and an emerging warehouse distribution center truck profile. The Fontana site shares the traffic and warehouse emissions profiles together with local emissions from industrial activities. The Fontana site will periodically be impacted from transported emissions from the dairy farms as well. Both Fontana and Rubidoux are downwind receptors of regional emissions from the major metropolitan sources that have incorporated a mix of primary and reactive chemical species.

By comparison, the metropolitan central Los Angeles site reflects a mix of emissions from heavy local and freeway traffic, railway and goods movement operations and significant industrial activities from a varying profile of small to large sources. The Long Beach site is in close proximity to three heavily traveled freeways including the commuter impacted I405 and the heavy diesel truck impacted I710. The site is also located directly downwind of refineries and rail transfer facilities. The South Long Beach monitor is directly impacted from goods movement trucking and rail emissions as well as the ocean going vessel (OGV) emissions emanating from the Ports of Los Angeles and Long Beach. The Anaheim site reflects a neighborhood profile including both freeway and local-residential traffic and light to moderate industrial activities. Both Anaheim and Los Angeles are downwind of OGV and port emissions. Typical Basin wind flow places Los Angeles as a receptor of these source emissions during the morning hours after which the rotation of the sea breeze targets the Anaheim area in the afternoon and early evening hours.

Calculation of the Draft Final 2012 AQMP relative contributions of the precursor emissions to the regionally averaged reductions in the component 24-hour PM_{2.5} species followed the procedure as in the 2007 SIP. Table 1 summarizes the relative precursor contributions to 2014 24-hour PM_{2.5} from 1-TPD emissions reduction to simulated reductions of VOC, NO_x, SO_x and directly emitted PM_{2.5}. (Again, it is

important to note that the reductions of ammonium are incorporated together with bonded water in the estimation of reduced regional sulfate and nitrate). Compared with the annual Basin averaged conversion factors included in the 2007 AQMP, 1-TPD of directly PM2.5 emissions reductions resulted in 6 times more reduction of mass for the 24-hour PM2.5. For the 2014 controlled scenario, 1-TPD of directly emitted PM2.5 resulted in an average 0.2132 $\mu\text{g}/\text{m}^3$ improvement in ambient PM2.5. 1-TPD reductions of VOC, NOx and SOx emissions resulted in between 2 to 4 times more mass reduction for the 24-hour PM2.5 than estimated for the Basin annual average concentration.

Table 2 provides the normalized NOx-equivalent conversion factors that relate the precursor emissions to PM2.5 species reduction factors to a common currency, NOx emissions. The 24-hour PM2.5 factors place a greater weight on the reduction of directly emitted particulate while maintaining the emissions contribution factor for VOC and nominally lowering the factor for SOx compared with the 2007 SIP factors for annual PM2.5. Overall the normalized-equivalent NOx emissions conversion factors for 24-hour PM2.5 for the 2014 controlled scenario were: VOC: 0..3, NOx: 1.0, SOx: 7.8 and directly emitted PM2.5: 14.8. As with the annual estimation, the factors are valid for the 2014 controlled emissions scenario. Figure 1 depicts the relative PM2.5 reductions for ammonium nitrate, ammonium sulfate, organic carbon and particulates projected from the 2008 base year to the simulated 2014 control scenario.

TABLE 1

Relative Contributions of Precursor Emissions Reductions to 2014 Simulated Controlled Future-Year 24-hour PM2.5 Concentrations

PRECURSOR	PM2.5 COMPONENT ($\mu\text{g}/\text{m}^3$)	DRAFT FINAL 2012 AQMP BASIN AVERAGED 24-HOUR PM2.5 CONVERSION FACTORS: 1-TPD EMISSIONS TO PM2.5 CONCENTRATION ($\mu\text{g}/\text{m}^3$)
VOC	Organic Carbon	0.0046
NOx	Nitrate	0.0144
SOx	Sulfate	0.1115
PM2.5	Elemental Carbon & Others	0.2132

TABLE 2

Normalized NO_x-Equivalent Conversion Factors

PRECURSOR	PM2.5 COMPONENT ($\mu\text{g}/\text{m}^3$)	DRAFT FINAL 2012 AQMP STANDARDIZED CONTRIBUTION TO AMBIENT 24-HOUR PM2.5 MASS
VOC	Organic Carbon	Factor of 0.3
NO _x	Nitrate	Factor of 1.0
SO _x	Sulfate	Factor of 7.8
PM2.5	Elemental Carbon & Others	Factor of 14.8

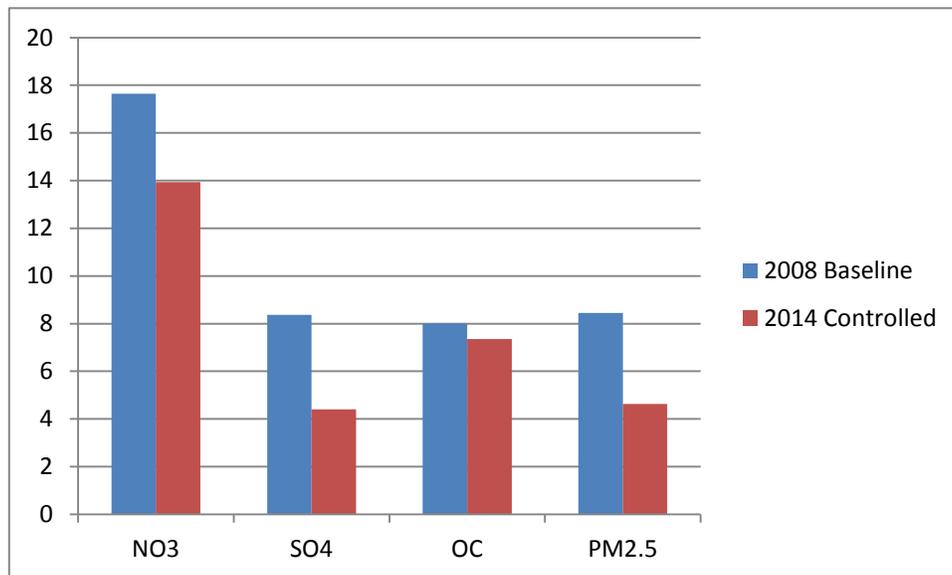


FIGURE 1

Simulated 2014 Controlled Future-Year 24-hour PM2.5 Concentrations by Species

**DRAFT FINAL 2012 AQMP
APPENDIX VI**

**REASONABLY AVAILABLE CONTROL MEASURES
(RACM) DEMONSTRATION**

NOVEMBER 2012

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INTRODUCTION

The South Coast Air Basin (Basin) is classified as “Nonattainment” with respect to the 1997 PM_{2.5} National Ambient Air Quality Standards (NAAQS) of 15 µg/m³ annual average, and 65 µg/m³ 24-hour average, and the U.S. EPA has granted the Basin a one-time extension to April 5, 2015 to reach attainment.¹ In 2006, the U.S. EPA lowered the 24-hour PM_{2.5} standard to 35 µg/m³, and designated the Basin and 30 other areas as nonattainment, effective December 14, 2009. The Basin is required to submit an Air Quality Management Plan (AQMP) to U.S. EPA no later than 3 years after designation date, by December 14, 2012, to address the attainment strategies for the 2006 24-hour PM_{2.5} standard. In addition, the Basin must reach attainment within 5 years of the designation date, or by December 14, 2014. Table VI-1 provides a list of several nonattainment areas in the nation and the important milestone dates that require actions from the nonattainment air districts.

TABLE VI-1
PM_{2.5} NAAQS Designation and Implementation

	1997 PM _{2.5} NAAQS	2006 PM _{2.5} NAAQS
Nonattainment Areas	<ul style="list-style-type: none"> — Los Angeles, South Coast Air Basin, CA — San Joaquin Valley, CA — New York, New Jersey, Long Island, CT 	<ul style="list-style-type: none"> — Los Angeles, South Coast Air Basin, CA — San Joaquin Valley, CA — Sacramento Metro, CA — San Francisco, CA — New York, New Jersey, Long Island, CT
Effective Date of Standards	September 1997	December 2006
Effective Date of Designations	April 2005	December 2009
SIPs Due Within 3 Years	April 2008	December 2012
Attainment Date Within 5 Years	April 2010	December 2014
Attainment Date With Extension	Up To April 2015	Up To December 2019

Particulate Matter (PM_{2.5}) Nonattainment Areas, www.epa.gov/airquality/greenbook/rnc.html, posted on 3/30/2012.

With regards to the ozone standards, on March 12, 2008, the U.S. EPA strengthened its ground-level 8-hour ozone standard from 0.08 parts per million (ppm) to a level of 0.075 ppm. On May 21, 2012, the U.S. EPA classified two areas in the country, the South Coast and the San Joaquin Valley, as “Extreme” nonattainment areas with respect

to the 2008 8-hour ozone standard.² The attainment dates for the 1997 and 2008 ozone standards are June 15, 2024 and December 31, 2032, respectively. Table VI-2 shows the classifications and attainment dates for several nonattainment areas in the nation. While an extreme nonattainment area has a period of 20 years from the date of designation to reach attainment, other areas that are classified as severe, serious, moderate and marginal must reach attainment sooner in 15 years, 9 years, 6 years and 3 years after the date of designation, respectively.³

TABLE VI- 2
8-Hour Ozone NAAQS Designation and Implementation

NONATTAINMENT AREA	1997 OZONE STANDARD		2008 OZONE STANDARD	
	Classification	Attainment	Classification	Attainment
Los Angeles South Coast Air Basin, CA	Extreme	June 2024	Extreme	December 2032
San Joaquin Valley, CA	Extreme	June 2024	Extreme	December 2032
Riverside County (Coachella Valley), CA	Severe-15	June 2019	Severe-15	December 2027
Sacramento Metro, CA	Severe-15	June 2019	Severe-15	December 2027
Houston-Galveston-Brazoria (HGB), TX	Severe-15	June 2019	Marginal	December 2015
Ventura County, CA	Serious	June 2013	Serious	December 2021
Dallas-Fort Worth , TX	Serious	June 2013	Moderate	December 2018
New York, New Jersey, Long Island, CT	Moderate	June 2010	Marginal	December 2015
Washington (DC-MD-VA Area), District Columbia	Moderate	June 2010	Marginal	December 2015
San Francisco, CA	Marginal	June 2007	Marginal	December 2015

Note: Classifications of 8-Hour Ozone Nonattainment Areas, www.epa.gov/airquality/greenbook/gnc.html, posted on 3/30/2012. The designation date is December 31, 2012. Attainment dates are within 20 years after the date of designation for extreme area, 15 years after the date of designation for severe area, 9 years after the date of designation for serious area, 6 years after the date of designation for moderate area, and 3 years after the date of designation for marginal area.

To address multiple layers of attainment deadlines, the District is working in collaboration with CARB and the San Joaquin Valley to develop a joint “Vision of Clean Air” and formulate the attainment strategies for 24-hour PM2.5 standards in 2014-2019, 8-hour ozone standards in 2024-2032, and the state is committed to reduce greenhouse gases emissions by 2050. The District’s goal is to develop and incorporate

all feasible control measures while balancing costs and socioeconomic impacts to meet the requirements of the Clean Air Act (CAA) on a timely basis.

The CAA, Section 172(c)(1), sets the overall framework for the Reasonably Available Control Measures (RACM) analysis. The CAA requires the nonattainment air districts to:

“provide for the implementation of all reasonably available control measures as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology) and shall provide for attainment of the national primary ambient air quality standards.”

The U.S. EPA provided further guidance on the RACM in the preamble and the final “Clean Air Fine Particle Implementation Rule” to implement the 1997 PM_{2.5} NAAQS which were published in the Federal Register in November 1, 2005 and April 25, 2007, respectively.^{4, 5} The U.S. EPA’s long-standing interpretation of the RACM provision stated in the 1997 PM_{2.5} Implementation Rule is that the nonattainment air districts should consider all candidate measures that are available and technologically and economically feasible to implement within the nonattainment areas, including any measures that have been suggested; however, the districts are not obligated to adopt all measures, but should demonstrate that there are no additional reasonable measures available that would advance the attainment date by at least one year or contribute to reasonable further progress (RFP) for the area.

Regarding the approach of identifying emission reduction programs, the U.S. EPA recommends the nonattainment air districts to first identify the emission reduction programs that have already been implemented at the federal, other states and local air districts. Next, the U.S. EPA recommends the air districts to examine additional RACM/RACTs adopted for other nonattainment areas to attain the ambient air quality standards as expeditiously as practicable. The U.S. EPA also recommends the air districts evaluate potential measures for sources of direct PM_{2.5}, SO_x and NO_x first with a presumption that VOC and ammonia do not significantly contribute to the PM_{2.5} concentration in the nonattainment area. The PM_{2.5} Implementation Rule also requires the air districts establish RACM/RACT emission standards taking into consideration the condensable fraction of direct PM_{2.5} emissions after January 1, 2011. In addition, the U.S. EPA recognizes that each nonattainment area has its own profile of emitting sources, and thus neither requires specific RACM/RACT to be implemented in every nonattainment area, nor includes a specific source size threshold for the RACM/RACT

analysis. The U.S. EPA however recommends severe nonattainment air districts to evaluate controls for smaller sources if needed for attainment.

A RACM/RACT demonstration must be provided within the State Implementation Plan (SIP). For areas projected to attain within five years of designation, a limited RACM/RACT analysis including the review of available reasonable measures, the estimation of potential emission reductions, and the evaluation of the time needed to implement these measures is sufficient. The areas that cannot reach attainment within five years must conduct a thorough RACM/RACT analysis to demonstrate that sufficient control measures could not be adopted and implemented cumulatively in a practical manner in order to reach attainment at least one year earlier.

In regards to economically feasible, the U.S. EPA did not propose a fixed dollar per ton cost threshold and recommended the air districts to include health benefits in the cost analysis. As indicated in the preamble of the 1997 PM_{2.5} Implementation Rule:

“In regard to economic feasibility, U.S. EPA is not proposing a fixed dollar per ton cost threshold for RACM, just as it is not doing so for RACT...Where the severity of the nonattainment problem makes reductions more imperative or where essential reductions are more difficult to achieve, the acceptable cost of achieving those reductions could increase. In addition, we believe that in determining what are economically feasible emission reduction levels, the States should also consider the collective health benefits that can be realized in the area due to projected improvements.”

Subsequently, on March 2, 2012, the U.S. EPA issued a memorandum to confirm that the overall framework and policy approach stated in the PM_{2.5} Implementation Rule for the 1997 PM_{2.5} standards continue to be relevant and appropriate for addressing the 2006 24-hour PM_{2.5} standards.⁶

The objective of this Appendix is to demonstrate that the District has conducted a thorough RACM/RACT analysis to meet the requirement of the CAA following closely the policy and guidance approach provided by the U.S. EPA in its PM_{2.5} Implementation Rule in identifying and selecting the control measures for the Draft Final 2012 AQMP.

For the scope of this RACM analysis, District staff will closely study the attainment strategies for stationary and area sources, the rules and regulations of the air districts responsible for the nonattainment areas listed in Table VI-1 and Table VI-2 while taking into account all available candidate measures proposed by the U.S. EPA, CARB,

the Advisory Committee members, the technical experts in air pollution control as well as the public and variety of stakeholders. Staff selected the air districts listed on Table VI-1 and Table VI-2 based on the severity of their nonattainment status and their near-term attainment dates. The RACM analysis for Transportation Control Measures is conducted by SCAG as shown in Appendix IV-C and the RACM analysis for mobile sources conducted by the CARB is shown in the Attachment of this Appendix.

IDENTIFYING AND EVALUATING REASONABLY AVAILABLE CONTROL MEASURES

To demonstrate that the District has considered all candidate measures that are available and technologically and economically feasible to implement within the Basin, the District staff has conducted 6-steps analysis described below.

Step 1 - Air Quality Technology Symposium

District staff conducted the 2012 Air Quality Technology Symposium in September 2011 with participation of technical experts from a variety of areas and the public to solicit new and innovative concepts to assist the Basin in attaining the NAAQS) for PM_{2.5} by 2014-2019 and ozone by 2024-2032. In addition, the District's Planning, Rules Development and Area Sources Division conducted multiple internal meetings with the District's Technology Advancement Office and the Engineering & Compliance Division from September through November of 2011 to brainstorm ideas for feasible control measures. In addition, the District also conducted an on-going extensive outreach to engage a wide range of stakeholders in the process. In general, the following concepts were proposed:

- Promoting zero or near-zero emission measures and providing incentives for on-road and non-road mobile sources as well as goods movement;
- Further reducing VOC emissions from marine coatings, aerospace coatings, solvents and various consumer products, and focusing on reformulations or alternatives to VOC based-solvents;
- Conducting a mandatory technology review for NO_x RECLAIM, and further reducing NO_x emissions through the use of low NO_x burners, fuel cells, biogas control, distributed power generation applications, and assessment for all feasible measures, as well as incentives;

- Addressing energy-climate change and co-benefits, the need for electricity storage and smart grid, or new fossil-fueled peaking plants, to compensate for fluctuations in renewable energy supply, and the use of outreach to promote energy efficiency measures; and
- Influencing consumer behavior, expanding carpool programs, incentivizing with outreach, increasing gas tax, and promoting public-private participation and multi-agency collaboration.

Step 2 – U.S. EPA’s Suggested List of Control Measures

District staff reviewed for inclusion the control measure concepts suggested by the U.S. EPA for PM2.5 nonattainment areas described in the preamble of the PM2.5 Implementation Rule. As summarized in Table VI-3, the District either has an existing rule or developed a 2012 control measure for each control measure concept suggested by the U.S. EPA.

TABLE VI-3

Demonstration of Compliance with Control Measures Recommended by U.S. EPA

U.S. EPA’S CONTROL MEASURE CONCEPTS	2012 CONTROL MEASURES AND EXISTING RULES
STATIONARY SOURCE MEASURES	
Diesel engine retrofit, rebuild, replacement, with catalyzed particle filter	Rule 1470, Rule 1110.2
New or upgraded emission controls for direct PM2.5 (e.g., baghouse or electrostatic precipitator; improved monitoring methods)	Rule 1155, Rule 1156
New/upgraded emission controls for PM2.5 precursors (e.g., scrubbers)	2010 RECLAIM Amendment
Energy efficiency measures to reduce fuel consumption	Rule 1146, Rule 1146.1, Rule 1146.2, Rule 1114, Rule 1111, Control Measure EDU-01, INC-01
MOBILE SOURCE MEASURES	
On-road diesel engine retrofits for school buses and trucks using U.S. EPA-verified technologies	Refer to CARB’s Existing Rules and Control Measures
Non-road diesel engine retrofit, rebuild/replace with catalyzed particle filter	Refer to CARB’s Existing Rules and Control Measures

TABLE VI-3 (concluded)

Demonstration of Compliance with Control Measures Recommended by U.S. EPA

U.S. EPA'S CONTROL MEASURE CONCEPTS	2012 CONTROL MEASURES AND EXISTING RULES
MOBILE SOURCE MEASURES (continued)	
Diesel idling programs for trucks, locomotive, and other mobile sources	Refer to CARB's Existing Rules and Control Measures
Transportation control measures (including those listed in section 108(f) of the CAA as well as other TCMs), as well as other transportation demand management and transportation systems management strategies	Refer to SCAG's Control Measures
Programs to reduce emissions and accelerate retirement of high emitting vehicles, boats, lawn and garden equipment	Refer to CARB's Rules and Control Measures
Emissions testing and repair/maintenance programs for on-road vehicles	Refer to CARB's Rules and Control Measures
Emissions testing and repair/maintenance programs for non-road heavy duty vehicles and equipment	Refer to CARB's Rules and Control Measures
Programs to expand use of clean burning fuels	Refer to CARB's Rules and Control Measures
Opacity/emissions standards for gross-emitting diesel equipment or vessels	Refer to CARB's Rules and Control Measures
AREA SOURCE MEASURES	
New open burning regulations and/or measures to minimize emissions from forest and agricultural burning activities	Rule 444
Reduce emissions from woodstoves and fireplaces	Rule 445, Control Measure BCM-01
Regulate charbroiling/other commercial cooking operations	Control Measure BCM-02
Reduce solvent usage or solvent substitution	Control Measure CTS-02
Reduce dust from construction activities/vacant disturbed areas, paved and unpaved roads.	Rule 1157

Step 3 – Reasonably Available Control Technology (RACT)

As required by the CAA, Section 172(c)(1), the nonattainment areas must implement applicable RACTs. While RACM refers to measures which may be applicable to a wide range of sources, stationary as well as area and mobile sources, the U.S. EPA defines RACT as the lowest level of control specifically designed for stationary sources:

“lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility”.

The CAA, Section 172(c)(1) and Section 182, require nonattainment areas for ozone that are designated at moderate or above to adopt RACT for major sources. Nonattainment areas classified as serious, severe, or extreme must adopt control measures above and beyond the minimum RACT levels to fulfill attainment.

In addition, the CAA, Section 183, requires the U.S. EPA to provide guidance to the air districts on the “presumptive” RACT levels. As a result, the U.S. EPA developed several Control Techniques Guidelines (CTGs) for VOC sources, and Alternatives Control Techniques (ACT) documents for VOC and NO_x sources. Most of the CTGs were issued prior to 1990, and most of the ACT documents were issued in the mid-1990s. The CTGs contain mandated emission standards and work practices whereas the ACTs describe available control techniques and their cost effectiveness, but do not define “presumptive” RACT levels. The U.S. EPA is required to update existing CTG/ACTs, or develop new guidelines, on a frequent basis as new or updated control technologies become available.

The CAA, Section 182(b)(2), further requires the air districts to revise their SIPs to include the mandated RACT levels covered by the CTGs issued after November 15, 1990 and prior to the area’s date of attainment. The U.S. EPA’s final rule to implement the 8-hour ozone standard discusses RACT requirements which states that where a RACT SIP is required, the states must assure that RACT is met, either through a certification that previously required RACT controls represent RACT for 8-hour ozone standards, or through a new RACT determination.⁷ To satisfy this requirement, the District developed and submitted to CARB and U.S. EPA a demonstration and certification that the District’s rules and regulations fulfill the 8-hour ozone RACT requirements developed between 1990 and the beginning of 2006.⁸ The U.S. EPA approved the District’s RACT demonstration in December 2008.⁹

Subsequently, the U.S. EPA developed twelve new CTGs in 2006-2008 to update the requirements for several types of coatings, and staff again conducted an analysis comparing the current requirements in the District’s rules with those requirements in the new CTGs. The 12 new CTGs developed by the U.S. EPA are:¹⁰

- Flat Wood Paneling Coatings (2006)

- Flexible Packaging Printing Materials (2006)
- Industrial Cleaning Solvents (2006)
- Lithographic Materials and Letterpress Printing Materials (2006)
- Large Appliance Coatings (2007)
- Metal Furniture Coatings (2007)
- Paper, Film, and Foil Coatings (2007)
- Miscellaneous Metal Products Coatings (2008)
- Plastic Parts Coating (2008)
- Auto and Light-Duty Truck Assembly Coatings (2008)
- Fiberglass Boat Manufacturing Materials, and Miscellaneous (2008)
- Industrial Adhesives (2008)

District staff's analysis is summarized in Table VI-4. As shown in Table VI-4, three District's VOC rules, Rule 1130 – Graphic Arts, Rule 1115 – Motor Vehicle Assembly Line Coating Operations and Rule 1168 - Adhesives and Sealants have met or exceeded most, but not all, minimum requirements of the CTGs. Consequently, District staff has developed one or more control measures to address these issues. Staff estimates a potential reduction of 0.2 tons per day VOC associated with Rule 1130, and less than 0.01 tons per day VOC associated with Rule 1115, and no emission reduction estimate for Rule 1168 is available at this time. District staff is aware that additional assessments may be required, such as a determination that major VOC sources subject to Rules 1130, 1115, and 1168 met the minimum requirements in the CTGs, or a negative declaration that there are no sources in the area subject to the CTGs. These additional analyses will be provided during the rule development phase, or at the time of developing the 8-hour ozone AQMPs, whichever comes first.

TABLE VI-4
Evaluation of 2006-2008 U.S. EPA's VOC CTGs

CTG TITLE	DISTRICT RULE	EVALUATION
Flat Wood Paneling Coatings (2006)	Rule 1104 - Wood Flat Stock Coating Operations	Overall equivalency to CTG emission standards. No further action is needed. ¹
Flexible Packaging Printing Materials (2006); Lithographic Printing Materials and Letterpress Printing Materials (2006)	Rule 1130 - Graphic Arts	Regarding flexible packaging printing, the rule is more stringent than CTG, and thus no further action is needed. Regarding lithographic and letterpress printing, the CTG standards for alcohol content in fountain solution and overall control efficiency are more stringent. Staff estimated a potential reduction of 0.2 tpd and may pursue rule update as part of Control Measure MCS-01 – Application of All Feasible Measure Assessment if needed for ozone attainment. ¹
Industrial Cleaning Solvents (2006)	Rule 1171 - Solvent Cleaning Operations	District rule is more stringent than CTG. No further action is needed. ²
Large Appliance Coatings (2007); Metal Furniture Coatings (2007); and Miscellaneous Metal Products Coatings (2008)	Rule 1107 - Coating of Metal Parts and Products	District rule is equivalent or more stringent than CTGs, thus no further action is needed. ²
Paper, Film, and Foil Coatings (2007)	Rule 1128 - Paper, Fabric, and Film Coatings	District rule is more stringent than CTG. No further action is needed. ¹
Plastic Parts Coatings (2008)	Rule 1145 - Plastic, Rubber, Glass Coatings	District rule is equivalent or more stringent than CTG. No further action is needed. ¹
Auto and Light-Duty Truck Assembly Coatings (2008)	Rule 1115 - Motor Vehicle Assembly Line Coating Operations	CTG has more stringent limits for electro-deposition primer at 84 g/L (145 g/L in Rule 1115); sprayable primer, primer-surfacer, and topcoat at 144 g/L (180 g/L in Rule 1115); and trunk coatings, interior coatings, sealers, and deadeners at 650 g/L (Rule 1115 provides an exemption for these categories). However, Rule 1115 has a small inventory of about 0.01 tpd, thus no action is needed. ¹
Fiberglass Boat Manufacturing Materials, and Miscellaneous (2008)	Rule 1162 - Polyester Resin Operations	The rule has an overall equivalency to CTG based on more stringent transfer efficiency requirements. No further action is needed. ²
Industrial Adhesives (2008)	Rule 1168 - Adhesives and Sealants	CTG has more stringent limits for reinforced plastic composite at 200 g/L (250 g/L in Rule 1168); single-ply roof membrane adhesive primer at 250 g/L (450 g/L in Rule 1168); other adhesive primers at 250 g/L (420 g/L in Rule 1168); the control efficiency is 85% (80% in Rule 1168); and the work practices is limited only for stripping cured adhesives or sealants for Rule 1148. Staff may further pursue rule update as part of Control Measure MCS-01 – Application of All Feasible Measures Assessment or CTS-02 – Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants if needed for ozone attainment. ³

Note: 1) Evaluation conducted by Hopps and Ono; 2) Evaluation conducted by Morris and Ono; 3) Evaluation conducted by Calungcagin and De Boer.

Step 4 - Other Districts' Current Rules and Regulations

Because the District is classified as extreme nonattainment for both the 1997 and 2008 ozone standards, and nonattainment for both the 1997 and 2006 PM_{2.5} standards, the District staff commits to search for innovative control technologies, make improvements, and update the District's rules and regulations as expeditiously as possible to effectively help the Basin reach the PM_{2.5} attainment in 2014-2019, and ozone attainment in 2024-2032. District staff's envisioned that the control technologies available and cost-effective to be implemented in other local areas in California, or any other areas in the nation, would be available and cost-effective for use in the Basin in a timely manner.

To catch all the improvements on innovative control technologies and identify the areas for improvements in its rules and regulations, the District staff re-evaluated all the District's source-specific rules and regulations, and compared the requirements in these rules with more than 100 rules recently adopted or amended by four local air districts in California from 2007 to 2012. The four air districts selected are San Joaquin Valley, Sacramento Metropolitan, Ventura, and San Francisco Bay Area. Staff selected these districts based on the severity of their nonattainment status and their near-term attainment dates as shown in Table VI-1 and Table VI-2.

The summary of this analysis is presented in Table VI-5. In this table, staff *only* listed the areas where the requirements in other local air district's rules are more stringent than those in the District's rules and regulations. The analysis in Table VI-5 shows that in general the District's current rules and regulations are equivalent to or more stringent than those developed by other air districts. However, where improvements are possible, District staff has developed several control measures to further study the situations.

Details of the control measures, emission reductions, cost effectiveness, prioritization and implementation schedule are discussed in Chapter 4 and Appendix IV. The modeling results discussed in Chapter 5 has shown that the attainment for PM_{2.5} can be achieved with a few episodic additional control measures. With regards to the ozone attainment, the District has identified several control measures with estimated early emission reductions. The control measures of which emission reductions cannot be quantified will not be considered RACMs since they cannot be used collectively to estimate the advancement of the attainment date.

Staff commits to fine-tune the emission inventory, emission reduction, and cost-effectiveness analysis, especially during the rule development process. In addition, staff commits to monitor the rule development in other air districts and conduct further analysis if necessary, and has developed a catch-all Control Measure MCS-01 – Application of All Feasible Measures Assessment to facilitate this activity.

Step 5 - Other Districts' Control Measures

In an effort to ensure that all feasible candidate control measures are considered, District staff evaluated more than 100 control measures adopted within the period of 2007-2012 by eight nonattainment air districts in the nation for both PM_{2.5} and 8-hour ozone listed on Table VI-1 and Table VI-2, specifically Ventura, San Francisco Bay Area, San Joaquin Valley, Sacramento Metro in California, Dallas-Fort Worth and Houston-Galveston-Brazoria in Texas, New York and New Jersey. A summary of this evaluation is provided below.

Ventura

Ventura is classified as serious nonattainment for the 2008 8-hour ozone standard. In the 2006-2008 Final Triennial Assessment and Plan Update,¹¹ the Ventura County Air Pollution Control District conducted an analysis of all feasible control measures, and identified 7 new control measures in addition to the 15 control measures in the Ventura's 2007 AQMP. In this list, there is only one new Ventura's control measure described below that is more stringent than the requirements in the existing District's rules:

Ventura adopted a control measure to eliminate the current vapor pressure limit (45 mmHg) of low VOC spray gun cleaning and establish a new limit of 25 g/L VOC content for cleaning solutions used in aerospace assembly and component manufacturing operations, adhesives and sealants, marine coating operations, and pleasure craft coatings and commercial boatyard operations. Currently, the cleaning solutions used in marine coating operations, pleasure craft coatings, and adhesives and sealants in the Basin are subject to District's Rule 1171 limit of 25 g/L, and there is no vapor pressure limit in Rule 1171. However, the limit for cleaning solutions and strippers in District's Rule 1124 – Aerospace Assembly and Component Manufacturing Operations are currently at 200 g/L (or 45 mmHg) and 300 g/L (or 9.5 mmHg), respectively, and there is a potential to reduce these limits. Further assessment will be

conducted through the District's Control Measure CTS-02 – Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants.

San Francisco Bay Area

San Francisco Bay Area is a nonattainment area for PM_{2.5} standard and a marginal nonattainment for 8-hour ozone standards. On September 15, 2010, the Bay Area adopted the final Bay Area 2010 Clean Air Plan (CAP) ¹² to provide an integrated, multi-pollutant strategy to address ozone, PM, air toxics and greenhouse gases. The plan established 55 feasible control measures to be implemented in the 2010-2012 timeframe in which there are 18 measures for stationary and area sources and 4 energy and climate measures. The following 6 Bay Area's control measures are currently above and beyond the requirements in the existing District's rules:

- Bay Area's Control Measure SSM1 – Metal Melting, and Control Measure SSM6 – PM Limitation proposed to reduce particulate emission limits and encourage the use of high efficiency filtration at foundry operations and metal melting facilities, and other facilities whenever appropriate. The Bay area has developed and proposed amended rule for SSM1 and scheduled for a Public Hearing in 2012. District staff will conduct further analysis study on this concept through the District's Control Measure MCS-01 – Application of All Feasible Measures Assessment.
- Bay Area's Control Measure SSM2 – Digital Printing proposed to control VOC emissions from digital printing. The Bay Area is currently collected emissions information from this fairly new category of printing, including solvent-based inkjet printing and laser printing. It is forecasted to have 21% market share by 2025, and thus there will be a potential to reduce VOC emissions from this category. District staff will conduct further study on this concept through the District's Control Measure MCS-01 – Application of All Feasible Measures Assessment.
- Bay Area's Control Measure SSM5 – Vacuum Trucks requires carbon or other control technology on vacuum trucks to reduce emissions of VOCs. District staff will conduct further study on this concept through the District's Control Measure FUG-01 – Further VOC Reductions from Vacuum Trucks.
- Bay Area's Control Measure SSM9 – Cement Kilns, SSM10 – Refinery Boilers and Heaters, SSM11 - Glass Furnaces proposed to further reduce NO_x from these source

category. District staff will conduct further study through the Control Measure CMB-01 – Further NO_x Reductions from RECLAIM.

- Bay Area’s Control Measure ECM1 – Energy Efficiency proposed 1) to promote education and training to increase awareness on energy efficiency; 2) to provide technical assistance to local governments and encourage them to adopt and enforce energy efficient building codes; and 3) to provide incentives for improving energy efficiency at schools. These concepts are similar to those described in the District’s Control Measure EDU-01 – Further Criteria Pollutant Reductions from Education, Outreach and Incentives.
- Bay Area’s Control Measure ECM2 - Renewable Energy proposed to promote distributed renewable energy generation (solar, micro wind turbines, cogeneration, etc.) on commercial and residential buildings, and at industrial facilities. These concepts are covered under the District’s Control Measure EDU-01 – Further Criteria Pollutant Reductions from Education, Outreach and Incentives.

The District already spearheaded in implementing other concepts in the Bay Area’s AQMP that called for reducing SO₂ emissions from coke calciner and cement kilns; further controlling VOC emissions from livestock waste and natural gas production facilities; and NO_x emissions from residential fan type furnaces, space heating, dryers, and ovens. The District also has an on-going program that promotes tree planting. Other Bay Area’s control measures addressing New Source Review, Air Toxics “Hot Spots” program, and greenhouse gases in permitting, are either administrative in nature or not related to criteria pollutants.

San Joaquin Valley

San Joaquin Valley is extreme nonattainment with respect to 2008 8-hour ozone standards and nonattainment with respect to PM_{2.5} standards. Up to date, the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) has developed two separate plans to address the 8-hour ozone standards in 2007 and the 1997 PM_{2.5} standards in 2008. Recently, the SJVUAPCD developed a 2010 mid-course review for the ozone plan, and continued the feasibility study for several other measures such as refinery wastewater separators, refinery turnaround units, refinery vacuum devices and municipal water treatment plans. In addition, the SJVUAPCD is in the process of developing a plan to address the 2006 PM_{2.5} standards in cooperation with CARB and the District. District staff reviewed the list of control measures completed and listed in

the San Joaquin Valley's 2010 mid-course review in comparison with the 2012 control measures recommended by the District. Overall, the District has either already implemented or developed control measures with similar concepts proposed in the SJVUAPCD plans.¹³⁻¹⁵

Dallas-Fort Worth (DFW) Texas

The entire state of Texas is in attainment of the PM_{2.5} standards, but the state has two nonattainment areas with respect to the 8-hour ozone standards: the Dallas-Fort Worth and the Houston-Galveston-Brazoria. The DFW area was reclassified from a moderate to a serious nonattainment area for the 1997 8-hour ozone standard, and is moderate nonattainment with respect to the 2008 8-hour ozone. The area must attain the 1997 and 2008 8-hour ozone standards by June 2013 and December 2018, respectively. In their previous SIPs, the Texas Commission on Environmental Quality (TCQE) identified 8 new RACMs for area sources and point sources, and 6 of these measures were already implemented at the District. The remaining 2 measures, one for the cement kilns and one for the voluntary energy efficiency and renewable energy will be implemented through the District's Control Measure CMB-01 – Further NO_x Reductions from RECLAIM and Control Measure EDU-01 – Further Criteria Pollutant Reductions from Education, Outreach and Incentives.¹⁶

After being reclassified from a moderate to a serious nonattainment area, TCQE conducted additional RACM analysis in 2011 and made a determination not to adopt any additional measures since modeling demonstrated that the area would be able to meet the attainment date of 2013 for the 1997 ozone standard.

Houston-Galveston-Brazoria (HGB) Texas

The Houston-Galveston-Brazoria area was reclassified from moderate to a severe nonattainment area for the 1997 8-hour ozone standard, and classified as marginal for the 2008 8-hour ozone standard. The HGB area must attain the 1997 8-hour ozone standards by June 2019. The TCQE identified 11 RACMs for area sources and point sources. After being reclassified to severe nonattainment area, the TCQE conducted additional RACM analysis, analyzed additional 100 potential control measures, and determined that there is only one control measure that would help advance the attainment date for the HGB by one year.¹⁷

This specific control measure calls for a 25% additional reduction of the facility's highly reactive VOC (HRVOC) caps from the facilities which are located in the Harris County and regulated under the HRVOC Emissions Cap and Trade program. The HRVOC cap includes the emissions from cooling towers, process vents, and flares. The District does not have a VOC cap and trade program, nevertheless plans to further control emissions from flares and from process vents at specific facilities through the District's Control Measure CMB-02 – NO_x Reductions from Biogas Flares, FUG-01 – Further VOC Reductions from Vacuum Trucks, FUG-02 – Emission Reduction from LPG Transfer and Dispensing, and FUG-03 – Further VOC Reductions from Fugitive VOC Emissions. The District has no plan to further regulate the emissions from cooling towers at this stage.

New York Metropolitan

The New York Metropolitan Area is classified as nonattainment area for the 1997 annual PM_{2.5} standard of 15 µg/m³. All of the New York State is in compliance with the 1997 24-hour PM_{2.5} standard of 65 µg/m³. To satisfy the requirement of the CAA, the New York Department of Environmental Conservation (NYDEC) finalized the final annual PM_{2.5} SIP in July 2008.¹⁸ In this final PM_{2.5} SIP, it was determined that modeling will be used to demonstrate attainment in 2010 taking into effect the emission reduction programs already in place, the control measures already proposed, and the contingency measures, if needed. The three stationary source control measures that are more stringent than the District's existing rules are:¹⁹

- Portland Cement Plants. The NYDEC has revised its regulations for cement plants on June 11, 2010 to require case-by-case RACT analysis for cement kilns. The District selects to reduce cement kiln emissions through the District's Control Measure CMB-01 – Further Reductions from NO_x RECLAIM.
- Glass Furnaces. The NYDEC has revised its regulation for glass manufacturing facilities on June 11, 2010 to require case-by-case RACT analysis to potentially include control technologies such as oxy-fuel firing, low NO_x burners, SCR, SNCR. The District selects to reduce emissions from glass furnaces through Control Measure CMB-01 – Further Reductions from NO_x RECLAIM.
- Stationary Combustion Installations. The NYDEC has revised its regulation on June 8, 2010 to include stricter, case-by-case RACT determination for major stationary sources that contain natural gas and/or oil-fired Industrial/Commercial/Institutional

boilers, or combined cycle/cogeneration combustion turbines. The Districts will reduce emissions from this category of sources through the District's Control Measure CMB-01 – Further Reductions from NO_x RECLAIM.

In addition, many counties in the New York state are nonattainment areas with respect to the 8-hour ozone standards. The NYDEC developed a comprehensive plan to address multi-pollutant attainment for criteria pollutants, greenhouse gases and toxics in June 2010.²⁰ In addition to the control measures for cement kilns, glass furnaces, boilers and turbines addressed above, the NYDEC includes several measures for VOC Clean Air Interstate Trading of NO_x and SO₂. Some of the VOC measures are more stringent than the District's existing rules which will be further analyzed under District's Control Measure MCS-01 – Application of All Feasible Measures Assessment.

New Jersey and Sacramento Metro

District staff also reviewed the control measures developed by Sacramento Metro and New Jersey Department of Environmental Protection for their 8-hour ozone plans. There are no additional new measure concepts that the District has not yet considered for this Draft Final 2012 AQMP.²¹⁻²⁴

Step 6 - Additional Studies and Analyses

In addition to all of the above analyses, SCAG, CARB, and the District have completed the following analyses to meet the requirements of the CAA:

- RACM analyses and demonstration conducted by SCAG and CARB for transportation and mobile sources control measures are included in Appendix IV-C and in the Attachment of this Appendix.²⁵
- Costs and cost effectiveness analyses, planning and scheduling to implement for each District's stationary source and mobile source control measures, if available, are provided in Chapter IV, Appendix IV-A and B.

CONCLUSION

Following are the District staff's findings:

- As required by the CAA and the U.S. EPA's PM_{2.5} Implementation Rule, District staff evaluated and analyzed all feasible control measure concepts that were currently available for inclusion in the Draft Final 2012 AQMP. These concepts were either provided by the public and experts, or recommended by U.S. EPA, or implemented by other air districts. From these concepts, District staff selected and developed 8 short-term stationary source control measures to address the 24-hour PM_{2.5} attainment, 16 early-action stationary source control measures and 17 on-road and off-road control measures to address the 8-hour ozone attainment. District staff also developed a catch-all Control Measure MSC-01 – Application of All Feasible Measures Assessment to facilitate the inclusion of any incoming innovative air pollution control technologies or ideas that can help the Basin achieve the NAAQS as expeditiously as possible.
- Following the approach recommended by the U.S. EPA in the PM_{2.5} Implementation Rule, District staff conducted a study of more than 100 rules and regulations and 100 control measures recently developed in the 2007-2012 timeframe by other nonattainment air districts in the nation. In general, the District's existing rules and regulations are equivalent to, or more stringent than other districts' rules and regulations and their proposed control measures in their respective SIPs. In the few areas where the District's rules can be amended to promote cleaner technologies, add additional best management practices, and improve enforceability, District staff has developed one or more control measures to facilitate these activities.
- The control measures that do not have estimated emission reductions cannot be considered RACMs, and the District commits to further conduct analyses to refine the emission inventory, emission reductions, and cost-effectiveness for these measures. The District's ambient air quality data and modeling analysis in Chapter 3 and Chapter 5 demonstrates that the Basin would be able to meet the 24-hour PM_{2.5} attainment date by 2014 with the implementation of a few episodic control measures discussed in Chapter 4.
- With regards to the early actions to achieve ozone attainment, District staff has developed an effective menu of controls to meet the attainment dates as expeditiously as possible. The available control measures that District staff did not include would not collectively advance the attainment date or contribute to the RFP because of the uncertain non-quantifiable amount of emission reductions that they may potentially generate.

- In conclusion, the District has conducted the RACM/RACT analysis for identifying and selecting the control measures for the Draft Final 2012 AQMP is in compliance with the requirements of the CAA, the U.S. EPA's PM2.5 Implementation Rule, as well as the U.S. EPA's policy and guidelines.

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TABLE VI-5

Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1109	NOx	Emissions of Oxides of Nitrogen from Boilers and Process Heaters – Petroleum Refineries (Amended 8/5/88)	<p>0.03 lbs/mmBTU of heat input (~25 ppmv). Subsumed by RECLAIM.</p> <p>RECLAIM (Amended 1/2005):</p> <ul style="list-style-type: none"> • 5 ppmv for >110 mmbtu/hr units • 25 ppmv for units 40-100 mmbtu/hr 	<p>San Joaquin Rule 4306 (Amended 10/18/08) has the following limits:</p> <p>NOx limits for refinery gas:</p> <ul style="list-style-type: none"> • 5 ppmv for units >110 mmbtu/hr; • 25 ppmv for units 65-110 mmbtu/hr; and • 30 ppmv for 5-65 mmbtu/hr units <p>San Joaquin Rule 4320 (Amended 9/5/08) has the following limits for refinery gas:</p> <ul style="list-style-type: none"> • 5 ppmv for >110 mmbtu/hr units • 5 - 6 ppmv for units between 20 - 110 mmbtu/hr <p>Compliance may be mitigated with annual emissions fee.</p>	<p>Further study the feasibility of lowering the NOx limits through:</p> <p>CMB-01 – Further NOx Reductions from RECLAIM</p>
1110.2	NOx, VOC, CO	Emissions from Gaseous and Liquid Fueled Engines (Amended 7/9/2010)	<p>Rule 1110.2 has NOx, VOC, CO limits for all stationary and portable engines over 50 brake horse power (bhp).</p> <p>In general, the limits applicable to 1) stationary, non-emergency engines by 7/1/2011, and 2) biogas (landfill and digester gas) engines by 7/1/2012 are:</p>	<p>San Joaquin Valley Rule 4702 (Amended 8/19/2011) has NOx, VOC, CO and SOx limits for engines rated over 25 bhp.</p> <p>For engines over 50 bhp:</p> <ul style="list-style-type: none"> - By 1/1/2017, the limits for spark-ignited engines are: <ul style="list-style-type: none"> • 11 ppmv NOx 	<p>Further study the feasibility of lowering the NOx limits through:</p> <p>CMB-01 – Further NOx Reductions from RECLAIM</p>

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - NO_x and SO_x Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
			<ul style="list-style-type: none"> • 11 ppmv NO_x • 30 ppmv VOC • 250 ppmv CO <p>Limits for new non-emergency engines driving electrical generators are:</p> <ul style="list-style-type: none"> • 0.07 lbs NO_x per MW-hr • 0.20 lbs CO per MW-hr • 0.10 lbs VOC per MW-hr <p>NO_x limits for low usage biogas engines:</p> <ul style="list-style-type: none"> • 36 ppmv, engines ≥ 500 bhp 45 ppmv, engines < 500 bhp <p>VOC and CO limits for low usage biogas engines:</p> <ul style="list-style-type: none"> • 40 ppmv VOC, landfill gas • 250 ppmv VOC, digester gas • 2000 ppmv CO. <p>Portable and agricultural engines are not subject to the general limits listed above.</p> <p>Many of Rule 1110.2 engines are in RECLAIM, and RECLAIM will be amended to incorporate feasible BARCT.</p>	<ul style="list-style-type: none"> • 250 ppmv VOC (rich-burn) and 750 ppmv VOC (lean burn), and • 2000 ppmv CO <p>- Engines used in agricultural operations (AO), or fueled with waste gas, or limited used, or cyclic loaded and field gas fueled are subject to higher limits than the above</p> <p>- In general, all compression ignited engines must meet EPA Tier 4 standards.</p> <p>Engines between 25 bhp - 50 bhp, non agricultural operations (AO), must meet federal standards 40CFR Part 60 Subpart IIII and JJJJ.</p> <p>The SO_x limits are: 1) Natural gas, propane, butane, LPG, or combination, or 2) 5 grains/100 scf for gaseous fuel, or 3) 15 ppmv liquid fuel, or 4) CA reformulated gasoline for spark-ignited engines, or 5) CA reformulated diesel for compression ignited engines, or 6) 95% control.</p>	

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - NO_x and SO_x Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1111	NO _x	NO _x Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces (Amended 11/6/09)	40 nanograms per joule heat output until 2014. A lower standard of 14 ng/J is required with staggering compliance dates from 2014-2018.		
1112	NO _x	Emissions of Oxides of Nitrogen from Cement Kilns (Amended 6/6/86)	Applicable to gray cement only. 11.6 lbs/ton clinker averaged over 24 hours and 6.4 lbs/ton clinker averaged over 30 days. Subsumed by RECLAIM. RECLAIM, amended 1/2005 version, had no recommendation for cement kiln BARCT. However, RECLAIM BARCT analysis is an on-going process and will be evaluated every three years.		Further study the feasibility of lowering the NO _x limits through: CMB-01 – Further NO _x Reductions from RECLAIM
1117	NO _x	Emissions of Oxides of Nitrogen from Glass Melting Furnaces (Amended 1/6/84)	4 lb/NO _x per ton of glass pulled. Flat glass and fiberglass melting furnaces are exempt. Many of these R1117 units are in RECLAIM. RECLAIM (Amended 1/2005 version) had no BARCT recommendation for this class. However, BARCT analysis is an on-going process and will be reevaluated every three years.	San Joaquin Rule 4354 – Glass Melting Furnaces (Amended 5/19/2011) have NO _x , CO, VOC, SO _x limits. There are several options for the NO _x limits: <ul style="list-style-type: none"> • Container Glass: 1.5 lbs/ton (rolling 30-day average) • Fiberglass: 1.3-3 lbs/ton (24-hour average) 	Further study the feasibility of lowering NO _x limit through: CMB-01 – Further NO _x Reductions from RECLAIM

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1117 (Cont.)				<ul style="list-style-type: none"> • Flat Glass: 2.9 lbs/ton (30-day average) – 3.7 lbs/ton (24-hour average) <p>The SOx limits are:</p> <ul style="list-style-type: none"> • Container Glass: 0.9-1.1lbs/ton (rolling 30-day average) • Fiberglass: 0.9 lbs/ton (rolling 24-hour average) • Flat Glass: 1.2 lbs/ton (30-day average) – 1.7 lbs/ton (24-hour average) <p>The VOC limits are:</p> <ul style="list-style-type: none"> • Container or Fiberglass: 0.25 lbs/ton or 20 ppmv • Flat Glass: 0.10 lbs/ton or 20 ppmv. 	
1121	NOx	Control of Nitrogen Oxides from Residential Type, Natural-Gas-Fired Water Heaters (Amended 9/3/2009)	15 ppmv at 3% O2, dry input (or 10 ng/j output) for all stationary water heaters; and 55 ppmv at 3% O2, dry input (40 ng/j output) for mobile water heaters.	Other Districts' plans propose to accelerate replacements of old water heaters with electric units or new highly-efficient lower-emitting water heaters with the use of incentives.	<p>Further study the possibility of using incentives to promote electric heaters through:</p> <p>INC-01 – Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx]</p> <p>In addition, further consider the feasibility of technology transfer through:</p> <p>CMB-03 – Reductions from Commercial Space Heating</p>

TABLE VI-5

Evaluation of SCAQMD Rules and Regulations - NO_x and SO_x Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1134	NO _x	Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Amended 8/8/97)	<p>Standard = Reference Limit x (Unit Efficiency/25%), where reference limit depends on size of units, varying from 9 ppmv for units rating at equal to or larger than 10MW to 25 ppmv for units rating from 0.3 MW to less than 2.9 MW.</p> <p>RECLAIM, amended 1/2005 version, indicated that 5 ppmv was achieved in practice but not cost effective, therefore did not propose BARCT. This analysis may need to be revised based on new information. RECLAIM BARCT is an on-going process that is planned to be reviewed every 3 years.</p>	<p>Bay Area, Regulation 9, Rule 9 (Adopted 12/6/06) contains the following limits:</p> <ul style="list-style-type: none"> • 9 ppmv for units between 250-500 mmBTU/hr and • 5 ppmv for units more than 500 mmBTU/hr <p>San Joaquin Valley Rule 4703, (Amended 8/17/06) requires 3 ppmv for combined cycle >10 MW, and standards from 5 – 50 ppmv for other units.</p> <p>Sacramento Rule 413 (Amended 03/24/05) requires 9 – 25 ppmv depending on size of units, but are independent on equipment efficiency.</p> <p>Ventura Rule 74.9 (Amended 11/08/05) requires 25 – 125 ppmv depending on fuel type but are independent from equipment size and efficiency. Control efficiency 90% - 96%. In addition, all units have to meet 20 ppmv NH₃.</p>	<p>Further study the feasibility of lowering the NO_x standard and establish ammonia standard through:</p> <p>CMB-01 – Further NO_x Reductions from RECLAIM</p> <p>MCS-01 – Application of All Feasible Measures Assessment (for non-RECLAIM facilities)</p>

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1135	NOx	Emissions of Oxides of Nitrogen From Electric Power Generating Systems (Amended 7/19/91)	<p>Mass emission limits and emission reduction goals for utility boilers. Only City of Glendale is subject to Rule 1135, which is allowed to meet 0.2 lb/MW-hr (or a daily mass limit of 390 lb NOx per day, or an annual limit of 35 tons per year).</p> <p>Other utility boilers are in RECLAIM subject to declining NOx allocations which were determined based on a level of 7 ppmv = 0.07 lb/MW-hr = 0.008 lb/mmbtu, assuming a heat rate of 8130 Btu/kw-hr. The utility boilers are operated at various BARCT levels from 5 - 30 ppmv. ^(Note)</p>	<p>Ventura Rule 59 (amended 7/15/97) requires:</p> <ul style="list-style-type: none"> • 0.1 lb NOx/MW-Hr for utility boilers and • 0.04 lb/MW-hr for auxiliary boilers. <p>San Joaquin Rule 4306 – Phase 3 (amended 3/17/2005) requires boilers more than 20 mmbtu/hr to comply with the following options:</p> <ul style="list-style-type: none"> • Standard option of 9 ppmv (or 0.011 lb/mmbtu) complied by 2005-2007, or • Enhanced option of 6 ppmv (or 0.007 lb/mmbtu) complied by 2006-2008. (Assuming a heat rate of 8130 Btu/kw-hr, 6 ppmv is about 0.06 lb/MW-hr.) 	<p>Further study the feasibility of lowering the emission targets through:</p> <p>CMB-01 – Further NOx Reductions from RECLAIM facilities</p> <p>MCS-01 – Application of All Feasible Measures Assessment</p>

Note: RECLAIM facilities have flexibility to operate their utility boilers provided that the total facility emissions must be at or below their allocations determined based on a level of 7 ppmv. Regarding BARCT levels, according to Marty Kay and John Yee, the utility boilers at Southern California Edison, Department of Water and Power, and City of Burbank are operated at a level from 5 – 7 ppmv (1-hr to 1-month average time) whereas City of Pasadena boilers are operated at a level of 30 ppmv. In addition, since heat rate (mmbtu per kw-hr) varies with each utility boiler, District staff used 8130 BTU/kw-hr to convert the ppmv to lb/MW-hr for the unit operated by City of Glendale.

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - NO_x and SO_x Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1146	NO _x	Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters (Amended 9/5/2008)	<p>Applicable to units rating of more than 5 mmbtu/hr.</p> <p>Current NO_x limits:</p> <ul style="list-style-type: none"> • For digester gas: 15 ppmv • For landfill gas: 25 ppmv • For refinery gas: 30 ppmv (the 2008 amendment did not revise limits for refinery gas) • For other types of fuels: 5 ppmv for ≥75 mmbtu/hr, natural gas; 30 ppmv for ≥75 mmbtu/hr, other fuels; and 5 or 9 ppmv for 20–75 mmbtu/hr units <p>CO limit: 400ppmv</p> <p>Many Rule 1146 units are in RECLAIM. RECLAIM (Amended 1/2005 version) contains the following NO_x limits:</p> <ul style="list-style-type: none"> • For refinery gas: 5 ppmv for units > 110 mmbtu/hr; and 25 ppmv for units < 110 mmbtu/hr units • For other units: 9 ppmv for units > 20 mmbtu/hr; and 12 ppmv for units >2 mmBTU/hr 	<p>Sacramento Rule 411 (Amended 10/27/05) limits for gaseous fuel are 9 ppmv for units greater than 20 mmbtu/hr, and 15 ppmv for units from 5 to 20 mmbtu/hr.</p> <p>San Joaquin Rule 4306 (Amended 10/18/08) has the following limits:</p> <p>NO_x limits:</p> <ul style="list-style-type: none"> • 30 ppmv for 5-65 mmbtu/hr units using refinery gas. For units from 40 – 100 mmbtu/hr, refer to the comparison under Rule 1109. • For other types of fuels: 9 ppmv for >20 mmbtu/hr units; 15 ppmv for ≤20 mmbtu/hr units (6 – 9 ppmv for enhanced options) • Other units: 15 – 30 ppmv <p>CO limit: 400 ppmmv.</p> <p>San Joaquin Valley further reduces NO_x, CO, SO₂ and PM₁₀ emissions by adopting Rule 4320 on 10/16/08. The limits in Rule 4320 are:</p>	<p>Further explore the feasibility of lowering the NO_x standards for Rule 1146 (e.g. refinery fuels, digester and landfill gases) and RECLAIM through:</p> <p>CMB-01 – Further NO_x Reductions from RECLAIM</p>

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - NO_x and SO_x Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1146 (Cont.)	NO _x			NO _x limits: <ul style="list-style-type: none"> • For refinery gas: 5 – 6 ppmv for units between 20-110 mmbtu/hr; 6 – 9 ppmv for units between 5 - 20 mmbtu/hr; and 9 ppmv for units firing of less than 50% by vol PUC quality gas. Refer to the comparison under Rule 1109 for 40 mmbtu/hr units and above using refinery gas. • For oil field generators: 5 - 7 ppmv for units greater than 20 mmbtu/hr; 6 – 9 ppmv for units larger than 5 but less than 20 mmtu/hr; and 9 ppmv for units firing of less than 50% by vol PUC quality gas • For low usage units: 9 ppmv • For units at a wastewater treatment facilities firing on less than 50% by vol PUC quality gas: 9 ppmv • For other units: 5 – 7 ppmv for units larger than 20 mmbtu/hr; and 6 – 9 ppmv for units between 5 mmbtu/hr and 20 mmbtu/hr Compliance may be mitigated with annual emission fees.	

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - NOx and SOx Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1146.1	NOx	Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (Amended 9/5/2008)	<p>Applicable to units rating from 2 mmbtu/hr to 5 mmbtu/hr.</p> <p>NOx limits:</p> <ul style="list-style-type: none"> • Atmospheric Units: 12 ppmv • Digester gas: 15 ppmv • Landfill gas: 25 ppmv • All others: 9 ppmv <p>CO limit: 400 ppmv.</p> <p>Many Rule 1146.1 units are in RECLAIM, and RECLAIM (Amended 1/2005 version) BARCT analysis recommended 12 ppmv for less than 20 mmbtu/hr units based on ultra low NOx technology that is achieved in practice.</p> <p>RECLAIM (Amended in 2005) has a limit of 12 ppmv NOx for boilers in this size range.</p>	<p>Bay Area Rule 9-11 (Amended 5/17/00) has following limits for boilers using gaseous fuel 1) 10 ppmv for boilers with rated input greater than 1.75 mmbtu/hr, 2) 25 ppmv for boilers from 1.5-1.75 mmbtu/hr, 3) 30 ppmv for boilers less than 1.5 million btu/hr. Non-gaseous fuel combustion devices have higher limits than gaseous fuel devices.</p> <p>San Joaquin Rule 4307 (Amended 5/19/2011) has the following limits:</p> <p>NOx limits:</p> <ul style="list-style-type: none"> - For New or Replacement Units: Atmospheric Units: 12 ppmv, and Non-Atmospheric Units: 9 ppmv -For Retrofit Units: 30 ppmv burning gaseous fuels; and 40 ppmv burning liquid fuels <p>Sulfur limits for SO2:</p> <ul style="list-style-type: none"> -For natural gas, propane, butane, or LPG: 5 grains of total sulfur per 100 scf, or 9 ppmv SO2, or 95% control -For liquid fuels: 15 ppmv sulfur 	<p>Further study the feasibility of promoting the use of cleaner units through incentives through one of the following:</p> <p>INC-01 – Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx]</p>

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - NO_x and SO_x Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1146.2	NO _x	Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers (Amended 5/5/06)	Applicable to units less than 2 mmbtu/hr. Current limits are: <ul style="list-style-type: none"> • 20 ppmv for units from 400,000 btu/hr – 2 mmbtu/hr • 55 ppmv for units rating less than 400,000 btu/hr 	San Joaquin Valley Rule 4308, (Amended 12/17/09) requires: <ul style="list-style-type: none"> • 20 ppmv for units used PUC gas from 75,000 btu/hr – 2 mmbtu/hr • 30 ppmv for units from 400,000 btu/hr - 2 mmbtu/hr used other types of fuels • 77 ppmv for units rating from 75,000 btu/hr – 400,000 btu/hr used other types of fuels 	Further study the feasibility of promoting the use of cleaner units through: INC-01 – Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NO _x]
2000 - 2015	NO _x , SO _x	RECLAIM (Amended 5/6/05)	Include facility allocations for NO _x and SO _x for RECLAIM facilities.	Since other Districts do not have RECLAIM, refer to comparison for individual rules such as Rule 1146, 1146.1, 1110.2 etc.	Further review BARCT through: CMB-01 – Further NO _x Reductions from RECLAIM . District has set most stringent BARCT for SO _x sources in the 2010 RECLAIM Amendments.

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1106	VOC	Marine Coating Operations (Amended 1/13/95)	Coating-specific emission limits from 275 – 780 g/L. In lieu of complying with specific emission limits, operator can use air pollution control system with at least 85% efficiency. Solvent cleaning operations must comply with Rule 1171.	Ventura Rule 74.24 (Amended 11/11/03) generally has the same limits as South Coast Rule 1106, except the limit for special marking of items such as flight decks, ship numbers is 420 g/L (490 g/L in Rule 1106) Bay Area Rule 8-43 (Amended 10/16/02) generally has the same limits as South Coast Rule 1106, except it has lower limit for pretreatment wash primer at 420 g/L (780 g/L in Rule 1106)	Further study the potential of lowering the emission standards for this source category through: CTS-02 – Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants
1106.1	VOC	Pleasure Craft Coating Operations (Amended 2/12/99)	Coating-specific emission limits from 340 – 780 g/L. Solvent cleaning operations must comply with Rule 1171.	San Joaquin Valley's Rule 4603 (Amended 9/17/09) limit for teak primer, wood sealer, and clear wood varnish is 420 g/L, which is more stringent than the limits in Rule 1106.1 (i.e. 775 g/L for teak primer, 550 g/L for clear wood sealers, and 490 g/L for clear wood varnishes.)	Further study the potential of lowering the emission standards for this source category through: CTS-02 – Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants
1113	VOC	Architectural Coatings (Amended 6/3/2011)	Coating-specific emission limits from 50 g/L – 730 g/L. Allow averaging, scheduled to be phased out on January 1, 2015.		Further study the potential of lowering the emission standards for this source category through: CTS-01 – Further VOC Reductions from Architectural Coatings (R1113)

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1107	VOC	Coating of Metal Parts and Products (Amended 1/6/06)	Coating-specific emission limits from 2.3 lbs/gal – 3.5 lbs/gal. In lieu of complying with specific emission limits, operator can use air pollution control system with at least 95% control efficiency (or 5 ppmv outlet) and 90% capture efficiency. Solvent cleaning operations must comply with Rule 1171.	Ventura Rule 74.12 (Amended 1/6/06) generally has the same coating-specific limits as South Coast Rule 1107, except in the following categories: <ul style="list-style-type: none"> • Limit for metallic coating is 3 lbs/gal (3.5 lbs/gal in Rule 1107); • Limit for camouflage is 3 lbs/gal (3.5 lbs/gal in Rule 1107); • Limit of pretreatment coatings is 2.3 lbs/gal (3.5 lbs/gal in Rule 1107) • Overall minimum control efficiency is 90%, higher than Rule 1107 requirement at 85% San Joaquin Valley Rule 4603 (Amended 9/17/09) have more stringent limits than Rule 1107 for baked camouflage and baked metallic coating at 360 g/L (420 g/L in Rule 1107)	Explore the feasibility of lowering the VOC limits considering the diversity of applications, and if feasible, implement through the following control measure: CTS-02 – Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents, and Lubricants, or MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1115	VOC	Motor Vehicle Assembly Line Coating Operations (Amended 5/12/95)	Limits from 1.2 lbs VOC/gal coating for electrophoretic primer to 15 lbs/gal of applied solids for primer, primer surfacer and topcoat. Cleaning operations must comply with Rule 1171.	San Joaquin Valley Rule 4602, (Amended 9/17/09) has more stringent limits for: 1) Primer at 0.7 lbs/gal and 2) Primer surface and topcoat at 12 lbs/gal	Further lowering the VOC limits
1118	All	Refinery Flares (Amended 11/4/05)	<ul style="list-style-type: none"> Minimize flare emissions & require smokeless operations Specify SO₂ gradually decreasing performance target to less than 0.5 tons per million barrels of crude by 2012. If the performance target is exceeded, the operator must 1) pay mitigation fee; or 2) submit a Flare Mitigation Plan to reduce emissions. Require Cause Analysis for event exceeding 100 lbs VOC, 500 lbs of SO₂, or 500,000 scfm of vent gas, excluding planned shutdown, startup and turnarounds Require 160 ppmv H₂S, 3 hour average by 1/1/2009, and no limits for NO_x, VOC, PM and CO. 	<p>U.S. EPA suggested the District to further re-evaluate Rule 1118 (FR Vol 76 No 217, Nov 9, 2011, CBE comments).</p> <p>San Joaquin Valley Rule 4311 (Amended 6/18/09) has VOC/NO_x limits for ground-level enclosed flares; SO₂ Targets (1.50 tons/million barrels of crude by 2011, and 0.5 tons/million barrels by 2012); Flare Minimization Plan for refinery flares more than 5 mmbtu/hr; and operational requirements for all flares that have potential to emit more than 10 tons/yr VOC and more than 10 tons/yr of NO_x.</p> <p>Bay Area Rule 12-12 (Adopted 4/5/06) does not specify a declining SO₂ target and does not contain a mitigation fee option.</p>	<p>Explore the possibility of further minimizing flare related events, through:</p> <p>MSC-03 – Improved Start-Up, Shutdown and Turnaround Procedures</p> <p>In addition, further study the feasibility of reducing emissions of landfill flares through:</p> <p>CMB-02 – NO_x Reductions from Biogas Flares</p>

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1122	VOC	Solvent Degreasers (Amended 5/1/09)	Contain various work practice and design requirements.		Further study to assess the feasibility of reducing emissions through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants
1124	VOC	Aerospace Assembly and Component Manufacturing Operations (Amended 9/21/01)	Coating-specific emission limits from 160 – 1000 g/L. Specific high transfer coating applications (e.g. HVLP spray). In lieu of complying with specific emission limits, operator can use air pollution control system with at least 95% control efficiency (or 50 ppmv outlet) and 90% capture efficiency. Solvent cleaning operations must comply with Rule 1171.	San Joaquin Valley Rule 4605 (Amended 6/16/2011) has the following limits that are more stringent than those in Rule 1124: <ul style="list-style-type: none"> • Flight Test Coatings = 600 g/L (840 g/L in Rule 1124) • Fastener Sealant = 600 g/L (675 g/L in Rule 1124) Sacramento Rule 456 (Amended 10/23/08) has the following limits that are more stringent than those in Rule 1124: <ul style="list-style-type: none"> • Conformal Coating = 600 g/L (Rule 1124 limit is 750 g/L) 	Explore the feasibility of lowering the VOC limits through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1124 (Cont.)				<ul style="list-style-type: none"> • Fire Resistant Coatings = 600 g/L. (Rule 1124 limits are 650 g/L for Commercial; 800 g/L for Military) • High-Temperature Coating = 420 g/L. (Rule 1124 limit is 850 g/L) • Mold Release Coatings = 762 g/L. (Rule 1124 limit is 780 g/L) • Radiation Effect = 600 g/L. (Rule 1124 limit is 800 g/L) • Rain Erosion Resistant Coating = 600 g/L in All Other Category. (Rule 1124 limit is 800 g/L) <p>Ventura 2006-2008 Triennial Assessment and Plan Update has a control measure to require 25 g/L VOC limit for cleaning solutions and remove the 45 mmHg vapor pressure allowance. (Rule 1124 limits for cleaning solutions and strippers are 200 g/L (or 45 mmHg vapor pressure) and 300 g/L (or 9.5 mmHg vapor pressure))</p>	

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1125	VOC	Metal Container, Closure, and Coil Coating Operations (Amended 3/7/2008)	Coating-specific emission limits from 0 g/L (for non food cans) – 660 g/L. Specific high transfer coating applications (e.g. HVLP spray). In lieu of complying with specific emission limits, operator can use air pollution control system with at least 95% control efficiency (or 50 ppmv outlet) and 90% capture efficiency, which is equivalent to an overall control efficiency of 85%. Solvent cleaning operations must comply with Rule 1171.	<p>The following limit in San Joaquin Rule 4604 (Amended 9/20/07) are more stringent than those in Rule 1125:</p> <ul style="list-style-type: none"> • Two-Piece Interior Body Spray = 420 g/L (440 g/L in Rule 1125) • Three-Piece Interior Body Spray = 360 g/L (510g/L in Rule 1125) <p>In addition, SJV Rule 4604 have many limits that are not listed in Rule 1125 such as 20 g/L for end seal compounds and 225 g/L for two-piece interior sheet base coating and over-vanish.</p> <p>Sacramento Rule 452 (Amended 9/25/2008) has the following more stringent limits than Rule 1125:</p> <ul style="list-style-type: none"> • Two-Piece Interior Body Spray = 420 g/L (440 g/L in Rule 1125) • Three-Piece Interior Body Spray = 360 g/L (510g/L in Rule 1125) 	<p>Explore the feasibility of lowering the VOC limits through:</p> <p>CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants, or</p> <p>MSC-01 – Application of All Feasible Measures Assessment</p>

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1130	VOC	Graphic Arts (Amended 10/8/99)	<p>VOC content limits: 80 g/l – 100 g/l for fountain solution, 150 g/l for adhesives, 225 g/l - 300 g/l for inks and coatings. In lieu of meeting specific emission limits, control device with overall control efficiency from 75% - 85% can be used to achieve equal or better emission reductions.</p> <p>VOC limits for cleaning solutions for printing presses are in Rule 1171 ranging from 25 g/l (0.21 lb/gal) for flexographic printing to 100 g/l (0.83 lb/gal) for lithographic printing (even though 500 g/l is allowed up to end of year 2007.)</p>	<p>The following limits in San Joaquin Valley Rule 4607 (Amended 12/18/08) are more stringent: 1) 95% control efficiency for heat-set web offset lithographic or letterpress printers that emit greater than 25 tons per year VOC; 2) 1.6% VOC content for fountain solution used in heat-set lithographic printers, 5% for fountain solution used in cold-set and sheet-fed lithographic printers, and 8% for fountain solution used in other presses.</p> <p>Sacramento Rule 450 is more stringent in the following: 1) overall control efficiency of 95% for heat-set web offset lithographic and letterpress printing and 80% for flexible package printing (Rule 1130 requires only 75% control efficiency) ; 2) VOC in fountain solution is lower, generally from 1.6% to 5%; 3) electronic circuit limit is 800 g/l (850 g/l in Rule 1130.1)</p>	<p>Further study to assess the feasibility of increasing the overall control efficiency and reducing the alcohol usage in fountain solution through the implementation of:</p> <p>MSC-01 – Application of All Feasible Measures Assessment</p>

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1130 (Cont.)				<p>Bay Area, Regulation 8, Rule 20 (Amended 11/19/08) requires 8% VOC content in fountain solution. In addition, the rule requires recordkeeping for digital printing, cleaning and stripping of UV or electron beam-cured inks for further study potential emission reductions in a near future.</p> <p>Ventura Rule 74.19 (Amended 6/14/11) requires low VOC content in fountain solution used in lithographic presses.</p> <p>In addition, the U.S. EPA CTG for lithographic and letterpress, September 2006, recommends:</p> <ul style="list-style-type: none"> • Destruction efficiency of 90% to 95% depending on date of installation (or 20 ppmv outlet concentration) for heat-set web with potential to emit, prior to controls, of at least 25 tpy. • For operations emitting 15 lb/day, fountain solution must be 1) 1.6% alcohol or less, or 	

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1130 (Cont.)				2) 3% with refrigerated chiller or 3) 5% alcohol substitute for heat-set web presses; 4) 5% alcohol for sheet-fed presses; 5) 5% alcohol substitute and no alcohol in fountain solution for cold-set web presses. The EPA CTG for rotogravure and flexographic, adopted in September 2006, recommends control efficiency of 80% for presses installed after March 1995, and 65% - 75% for older presses.	
1130.1	VOC	Screen Printing Operations (Amended 12/13/96)	VOC content limits ranges from 400 g/l – 800 g/l for materials used in screen printing. In lieu of specific emission limits, control device can be used to achieve equal or better reductions, at least 95%.	Bay Area, Regulation 8, Rule 20 (Amended 11/19/08) has more stringent limit for adhesives at 150 g/L (400 g/L in Rule 1130.1). Sacramento Rule 450 (Amended 10/23/08) has more stringent limits than Rule 1130.1 in the following areas: 1) limit for electronic circuit ink is 800 g/L (850 g/L in Rule 1130.1); 2) limit for adhesives is 150 g/L (400 g/L in Rule 1130.1)	Further study to assess the feasibility of reducing the VOC limits for adhesives through: MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1132	VOC	Further Control of VOC from High Emitting Spray Booths (Amended 5/7/04)	Further reduce emissions by 65% from the baseline primarily through the installation of control devices, beyond and above the use of coatings that comply with existing coating rules.		
1136	VOC	Wood Products Coatings (Amended 6/14/96)	VOC content limits range from 2.3 – 6.3 lbs/gal VOC. Averaging provisions and add-on control are allowed. Transfer efficiency is at least 65%, or operator must use certain type of equipment (e.g. HVLP). Solvent cleaning operations must comply with Rule 1171.	Ventura Rule 74.30 (Amended 6/27/06) has more stringent limit for high-solid stains on new wood products at 2 lbs/gal (2.9 lbs/gal in Rule 1136). In lieu of coating specific limits, control equipment achieving 90% efficiency is required. No averaging provisions in Ventura. San Joaquin Valley Rule 4606 (Amended 10/16/08) is more stringent in the following areas: <ul style="list-style-type: none"> • Rule 1136 allows the use of a stripper with limits higher than 350 g/L if the stripper has low vapor pressure of 2 mmHg. SJV does not have this allowance; • SJV Rule 4606 requires a min overall control efficiency of 85% - 90% for flat wood paneling products, whereas Rule 1136 does not have control efficiency requirement. 	Explore the feasibility of lowering the VOC limits for wood products coatings through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants, or MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1136 (Cont.)				Bay Area, Regulation 8, Rule 32, (Amended 8/5/09) has lower limits for surface preparation and cleanup, including stripping, at 0.21 lbs/gal.	
1144	VOC	Metalworking Fluids and Direct-contact Lubricants (Amended 7/9/2010)	Various limits from 50 g/L – 340 g/L. Add-on control at 90% capture efficiency, 95% control efficiency (or 5 ppmv outlet)		Further study the potential of lowering the VOC limits through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1151	VOC	Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations (Amended 12/2/05)	VOC content limits range from 250 – 840 grams VOC per liter. Averaging provisions are allowed. High transfer coating equipment (e.g. HVLP) is required. Solvent cleaning operations must comply with Rule 1171.	<p>San Joaquin Valley Rule 4602 (Amended 9/17/09) is more stringent in the following areas: 1) adhesive at 250 g/L (540 g/L in Rule 1151), 2) gasket/gasket sealing at 200 g/L (400 g/L in Rule 1151), and 3) truck bed liner coating at 200 g/L (310 g/L in Rule 1151)</p> <p>Sacramento Rule 459 (Amended 8/25/11) is more stringent in the following areas: 1) multi-color coating at 520 g/L for mobile equipment driven on rails (680 g/L in Rule 1151), 2) truck bed liner coating at 200 g/L (310 g/L in Rule 1151)</p> <p>Bay Area, Regulation 8, Rule 45 (Amended 12/3/08) is more stringent in the following areas: 1) VOC limit for surface preparation and cleanup, including stripping, of 0.2 lbs/gal or 2) a minimum 85% overall control efficiency.</p>	<p>Further study the feasibility of lowering the VOC limits for coatings through:</p> <p>CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants, or</p> <p>MSC-01 – Application of All Feasible Measures Assessment</p>
1162	VOC	Polyester Resin Operations (Amended 7/8/05)	VOC limits (monomer content) from 10-48% by weight or alternatively 90% control efficiency for add-on control	Regulation 8, Rule 50 (Amended 12/2/09) is similar to Rule 1162, except the limit for corrosion resistant resin is more stringent at 40% - 46% (48% in Rule 1162). The rule allows some usage of acetone	<p>Further study the feasibility of lowering the VOC limits through:</p> <p>MSC-01 – Application of All Feasible Measures Assessment</p>

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1168	VOC	Adhesive and Sealant Applications (Amended 1/7/05)	VOC limits for solvents range from 30 – 775 lbs VOC per gallon. Require the use of high transfer efficiency equipment (e.g. HVLP spray). In lieu of meeting the VOC limits, using add-on control with 80% control efficiency is allowed.	San Joaquin Valley Rule 4653 (Amended 9/16/2010) has more stringent limits in the following areas: <ul style="list-style-type: none"> • 100 g/L for Cellulosic Plastic Welding Adhesive, 100 g/L for Styrene Acrylonitrile Welding Adhesive, and 200 g/L for Reinforced Plastic Composite Adhesive (Rule 1168 limit is 250 g/L limits for all three categories) • Minimum overall control efficiency is 85% (80% in Rule 1168) 	Further study the feasibility of lowering the VOC limits through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - VOC Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1171	VOC	Solvent Cleaning Operations (Amended 5/1/2009)	VOC limits for solvents are 25 g/l in general, and have a 100-800 g/l VOC for specific cleaning operations. In lieu of meeting the VOC limits, add-on control having 90% collection efficiency and 95% destruction efficiency or meeting 50 ppmv outlet concentration can be used. The rule however only requires $(70\%)(95\%) = 66.5\%$ overall control efficiency for graphic arts and screen printing applications	The U.S. EPA RACT published in September 2006 limit is 50 g/l or an overall control efficiency of 85%. The U.S. EPA is not recommending limits beyond 50 g/l; but also recommends states to adopt higher limits based on individual performance requirements of specific applications. Rule 1171 meets the U.S. EPA RACT.	Further study the feasibility of lowering the VOC limits and increasing the overall control efficiency requirement for control devices located at graphic arts facilities through: CTS-02 - Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants,
462	VOC	Organic Liquid Loading (Amended 5/14/99)	Limit in Rule 462 is 0.08 lbs per 1000 gallons of liquid loaded for Class A facility loading of 20,000 gallons or more. This limit is not applicable to small facilities (Class B and C).	Bay Area, Regulation 8, Rule 33 (Amended 4/15/09) has a limit of 0.04 lbs/1000 gallons of liquid loaded and requires stringent monitoring requirements	Further study to assess the feasibility of reducing the VOC limits through: MSC-01 – Application of All Feasible Measures Assessment

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations – VOC, PM Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1133, 1133.1, 1133.2	PM, VOC, NH ₃	Composting, Co-Composting, and Related Operations (Rule 1133, Adopted 1/10/2003; Rule 1133.1, Amended 7/8/2011; and Rule 1133.2, Adopted 1/10/2003)	Various performance standards. Air pollution control must have 80% control efficiency or greater. Existing operations must reduce up to 70% baseline VOC and ammonia emissions. Baseline emission factors are 1.78 lbs VOC/ton throughput and 2.93 lbs NH ₃ /ton throughput.	San Joaquin Rule 4565 – Biosolids, Animal Manure, and Poultry Litter Operations (Adopted 3/15/07) and Rule 4566 – Organic Material Composting Operations (Adopted 8/18/11) have various operational requirements for these operations as well as the operators who landfills, composts, or co-composts these materials. The applicability of Rules 4565/4566 is broader than the applicability of Rule 1133.3. In addition, Rules 4565/4566 include additional mitigation measures to control VOC from composting active piles (e.g. maintain minimum oxygen concentration of 5%, moisture content of 40%-70%, carbon to nitrogen ratio of 20-1). San Joaquin's rule does not address chipping & grinding as in Rule 1133.1.	Further study the feasibility of further control through: MCS-02 – Further Emission Reductions from Green Waste Processing
1133.3	VOC NH ₃	Emission Reductions from Greenwaste Composting Operations (Adopted 7/8/2011)	Include requirements for composting greenwaste, or greenwaste in combination of manure or foodwaste. Include various performance standards. Require air pollution control with efficiency of 80% or greater for operations greater than 5000 tons/year of foodwaste. For operations less than 5000 tons/year, require the composting piles to be covered, watered, and turned, or operated with measures that reduce at least 40% VOC emission and 20% NH ₃ emissions.		

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - PM Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1138	PM	Control Of Emissions From Restaurant Operations (Amended 11/14/97)	Require catalytic oxidizer for chain-driven charbroilers. Exemption provided for under-fired charbroilers and units cooking less than 875 lbs/week, but does not contain any specific limits.	<p>San Joaquin Valley Rule 4962 (Amended 9/17/09) requires the emissions from the restaurant charbroilers be controlled by catalytic oxidizer with minimum control efficiencies of 86% for VOC and 83% for PM10.</p> <p>Bay Area Regulation 6, Rule 2 (Adopted 12/5/07) sets limit for both chain-driven charbroilers at 1.3 lbs PM10 and 0.32 lbs ROG per 1000 lbs beef cooked) and under-fired charbroilers at 1 lbs PM10 per 1000 lbs beef cooked)</p> <p>Ventura Rule 74.25 (Adopted 10/12/04) which has equivalent requirements as in Rule 1138.</p>	<p>Further study the feasibility of regulating under-fired charbroilers through:</p> <p>BCM-03 – Emission Reductions from Under-Fired Charbroilers</p> <p>Note that the District has currently funded UCR - CE-CERT to investigate on the control technologies for under-fired charbroilers.</p>

TABLE VI-5 (continued)
 Evaluation of SCAQMD Rules and Regulations - PM Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
1155	PM	Particulate Matter Control Devices (Adopted 12/4/2009)	PM standards for PM control devices at 0.01 gr/dscf for existing large baghouses >7500 square feet. Good operational practices to reduce PM emissions	Bay Area, Draft Regulation 12, Rule 13 is scheduled for a Public Hearing in summer of 2012. This rule is to implement Bay Area Control Measure SSM1 in the 2010 Clean Air Plan. The rule is applicable to facilities that melt or process metals (foundries, forges, heat treatment of metals, and metal recycling operations). The focus is to promote the use of high efficiency filters (e.g. Gore-Tex bags). Proposed limits are: <ul style="list-style-type: none"> • 0.002 gr/dscf for flow rate of 25,000 dscf per min or higher; and • 0.004 gr/dscf for flow rates less than 25,000 dscf per min. 	Further study the feasibility of lowering the PM limits through: MCS-01 – Application of All Feasible Measures Assessment
444	All	Open Burning (Amended 11/7/2008)	Contains requirements and prohibitions for open burning to minimize emissions and smoke impacts to the public.	San Joaquin Valley Rule 4103 (Amended 4/15/2010) contains additional best management practices compared to Rule 444 such as best management practices to control open burning of weeds. Bay Area, Reg 5, sets requirements for open burning, and was to forbid recreational burning during curtailment periods.	Further study to include additional good management practices and a possibility of restricting burning during episodic curtailment periods through: BCM-02 – Further Reductions from Open Burning

TABLE VI-5 (continued)

Evaluation of SCAQMD Rules and Regulations - PM Rules

RULE	TYPE	RULE TITLE	CURRENT RULE REQUIREMENTS	OTHER DISTRICTS' 2007-2012 RULES	EVALUATION
404, 468, and 469	PM	<p>Rule 404 – Particulate Concentration (Amended 2/7/86)</p> <p>Rule 468 – Sulfur Recovery Units (Amended 10/8/76)</p> <p>Rule 469 – Sulfuric Acid Units (Amended 2/13/81)</p>	<p>PM limits vary from 0.01 gr/dscf to 0.19 gr/dscf in Rule 404 depending on exhaust flow rates.</p> <p>Sulfuric acid mist limit in Rule 469 is 0.3 lbs per ton of acid produced (approximately 0.1 gr/dscf)</p> <p>Rule 468 for sulfur recovery units does not contain any PM standard.</p>	<p>Bay Area, Regulation 6, Rule 1 (Adopted 12/5/07) contains the following limits:</p> <ul style="list-style-type: none"> • Generally, PM limit is 0.15 gr/dscf • Sulfuric Acid Manufacturing Plants: limit sulfur trioxide or sulfuric acid mist, or both, expressed as 100% sulfuric acid, to 0.04 gr/dscf • Sulfur Recovery Units: limit sulfur trioxide or sulfuric acid mist, or both, expressed as 100% sulfuric acid, to 0.08 gr/dscf 	<p>Further study the feasibility of reducing the emission limits through:</p> <p>MCS-01 – Application of All Feasible Measures Assessment</p>
445	PM	Wood Burning Devices (Adopted 3/7/08)	Contains requirements for wood burning devices to minimize emissions and smoke impacts to the public.	San Joaquin Valley Rule 4901 (Amended 10/16/2008) contains additional best management practices compared to Rule 445.	<p>Further study to include additional good management practices and the possibility of restricting burning during the episodic curtailment periods through:</p> <p>BCM-01 – Further Reductions from Residential Wood Burning Devices</p>

ATTACHMENT

CALIFORNIA AIR RESOURCES BOARD

Mobile Source RACM Analysis for the South Coast 2012 Draft Final AQMP

Given the significant emission reductions needed for attainment in California, ARB has adopted some of the most stringent control measures nationwide for on-road and off-road mobile sources and the fuels that power them. These measures target both new and in-use equipment. And while California first focused on cleaning up cars – new car emissions have been reduced by 99 percent – the scope of California’s program is vast. The State has implemented regulations and programs to reduce emissions from freight transport equipment, including heavy-duty trucks, ocean going vessels, locomotives, harbor craft, and cargo handling equipment. In addition, the State has standards for lawn and garden equipment, recreational vehicles and boats, and other newly manufactured off-road equipment. California has also adopted many measures that focus on achieving reductions from in-use mobile sources that include accelerated replacement of older equipment with newer, less polluting equipment; more stringent inspection and maintenance requirements; and operational requirements such as truck and bus idling restrictions and speed reduction requirements for ocean going vessels.

California has unique authority under Clean Air Act section 209 to adopt and implement new emission standards for many categories of on-road vehicles and engines, and new and in-use off-road vehicles and engines. Use of this authority is subject to U.S. EPA waiving the applicable federal standard upon their finding that the standards adopted by California are, in the aggregate, at least as stringent as the comparable federal standard.

To support the attainment plans submitted to U.S. EPA in 2007 for 8-hour ozone and PM_{2.5}, ARB undertook an extensive public consultation process to identify potential SIP measures. New measures developed by ARB as part of this 2007 State Strategy focused on cleaning up the in-use fleet, and increasing the stringency of emissions standards for a number of engine categories, fuels, and consumer products. These measures build on ARB’s already comprehensive program that addresses emissions from all types of mobile sources.

In 2011, U.S. EPA approved the State mobile source control program as being RACM in the context of the 2007 and 2008 South Coast and San Joaquin Valley PM_{2.5} plans (76 FR 69928 at 69933). In its proposed approval of the 2007 South Coast PM_{2.5} Attainment Plan, U.S. EPA recognized that the “State of California has been a leader in the development of some of the most stringent control measures nationwide for on-road and off-road mobile sources and the fuels that power them” (76 FR 41562 at 41570). In the 2007 State Strategy, ARB identified and committed

to propose new defined measures for the sources under its jurisdiction. Of these new measures, U.S. EPA noted that “many, if not most, of these measures are being proposed for adoption for the first time anywhere in the nation” (76 FR 41562 at 41570).

California’s comprehensive mobile source program continues to be RACM as it expands and further reduces emissions. The 2012 PM_{2.5} SIPs rely on additional regulations adopted since the State’s last major SIP revision in 2007. In January 2012, ARB adopted the Advanced Clean Cars program, which combines the control of smog-causing pollutants and greenhouse gas emissions into a single coordinated package of requirements for model years 2017 through 2025. The program was developed in tandem with the federal government over several years, including a joint fact-finding process with shared engineering and technical studies. Benefits from this new program are reflected in emission inventories used in the 2012 PM_{2.5} attainment plans.

DRAFT FINAL
2012 AQMP: APPENDIX VII

2012 1-HOUR OZONE
ATTAINMENT DEMONSTRATION

NOVEMBER 2012

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT GOVERNING BOARD

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SECTION 1

INTRODUCTION

PURPOSE AND SCOPE

The purpose of the 2012 1-hour ozone SIP revision is to provide an attainment demonstration to respond to the U.S. EPA's published "SIP call" proposal on September 19, 2012, finding the existing approved 1-hour ozone SIP substantially inadequate to provide for attainment of the revoked 1-hour ozone standard by the applicable attainment date of November 15, 2010. EPA's proposed SIP call was in turn a response to the decision of the Ninth Circuit Court of Appeals in *Association of Irrigated Residents, et al. v. United States Environmental Protection Agency, et al.*, 686 F. 2d 668 (Amended January 12, 2012).

The only new information presented in this Appendix is the 1-hour ozone attainment demonstration described in Section 5. The other sections of this appendix are largely summaries or replications of information presented in the main volume or other appendices of the Draft Final 2012 AQMP. This information is repeated here to provide context and completeness in support of the 1-hour ozone attainment demonstration.

BACKGROUND

In 1979, EPA established a primary health-based national ambient air quality standard (NAAQS) for ozone at 0.12 parts per million (ppm) averaged over a 1-hour period. See 44 Fed. Reg. 8220 (February 9, 1979). The Clean Air Act, as amended in 1990, classified areas that had not yet attained that standard, based on the severity of their ozone problem, ranging from Marginal to Extreme. Extreme Areas were provided the most time to attain the standard, until November 15, 2010. On November 6, 1991, EPA classified the South Coast Air Basin as "Extreme" nonattainment. As required under the 1990 amendments to the CAA, in 1994 the District and CARB submitted a 1-hour ozone "state implementation plan" (SIP) revision. In 1997, EPA approved the 1-hour ozone SIP for the South Coast. 62 Fed. Reg. 1150 (January 8, 1997). In 1997 and 1999, CARB submitted revisions to the 1994 South Coast 1-hour ozone SIP, which EPA approved in 2000. 65 Fed. Reg. 18903 (April 10, 2000).

In 2004, CARB submitted the 2003 revisions to the 1-hour ozone SIP which included updated emissions inventories showing higher mobile source emissions than had previously been projected and a lower "carrying capacity" than previously predicted, along with new commitments to achieve specified amounts of VOC and NOx reductions needed to attain by the applicable date. 73 Fed. Reg. 63408, 63410, 63416 (October 24, 2008).

NEW OZONE STANDARD

In the meantime, in 1997 EPA promulgated a new 8-hour ozone standard of 0.08 ppm to replace the 1-hour standard. 62 Fed. Reg. 38856 (July 18, 1997). EPA

promulgated rules to implement that standard. The “Phase 1” rule, promulgated on April 30, 2004 (69 Fed. Reg. 23951) established anti-backsliding requirements that would continue to remain in effect even though the existing 1-hour standard was revoked effective June 2005. See 40 CFR §51.905(a)(1) and §51.900(f). An Extreme area was required to have a fully-approved attainment demonstration in effect. (Id.).

EPA ACTION ON 2003 1-HOUR OZONE SIP REVISION

In 2008, the California Air Resources Board (CARB) withdrew key components of its emission reduction commitments in the 2003 South Coast 1-hour ozone SIP. See 73 Fed. Reg. at 63410-12. In 2009, EPA approved certain elements of the 2003 South Coast 1-Hour Ozone SIP but disapproved the attainment demonstration, largely because CARB’s 2008 withdrawal of emission reduction commitments rendered the plan insufficient to demonstrate attainment. 74 Fed. Reg. 10176, 10181 (March 10, 2009). EPA also concluded that this disapproval did not trigger a sanctions clock or a FIP (federal implementation plan) because the approved SIP already contained an approved 1-hour attainment demonstration meeting CAA requirements, which was all that was necessary regarding the revoked 1-hour standard. 74 Fed. Reg. at 10177, 10181.

LITIGATION OVER EPA’S 2009 ACTION

Several environmental and community groups petitioned for review of EPA’s action in the Ninth Circuit Court of Appeals. On February 2, 2011, the Ninth Circuit ruled in favor of petitioners. As pertinent here, the Court held that EPA must promulgate a FIP or issue a SIP call where EPA disapproves a new attainment demonstration unless the Agency determines that the SIP as approved remains adequate to demonstrate attainment of the relevant NAAQS. On May 5, 2011, EPA petitioned for panel rehearing, and amicus briefs were filed in support of EPA by the District, CARB, and SCAG. On January 27, 2012, the Ninth Circuit denied the petition for rehearing but modified its opinion to delete references to sanctions. The court remanded the case to EPA, stating that “EPA should have ordered California to submit a revised attainment plan for the South Coast after it disapproved the 2003 Attainment Plan”. *Association of Irrigated Residents v. EPA*, 632 F. 3d. 668, 681 (9th Cir., reprinted as amended January 27, 2012, further amended February 13, 2012.) The Court also issued a ruling regarding transportation control measures for ozone under CAA §182(d)(1)(A), which is discussed in Appendix VIII of the Draft Final 2012 AQMP.

EPA PROPOSED SIP CALL

On September 19, 2012, EPA published a proposed SIP call under Section 110(k)(5) of the CAA, based on a determination that the applicable implementation plan (here, the 1997/99 plan approved April 10, 2000) “is substantially inadequate to attain or

maintain the relevant NAAQS...” The proposed SIP call is based on evidence submitted in the form of the 2003 South Coast 1-hour Ozone Plan that the 1997/1999 plan was substantially inadequate to provide for attainment. That plan noted that “this revision points to the urgent need for additional emission reductions (beyond those incorporated in the 1997-99 Plan) to offset increased emissions estimates from mobile sources...” (See 2003 Air Quality Management Plan, pages ES-1 and ES-2.) However, many of those additional emission reduction commitments were withdrawn by CARB in 2008. EPA also notes that on December 30, 2011, EPA determined that the South Coast Air Basin had failed to attain the 1-hour ozone standard by the applicable date of November 15, 2010, thus triggering a fee program or equivalent under CAA §185. 76 Fed. Reg. 82133 (December 30, 2011). This determination provides further support for the present SIP call because it establishes that the approved SIP did not in fact lead to attainment for the 1-hour ozone NAAQS by the applicable date.

As a result, the state must submit an attainment demonstration for the South Coast for the 1-hour ozone standard showing attainment as expeditiously as practicable but no later than five years from the effective date of the final SIP call, unless the State can demonstrate a need for a later date, not to exceed 10 years beyond the effective date of the SIP call, considering the severity of the remaining nonattainment problem and the availability and feasibility of pollution control measures. CAA §172(a)(2).

EPA’s proposed SIP call would give the State up to one year after the effective date of the SIP call to submit the revised attainment demonstration. The District intends to demonstrate that a period of the full 10 years allowed by law is needed to attain the 1-hour standard. The District plans to submit the updated 1-hour ozone attainment demonstration as part of the 2012 AQMP.

SECTION 2

OZONE AIR QUALITY IN THE BASIN

INTRODUCTION

The U.S EPA has designated the Basin as extreme nonattainment for the revoked federal 1-hour ozone standard of 0.12 ppm. The Basin had the highest number of days exceeding the federal 1-hour ozone standard of any urban area nationwide in 2011. The following information on 1-hour ozone air quality is taken from Chapter 2 and Appendix II of the Draft Final 2012 AQMP, and is repeated here for completeness. The 1-hour ozone air quality data is used to support the 1-hour ozone attainment demonstration.

OZONE HEALTH EFFECTS

The adverse effects of ozone air pollution exposure on health have been studied for many years, as is documented by a significant body of peer-reviewed scientific research, including studies conducted in southern California which shows that even relatively low concentrations of ozone can significantly reduce lung function in normal healthy people.

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered the most susceptible sub-groups to ozone effects. Short-term exposures to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences and daily hospital admission rates. An increased risk for asthma has been found in children who participate in multiple sports and live in high ozone communities.

Ozone exposure under exercising conditions is known to increase the severity of the above-mentioned observed responses. Animal studies suggest that exposures to a combination of pollutants which include ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

OZONE EPISODES

While the 1-hour ozone episode levels and the related health warnings still exist, they have been largely superseded by the more protective health warnings associated with the current 8-hour ozone NAAQS. The 1-hour O₃ episode warning levels include the state Health Advisory (0.15 ppm), Stage 1 (0.20 ppm), Stage 2 (0.35 ppm) and Stage 3 (0.50 ppm). Only the lowest of these 1-hour episode thresholds, the state Health Advisory, was exceeded in 2011. The last 1-hour O₃ Stage 1 episode occurred in

2003. The last Stage 2 episode occurred in 1988, and the last Stage 3 episode occurred in 1974.

1-HOUR OZONE LEVELS IN THE SOUTH COAST AIR BASIN

In 2011, the District regularly monitored ozone concentrations at 29 locations in the Basin and the Coachella Valley portion of the SSAB. All areas monitored measured 1-hour average ozone levels well below the Stage 1 episode level, but the maximum concentrations measured in the Basin exceeded the health advisory level in San Bernardino County. The maximum ozone concentrations in the Los Angeles, Riverside and San Bernardino Counties all exceeded the former 1-hour federal standard in 2011; Orange County and the Coachella Valley did not exceed that standard. Maximum ozone concentrations in the SSAB areas monitored by the District were lower than in the Basin and were below the health advisory level. Table VII-2-1 shows maximum 1-hour ozone concentrations by air basin and county.

TABLE VII-2-1

2011 Maximum 1-Hour Average Ozone Concentrations by Basin and County

BASIN/COUNTY	MAXIMUM 1-HR AVERAGE (PPM)	PERCENT OF FEDERAL STANDARD (0.12 PPM)	AREA
South Coast Air Basin			
Los Angeles	0.144	115	Santa Clarita Valley
Orange	0.095	76	North Orange County
Riverside	0.133	106	Lake Elsinore
San Bernardino	0.160	128	Central San Bernardino Mountains
Salton Sea Air Basin			
Riverside	0.124	99	Coachella Valley

The number of days exceeding the former federal 1-hour ozone standard in the Basin varies widely by area (Figure VII-2-1). The former 1-hour federal standard was not exceeded in areas along or near the coast in the Counties of Los Angeles and Orange, due in large part to the prevailing sea breeze which transports emissions inland before high ozone concentrations are reached. The standard was exceeded most frequently in the Central San Bernardino Mountains. Ozone exceedances also extended through San Bernardino and Riverside County valleys in the eastern Basin, as well as the northeast and northwest portions of Los Angeles County in the foothill

and valley areas. The Central San Bernardino Mountains area recorded the greatest number of exceedances of the former 1-hour federal standard (8 days). The Coachella Valley did not exceed the former 1-hour ozone standard in 2011.

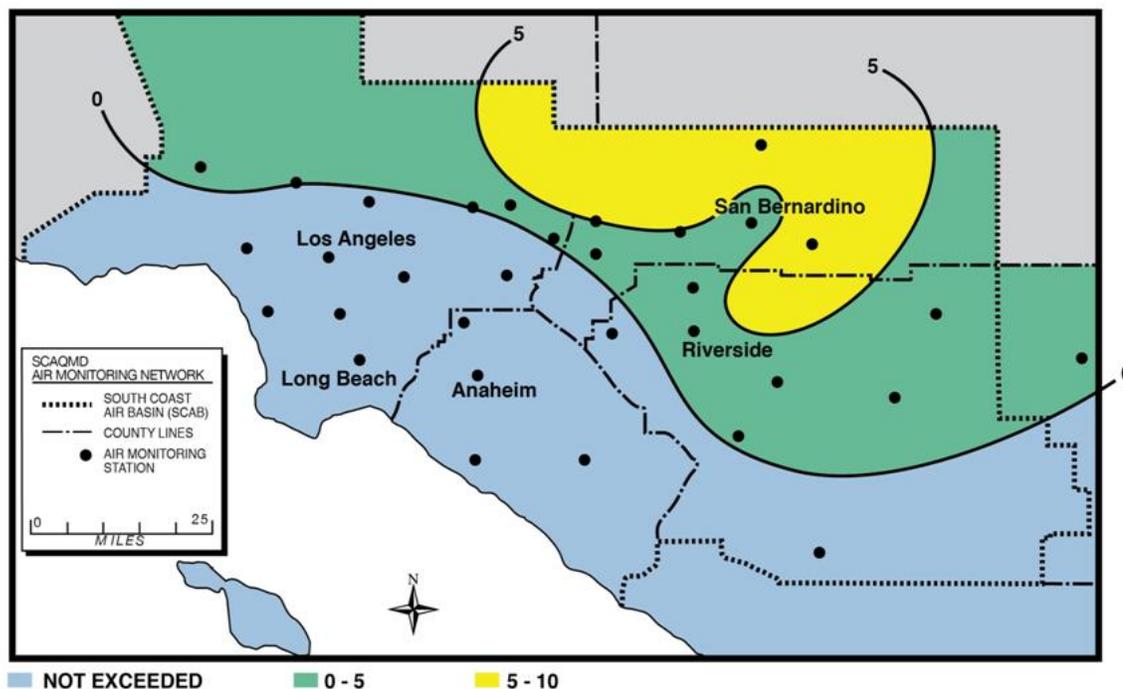


FIGURE VII-2-1

Number of Days in 2011 Exceeding the 1979 1-Hour Federal Ozone Standard
(1-hour average $O_3 > 0.12$ ppm)

AMBIENT AIR QUALITY STANDARDS

Federal Ozone Standards

The federal government has adopted ambient air quality standards, which define the concentration below which long-term or short-term exposure to a pollutant is not expected to cause adverse effects to public health and welfare. The current and revoked federal ozone ambient air quality standards and the effect of ozone on health are summarized in Table VII-2-2. As noted above, the federal 1-hour ozone standard was revoked in favor of the 8-hour ozone standard in 1997.

TABLE VII-2-2

Federal Ozone Ambient Air Quality Standards and Health Effects

Federal Standard (NAAQS)	Relevant Health and Welfare Effects[#]
Concentration, Averaging Time	
0.075 ppm, 8-Hour (2008) 0.08 ppm 8-Hour (1997) 0.12 ppm, 1-hour (1979, revoked in 1997)	(a) Pulmonary function decrements and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; (f) Property damage

ppm – parts per million by volume

Federal standards follow the design value form of the NAAQS

[#] More detailed health effect information can be found in the 2012 AQMP Appendix I or the U.S. EPA NAAQS documentation at <http://www.epa.gov/ttn/naaqs/>

Design Values and NAAQS Attainment Status

In 2011, 1- hour ozone levels exceeded federal standard concentration levels at one or more of the routine monitoring stations in the Basin. As shown in Table VII-2-1, maximum 1-hour ozone concentrations of 0.160 ppm recorded in the Central San Bernardino Mountains area were 128 percent of the former 1-hour federal standard. However, an exceedance of the concentration level does not necessarily mean a violation of the NAAQS, given that the form of the standard must be considered. Air quality statistics can be presented in terms of maximum concentrations measured at monitoring stations or in air basins, as well as the number of days exceeding state or federal standards.

Attainment of the NAAQS is measured with three-year design values that take into account the form of the federal standards and multi-year averages. For 1-hour O₃, the form of the standard is the 4th highest measured 1-hour average concentration at each station over a three-year period. The overall design value for an air basin is the highest design value of all the stations in that basin. Figure VII-2-2 shows the trends in the 1-hour ozone design values and the annual Basin days exceeding the former 1-hour ozone NAAQS over the past two decades.

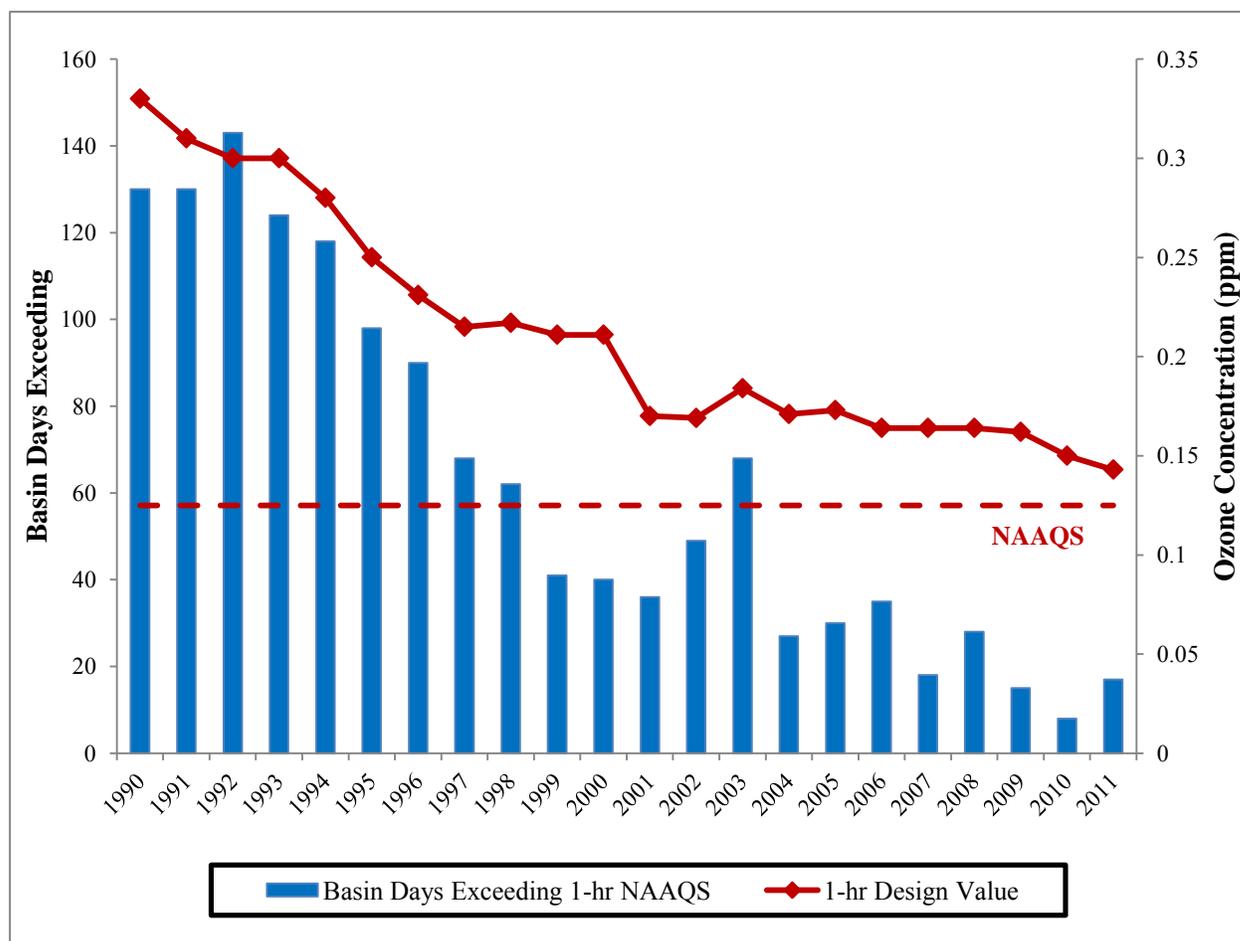


FIGURE VII-2-2

South Coast Air Basin Trends in Ozone Design Value and Annual Basin Days Exceeding the Former 1-hour NAAQS

Air Quality Compared to Other U.S. Metropolitan Areas

Despite significant improvement, the Basin still has some of the worst air quality in the nation in terms of the number of days per year exceeding the revoked federal 1-hour ozone standard. Figures VII-2-3 and VII-2-4 show maximum 1-hour ozone concentrations in 2011 for the Basin compared to other urban areas in the U.S. and California, respectively. It is important to note that maximum pollutant concentrations do not necessarily indicate potential NAAQS violations and subsequent nonattainment designations, as the design values that are used for attainment status are based on the form of the standard.

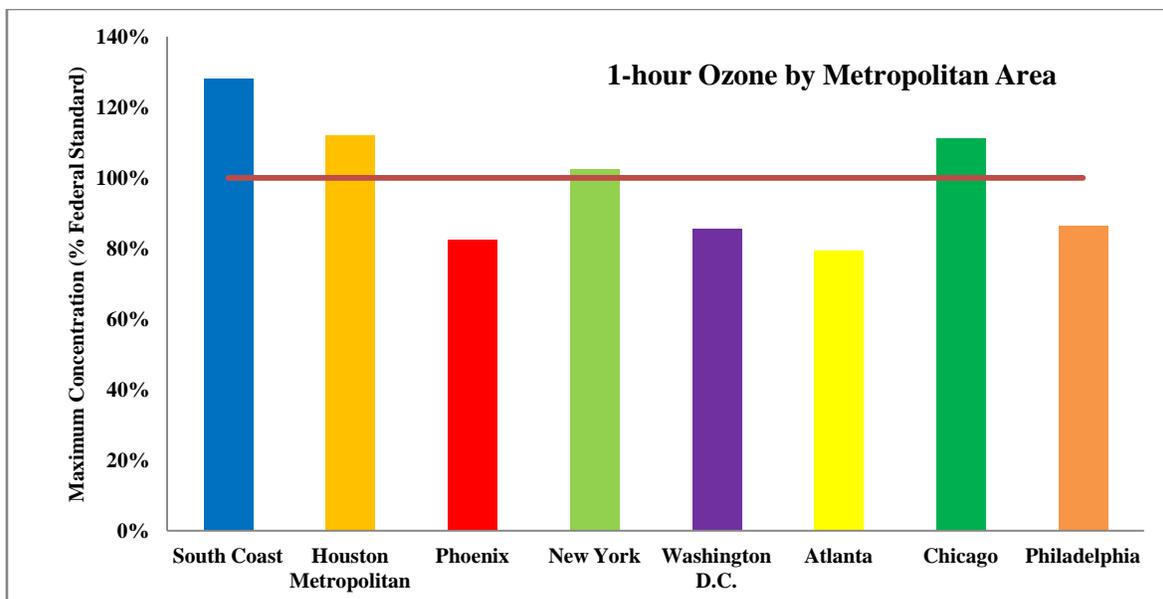


FIGURE VII-2-3

2011 South Coast Air Basin 1-hour Ozone Air Quality Compared to Other U.S. Metropolitan Areas (Maximum Pollutant Concentrations as Percentage of the Federal Standard)

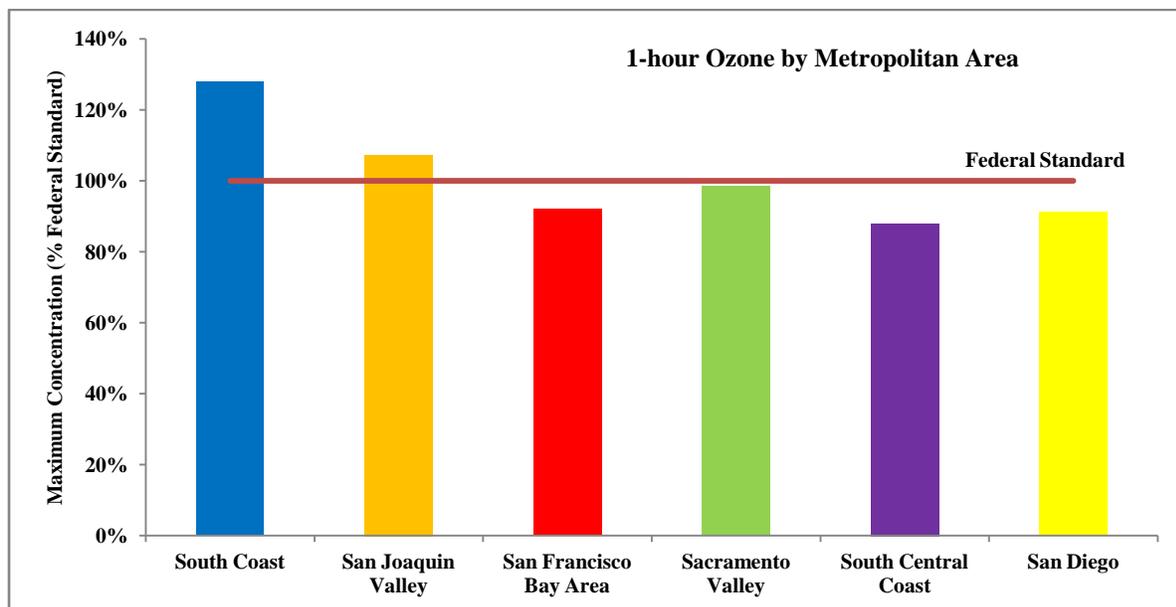


FIGURE VII-2-4

2011 South Coast Air Basin 1-hour Ozone Air Quality Compared to Other California Metropolitan Areas (Maximum Pollutant Concentrations as Percentage of the Federal Standard)

SECTION 3

BASE YEAR AND FUTURE YEAR EMISSIONS

INTRODUCTION

The 1-hour ozone attainment demonstration is based on the latest emissions inventories for the base year (2008) and projected future years developed as part of the Draft Final 2012 AQMP. For specific details and descriptions of inventory development methodology, please refer to Chapter 3 and Appendix III of the Draft Final 2012 AQMP.

BASE YEAR AND FUTURE YEAR EMISSIONS

Summaries of the summer planning inventory (ozone precursors) emissions that occurred in the Basin in the 2008 base year and that are projected for the 2022 attainment year are provided in the Tables VII-3-1 and VII-3-2. Note that the 2008 Base year inventory is identical to that in the Draft Final 2012 AQMP (Chapter 3, Appendix III). Table VII-3-3 provides the complete 2022 summer planning emissions inventory by major source category in the South Coast Air Basin.

TABLE VII-3-1

Summary of Emissions By Major Source Category: **2008** Base Year
 Summer Planning Inventory (tpd¹) *

SOURCE CATEGORY	SUMMER OZONE PRECURSORS	
	VOC	NO _x
STATIONARY SOURCES		
Fuel Combustion	14	41
Waste Disposal	12	2
Cleaning and Surface Coatings	43	0
Petroleum Production and Marketing	41	0
Industrial Processes	19	0
Solvent Evaporation		
Consumer Products	99	0
Architectural Coatings	25	0
Others	2	0
Misc. Processes	9	20
RECLAIM Sources	0	24
Total Stationary Sources	264	87
MOBILE SOURCES		
On-Road Vehicles	213	426
Off-Road Vehicles	162	208
Total Mobile Sources	375	634
TOTAL	639	721

¹ Values are rounded to nearest integer.

* Values represent inventory developed for Draft Final 2012 AQMP.

TABLE VII-3-2

Summary of Emissions By Major Source Category: **2022** Baseline
 Summer Planning Inventory (tpd¹)

SOURCE CATEGORY	SUMMER OZONE PRECURSORS	
	VOC	NO _x
STATIONARY SOURCES		
Fuel Combustion	14	27
Waste Disposal	14	2
Cleaning and Surface Coatings	55	0
Petroleum Production and Marketing	36	0
Industrial Processes	17	0
Solvent Evaporation		
Consumer Products	90	0
Architectural Coatings	19	0
Others	2	0
Misc. Processes	9	13
RECLAIM Sources	0	27
Total Stationary Sources	258	70
MOBILE SOURCES		
On-Road Vehicles	73	135
Off-Road Vehicles	109	136
Total Mobile Sources	182	271
TOTAL	440	341

¹ Values are rounded to nearest integer.

TABLE VII-3-3

2022 Baseline Summer Planning Emissions by Source Category
in the South Coast Air Basin (tpd)

CODE	SOURCE CATEGORY	VOC	NOx	CO
10	Electric Utilities	0.88	0.23	8.51
20	Cogeneration	0.05	0.01	0.41
30	Oil and Gas Production (Combustion)	0.12	0.81	0.64
40	Petroleum Refining (Combustion)	1.28	0.00	5.06
50	Manufacturing and Industrial	6.80	13.91	21.21
52	Food and Agricultural Processing	0.07	0.08	1.28
60	Service and Commercial	4.45	9.25	17.37
99	Other (Fuel Combustion)	0.31	3.09	2.90
Total Fuel Combustion		13.96	27.38	57.37
Waste Disposal				
110	Sewage Treatment	0.05	0.01	0.02
120	Landfills	9.72	0.66	0.62
130	Incinerators	0.09	1.05	0.47
140	Soil Remediation	0.01	0.01	0.00
199	Other (Waste Disposal)	3.97	0.00	0.01
Total Waste Disposal		13.84	1.73	1.12
Cleaning and Surface Coatings				
210	Laundrying	0.17	0.00	0.00
220	Degreasing	14.94	0.00	0.00
230	Coatings and Related Process Solvents	31.91	0.01	0.02
240	Printing	2.23	0.00	0.00
250	Sealants & Adhesives	5.24	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.74	0.03	0.04
Total Cleaning and Surface Coatings		55.23	0.04	0.06
Petroleum Production and Marketing				
310	Oil and Gas Production	1.57	0.10	0.08
320	Petroleum Refining	4.11	0.19	4.98
330	Petroleum Marketing	30.68	0.01	0.00
399	Other (Petroleum Production and Marketing)	0.02	0.01	0.00
Total Petroleum Production and Marketing		36.38	0.31	5.06
Industrial Processes				
410	Chemical	9.80	0.00	0.21
420	Food and Agriculture	1.69	0.00	0.00
430	Mineral Processes	0.47	0.03	1.05
440	Metal Processes	0.18	0.04	0.25
450	Wood and Paper	0.19	0.00	0.00
460	Glass and Related Products	0.02	0.00	0.00
470	Electronics	0.00	0.00	0.00
499	Other (Industrial Processes)	5.07	0.04	0.30
Total Industrial Processes		17.42	0.11	1.81
Solvent Evaporation				
510	Consumer Products	90.32	0.00	0.00
520	Architectural Coatings and Related Solvents	19.39	0.00	0.00
530	Pesticides/Fertilizers	1.00	0.00	0.00
540	Asphalt Paving/Roofing	1.49	0.00	0.00
Total Solvent Evaporation		112.20	0.00	0.00

TABLE VII-3-3 (Continued)2022 Baseline Summer Planning Emissions by Source Category
in the South Coast Air Basin (tpd)

CODE	SOURCE CATEGORY	VOC	NOx	CO
Miscellaneous Processes				
610	Residential Fuel Combustion	2.29	11.55	15.00
620	Farming Operations	2.19	0.00	0.00
630	Construction and Demolition	0.00	0.00	0.00
640	Paved Road Dust	0.00	0.00	0.00
645	Unpaved Road and Travel Dust	0.00	0.00	0.00
650	Fugitive Windblown Dust	0.00	0.00	0.00
660	Fires	0.24	0.08	3.02
670	Waste Burning and Disposal	2.64	1.24	41.28
690	Cooking	1.98	0.00	0.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00
	RECLAIM		27.23	
Total Miscellaneous Processes		9.34	40.10	59.30
On-Road Motor Vehicles				
710	Light Duty Passenger	19.63	13.36	199.00
722	Light Duty Trucks 1 (T1)	8.21	4.68	60.43
723	Light Duty Trucks 2 (T2)	11.27	8.33	100.70
724	Medium Duty Trucks (T3)	15.31	12.83	128.76
732	Light Heavy Duty Gas Trucks 1 (T4)	4.90	11.36	34.30
733	Light Heavy Duty Gas Trucks 2 (T5)	0.41	1.03	2.39
734	Medium Heavy Duty Gas Trucks (T6)	0.63	1.28	7.37
736	Heavy Heavy Duty Gas Trucks (HHD)	0.10	0.88	7.15
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.40	10.47	3.28
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.14	3.43	1.36
744	Medium Heavy Duty Diesel Trucks (T6)	0.49	6.55	2.33
746	Heavy Heavy Duty Diesel Trucks (HHD)	3.42	43.03	19.80
750	Motorcycles (MCY)	6.59	2.04	49.47
760	Heavy Duty Diesel Urban Buses	0.43	10.48	2.08
762	Heavy Duty Gas Urban Buses	0.30	0.62	3.05
771	School Buses - Gas	0.05	0.09	0.75
772	School Buses - Diesel	0.03	1.77	0.13
777	Other Buses - Gas	0.29	0.53	2.82
779	All Other Buses - Diesel	0.10	1.06	0.52
780	Motor Homes	0.07	1.00	1.07
Total On-Road Motor Vehicles		72.77	134.82	626.73
Other Mobile Sources				
810	Aircraft	4.41	15.44	41.75
820	Trains	1.32	22.60	8.40
833	Ocean Going Vessels	3.09	32.93	5.48
835	Commercial Harbor Craft	1.05	9.30	7.31
840	Recreational Boats	35.18	8.22	159.73
850	Off-Road Recreational Vehicles	9.04	0.17	8.58
860	Commercial/Industrial Mobile Equipment	46.80	44.64	668.44
870	Farm Equipment	0.56	2.80	8.07
890	Fuel Storage and Handling	7.35	0.00	0.00
Total Other Mobile Sources		108.80	136.10	907.76

TABLE VII-3-3 (Concluded)

2022 Baseline Summer Planning Emissions by Source Category
in South Coast Air Basin (tpd)

CODE	SOURCE CATEGORY	VOC	NOx	CO
	Total Stationary and Area Sources	258.34	63.78	209.89
	Total On-Road Vehicles	72.77	134.82	622.73
	Total Other Mobile	108.80	136.10	707.37
	Total	439.97	340.57	1659.23

[CO inventory changed from the previous annual average emissions inventory to the appropriate summer planning emissions inventory]

SECTION 4

1-HOUR OZONE SIP CONTROL STRATEGY

INTRODUCTION

This section sets forth the proposed control strategy and implementation schedule to demonstrate attainment with the former 1-hour ozone NAAQS by 2022. Given the approximate alignment of the attainment dates, the control strategy for the 1-hour ozone standard is identical to the control strategy for the 1997 federal 8-hour ozone standard. The control strategy for the 8-hour ozone standard is described in the 2007 AQMP with updates proposed in the current Draft Final 2012 AQMP. The following sections discuss the proposed control measures for attainment of the 1-hour ozone national ambient air quality standards (NAAQS) that include:

- 2007 8-hour ozone SIP control measures carried forward for the 1-hour ozone attainment demonstration; and
- Proposed 8-hour ozone control measures from the Draft Final 2012 AQMP (taken from Chapter 4 of the Draft Final 2012 AQMP and repeated in this Section for completeness.)

2007 SIP CONTROL MEASURES CARRIED FORWARD FOR THE 1-HOUR OZONE ATTAINMENT DEMONSTRATION

As provided in Table 1-3 of the Draft Final 2012 AQMP, the emission reduction commitments provided in the 2007 SIP have been met with the implementation of the majority of control measures identified in the 2007 SIP. For the 1-hour ozone attainment demonstration, the proposed control strategy is the continued implementation of the 2007 SIP control strategy for the 8-hour ozone attainment demonstration. As such, seven mobile source control measures (four on-road mobile source measures and three off-road measures) are proposed to be carried forward. The seven mobile source control measures are listed in Table VII-4-1 along with the specific reference pages from the 2007 SIP. The emission reductions associated with each measure are also provided in Table VII-4-1. These are not new measures and the emissions reductions commitments for these measures have already been approved in U.S. EPA's approval of the 2007 8-hour ozone SIP.

TABLE VII-4-1

List of 2007 SIP Mobile Source Control Measures Proposed to be Included in the 1-Hour Ozone Attainment Demonstration

2007 SIP Mobile Source Control Measures		
Title	2007 SIP Reference (released April 26, 2007)	Reduction (tpd) by 2022
Smog Check Improvements (BAR) - Annual Inspection of Older Vehicles	Pgs. 90 & 94	1.6 [VOC] 3.9 [NOx]
Smog Check Improvements (BAR) - Annual Inspection of High Mileage Vehicles	Pgs. 90 & 94	0.3 [VOC] 0.8 [NOx]
Smog Check for Motorcycles	Pgs. 91 & 95	1.2 [VOC] 0.4 [NOx]
Expanded Passenger Vehicle Retirement Program	Pgs. 91 & 100-101	0.4 [VOC] 0.3 [NOx]
Cleaner Main Ship Engines and Fuel - Main Engines	Pgs. 91 & 107-110	6.2 [NOx]
Accelerated Intro. of Cleaner Line-Haul Locomotives	Pgs. 92 & 113-114	12.1 [NOx]
Off-Road Recreational Vehicle Expanded Emission Standards	Pgs. 92 & 123-124	3.6 [VOC]
Total		7.1 [VOC] 23.7 [NOx]

DRAFT FINAL 2012 AQMP PROPOSED 8-HOUR OZONE CONTROL MEASURES FOR THE 1-HOUR OZONE ATTAINMENT DEMONSTRATION

As stated above, the control strategy for attainment of the 1997 federal 8-hour ozone standard is identical to the control strategy being proposed for attainment of the former 1-hour ozone standard. The proposed 8-hour ozone control measures identified in the Draft Final 2012 AQMP are repeated below for completeness, and are taken directly from Chapter 4 of the Draft Final 2012 AQMP. A more detailed description of each control measure is provided in Appendices IV-A and IV-B.

The Draft Final 2012 AQMP is proposing a control strategy that includes emission reductions from both stationary and mobile sources. The proposed stationary source control measures in the Draft Final 2012 AQMP are based on implementation of all

feasible control measures through the application of available cleaner technologies, best management practices, incentive programs, as well as development and implementation of zero- and near-zero technologies and control methods. The stationary source control measures presented in the Plan are proposed to further reduce emissions from both point sources (permitted facilities) and area sources (generally small and non-permitted in addition to smaller permitted sources with emissions less than the reporting threshold in the District's Annual Emissions Reporting Program). The basic principles followed in developing the District's stationary source control measures call for initiating programs or rule making activities for VOC and further NO_x control strategies aiming at maximum reductions by the applicable timeframe to further implement the federal ozone standards.

The mobile source strategy includes actions seeking further emission reductions from both on-road and off-road mobile sources, such as accelerated penetration of zero- and near-zero emission vehicles and early retirement of older vehicles. In addition, the mobile source strategy includes research and development of advanced control technologies from various mobile sources. Some of the proposed actions need to be implemented by several agencies that currently have the statutory authority to implement such measures.

For each control measure, the District will seek to achieve the maximum reduction potential that is technically feasible and cost-effective. Significant challenges remain in meeting the federal ozone standards. Ozone reduction strategies and programs need to be continued and accelerated to ensure that the air basin will meet the 1-hour ozone standards by 2022. Proposed measures to reduce ozone include emission reductions from coatings, consumer products, and RECLAIM facilities as well as early transitions to cleaner technologies.

To ultimately achieve the ozone ambient air quality standards, significant additional emissions reductions will be necessary from a variety of sources, including those primarily under the jurisdiction of CARB (e.g., on-road motor vehicles, off-road equipment, and consumer products) and U.S. EPA (e.g., aircraft, ships, trains, and pre-empted off-road equipment). Without an adequate and fair-share level of reductions from all sources, the emission reduction burden would unfairly be shifted to sources that have already been doing their part for clean air. Moreover, the District will continue to use its available regulatory authority to further control mobile source emissions where federal or State actions do not meet regional needs.

Overall, the Draft Final 2012 AQMP includes 16 stationary and 17 mobile source measures for ozone. The following two sections discuss the control measures as outlined below:

- SCAG’s Regional Transportation Strategy and Transportation Control Measures (see Appendix IV-C for detailed descriptions of the regional transportation strategy and control measures)
- Proposed Ozone measures (see Appendix IV-A for detailed descriptions of the District’s stationary source control measures and Appendix IV-B for detailed descriptions of the District’s mobile source measures)

For District’s SIP emission reduction commitments, overall emission reductions and implementation, please refer to Chapter 4 of The Draft Final 2012 AQMP.

SCAG’s REGIONAL TRANSPORTATION STRATEGY AND TRANSPORTATION CONTROL MEASURES

The Southern California Association of Governments (SCAG), the Metropolitan Planning Organization (MPO) for Southern California, is mandated to comply with federal and state transportation and air quality regulations. Federal transportation law authorizes federal funding for highway, highway safety, transit, and other surface transportation programs. The federal CAA establishes air quality standards and planning requirements for various criteria air pollutants.

Transportation conformity is required under CAA Section 176(c) to ensure that federally supported highway and transit project activities “conform to” the purpose of the SIP. Conformity currently applies to areas that are designated non-attainment, and those re-designated to attainment after 1990 (“maintenance areas” with plans developed under CAA Section 175[A]) for the specific transportation-related criteria pollutants. Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS. The transportation conformity regulation is found in 40 CFR Part 93.

Pursuant to California Health and Safety Code section 40460, SCAG has the responsibility of preparing and approving the portions of the AQMP relating to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. The District combines its portion of the Plan with those prepared by SCAG.

The transportation strategy and transportation control measures (TCMs), included as part of the Draft Final 2012 AQMP and SIP for the South Coast Air Basin, are based on SCAG’s adopted 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and 2011 Federal Transportation Improvement Program (FTIP). This was developed in consultation with federal, state and local transportation and air quality planning agencies and other stakeholders.

The Regional Transportation Strategy and Transportation Control Measures portion of the 2012 AQMP/SIP consists of the following three related sections.

Section I. Linking Regional Transportation Planning to Air Quality Planning

As required by federal and state laws, SCAG is responsible for ensuring that the regional transportation plan, program, and projects are supportive of the goals and objectives of AQMPs/SIPs. SCAG is also required to develop demographic projections and a regional transportation strategy and control measures for the AQMPs/SIPs.

The RTP/SCS, updated every four years, is a long-range regional transportation plan that provides a vision for transportation investments throughout the SCAG Region. The 2012-2035 RTP/SCS also integrates land use and transportation planning to achieve regional greenhouse gas (GHG) reduction targets set by ARB pursuant to SB375.

SCAG also develops the biennial FTIP. The FTIP is a multimodal program of capital improvement projects to be implemented over a six year period. The FTIP implements the programs and projects in the RTP/SCS.

Section II. Regional Transportation Strategy and Transportation Control Measures

The SCAG Region faces daunting mobility, air quality, and transportation funding challenges. Under the guidance of the goals and objectives adopted by SCAG's Regional Council, the 2012-2035 RTP/SCS was developed to provide a blueprint to integrate land use and transportation strategies to help achieve a coordinated and balanced regional transportation system. The 2012-2035 RTP/SCS represents the culmination of more than two years of work involving dozens of public agencies, 191 cities, hundreds of local, county, regional and state officials, the business community, environmental groups, as well as various nonprofit organizations. The 2012-2035 RTP/SCS was formally adopted by the SCAG Regional Council on April 4, 2012. The 2012-2035 RTP/SCS contains a host of improvements to every component of the regional multimodal transportation system including:

- Active transportation (non-motorized transportation, such as biking and walking)
- Transportation demand management (TDM)
- Transportation system management (TSM)
- Transit
- Passenger and high-speed rail
- Goods movement
- Aviation and airport ground access

- Highways
- Arterials
- Operations and maintenance

Included within these transportation system improvements are TCM projects that reduce vehicle use or change traffic flow or congestion conditions. TCMs include the following three main categories of transportation improvement projects and programs:

- High occupancy vehicle (HOV) measures,
- Transit and systems management measures, and
- Information-based transportation strategies.

New to this cycle of the RTP is the inclusion of the SCS as required by SB 375. The primary goal of the SCS is to provide a vision for future growth in Southern California that will decrease per capita GHG emissions from passenger vehicles. However, the strategies contained in the 2012-2035 RTP/SCS will produce benefits for the region far beyond simply reducing GHG emissions. The SCS integrates the transportation network and related strategies with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. The regional vision of the SCS maximizes current voluntary local efforts that support the goals of SB 375. The SCS focuses the majority of new housing and job growth in high-quality transit areas and other opportunity areas on existing main streets, in downtowns, and commercial corridors, resulting in an improved jobs-housing balance and more opportunity for transit-oriented development. In addition, SCAG is a strategic partner in a regional effort to accelerate fleet conversion to near-zero and zero-emission transportation technologies, including planning for the expansion of alternative-fuel infrastructure to accommodate the anticipated increase in alternative fueled vehicles.

Section III. Reasonably Available Control Measure (RACM) Analysis for Transportation Control Measures

As required by the CAA, a RACM analysis must be included as part of the overall control strategy in the AQMP/SIP to ensure that all potential control measures are evaluated for implementation and that justification is provided for those measures that are not implemented. Appendix IV-C contains the RACM TCM component for the Draft Final 2012 AQMP control strategy. In accordance with U.S. EPA procedures, this analysis considers TCMs in the 2012-2035 RTP/SCS, measures identified by the CAA, and relevant measures adopted in other non-attainment areas of the country. Based on this comprehensive review, it is determined that the TCMs being implemented in the Basin are inclusive of all TCM RACM. None of the candidate measures reviewed and determined to be infeasible meets the criteria for RACM implementation.

The emission benefits associated with the RTP/SCS are reflected in the 2012 AQMP projected emissions. For a detailed discussion of the regional transportation strategy, refer to Appendix IV-C: Regional Transportation Strategy and Control Measures.

PROPOSED OZONE CONTROL MEASURES

The 2007 State Implementation Plan for the 8-hour ozone NAAQS contains commitments for emission reductions that rely on advancement of technologies, as authorized under Section 182(e)(5) of the federal Clean Air Act. These measures, which have come to be known as the “black box,” account for a substantial portion of the NO_x emission reductions needed to attain the federal ozone standards – over 200 tons/day. Attaining these standards will require substantial reductions in emissions of NO_x well beyond reductions resulting from current rules, programs, and commercially available technologies. The 8-hour ozone measures included in the Draft Final 2012 AQMP as an implementation update for the 8-hour ozone plan are also being submitted as the control strategy for the 1-hour ozone attainment demonstration.

Mobile sources emit over 80 percent of regional NO_x and therefore must be the largest part of the solution. On-road truck categories are projected to comprise the single largest contributor to regional NO_x. Other equipment involved in goods movement, such as marine vessels, locomotives and aircraft, are also substantial NO_x sources.

Since NO_x emissions from most significant sources are already controlled by over 90%, attainment of the ozone standards will require broad deployment of zero and near zero¹ emission technologies. On-land transportation sources such as trucks, locomotives and cargo handling equipment have technological potential to achieve zero- and near-zero emission levels. Current and potential technologies include hybrid-electric, hybrid with all electric range, battery-electric, and hydrogen fuel cell on-road vehicle technologies. New types of hybrids could also serve long-term needs while providing additional fuel diversity. These could include, for example, natural gas-electric hybrid technologies for on-road and other applications, particularly if coupled with improved after-treatment technologies. Equipment powered solely by alternative fuels such as natural gas may also play a long-term role in some applications, if those applications are found to pose technological barriers to

¹ The term “near zero emissions” refers to emissions approaching zero and will be delineated for individual source categories through the process of developing and implementing the Air Quality Management Plan/State Implementation Plan. Based on current analyses, on-land transportation sources will need to achieve zero emissions where possible, and otherwise will need to be substantially below adopted emission standards — including standards with future effective dates. Near zero emissions technologies can help meet this need, particularly if they support a path toward zero emissions (e.g. electric/fossil fuel hybrids with all- electric range).

achieving zero or near-zero emissions. Even in such applications, however, substantial additional emission reductions will be needed through development of new, advanced after-treatment technologies. In addition, alternative fuels will likely play a transitional near-term role. Alternative fuels such as natural gas have historically helped the region make progress toward attaining air quality standards, and -- while not achieving zero or near-zero NO_x emission levels -- they are generally cleaner than conventional fuels. Given the region's need to attain air quality standards in a few short years, alternative fueled engines will continue to play a role. Finally, we emphasize that air quality regulatory agencies have traditionally set policies and requirements that are performance based and technology and fuel neutral -- a policy that the District intends to continue. In short, all technologies and fuels should be able to compete on an equal footing to meet environmental needs.

While there has been much progress in developing and deploying transportation technologies with zero- and near-zero emissions (particularly for light-duty vehicles and passenger transit), additional technology development, demonstration and commercialization will be required prior to broad deployment in freight and other applications. This section describes a path to evaluate, develop, demonstrate, fund and deploy such technologies for land-based transportation sources. It also proposes near-term measures to accelerate fleet turnover to the lowest emission units, and require deployment of zero-emission technologies where most feasible.

The District staff believes that a combination of regulatory actions and public funding is the most effective means of achieving these emission reductions. Voluntary incentive programs such as the Carl Moyer Program can help to accelerate turnover to the cleanest commercially available equipment. A majority of the on-road and off-road measures proposed are based on existing funding programs implemented by the District or the California Air Resources Board. However, several of the existing funding programs will sunset in the 2014 – 2015 timeframe. Continued funding beyond 2015 will be needed to reduce the emissions associated with the black box. Developing, demonstrating and deploying new technologies will require public/private partnerships and, in some cases, regulatory actions.

The measures described in this section are a relatively small down payment on the total emission reductions needed to attain the 8-hour and 1-hour NAAQS for ozone. The measures proposed in this section and further discussed in Appendix IV-A and IV-B are feasible steps that must commence in the near-term to establish a path toward a broader transition to the technologies that will be needed to attain federal air quality standards. Between now and 2015, the additional measures needed to attain the ozone NAAQS will be fleshed out in greater detail as required under the federal Clean Air Act as part of the next AQMP revision. Given the magnitude of needed emission reductions, and the time remaining until attainment deadlines, it is

important that progress and momentum to identify, develop, and deploy needed technologies be sustained and accelerated.

The District staff recognizes these are very difficult policy choices the Basin is facing. Transitioning over the next 10 to 20 years to cleaner transportation technologies will involve major costs and effects on the economy. However, adopting sufficient plan measures to attain the ozone air quality standards by the applicable dates is required by federal law and therefore, failing to do so is not an acceptable public policy. Such failure would also risk adverse health consequences highlighted in recent health studies, not to mention the potential adverse economic impacts on the region due to potential federal sanctions. The following sections summarize the ozone measures. More detailed discussions are provided in Appendix IV-A and IV-B.

Clean Air Act Section 182(e)(5)

The District's 1-hour ozone SIP submittal relies in part on the ability to use advanced technology measures as authorized under Clean Air Act § 182(e)(5). EPA has already approved the reliance on § 182(e)(5) in the South Coast 8-hour ozone plan. 77 Fed. Reg. 12674, 12693 (Mar. 1, 2012). The present 1-hour ozone SIP submittal includes a number of ozone measures which reduce reliance on § 182(e)(5). Under the plain language of the Clean Air Act, the District may rely on § 182(e)(5) measures, as long as the reductions to be obtained from them are not needed for the first ten years after November 15, 1990. 42 U.S.C. § 7511a(e)(5)(B). The District's initial 1-hour ozone plan complied with this requirement, and EPA approved the § 182(e)(5) measures in 1995. 62 Fed. Reg. 1150, 1178 (Jan. 8, 1997), citing 60 Fed. Reg. 43379 (Aug. 21, 1995).

Since the present 1-hour SIP submission does not rely on § 182(e)(5) for emission reductions prior to November 15, 2000, it complies with § 182(e)(5). There is no textual or policy basis for concluding that § 182(e)(5) is not available. Because the present SIP submission addresses 1-hour ozone, there is no textual basis for deviation from the plain language of the Clean Air Act: Section 182(e)(5) is available for reductions needed after November 15, 2000. Nor is there any policy basis to do so. The Clean Air Act clearly authorizes EPA to grant up to 10 years to attain the standard. Therefore, under § 182(e)(5), contingency measures would need to be in place which attain the needed reductions by three years before the attainment deadline. This provides adequate assurance that the § 182(e)(5) measure, or the contingency measures, will be implemented in time to attain the 1-hour ozone standard.

The fact that EPA has interpreted § 182(e)(5) somewhat differently in the context of the 8-hour ozone standard is irrelevant here. EPA was required to deviate from the literal language of the Clean Air Act in the case of the 8-hour ozone standard because

it did not literally apply. However, the U.S. Supreme Court held that EPA may not simply ignore Subpart 2 (relative to 1-hour ozone) as to do so produced unreasonable results (e.g., Los Angeles needing to attain the more stringent 8-hour standard *at least as quickly as* it attained the less stringent 1-hour standard.) *Whitman v. American Trucking*. 531 U.S. 457, 486 (2001). As a result, EPA was required to “interpret” Subpart 2. In contrast, when considering the 1-hour ozone standard, the plain language of § 182(e)(5) applies, leaving no room for interpretation. Certainly nothing in § 179(d), dealing with plan submittals on failure to attain, remotely suggests that the plain language of § 182(e)(5) is no longer applicable. That being the case, EPA is not authorized to “interpret away” the provisions of § 182(e)(5). Even if the language were ambiguous, there is no policy reason to interpret it to prohibit reliance on § 182(e)(5).

As noted above, EPA has already approved the District’s reliance on § 182(e)(5) for the 8-hour standard. It would make no sense to prohibit reliance on § 182(e)(5) for a standard *that has been revoked*. The District has already established in the 2007 AQMP and the 2012 1-hour ozone submittal that it is impossible to attain the standards without § 182(e)(5) measures, and all reasonable or feasibly available measures have been identified and scheduled for adoption. To say the District must attain a *revoked* standard, which EPA repeatedly described as not necessary to protect public health, (69 Fed. Reg. 23951, 23971, 23976 (April 30, 2004)), without reliance on measures undisputedly available for the existing, *more* health protective 8-hour standard, produces absurd results. Any such conclusion must be rejected. See e.g., *Logan v. United States*, 522 U.S. 23, 26 (2007); *United States v. X-Citement Video, Inc.*, 513 U.S. 64, 69 (1994).

Finally, EPA must consider the fact that for 8 years, all parties believed an attainment demonstration for the 1-hour standard *was not required*.

EPA stated in revoking the standard: “attainment of the 1-hour NAAQS would no longer be a goal....” 69 Fed. Reg. 23951 23970 (Apr. 30, 2004). EPA explained that it is not appropriate to “mandate states to perform an attainment demonstration for a NAAQS that is not needed to protect public health.” 69 Fed. Reg. 23951, 23976. In disapproving the AQMD’s 2003 attainment demonstration because it relied on withdrawn CARB measures, EPA explained that states no longer needed to attain the 1-hour standard. Responding to a comment that EPA must assure a viable path to attainment, EPA said: “...EPA’s responsibility at the present time is to ensure that states adopt viable paths toward attainment of the 8-hour NAAQS, rather than the revoked 1-hour ozone NAAQS....” 74 Fed. Reg. 10176, 10179 (Mar. 10, 2009).

Only when the AIR case became final was this position rejected. (Jan. 27, 2012.) *Ass’n of Irrigated Residents v. EPA*, 686 F.3d 668 (9th Cir. 2012). That being the case, it would be unreasonable to say the District must now attain that standard without relying on future technology advancements, as authorized by § 182(e)(5).

Had it been clear when EPA revoked the standard that the District would still have to attain it, CARB may not have withdrawn the 2003 AQMP measures. The region may have been closer to attainment of the 1-hour standard by now. Absent the ability to rely on § 182(e)(5), District would have no choice but to seek to amend the Clean Air Act to eliminate such obligations relative to revoked standards.

Contingency Measures

CAA section 182(e)(5) authorizes EPA to “approve provisions of an implementation plan for an Extreme Area which anticipate development of new control techniques or improvement of existing control techniques, and an attainment demonstration based on such provisions,” if the State meets certain criteria. Such plan provisions may include enforceable commitments to submit, at a later date, contingency measures for failure to attain under CAA section 172(c)(9), in addition to the contingency measures to be implemented if the anticipated technologies approved under section 182(e)(5) do not achieve planned reductions. These contingency measures must be submitted no later than three years before proposed implementation of the plan provisions and approved or disapproved by EPA in accordance with CAA section 110.

CARB and the District have satisfied the criteria in section 182(e)(5) for reliance on the new technology provision as part of the attainment demonstration in the South Coast 8-Hour ozone SIP and in this 1-hour ozone SIP. Based on the State’s anticipated development of these new technologies, CARB has submitted an enforceable commitment to submit, no later than 2020, additional contingency measures under CAA section 182(e)(5) that meet the requirements for attainment contingency measures in CAA section 172(c)(9), in addition to contingency measures to be implemented if the anticipated long-term measures approved pursuant to section 182(e)(5) do not achieve planned reductions. CARB Resolution 11–22, July 2011 and see letter dated November 18, 2011 from James Goldstene, CARB, to Jared Blumenfeld, EPA. Similarly, when submitting this 1-hour ozone demonstration to EPA, CARB is expected to submit enforceable commitments no later than 2019 (no later than three years prior to the attainment year of 2022), additional contingency measures under CAA section 182(e)(5) that meet the requirements for attainment contingency measures in CAA section 172(c)(9), in addition to contingency measures to be implemented if the anticipated long-term measures approved pursuant to section 182(e)(5) do not achieve planned reductions need for attainment of the 1-hour ozone standard. **RACT/RACM**

The CAA, Section 172(c)(1), sets the overall framework for the Reasonably Available Control Measures (RACM) analysis. The CAA requires the nonattainment air districts to:

“provide for the implementation of all reasonably available control measures as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology (RACT)) and shall provide for attainment of the national primary ambient air quality standards.”

The U.S. EPA recommends that nonattainment air districts first identify the emission reduction programs that have already been implemented at the federal level, and by other states and local air districts. Next, the U.S. EPA recommends the air districts to examine additional RACM/RACTs adopted for other nonattainment areas to attain the ambient air quality standards as expeditiously as practicable. The RACT/RACM analysis for the 1-hour ozone attainment demonstration can be found in Attachment 2 of this Appendix.

Proposed Ozone Stationary Source Measures

The proposed stationary source implementation measures are designed to assist in the attainment of the 8-hour ozone standard. These measures will also assist in attaining the 1-hour standard. The measures target a number of source categories including Coatings and Solvents (CTS), Combustion Sources (CMB), Petroleum Operations and Fugitive VOC Emissions (FUG), Multiple Component Sources (MCS), Incentive Programs (INC) and Educational Programs (EDU). There are 16 stationary source measures with the majority anticipated to be adopted in the next 2 – 3 years and implemented after 2015. These measures include two incentive programs and one educational measure.

There are two measures that were continued from the 2007 AQMP. The remaining 14 control measures are new ideas or revised previous measures (e.g., further reductions from an existing rule).

Table VII-4-2 provides a list of the District’s ozone measures for stationary sources along with the anticipated adoption date, implementation date and emission reduction.

TABLE VII-4-2

List of the District's Adoption/Implementation Dates and Estimated Emission Reductions from Ozone Measures for Stationary Sources

NUMBER	TITLE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
CTS-01	Further VOC Reductions from Architectural Coatings (R1113) [VOC]	2015 - 2016	2018 – 2020	2-4
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]	2013 - 2016		1-2
CTS-03	Further VOC Reductions from Mold Release Products [VOC]	2014	2016	0.8 – 2
CTS-04	Further VOC Reductions from Consumer Products [VOC]	2013 - 2015	2018	N/A ^a
CMB-01	Further NO _x Reductions from RECLAIM [NO _x]	2015	2017 – 2020	3-5 ^b
CMB-02	NO _x Reductions from Biogas Flares [NO _x]	2015	Beginning 2017	Pending ^c
CMB-03	Reductions from Commercial Space Heating [NO _x]	Phase I – 2014 (Tech Assessment) Phase II - 2016	Beginning 2018	0.18 by 2023 0.6 (total)
FUG-01	VOC Reductions from Vacuum Trucks [VOC]	2014	2016	1 ^d
FUG-02	Emission Reduction from LPG Transfer and Dispensing [VOC] – Phase II	2015	2017	1-2
FUG-03	Further Reductions from Fugitive VOC Emissions [VOC]	2015 -2016	2017-2018	1-2
MCS-01	Application of All Feasible Measures Assessment [All Pollutants]	Ongoing	Ongoing	TBD ^e
MCS-02	Further Emission Reductions from Greenwaste Processing (Chipping and Grinding Operations not associated with composting) [VOC]	2015	2016	1 ^d
MCS-03 (formerly MCS-06)	Improved Start-up, Shutdown and Turnaround Procedures [All Pollutants]	Phase I – 2012 (Tech Assessment) Phase II - TBD	Phase I – 2013 (Tech Assessment) Phase II – TBD	TBD ^e

TABLE VII-4-2 (concluded)

List of the District’s Adoption/Implementation Dates and Estimated Emission Reductions from Ozone Measures for Stationary Sources

NUMBER	TITLE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx]	2014	Within 12 months after funding availability	TBD ^e
INC-02	Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies [All Pollutants]	2014-2015	Beginning 2015	N/A ^a
EDU-01 (formerly MCS-02, MCS-03)	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]	Ongoing	Ongoing	N/A ^a

- a. N/A are reductions that cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs) or if the measure is designed to ensure reductions that have been assumed to occur will in fact occur.
- b. CMB-01 will target a cumulative 3-5 TPD of NOx emission reductions, including any CMB-01 PM2.5 contingency measure emission reductions.
- c. Pending because emission reductions will be provided prior to the Final Draft.
- d. Reductions submitted in SIP once emission inventories are included in the SIP.
- e. TBD are reductions to be determined once the inventory and control approach are identified.

The following text provides a brief description of the proposed ozone stationary source control measures and is taken directly from Chapter 4 of the Draft Final 2012 AQMP.

Coatings and Solvents

The category of coatings and solvents is primarily targeted at reducing VOC emissions from these VOC-containing products. This category includes four proposed control measures that are based on additional emission reductions from architectural coatings; miscellaneous coatings, solvents, adhesives and lubricants; mold release products; and consumer products with low vapor pressure used by commercial and institutional facilities regulated by CARB.

CTS-01 – FURTHER VOC REDUCTIONS FROM ARCHITECTURAL COATINGS: The District adopted Rule 1113 – Architectural Coatings, in 1977 and it has since undergone numerous amendments. This proposed control measure seeks to reduce the VOC emissions from large volume coating categories such as flat, non-flat and primer, sealer, undercoaters (PSU) and from phasing out the currently exempt use of high-VOC architectural coatings sold in one liter containers or smaller. Additional emission reductions could be achieved from the application of

architectural coatings by use of application techniques with greater transfer efficiency. Such transfer efficiency improvements could be achieved through the use of a laser paint targeting system, which has been shown to improve transfer efficiency on average by 30% over equipment not using a targeting system, depending on the size, shape and configuration of the substrate. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule.

CTS-02 – FURTHER VOC REDUCTIONS FROM MISCELLANEOUS COATINGS, ADHESIVES, SOLVENTS, AND LUBRICANTS: This control measure seeks VOC emission reductions by focusing on select coating, adhesive, solvent and lubricant categories by further limiting the allowable VOC content in formulations. Examples of the categories to be considered include but are not limited to, coatings used in certain aerospace applications; adhesives used in a variety of sealing applications; solvents for graffiti abatement activities; and lubricants used as metalworking fluids to reduce heat and friction to prolong life of the tool, improve product quality and carry away debris. Reductions would be achieved by lowering the VOC content of the coatings, adhesives and lubricants. For solvents, reductions could be achieved with the use of alternative low-VOC products or non-VOC product/equipment at industrial facilities. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule.

CTS-03 – FURTHER VOC REDUCTION FROM MOLD RELEASE PRODUCTS: Metal, fiberglass, composite and plastic products are often manufactured using molds which form the product into a particular configuration. Mold release agents are used to ensure that the parts, as they are made, can be released easily and quickly from the molds. These agents often contain VOC solvent carriers and may also contain toxic components like toluene and xylene. Mold release products are also used for concrete stamping operations to keep the mold from adhering to the fresh concrete. Residential and commercial concrete stamping is a rapidly growing industry, and overall VOC emissions are estimated to be significant. This control measure seeks to reduce emissions from mold release products on metal, fiberglass, composite and plastic products, as well as concrete stamping operations, by requiring the use of low-VOC mold release products.

CTS-04 - FURTHER VOC REDUCTION FROM CONSUMER PRODUCTS: This measure seeks to revise the exemption for low vapor pressure solvents in CARB's consumer products regulation, which exempts low vapor pressure volatile organic compounds (LVP-VOC) from counting towards the compliance obligation for consumer product VOC limits. Recent testing conducted by the District on institutional cleaners found that traditionally formulated consumer products may contain significant amounts of LVP-VOC solvents. In some cases, such as certain multipurpose solvents, the products were 100 percent LVP-VOC solvents. Further

testing indicated that many of the LVP-VOC solvents evaporate nearly as quickly as the traditional solvents they were meant to replace and have Maximum Incremental Reactivity (MIR) values well above the threshold considered to be non-reactive, currently based on ethane. Therefore, an evaluation of the continued need for use of LVP-VOC solvents in certain categories is warranted.

Combustion Sources

This category includes three proposed measures for stationary combustion equipment. There is one control measure that further reduces NO_x emissions from RECLAIM facilities. A second proposed measure seeks a reduction from biogas flares, and a third proposed control measure seeks to reduce NO_x emissions from commercial space heaters.

CMB-01 – FURTHER NO_x REDUCTIONS FROM RECLAIM: This proposed control measure will seek cumulative reductions of 3-5 tpd of NO_x allocations by the year 2020, via implementation of periodic BARCT evaluation as required under the state law. If triggered, the PM_{2.5} contingency measure provision of CMB-01 would achieve 2-3 tpd of NO_x allocation reductions in 2015, with the remaining 1-2 tpd implemented in the 2017-2020 timeframe. If the contingency measure is not triggered, then the entire 3-5 tpd of NO_x reductions will be implemented in 2017-2020 timeframe. The control measure has the ability to produce co-benefits in the reduction of PM_{2.5} and ozone.

CMB-02 – NO_x REDUCTIONS FROM BIOGAS FLARES: There are no source-specific rules regulating NO_x emissions from biogas flares. Flare NO_x emissions are regulated through new source review and BACT. This control measure proposes that, consistent with the all feasible measures measure, older biogas flares be gradually replaced with flares that meet current BACT. Strategies that minimize flaring and associated emissions can also be considered as alternative control options.

CMB-03 – REDUCTIONS FROM COMMERCIAL SPACE HEATING: This control measure applies to natural gas-fired commercial space heaters used for comfort heating. District Rule 1111 - NO_x Emissions from Natural Gas-Fired Fan Type Central Furnaces, regulates space heaters with input rates less than 175,000 Btu/hr. This measure proposes to establish a NO_x emission limit for new space heaters for commercial applications, which can be achieved through the use of low-NO_x burners or other technologies.

Petroleum Operations and Fugitive VOC Emissions

This category pertains primarily to operations and materials associated with the petroleum, chemical, and other industries. Within this category, there is one proposed control measure targeting fugitive VOC emissions with improved leak

detection and repair. Other proposed measures include reductions from vacuum truck venting, and propane transfer and dispensing.

FUG-01 – VOC REDUCTIONS FROM VACUUM TRUCKS: This control measure seeks to reduce emissions from the venting of vacuum trucks. Emissions from such operations can be further reduced through the utilization of control technologies, including but not limited to, carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers and liquid scrubbers. Additionally, implementation of a leak detection and repair (LDAR) program may further reduce fugitive emissions.

FUG-02 - EMISSION REDUCTION FROM LPG TRANSFER AND DISPENSING: The District recently adopted Rule 1177 - Liquefied Petroleum Gas (LPG) Transfer and Dispensing (June 2012). The rule requires use of low-emission fixed liquid level gauges or equivalent alternatives during filling of LPG-containing tanks and cylinders, use of low-emission connectors, routine leak checks and repairs of LPG transfer and dispensing equipment. The purpose of this control measure is to reduce fugitive VOC emissions associated with the transfer and dispensing of LPG by expanding rule applicability to include LPG transfer and dispensing at currently exempted facilities such as refineries, marine terminals, natural gas processing plants and pipeline transfer stations, as well as facilities that conduct fill-by-weight techniques.

FUG-03 – FURTHER REDUCTIONS FROM FUGITIVE VOC EMISSIONS: This control measure seeks to broaden the applicability of improved leak detection and repair (LDAR) programs to remove additional fugitive VOC emissions. Areas for further study may include, but are not limited to, Rule 1142 - Marine Vessel Tank Operations, and wastewater separators. This control measure would explore the opportunity of incorporating a recently developed advanced optical gas imaging technology to detect leaks (Smart LDAR) to more easily identify and repair leaks in a manner that is less time consuming and labor intensive. Additionally, vapor recovery systems are currently required to be 95% control efficient. In an effort to further reduce emissions from these operations, this control measure would explore opportunities and the feasibility of further improving the collection/control efficiency of existing control systems resulting in additional VOC reductions.

Multiple Component Sources

There are a total of three stationary source measures proposed in this category. The first measure seeks reductions of all feasible measures after such an assessment is made. Another measure seeks further emission reductions from greenwaste processing, which is chipping and grinding not associated with composting. The third measure seeks to minimize emissions during equipment startup and shutdown

and to reduce emissions by applying the state requirement of all feasible control measures.

MCS-01 – APPLICATION OF ALL FEASIBLE MEASURES ASSESSMENT:

This control measure is to address the state law requirement for all feasible measures for ozone. Existing rules and regulations for pollutants such as VOC, NO_x, SO_x and PM reflect current best available retrofit control technology (BARCT). However, BARCT continually evolves as new technology becomes available that is feasible and cost-effective. Through this proposed control measure, the District would commit to the adoption and implementation of the new retrofit control technology standards. Finally, staff will review actions taken by other air districts for applicability in our region.

MCS-02 - FURTHER EMISSION REDUCTIONS FROM GREENWASTE PROCESSING (CHIPPING AND GRINDING NOT ASSOCIATED WITH COMPOSTING):

Chipped or ground greenwaste and/or wood waste has a potential to emit VOCs when being stockpiled or land-applied for various purposes. Chipping and grinding is a process to mechanically reduce the size of greenwaste and wood waste. The District rules currently establish best management practices (BMPs) for greenwaste composting and related operations under Rule 1133.1 – Chipping and Grinding Activities, and Rule 1133.3 – Greenwaste Composting Operations. During rule development, stakeholders raised the need to develop a holistic approach to identifying and accounting for emissions from all greenwaste streams and reducing potential emissions from greenwaste material handling operations at chipping and grinding facilities and other related facilities, and not just the ones associated with composting operations. This control measure would seek to establish additional Best Management Practices (BMPs) for handling processed or unprocessed greenwaste material by greenwaste processors, haulers, and operators who inappropriately stockpile material or directly apply the material to land. The implementation of the control measure would be in two phases. First, the existing database would be reviewed to refine the greenwaste material inventory, and second, staff would potentially develop a rule to incorporate technically feasible and cost-effective BMPs or controls.

MCS-03 - IMPROVED START-UP, SHUTDOWN AND TURNAROUND PROCEDURES:

This proposed control measure seeks to reduce emissions during equipment startup, shutdown, and turnaround. Opportunities for further reducing emissions from start-up, shut-down and turnaround activities potentially may exist at refineries as well as other industries. Examples of possible areas for improvement may include best management practices, better engineering and equipment design, diverting or eliminating process streams that are vented to flares, and installation of redundant equipment to increase operational reliability. This measure will be

implemented through a two-phase effort to first collect/refine emissions and related data and then, based on the data collected, assess viable controls, if appropriate.

Incentive Programs

There are two proposed incentive programs within this category. The first program seeks to provide incentives for new and existing facilities to install and operate clean, more-efficient combustion equipment beyond what is currently required. The second program provides expedited permitting processing and development of applicable CEQA documentation if a company manufactures zero or near-zero emission technology.

INC-01: ECONOMIC INCENTIVE PROGRAMS TO ADOPT ZERO AND NEAR-ZERO TECHNOLOGIES: The primary objective of this measure is to develop programs that promote and encourage adoption and installation of cleaner, more-efficient combustion equipment with a focus on zero and near-zero technologies, such as boilers, water heaters and commercial space heating, through economic incentive programs, subject to the availability of public funding. Incentives may include grants for new purchases of equipment as well as loan programs in areas where long-term cost savings from increased efficiency are achieved.

INC-02: EXPEDITED PERMITTING AND CEQA PREPARATION FACILITATING THE MANUFACTURING OF ZERO AND NEAR-ZERO TECHNOLOGIES: This proposed measure is aimed at providing incentives for companies to manufacture zero and near-zero emission technologies locally, thus populating the market, potentially lowering the purchase cost, and increasing demand. With availability and usage of such technologies, air quality benefits will be achieved. This proposed measure focuses on two elements: 1) process the required air permit(s) in an expedited procedure; and 2) prioritize the preparation, circulation and certification of the applicable CEQA document. A stakeholder process will be initiated to design the program and collaborate with other existing District or local programs.

Educational Programs

There is one proposed educational program within this category.

EDU-01: FURTHER CRITERIA POLLUTANT REDUCTIONS FROM EDUCATION, OUTREACH AND INCENTIVES: This proposed control measure seeks to provide educational outreach and incentives for consumers to contribute to clean air efforts. Examples include the usage of energy efficient products, new lighting technology, “super compliant” coatings, tree planting, and the use of lighter colored roofing and paving materials which reduce energy usage by lowering the

ambient temperature. In addition, this proposed measure intends to increase the effectiveness of energy conservation programs through public education and awareness as to the environmental effects and benefits from conservation. Finally, educational and incentive tools to be used include comparison of energy usage and efficiency, social media, public/private partnerships.

Proposed Ozone Mobile Source Measures

Depending on the mobile source sector and the proposed control approach, District staff analyzed the need to accelerate the penetration of cleaner engine technologies. The proposed ozone measures are based upon a variety of control technologies that are commercially available and/or technologically feasible to implement in the next several years. The focus of these measures includes accelerated retrofits or replacement of existing vehicles or equipment, acceleration of vehicle turnover through voluntary vehicle retirement programs, and greater use of cleaner fuels in the near-term. In the longer-term, in order to attain the federal ozone ambient air quality standard, there is a need to increase the penetration and deployment of near-zero and zero-emission vehicles such as plug-in hybrids, battery-electric, and fuel cells, even further use of cleaner fuels (either alternative fuels or new formulations of gasoline and diesel fuels), and additional emission reductions from locomotive and aircraft engines.

Ten measures are proposed as actions to reduce mobile source emissions and seven additional measures are proposed to accelerate the development and deployment of near-zero and zero-emission technologies for goods movement related sources and off-road equipment. The measures call for greater emission reductions through accelerated turnover of older vehicles to the cleanest vehicles currently available and increased penetration of commercially-available near-zero and zero-emission technologies through existing incentives programs.

Drawing upon the recent draft “Vision for Clean Air: A Framework for Air Quality and Climate Planning” (or Vision), a document produced jointly between the District staff, the California Air Resources Board, and the San Joaquin Valley Air Pollution Control District, seven measures are proposed to further the development of zero- and near-zero emission technologies for on-road and off-road mobile sources. The draft Vision document discusses the need to accelerate deployment of the cleanest combustion technologies and zero- and near-zero emission technologies earlier to meet federal ambient air quality standards and long-term climate goals. The document provides actions for several key transportation sectors and off-road equipment.

Partial-zero and zero-emission technologies are rapidly being introduced into the on-road light- and medium-duty vehicle categories in large part due to the CARB Low Emission Vehicle (LEV) and the Zero-Emission Vehicle (ZEV) Regulations. In

addition, next-generation electric hybrid trucks are being commercialized for light-heavy and medium-heavy heavy-duty on-road vehicles. However, additional research and demonstration are needed to commercialize zero- and near-zero emission technologies for the heavier heavy-duty vehicles (with gross vehicle weight ratings greater than 26,000 lbs.).

For many of the off-road mobile sources such as locomotives, cargo handling equipment, commercial harbor craft, and off-road equipment, some form of “all zero-emission range” is feasible to demonstrate and implement beginning in the latter part of this decade. For other sectors such as marine vessels and aircraft, the development of cleaner combustion technologies beyond existing emission standards will be needed. The Vision document provides a broad discussion of the potential zero- and near-zero technologies or cleaner combustion technologies that could be demonstrated in the near-term. The potential technologies are discussed further in each of the “ADV” measures. A summary of the 17 measures is provided in Table VII-4-4.

TABLE VII-4-4

List of Adoption/Implementation Dates and Estimated Emission Reductions from Ozone Measures for Mobile Sources

ON-ROAD MOBILE SOURCES					
Number	Title	Adoption	Implementation Period	Implementing Agency	Reduction (tpd) by 2023
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Vehicles [VOC, NOx, PM]	N/A	Ongoing	CARB, SCAQMD	TBD ^a
ONRD-02	Accelerated Retirement of Older Light- and Medium-Duty Vehicles [VOC, NOx, PM]	N/A	Ongoing	CARB, Bureau of Automotive Repair, SCAQMD	TBD ^a
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Light-Heavy- and Medium-Heavy-Duty Vehicles [NOx, PM]	N/A	Ongoing	CARB, SCAQMD	TBD ^a
ONRD-04	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]	2014	2015-2023	CARB, SCAQMD	TBD ^{a,b}
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NOx, PM]	2014	2015-2020	CARB	0.75 [NOx] 0.025 [PM2.5]

TABLE VII-4-4 (continued)
 List of Adoption/Implementation Dates and Estimated Emission Reductions
 from Ozone Measures for Mobile Sources

OFF-ROAD MOBILE SOURCES					
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment [NO _x]	N/A	Ongoing	SCAQMD	7.5
OFFRD-02	Further Emission Reductions from Freight Locomotives [NO _x , PM]	Ongoing	2015 – 2023	CARB, U.S. EPA, San Pedro Bay Ports	12.7 [NO _x] ^c 0.32 [PM2.5] ^c
OFFRD-03	Further Emission Reductions from Passenger Locomotives [NO _x , PM]	Ongoing	Beginning 2014-2023	SoCal Regional Rail Authority	3.0 [NO _x] ^d 0.06 [PM2.5] ^d
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels While at Berth [NO _x , SO _x , PM]	2014	Ongoing	San Pedro Bay Ports, CARB, SCAQMD	TBD ^a
OFFRD-05	Emission Reductions from Ocean-Going Marine Vessels [NO _x]	N/A	Ongoing	San Pedro Bay Ports, CARB, U.S. EPA	TBD ^a

TABLE VII-4-4 (concluded)

List of Adoption/Implementation Dates and Estimated Emission Reductions from Ozone Measures for Mobile Sources

ADVANCED CONTROL TECHNOLOGIES					
Number	Title	Adoption	Implementation Period	Implementing Agency	Reduction (tpd) by 2023
ADV-01	Actions for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles [NOx]	N/A	2012 and on	SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA	TBD ^e
ADV-02	Actions for the Deployment of Zero- and Near-Zero Emission Locomotives [NOx]	N/A	2012 and on	SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA	TBD ^e
ADV-03	Actions for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment [NOx]	N/A	2012 and on	SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA	TBD ^e
ADV-04	Actions for the Deployment of Cleaner Commercial Harborcraft [NOx]	N/A	2012 and on	SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA	TBD ^e
ADV-05	Actions for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx]	N/A	2012 and on	SCAQMD, San Pedro Bay Ports, CARB, U.S. EPA	TBD ^e
ADV-06	Actions for the Deployment of Cleaner Off-Road Equipment [NOx]	N/A	2012 and on	SCAQMD, CARB, U.S. EPA	TBD ^e
ADV-07	Actions for the Deployment of Cleaner Aircraft Engines [NOx]	N/A	2012 and on	SCAQMD, CARB, FAA, U.S. EPA	TBD ^e

- a. Emission reductions will be determined after projects are identified and implemented.
- b. Reductions achieved locally in Mira Loma region.
- c. Emission reductions provided are updated from the 2007 SIP values reflecting a revised future year base emission levels. The reductions are not included in the 2012 AQMP SIP submittal
- d. Submitted into the SIP once technically feasible and cost effective options are confirmed.
- e. Emission reduction will be quantified after projects are demonstrated.

On-Road Mobile Source Measures

Five on-road mobile source control measures are proposed. The first two measures focus on on-road light- and medium-duty vehicles operating in the South Coast Air

Basin. By 2023, it is estimated that about 12 million vehicles will be operating in the Basin. The first measure would implement programs to accelerate the penetration and deployment of partial zero-emission and zero-emission vehicles in the light- and medium-duty vehicles categories. The second control measure would seek to accelerate retirement of older gasoline and diesel powered vehicles up to 8,500 gross vehicle weight (GVW). These vehicles include passenger cars, sports utility vehicles, vans, and light duty pick-up trucks.

The remaining three measures focus on heavy-duty vehicles. The first of these measures seeks additional emission reductions from the early deployment of partial zero-emission and zero-emission light- and medium-heavy-duty vehicles with gross vehicle weights between 8,501 pounds to 26,000 pounds. The second control measure for heavy-duty vehicles seeks additional emissions reductions from older, pre-2010 heavy-duty vehicles beyond the emission reductions targeted in CARB's Truck and Bus Regulation. Additional emission reductions could be achieved if an additional percentage of the oldest, pre-2010 heavy duty vehicles not subject to the Truck and Bus Regulation are targeted. The fifth on-road measure seeks emission reductions at near-dock railyards through the deployment of zero-emission heavy-duty vehicles. District staff is recommending a minimum funding level of \$85 million per year for incentives to implement on-road mobile source measures.

Off-Road Mobile Source Measures

Five control measures that seek further emission reductions from off-road mobile sources and industrial equipment are proposed. Transportation sources such as aircraft, locomotives, and marine vessels are associated with anticipated economic growth not only in the Basin, but also nationwide. These sources are principally regulated by federal and state agencies. In addition, certain local actions can result in emission reductions beyond the emissions standard setting authority of the state and U.S. EPA. The first measure calls for the continuation of the Surplus Off-Road Opt-In for NO_x (SOON) provision of the statewide In-Use Off-Road Diesel Fleet Regulation beyond 2014. The SOON provision implemented to-date has realized additional NO_x reductions beyond the statewide regulation. The second and third measures call for additional emission reductions from freight and passenger locomotives. The fourth measure seeks additional emission reductions from ocean-going vessels while at berth. The fifth measure recognizes the efforts that the Ports of Los Angeles and Long Beach are implementing to incentivize Tier 2 and Tier 3 ocean-going vessels to call at the ports. District staff is recommending a minimum funding level of \$30 million per year for incentives to implement off-road mobile source measures.

Actions to Deploy Advanced Control Technologies

Seven additional measures are proposed to deploy the cleanest control technologies as early as possible and to foster the development and deployment of near-zero and zero-emission technologies. Many of these actions have already begun. However, additional research and development will be needed that will lead to commercial deployment of control technologies that achieve emission levels below current adopted emission standards. Other near-zero and zero-emission technologies that are commercially available will require infrastructure development to facilitate their deployment.

The term “near-zero” technology is not defined in these actions. The term’s specific meaning could depend on the source category and feasible technologies. The actions needed to deploy zero-emission technologies, “near-zero” emission technologies, and the next generation of cleaner combustion engines will be discussed in the development of the proposed measures and future AQMPs. To initiate the development of cleaner engines (either through in-cylinder or after-treatment controls or in combination with hybrid systems that lead to further criteria pollutant emission reductions), District staff is proposing that optional NOx standards be adopted. Having such optional standards will facilitate the early development of cleaner technologies and assist to deploy these technologies as soon as possible. They would be set by the level of emission reductions commercially achievable in the near-term. Several of the technologies to achieve emission levels lower than current standards, or zero-emission levels, are currently available and are potentially transferrable to various vehicle vocations and in-use applications. However, further research and demonstration are needed for many of these technologies to evaluate their performance prior to commercialization. Each measure contains a timeline for actions to bring about the zero-emission or cleaner technologies.

The District staff, U.S. Department of Energy, U.S. Environmental Protection Agency, Federal Aviation Administration, California Air Resources Board, California Energy Commission, engine manufacturers, advanced engine control developers, and electric hybrid systems developers have been discussing potential technologies to further reduce engine exhaust emissions or eliminate exhaust emissions entirely. Public forums such as technology symposiums will be used to solicit public input on technology development as part of the proposed actions.

The following text provides a brief description of the District staff’s proposed mobile source measures:

ONRD-01 – ACCELERATED PENETRATION OF PARTIAL ZERO-EMISSION AND ZERO EMISSION VEHICLES: This measure proposes to continue incentives for the purchase of zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode. The state Clean

Vehicle Rebate Pilot (CVRP) program is proposed to continue from 2015 to 2023 with a proposed funding for up to \$5,000 per vehicle. The proposed measure seeks to provide funding assistance for up to 1,000 zero-emission or partial-zero emission vehicles per year.

ONRD-02 – ACCELERATED RETIREMENT OF OLDER LIGHT- AND MEDIUM-DUTY VEHICLES: This proposed measure calls for promoting the permanent retirement of older eligible vehicles through financial incentives currently offered through local funding incentive programs and the AB 118 Enhanced Fleet Modernization Program (EFMP). The proposed measure seeks to retire up to 2,000 older light- and medium-duty vehicles (up to 8,500 lbs gross vehicle weight) per year. Funding incentives of up to \$2,500 per vehicle are proposed for the scrapping of the vehicle, which may include a replacement voucher for a newer or new vehicle.

ONRD-03 – ACCELERATED PENETRATION OF PARTIAL ZERO-EMISSION AND ZERO-EMISSION LIGHT-HEAVY- AND MEDIUM-HEAVY-DUTY VEHICLES: The objective of the proposed action is to accelerate the introduction of advanced hybrid and zero-emission technologies for Class 4 through 6 heavy-duty vehicles. The state is currently implementing a Hybrid Vehicle Incentives Project (HVIP) program to promote zero-emission and hybrid heavy-duty vehicles. The proposed measure seeks to continue the program from 2015 to 2023 to deploy up to 1,000 zero- and partial-zero emission vehicles per year with up to \$25,000 funding assistance per vehicle. Zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode would be given the highest priority.

ONRD-04 – ACCELERATED RETIREMENT OF OLDER ON-ROAD HEAVY-DUTY VEHICLES: This proposed measure seeks to replace up to 1,000 heavy-duty vehicles per year with newer or new vehicles that at a minimum, meet the 2010 on-road heavy-duty NO_x exhaust emissions standard of 0.2 g/bhp-hr. Given that exceedances of the 24-hour PM_{2.5} air quality standard occur in the Mira Loma region, priority will be placed on replacing older diesel trucks that operate primarily at the warehouse and distribution centers located in the Mira Loma area. Funding assistance of up to \$35,000 per vehicle is proposed and the level of funding will depend upon the NO_x emissions certification level of the replacement vehicle. In addition, a provision similar to the Surplus Off-Road Option for NO_x (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation will be sought to ensure that additional NO_x emission reduction benefits are achieved.

ONRD-05 – FURTHER EMISSION REDUCTIONS FROM HEAVY-DUTY VEHICLES SERVING NEAR-DOCK RAILYARDS: This proposed control measure calls for a requirement that any cargo container moved between the Ports of Los Angeles and Long Beach to the nearby railyards (the Intermodal Container Transfer Facility and the proposed Southern California International Gateway) be

with zero-emission technologies. The measure would be fully implemented by 2020 through the deployment of zero-emission trucks or any alternative zero-emission container movement system such as a fixed guideway system. The measure calls for CARB to either adopt a new regulation or amend an existing regulation to require such deployment by 2020. To the extent the measure can feasibly be extended beyond near-dock railyards, this would be considered for adoption by CARB.

OFFRD-01 – EXTENSION OF THE SOON PROVISION FOR CONSTRUCTION/INDUSTRIAL EQUIPMENT: This measure seeks to continue the Surplus Off-Road Option for NOx (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation beyond 2014 through the 2023 timeframe. In order to implement the SOON program in this timeframe, funding of up to \$30 million per year would be sought to help fund the repower or replacement of older Tier 0 and Tier 1 equipment, with reductions that are considered surplus to the statewide regulation with Tier 4 or cleaner engines.

OFFRD-02 – FURTHER EMISSION REDUCTIONS FROM FREIGHT LOCOMOTIVES: The proposed control measure is to meet the commitment in the 2007 SIP for the accelerated use of Tier 4 locomotives in the South Coast Air Basin. The measure calls for CARB to seek further emission reductions from freight locomotives through enforceable mechanisms within its authority to achieve 95 percent or greater introduction of Tier 4 locomotives by 2023.

OFFRD-03 – FURTHER EMISSION REDUCTIONS FROM PASSENGER LOCOMOTIVES: This measure recognizes the recent actions by the Southern California Regional Rail Authority (SCRRA or Metrolink) to consider replacement of their existing Tier 0 passenger locomotives with Tier 4 locomotives. The SCRRA adopted a plan that contains a schedule to replace their older existing passenger locomotives with Tier 4 locomotives by 2017. More recently, SCRRA released a Request for Quotes on the cost of new or newly manufactured passenger locomotives with locomotive engines that meet Tier 4 emission levels.

OFFRD-04 – FURTHER EMISSION REDUCTIONS FROM OCEAN-GOING MARINE VESSELS WHILE AT BERTH: This measure seeks additional emission reductions from ocean-going marine vessels while at berth. The actions would affect ocean-going vessels that are not subject to the statewide Shorepower Regulation or vessel calls that are considered surplus to the statewide regulation. The measure seeks at a minimum to have an additional 25 percent of vessel calls beyond the statewide regulation to deploy shorepower technologies or alternative forms of emissions reduction as early as possible. Such actions could be implemented through additional incentives programs or through the San Pedro Bay Ports as part of the implementation of the Ports Clean Air Action Plan.

OFFRD-05 – EMISSION REDUCTIONS FROM OCEAN-GOING MARINE VESSELS: This measure recognizes the recent actions at the Ports of Los Angeles and Long Beach to initiate an incentives program for cleaner ocean-going vessels to call at the ports. The program has been initiated as part of the San Pedro Bay Ports Clean Air Action Plan. The program will provide financial incentives for cleaner Tier 2 and Tier 3 ocean-going vessels to call at the ports. This measure also recognizes the need to monitor progress under such programs and augment them as necessary to ensure sufficient results. The program will be monitored on annual basis and, if necessary, any adjustments to the program will be made.

ADV-01 –ACTIONS FOR THE DEPLOYMENT OF ZERO- AND NEAR-ZERO EMISSION ON-ROAD HEAVY-DUTY VEHICLES: This measure would continue the efforts underway to develop zero-emission and near-zero emission technologies for on-road heavy-duty vehicle applications. Such technologies include, but not limited to, fuel cell, battery-electric, hybrid-electric with all electric range, and overhead catenary systems. Hybrid-electric systems incorporate an engine powered by conventional fuels or alternative fuels such as natural gas. The actions provided in the proposed measure are based on the SCAG 2012 Regional Transportation Plan.

ADV-02 –ACTIONS FOR THE DEPLOYMENT OF ZERO- AND NEAR-ZERO EMISSION LOCOMOTIVES: This measure calls for the development and deployment of zero-emission and near-zero emission technologies for locomotives. Such technologies include overhead catenary systems, hybrid locomotives that have some portion of their operation in an “all electric range” mode, and alternative forms of external power such as a battery tender car. The actions provided in the proposed measure are based on the SCAG 2012 Regional Transportation Plan. The zero-emission technologies could apply to freight and passenger locomotives.

ADV-03 –ACTIONS FOR THE DEPLOYMENT OF ZERO- AND NEAR-ZERO EMISSION CARGO HANDLING EQUIPMENT: This measure recognizes the actions underway to develop and deploy zero- and near-zero emission technologies for various cargo handling equipment. The San Pedro Bay Ports are currently demonstrating battery-electric yard tractors. In addition, battery-electric, fuel cell, and hybridized systems could be deployed on smaller cargo handling equipment. In addition, the use of alternative fuels for conventional combustion engines could potentially result in greater emissions benefits.

ADV-04 –ACTIONS FOR THE DEPLOYMENT OF CLEANER EMISSION COMMERCIAL HARBORCRAFT: Several commercial harbor craft operators have begun deployment of hybrid systems in their harbor craft to further reduce criteria pollutant emissions and improve fuel efficiency. Other cleaner technologies include the use of alternative fuels, retrofit of existing older marine engines with selective catalytic converters, and diesel particulate filters. This measure recognizes

several efforts between the District and the Ports of Los Angeles and Long Beach to further demonstrate control technologies that could be deployed on commercial harbor craft that could go beyond the statewide Harbor Craft Regulation.

ADV-05 –ACTIONS FOR THE DEPLOYMENT OF CLEANER OCEAN-GOING MARINE VESSELS: The Ports of Los Angeles and Long Beach, CARB, and the District have sponsored research and demonstration of various control technologies to further reduce emissions from ocean-going vessels. In addition, the San Pedro Bay Ports Clean Air Action Plan contains a measure to further demonstrate such technologies on ocean-going vessels. This measure recognizes many of these efforts and the need to further demonstrate retrofit technologies on existing ocean-going vessels.

ADV-06 –ACTIONS FOR THE DEPLOYMENT OF CLEANER OFF-ROAD EQUIPMENT: The District, Mobile Source Air Pollution Reduction Review Committee (MSRC), and CARB have been conducting an off-road “showcase” program for retrofit technologies to further reduce emissions from older off-road equipment. In addition, several major off-road engine manufacturers are investigating the potential use of hybrid systems to further reduce criteria pollutant and greenhouse gas emissions. Potential advanced technologies include hybrid systems that utilize batteries, fuel cells, or plug-in capabilities, which could result in lower emissions compared to Tier 4 emission levels when combined with future Tier 4 compliant engines. The measure is implemented by the District, CARB and U.S. EPA.

ADV-07 –ACTIONS FOR THE DEPLOYMENT OF CLEANER AIRCRAFT ENGINES: This measure recognizes the efforts of the Federal Aviation Administration’s Continuous Lower Energy, Emissions and Noise (CLEEN) Program. The goal of the CLEEN Program is the development of new aircraft engines that potentially can be up to 60 percent cleaner in NO_x emissions than current aircraft engines. The actions under this measure are to continue the development of cleaner aircraft engines and work with the airlines and local airport authorities to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin.

OVERALL EMISSION REDUCTIONS

A summary of emission reductions for the proposed 1-hour ozone control measures for the year 2022, based on the summer planning inventory for VOC and NO_x, is provided in Table VII-4-5. These reductions reflect the emission reductions associated with implementation of control measures under local, State, and federal jurisdiction. Emission reductions represent the difference between the projected baseline and the remaining emissions. Note the inclusion in Table VII-4-5 of long term (“black box”) measures under CAA Section 182(e)(5) provisions.

TABLE VII-4-5
Emission Reductions for 2022 Based on
Summer Planning Inventory (Tons per Day)

SOURCES	VOC	NOx
Year 2022 Baseline ¹	440	335
Emission Reductions:		
Stationary Sources (2012 Proposed Measures)	6	3
Mobile Sources (2012 Proposed Measures)	---	8
Mobile Sources (2007 SIP Carried Forward) ²	7	24
Long Term Measures ³	17	150
Total 1-hour Ozone SIP Reductions	30	185
2022 Remaining Emissions	410	150

¹ Emission assumptions from SCAG's 2012 regional transportation plan are already reflected in the AQMP baseline, including TCMs.

² Emissions reductions already committed in the 2007 8-hour ozone SIP

³ CAA Section 182(e)(5) long-term emission reduction measures. Note that the U.S. EPA approved 2007 8-hour ozone SIP included 40 tpd VOC and 241 tpd NOx emissions reductions (based on the emissions inventories from the 2007 SIP) as long term measures under CAA Section 182(e)(5). See 77 Fed. Reg. 12674 (March 1, 2012). Thus, the 1-hour ozone long term emissions reductions are not new emissions reductions as they are a subset of the previous 2007 SIP emissions reductions from long-term measures.

SECTION 5

1-hour Ozone Attainment Demonstration

INTRODUCTION

On September 19, 2012, in response to a California Ninth Circuit Court of Appeals remand, U.S. EPA published a proposed rule to require California to provide a new 1-hour ozone attainment demonstration for the South Coast Air Basin and the San Joaquin Valley non-attainment areas. The proposed rule made a finding of substantial inadequacy of the State Implementation Plan for the two areas. The proposed rule is anticipated to be approved early in 2013 and will allow five years, with a total of up to ten years for attainment of the now revoked 1-hour standard, if the state shows that ten years are needed. That will require a demonstration of attainment of the 0.12 ppm standard by 2023, with emissions reductions in place by the end of 2022. Background discussion on the reasoning for the required revision to the 1-hour ozone SIP as well as a description of the control strategy approach is provided in earlier sections of this Appendix. This section provides the details of the 2012 1-hour ozone modeling attainment demonstration.

BACKGROUND

For a full background discussion regarding the 1-hour ozone attainment demonstration, see the Introduction to this Appendix. The most recently approved SIP for the 1-hour ozone standard is the 1997/99 Plan, approved by EPA in April 2000. There have been changes to the motor vehicle emissions inventories and model since that time. EPA disapproved the attainment demonstration in the 2003 SIP revision because it relied in large part on control measures that had been withdrawn by CARB following revocation of the 1-hour standard. This disapproval led to the litigation which resulted in the SIP call proposed by EPA on September 19, 2012. In that proposal EPA calls for a revised and updated 1-hour ozone attainment demonstration.

Modeling platforms, meteorological models and chemistry packages have also undergone significant enhancements since the 1997 AQMP attainment demonstration when the Urban Airshed Model (UAM) with CB-IV chemistry was the primary tool for projecting air quality. During the development of the 2003 AQMP, the District convened a panel of seven experts to independently review the regional air quality modeling for ozone. The consensus of the panel was for the District to move to more current state-of-the-art dispersion platforms and chemistry modules. At that time, the model selected for the 2007 AQMP ozone attainment demonstrations was the Comprehensive Air Quality Model with Extensions (CAMx) [Environ, 2002], using SAPRC99 chemistry. The Draft Final 2012 AQMP has continued to move forward to incorporate current state-of-the-art modeling platforms to conduct regional modeling analyses. The Draft Final 2012 AQMP PM_{2.5} attainment demonstration and ozone implementation update has been developed using the U.S. EPA supported Community Multiscale Air Quality (CMAQ) (version 4.7) air quality modeling

platform with SAPRC99 chemistry, and the Weather Research and Forecasting Model (WRF) (version 3.3) meteorological fields. Appendix V of the 2012 Draft Final AQMP provides an expanded discussion of the current modeling platform.

ATTAINMENT DEMONSTRATION STRUCTURE: DETERMINISTIC VS. TIERED RELATIVE RESPONSE FACTOR (RRF)

The 1997 AQMP and 2003 AQMP 1-hour ozone attainment demonstrations relied on direct output from model simulations to project future year air quality and design values. This “deterministic” approach was based on the premise that future year projected baseline inventories were accurate and the impacts of implementing the control program were well simulated. In addition, the form of the 1-hour ozone standard was directed at the fourth highest concentration in a three year period for a given air monitoring station. In essence, the analysis looked at the 2nd highest concentration in a given year, typically occurring during the worst-case meteorological scenario. The 2007 AQMP and 2012 AQMP have relied on the use of relative response factors (RRF) determined from the ratio of future to base year simulation projections to estimate attainment. Since shifting to the 8-hour ozone standard, the RRF estimated from multiple meteorological episodes has been the primary methodology to project future year station specific design values calculated as the three year averages of the 4th highest 8-hour concentration. Both approaches, (deterministic or RRF), have their limitations: the deterministic method relies on accurate modeling and the proper selection of a meteorological episode while the RRF approach tends to place less reliance on individual day model performance since the factor is based on an average of several events having similar meteorological profiles. However, basing the RRF on multiple days may mask the meteorological profile characteristics of an extreme event such as an annual second maximum concentration. Table VII-5-1 summarizes a comparison of the two approaches to demonstrate attainment of the standard.

No specific modeling guidance applies to this current analysis since the 1-hour standard has been revoked. As discussed above, the previous 1-hour ozone attainment demonstrations utilized the deterministic approach to demonstrate attainment of the standard. As modeling platforms (both dispersion and meteorological) and emissions inventories have greatly improved over the past two decades, ozone simulations have demonstrated an increasingly higher level of accuracy in recreating observed base year concentrations. The improved simulation performance has mitigated several of the concerns regarding using the deterministic approach to directly predict future year concentrations. As a result of the improved base year performance, this Basin 1-hour ozone attainment demonstration will be based on the deterministic modeling approach. As part of the weight of evidence discussion, the RRF approach will be applied using a stratified or tiered approach to develop station specific projections of 2022 1-hr ozone concentrations.

TABLE VII-5-1

Comparison of Attainment Demonstration Methodologies

RRF	Deterministic
Targets 98th percentile – multiple year average standard	Targets annual 2nd maximum concentration
Designed to compensate for base year performance	Requires performance within established criteria thresholds
Projects future design values based on the base year design value applied to ratio of future to base year simulated ozone	Assumes accurate future year emissions inventory and directly predicts expected concentrations
Station specific evaluation	Day specific analysis requiring candidate episode meeting the “worst case” profile
Requires concentration threshold for inclusion in analysis and minimum number of valid simulation days	

MODELING PROTOCOL

Table VII-5-2 provides the Draft Final 2012 AQMP 1-hour ozone modeling protocol. As previously discussed, the CMAQ/WRF/SAPRC99 modeling structure used for the 8-hour ozone update in the Draft Final 2012 AQMP was used for the 1-hour ozone attainment demonstration. A comprehensive discussion of the 8-hour ozone modeling analysis is provided in Appendix V of the Draft Final 2012 AQMP.

TABLE VII-5-2

Summary of Draft Final 2012 AQMP 1-hour Ozone Model Selection and Modeling Protocol

Draft Final 2012 AQMP 1-Hour Ozone Modeling Protocol
<p><u>Ozone</u></p> <p>Dispersion Platform: CMAQ Chemistry: SAPRC99</p>
<p><u>Domain/ Coordinates</u></p> <p>Expanded SCOS97 Meteorology, Emissions and Model application: Lambert Conformal Grid: 4 Km X 4 Km Ozone: 18 layers</p>
<p><u>Emissions Inventories</u></p> <ul style="list-style-type: none"> • 2008 Base year • Day-Specific Emissions • Shipping emissions split into 2layers • EMFAC2011 <ul style="list-style-type: none"> ○ 3- modules ○ Modified DTIM • Adjustments to fugitive PM2.5 Paved road EPA with CA modifications • Day-Specific Biogenic emissions • Revised Mexican emissions profile
<p><u>Meteorology</u></p> <ul style="list-style-type: none"> • WRF initialized with NCEP data with FDDA
<p><u>Air Quality Model Performance</u></p> <ul style="list-style-type: none"> • Assess model performance based on both 1-hour statistics: <ul style="list-style-type: none"> Normalized gross bias Normalized gross error Peak prediction accuracy • 60 ppb threshold (both indices) • 49 Cell averaging
<p><u>2008 Base Year Simulations</u></p> <p>June – August 2008 92 days of simulations evaluated Peak Episode 6/18-6/21</p>
<p><u>Future Year Projections—Deterministic Approach /Tiered RRF Approach</u></p> <ul style="list-style-type: none"> • 2022

MODELING EMISSIONS INVENTORY

Table VII-5-3 provides the baseline and controlled modeling emissions inventories used in the attainment demonstration. The CMAQ simulations were based on the summer planning inventory, with adjustments made for weekly and daily temperature variations. A brief characterization of the emissions used for the modeling analysis is presented in Section 3 of this Appendix and Chapter 3 of the Draft Final 2012 AQMP. An extensive discussion of the overall emissions inventory is provided in the Draft Final 2012 AQMP Appendix III.

TABLE VII-5-3
Summer Planning Emissions Inventory (tons/day)

Year	VOC	NOX	CO
(a) Baseline			
2008	593	754	2880
2022	440	335	1540
(b) Controlled			
2022	410	150	1540

EPISODE SELECTION AND DESIGN VALUES

Past ozone attainment demonstrations evaluated a set of days characterized by restrictive meteorology or episodes occurring during concurrent intensive field monitoring programs. Of great importance, these episode periods needed to be rated in terms of how representative they were relative to the ozone standard being evaluated. For the now revoked 1-hour ozone standard, the attainment demonstration focused on a limited number of days closely matching the annual design value. Typically, the analysis addressed fewer than 5 days of simulations. The 2003 1-hour ozone episode focused on the August 4-7, 1997 ozone meteorological episode that occurred during the Southern California Ozone Study and was the subject of an extensive field monitoring campaign.

This update to the future year ozone projection focuses on 92 days of ozone air quality observed during June through August of the base year 2008. Overall, the 92 day period provides a robust description of the 2008 ozone meteorological season. Table VII-5-4 lists the number of days each Basin station exceeded the revoked 1-hour ozone standard during the June through August 2008 period. Also listed in Table VII-5-4 are the 2008, 5-year weighted design values (also used in the RRF future year ozone projections). Figure VII-5-1 depicts the time series of the daily Basin maximum and the Crestline (the Basin design station) daily maximum 1-hour ozone concentrations during the three month period in 2008. During this period,

seven well defined multi-day ozone episodes occurred in the Basin with 30 total days having daily Basin-wide 1-hour maximum ozone concentrations of 120 ppb or higher. More importantly, when assessed for a normalized meteorological ozone episode potential using a regression based weighting covering 30-years of data (1998-2010), the June 18 - 22, 2008 period was ranked in the 99th percentile. This episode contained the top four daily Basin ozone maximum concentrations for 2008 and has been selected as the focus of the attainment demonstration.

Table VII-5-5 summarizes the June 18 - 22 ozone meteorological episode. Three monitoring stations shared the distinction as having the daily maximum concentration including Crestline, Glendora and on the final day, Glendora and Santa Clarita. As indicated in Table VII-5-4, Crestline is the design site for the Basin with a 1-hour average design value of 158 ppb. Several locations in the San Bernardino and Riverside Valleys exhibit similar daily transport patterns as Crestline. Glendora, which exhibited the second highest design value (151 ppb) is located approximately 30 km downwind of Central Los Angeles along the same wind transport route. The peak Basin 2008 1-hour average ozone concentration observed at Santa Clarita was on August 2nd with a value of 150 ppb along a distinctly different transport route. As illustrated in Table VII-5-5, the observed Basin maximum ozone concentration for the episode closely matches the station design value for the station observing the maximum concentration. The exceptions occur on June 20th where the observed 1-hr maximum ozone concentration reached 176 PPB at Crestline, approximately 111 percent of the Crestline (and Basin) design value. Similarly, on Sunday June 22nd the observed maximum concentration was approximately 82 and 87 percent of the Glendora and Santa Clarita design values, respectively.

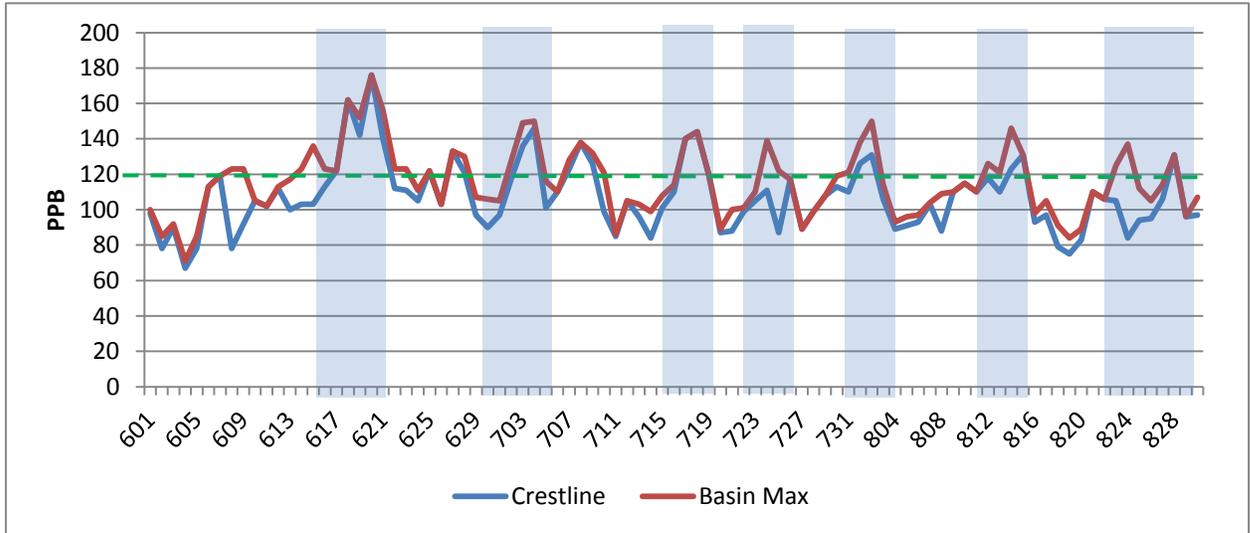


FIGURE VII-5-1

Observed Basin and Crestline Daily Maximum 1-Hr Ozone Concentrations: June 1 through August 31, 2008. (Shaded areas indicate multiple day regional ozone episodes).

TABLE VII-5-4

2008 Basin Weighted Design Values and Number of Days Daily 1-Hour Ozone Maximum Concentrations Exceeded 120 ppb*

Station	2008 5-Year Weighted Design (ppb)	Number of Days in 2008 with Observed 1-Hr Maximum Ozone > 120 ppb
Azusa	137	7
Burbank	127	0
Reseda	125	0
Pomona	138	5
Pasadena	130	1
Santa Clarita	141	8
Glendora	151	12
Rubidoux	137	8
Perris	134	4
Mira Loma	129	4
Lake Elsinore	133	6
Banning Airport	138	10
Upland	147	9
Crestline	158	16
Fontana	148	8
San Bernardino	150	11
Redlands	149	12

*Only Stations having design values greater than 120 ppb are listed

TABLE VII-5-5
 Profile of the June 18-22, 2008 Meteorological-Ozone Episode

Date	Day of Week	Maximum Observed 1-Hr Ozone (PPB)	Design Value at Maximum Station (PPB)	Maximum Location
18-Jun-08	Wed	162	158	Crestline
19-Jun-08	Thu	152	151	Glendora
20-Jun-08	Fri	176	158	Crestline
21-Jun-08	Sat	156	151	Glendora
22-Jun-08	Sun	123	151	Glendora
			141	Santa Clarita

BASE-YEAR OZONE MODEL PERFORMANCE EVALUATION

For the CMAQ performance evaluation, the modeling domain is separated into nine sub-regions or zones. Figure VII-5-2 depicts the sub-regional zones used for base-year simulation performance. The different zones present unique air quality profiles. In previous ozone modeling attainment demonstrations using a smaller modeling domain, the number and size of the zones were different. Seven zones represented the Basin and portions of Ventura County, the Mojave Desert and the Coachella Valley.

For the current analysis the Basin is represented by three of the zones: Zone 3 – the San Fernando Valley, Zone 4 – the Eastern San Gabriel, Riverside and San Bernardino Valleys, and Zone 5 – the Los Angeles and Orange County emissions source areas. Of the three areas, Zone 4 represents the Basin maximum ozone concentrations and the primary downwind impact zone. As such, the priority in evaluating model performance is focused on Zone 4.

The statistics used to evaluate 1-hour average CMAQ ozone performance do not change from previous AQMPs and include the following:

Statistic for O ₃	Criteria (%)	Comparison Basis
Normalized Gross Bias	≤ ±15	Paired in space and time
Normalized Gross Error	≤ 35	Paired in space (+2 grid cells) and time
Peak Prediction Accuracy	≤ ± 20	Unpaired in space and time

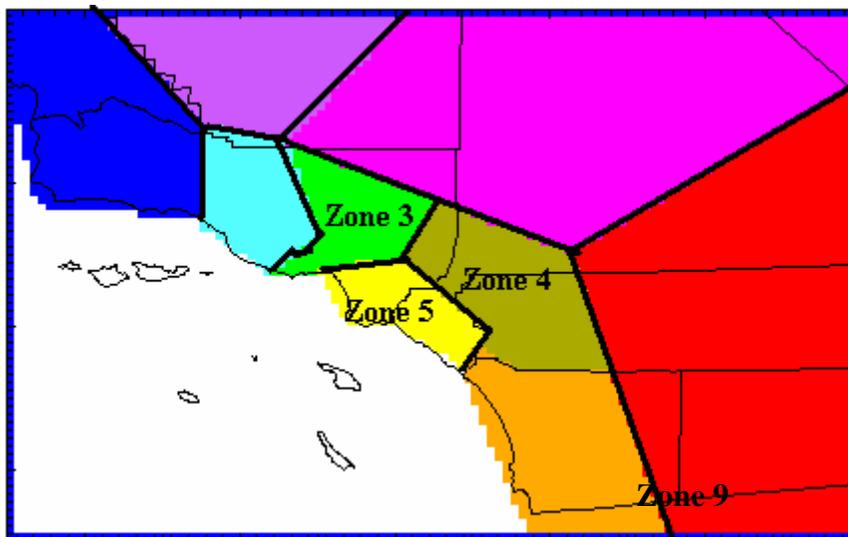


FIGURE VII-5-2
Performance Evaluation Zones

The base year average regional model performance for the June 2008 episode for Zones 3, 4, and 5 is presented in Table VII-5-6. Performance statistics are presented for observed concentrations of 60 ppb or greater.

The CMAQ ozone simulations generally meet the 1-hour average unpaired peak on four of the five episode days in Zones 3 and 5 and on three of the days in Zone 4. The 2008 highest observed 1-hour ozone concentrations occurred on June 18th and June 20th in Zone 4. The ozone simulations were only able to recreate 76 and 73 percent of the observed concentrations on each of those days. Normalized bias tended to be negative in Zones 3 and 4. Zone-5 showed a tendency for over prediction on June 19th and 22nd. The normalized model error performance goal was consistently met in the three zones on June 19-21.

Figures VII-5-3 through VII-5-12 present the diurnal profiles of observed and CMAQ simulated 1-hour ozone and spatial plots of daily 1-hour maximum predicted ozone for the June 2008 episode. The diurnal trends depict station profiles grouped

by evaluation zone with Zone 3 presented at the left side of the chart. The CMAQ predicted trend is highlighted by a dashed red line. The trend diagrams support the statistical analysis with June 19th and 21st depicting a close match with observations, particularly in Zone 4. The trend of predicted and observed diurnal ozone is also closely matched in Zones 3 and 5 for all days except June 22nd when the daily peak ozone concentrations were over predicted.

The corresponding spatial plots of daily ozone maximum demonstrate the extent and concentration ranges of CMAQ predicted ozone. The peak predicted concentrations occur in Zone 4 on June 21st followed by June 19th, with both days meeting the unpaired prediction criteria. On June 22nd, the same pattern persists but with an extension of higher predicted ozone concentrations occurring in Zone 5 as well. While June 18th and 20th are under predicted (unpaired peak ratio of 0.76 and 0.73), the location of the projected daily 1-hour ozone maximum concentrations is correctly depicted in the spatial presentation.

Additional statistical characterizations of model performance and individual station diurnal trends of observed and predicted 1-hour ozone concentrations are presented as Attachments 1 and 2 to this Appendix.

TABLE VII-5-6

June 18-22, 2008 Base Year 1-Hour Average Ozone Performance
(Bold type indicates meeting statistical performance criteria).

Date	Zone 3				
	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)
618	87	93	1.07	-17	25
619	95	109	1.15	4	18
620	111	99	0.89	-10	19
621	122	107	0.87	-19	20
622	123	92	0.75	-29	29
Date	Zone 4				
	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)
618	162	123	0.76	-17	20
619	152	136	0.90	-1	18
620	176	129	0.73	-12	16
621	156	150	0.96	-1	18
622	123	134	1.09	10	21
Date	Zone 5				
	Observed (ppb)	Predicted (ppb)	Unpaired Peak Ratio	Normalized Bias* (ppb)	Normalized Error* (ppb)
618	118	107	0.91	0	22
619	110	111	1.01	11	15
620	114	106	0.93	0	13
621	107	115	1.07	4	12
622	107	121	1.13	13	19

*Normalized bias and normalized error calculated for hours where observations > 60 ppb

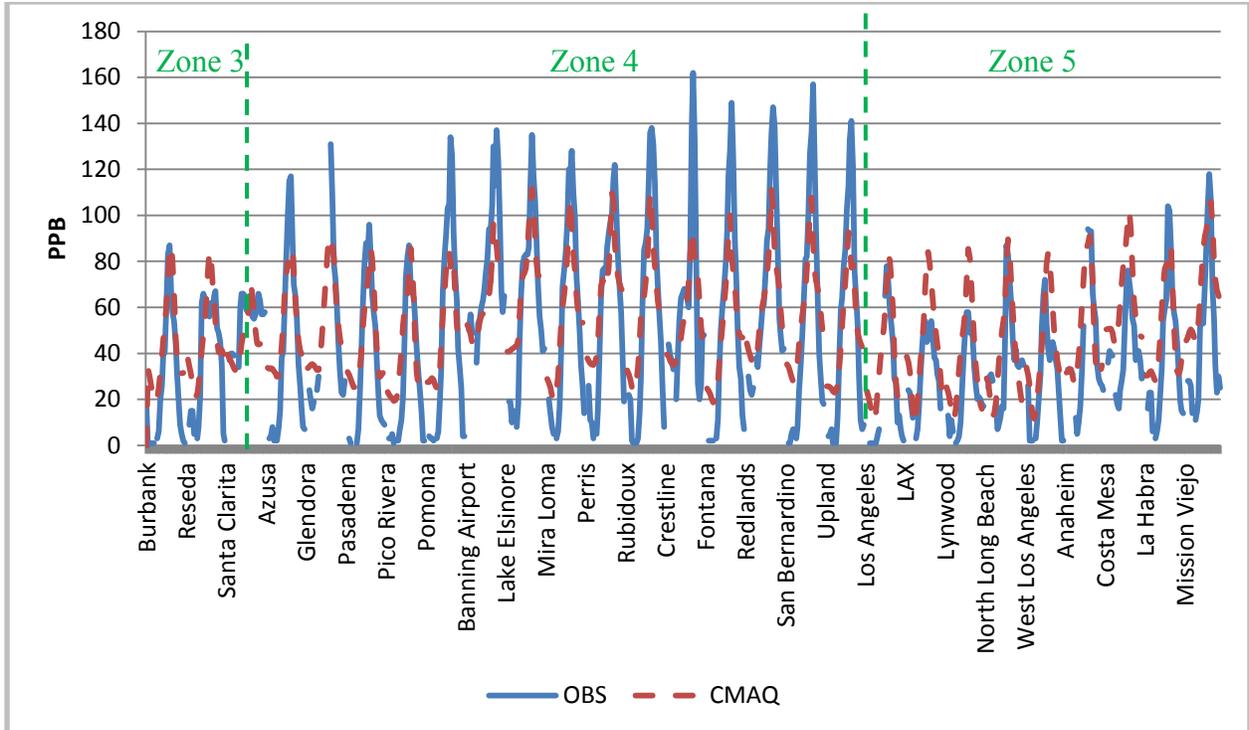


FIGURE VII-5-3
CMAQ predicted and observed diurnal trends of 1-hour ozone for June 18, 2008

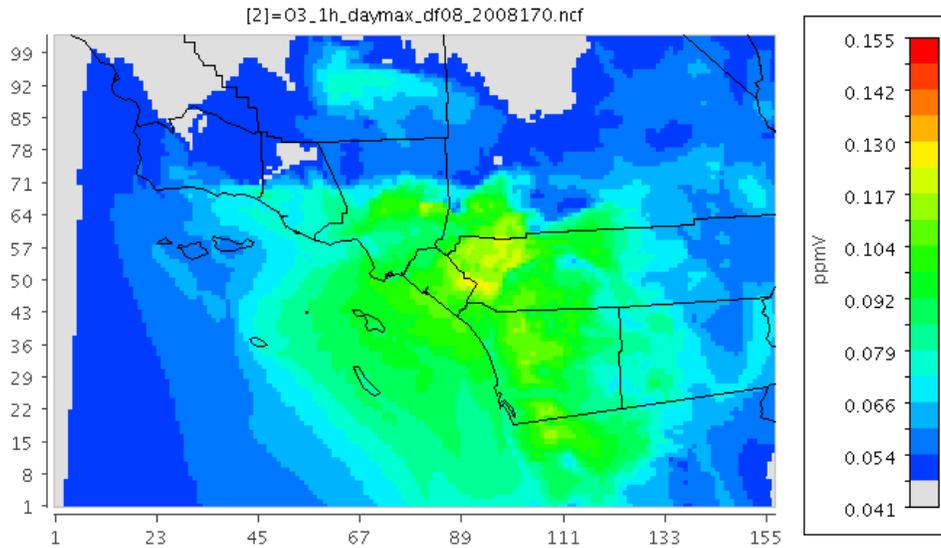


FIGURE VII-5-4
CMAQ predicted maximum 1-hour ozone (PPB) for June 18, 2008

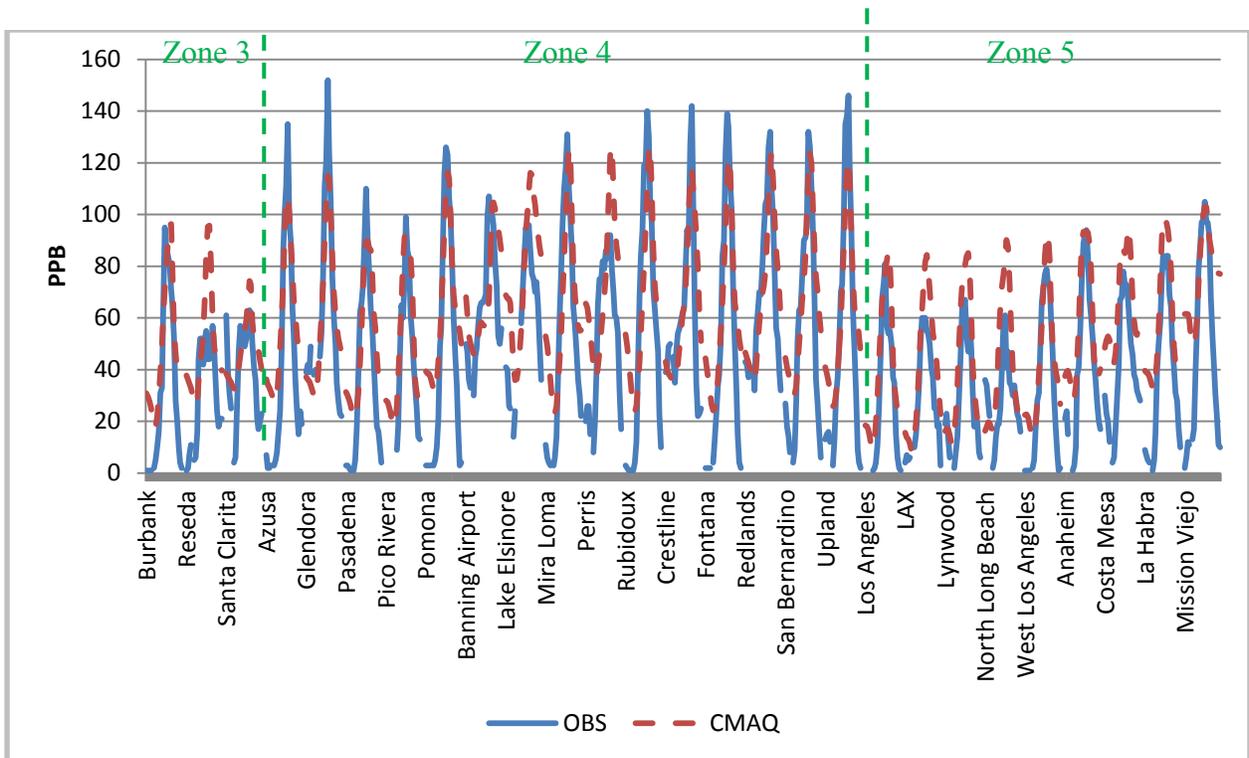


FIGURE VII-5-5
CMAQ predicted and observed diurnal trends of 1-hour ozone for June 19, 2008

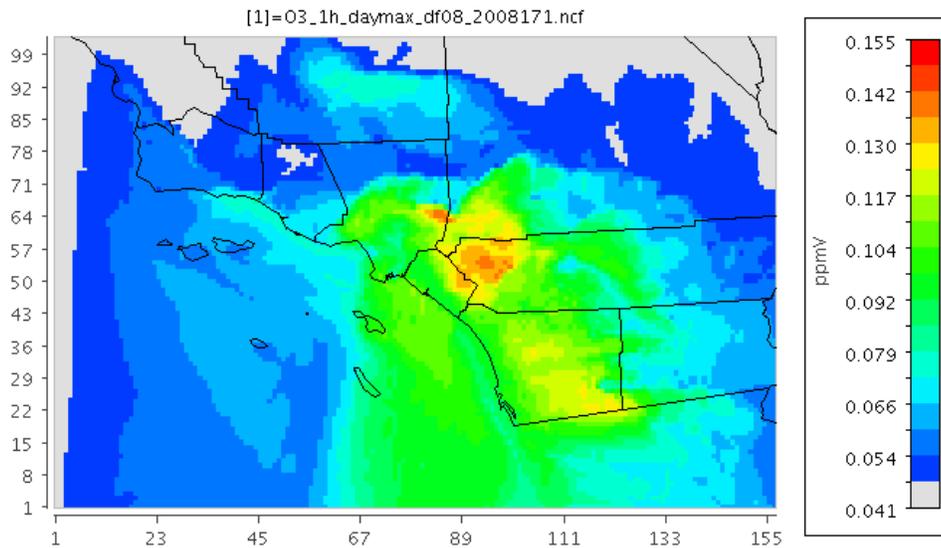


FIGURE VII-5-6
CMAQ predicted maximum 1-hour ozone (PPB) for June 19, 2008

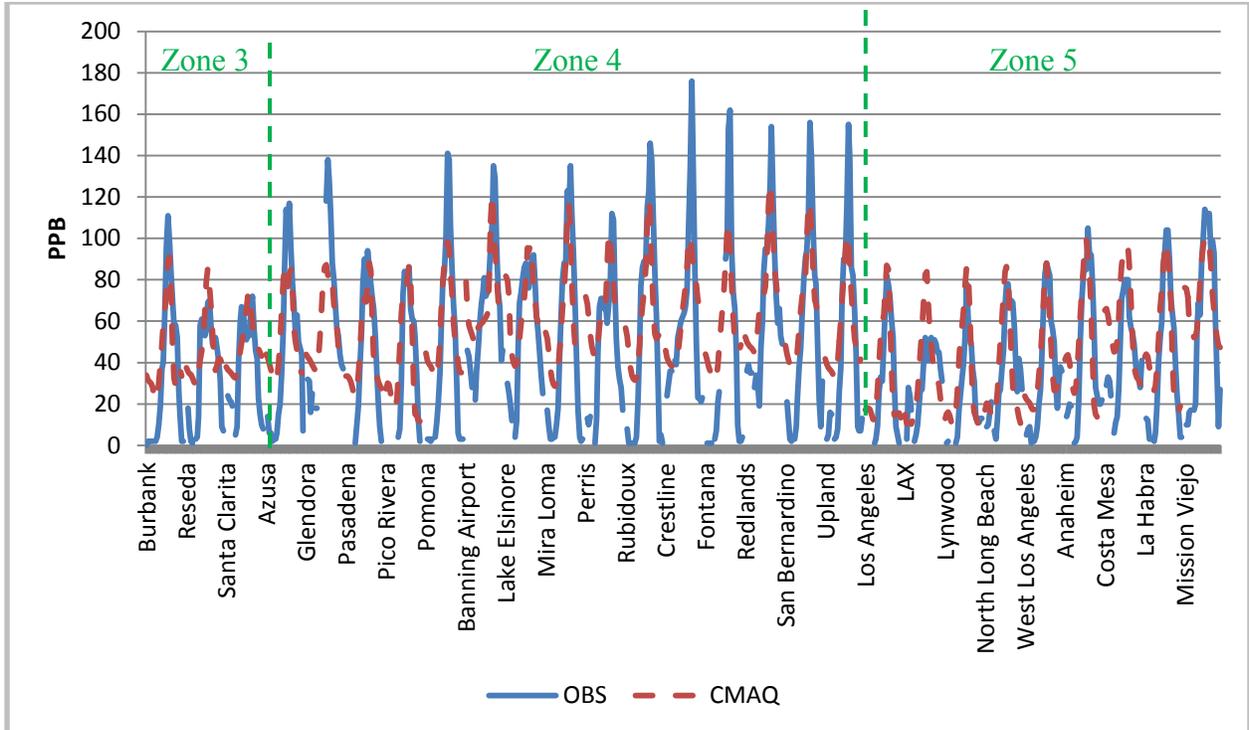


FIGURE VII-5-7
CMAQ predicted and observed diurnal trends of 1-hour ozone for June 20, 2008

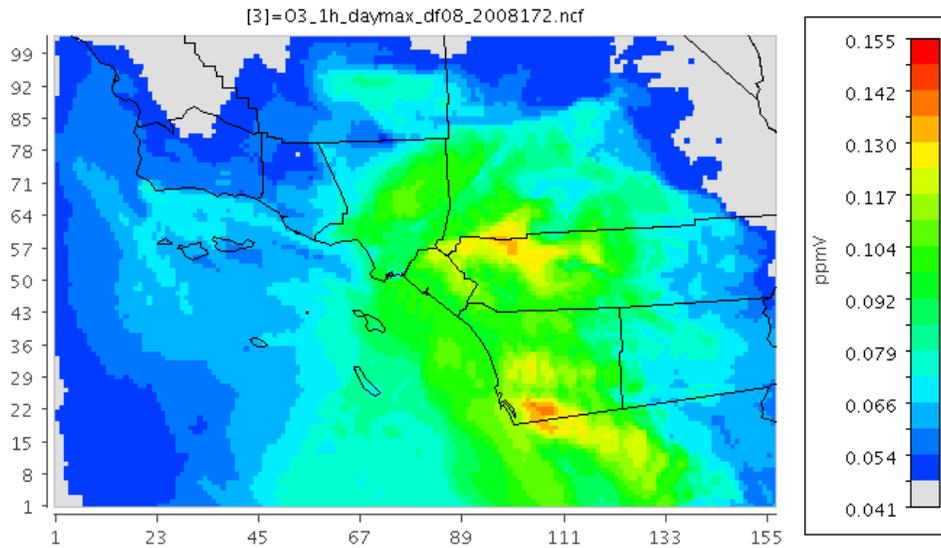


FIGURE VII-5-8
CMAQ predicted maximum 1-hour ozone (PPB) for for June 20, 2008

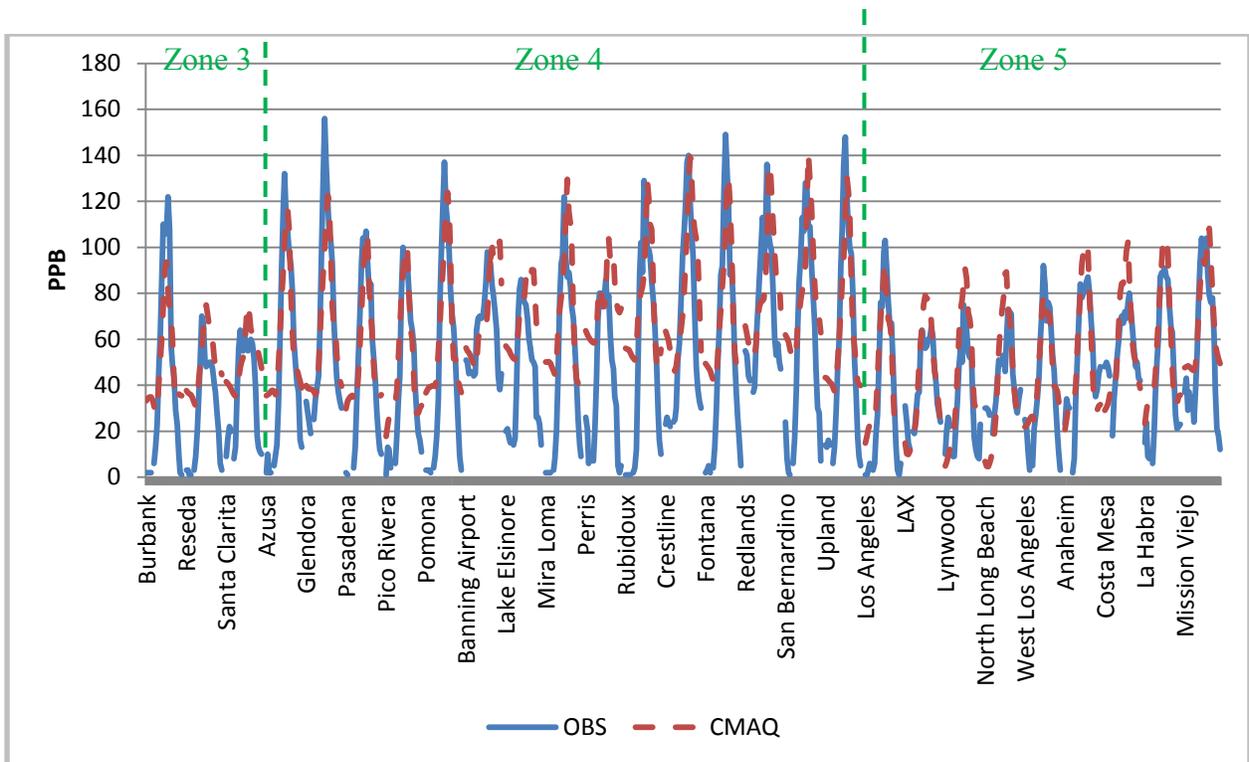


FIGURE VII-5-9
CMAQ predicted and observed diurnal trends of 1-hour ozone for June 21, 2008

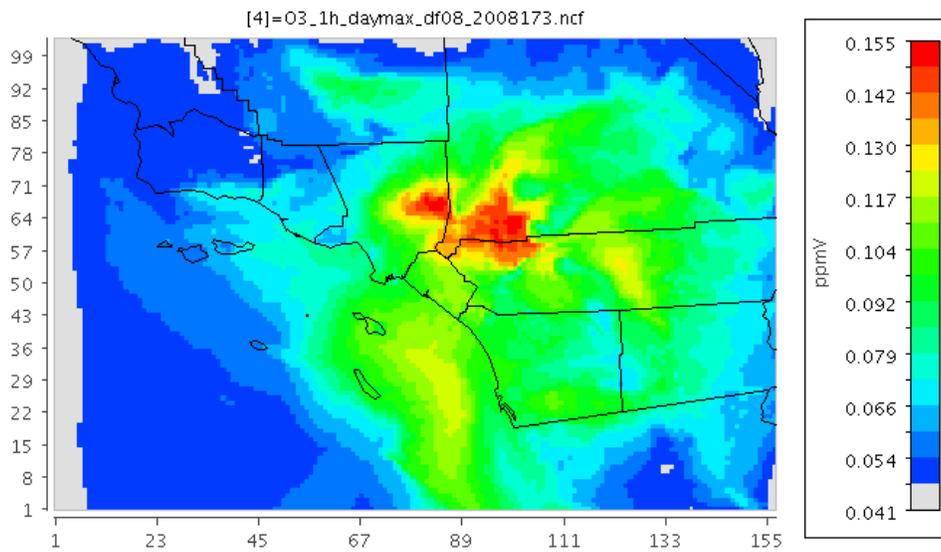


FIGURE VII-5-10
CMAQ predicted maximum 1-hour ozone (PPB) for June 21, 2008

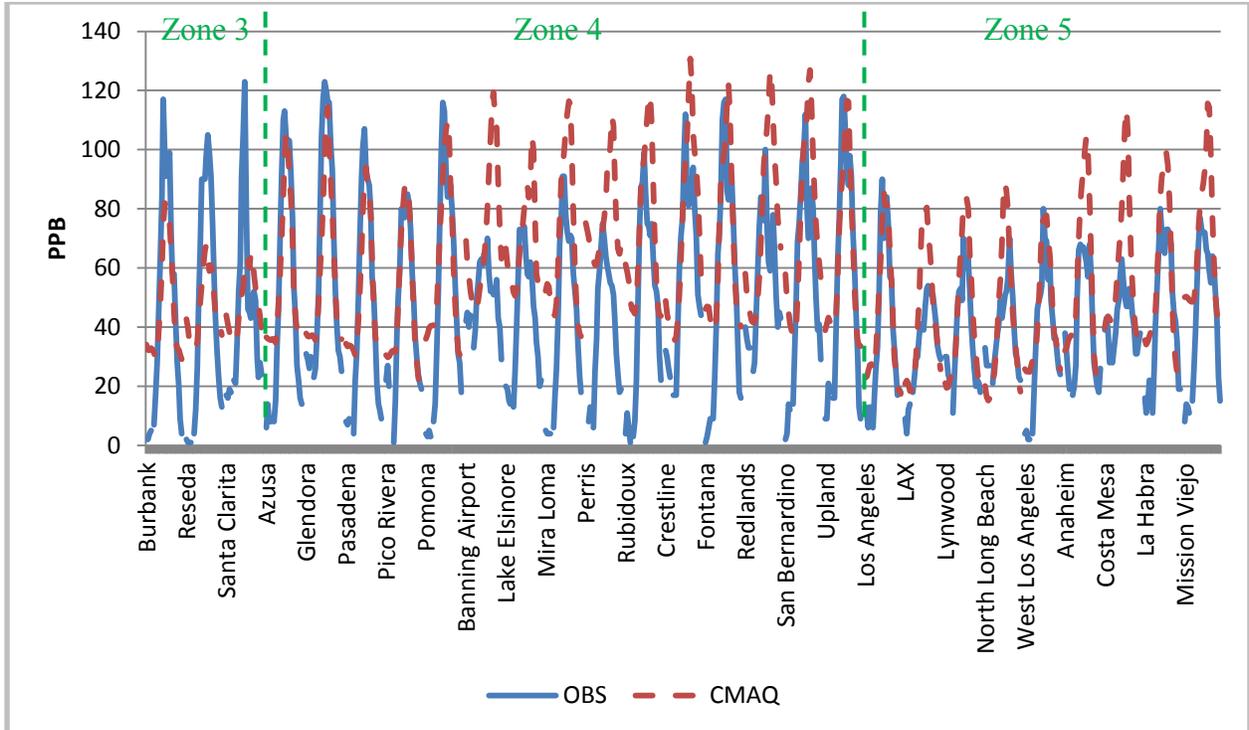


FIGURE VII-5-11
CMAQ predicted and observed diurnal trends of 1-hour ozone for June 22, 2008

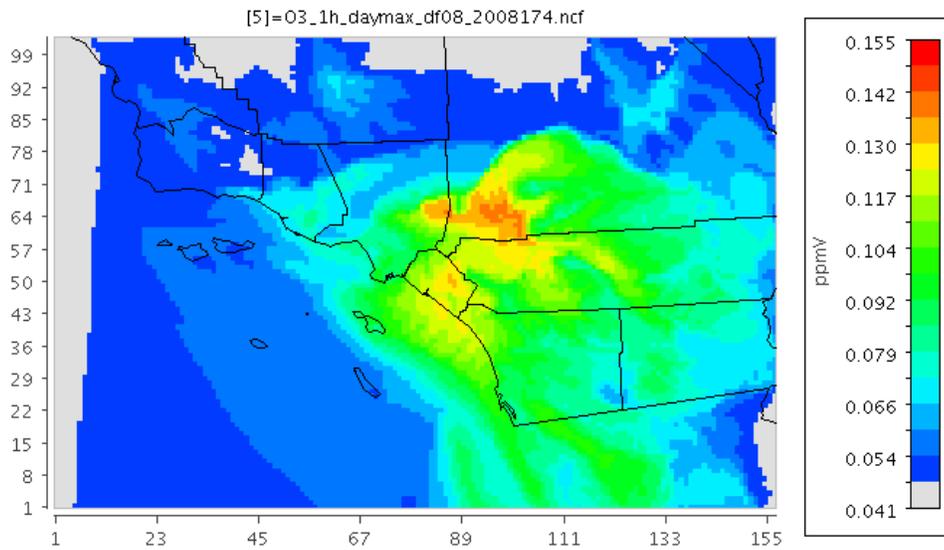


FIGURE VII-5-12
CMAQ predicted maximum 1-hour ozone (PPB) for June 22, 2008

ATTAINMENT DEMONSTRATION

Table VII-5-7 provides the summary of the 1-hour ozone attainment demonstration using the CMAQ modeling platform and the 2022 controlled emissions inventory (410 TPD VOC, 150 TPD NO_x). The Controlled Emissions Projection Algorithm (CEPA) summary is provided as Attachment 3 to this document. The maximum predicted 1-hour ozone concentration on 125.6 ppb occurs on June 19th at Pasadena. All other predicted concentrations during the five day episode are projected to be below the attainment demonstration concentration threshold of 124.4 ppb. (Note: both June 18th and June 20th failed to meet all of the model acceptance criteria, more specifically the unpaired peak analysis. As a result, the attainment demonstration is focusing on the June 19th and 21st, days with observed peak concentrations that closely matched the design values).

The final two columns in Table VII-5-7 provide the maximum of the 2022 predicted daily maximum 1-hour ozone concentrations for all 92 days simulated with the controlled emissions as well as the number of occurrences the daily maximum was predicted to exceed 124.4 ppb. The analysis demonstrated that throughout the June through August smog season, only Pasadena on June 19th has a 2022 predicted 1-hour daily maximum ozone concentrations that would exceed the attainment threshold. All other predicted maximum 1-hour average concentrations during the 92 day summer ozone season are projected to be at least 10 percent below the attainment threshold. This is illustrated by the time series of predicted daily maximum 1-hour ozone concentrations in Figure VII-5-13. Regional temperatures during the June episode were extremely warm, giving rise to extensive evaporative and biogenic emissions. Midday temperatures in the San Gabriel Valley exceeded 100 degrees Fahrenheit on each day during the episode. Table VII-5-8 lists a summary of 4 model simulations for June 19th which include the 2022 predicted maximum 1-hour ozone for that day, the maximum predicted 1-hour ozone over all 92 simulated days, and the number of days the standard was projected to be violated at each station. The simulations included 2022 baseline emissions, and model analyses with remaining emissions of 410 TPD VOC and 180, 160 and 150 TPD NO_x.

The analysis shows that when NO_x emissions are reduced from the 2022 baseline values to 180 TPD, only 4 sites have one day exceeding the standard throughout the season. Three violations are projected to occur on June 19th while the violation at Upland is projected to occur on June 20th. When simulated with 160 TPD NO_x, only Burbank and Pasadena are projected to exceed the standard on June 19th, and with 150 TPD NO_x, only Pasadena is projected to exceed the standard on one day. The high biogenic emissions during this episode may have contributed to an increasing VOC/NO_x ratio in this area which is directly downwind of the metropolitan Los Angeles emissions sources. As biogenic emissions remain constant, NO_x emissions are lowered leading to the increased reactivity and ozone forming potential. By the

150 TPD NO_x emissions level, the impact appears to be isolated only to Pasadena which remained above the 124.4 ppb level. It is important to note that variations in the local wind field and deeper atmospheric mixing responding to the surface heating on June 18th and June 20th may have ameliorated the impact to the San Gabriel Valley on those days.

The form of the 1-hour standard allows for a single exceedance at a station annually. Given the form of the standard, the 410 TPD VOC and 150 TPD NO_x emissions carrying capacity satisfies the Basin 1-hour ozone attainment demonstration. The 410 TPD VOC and 150 TPD NO_x level emissions carrying capacity translates to a 30 TPD (7 percent) reduction in VOC emissions beyond the 2022 baseline and a 185 TPD (55 percent) reduction in NO_x emissions beyond 2022 baseline. The 150 TPD NO_x level represents a conservative estimate of the carrying capacity. Since the form of the standard allows for one exceedance per station per year, it may be possible to meet the standard at NO_x levels as high as 180 TPD as demonstrated in Table VII-5-8.

Figures VII-5-14 through VII-5-23 provide the gridded daily 1-hour maximum ozone simulated for the 2022 baseline (440 TPD VOC and 335 TPD NO_x) and controlled emissions (410 TPD VOC and 150 TPD NO_x).

TABLE VII-5-7

Predicted Maximum 1-Hour Ozone (PPB) for the June 18-22 Episode for the 2022
Controlled Summer Planning Day Emissions

	June 18 Wed	June 19 Thu	June 20 Fri	June 21 Sat	June 22 Sun	92 Days Simulated Maximum PPB	Number of Days > 124.4 PPB
Azusa	112.7	116.1	112.8	119.5	93.4	119.5	0
Burbank	107.5	121.9	97.6	91.3	78.6	121.9	0
Glendora	115.6	113.0	113.7	115.6	91.4	115.6	0
Pasadena	112.4	125.6	109.3	108.6	89.7	125.6	1
Pomona	122.1	89.5	101.3	112.2	99.0	122.1	0
Reseda	66.0	97.6	79.9	58.9	54.8	97.6	0
Santa Clarita	55.3	61.8	58.4	58.2	56.2	93.8	0
Banning Airport	104.7	83.0	103.2	93.8	104.9	104.9	0
Lake Elsinore	83.5	81.2	69.4	62.3	72.9	98.0	0
Mira Loma	111.9	90.9	106.7	100.2	105.1	111.9	0
Perris	97.6	90.9	77.8	92.3	101.1	101.1	0
Rubidoux	110.8	90.5	106.8	104.8	109.9	110.8	0
Crestline	99.5	83.4	106.7	116.4	96.1	116.4	0
Fontana	120.1	89.0	102.0	116.1	103.4	120.1	0
Redlands	115.1	94.5	109.1	104.1	107.6	115.1	0
San Bernardino	117.8	95.1	107.4	99.7	108.2	117.8	0
Upland	122.0	89.8	104.1	112.6	94.7	122.0	0

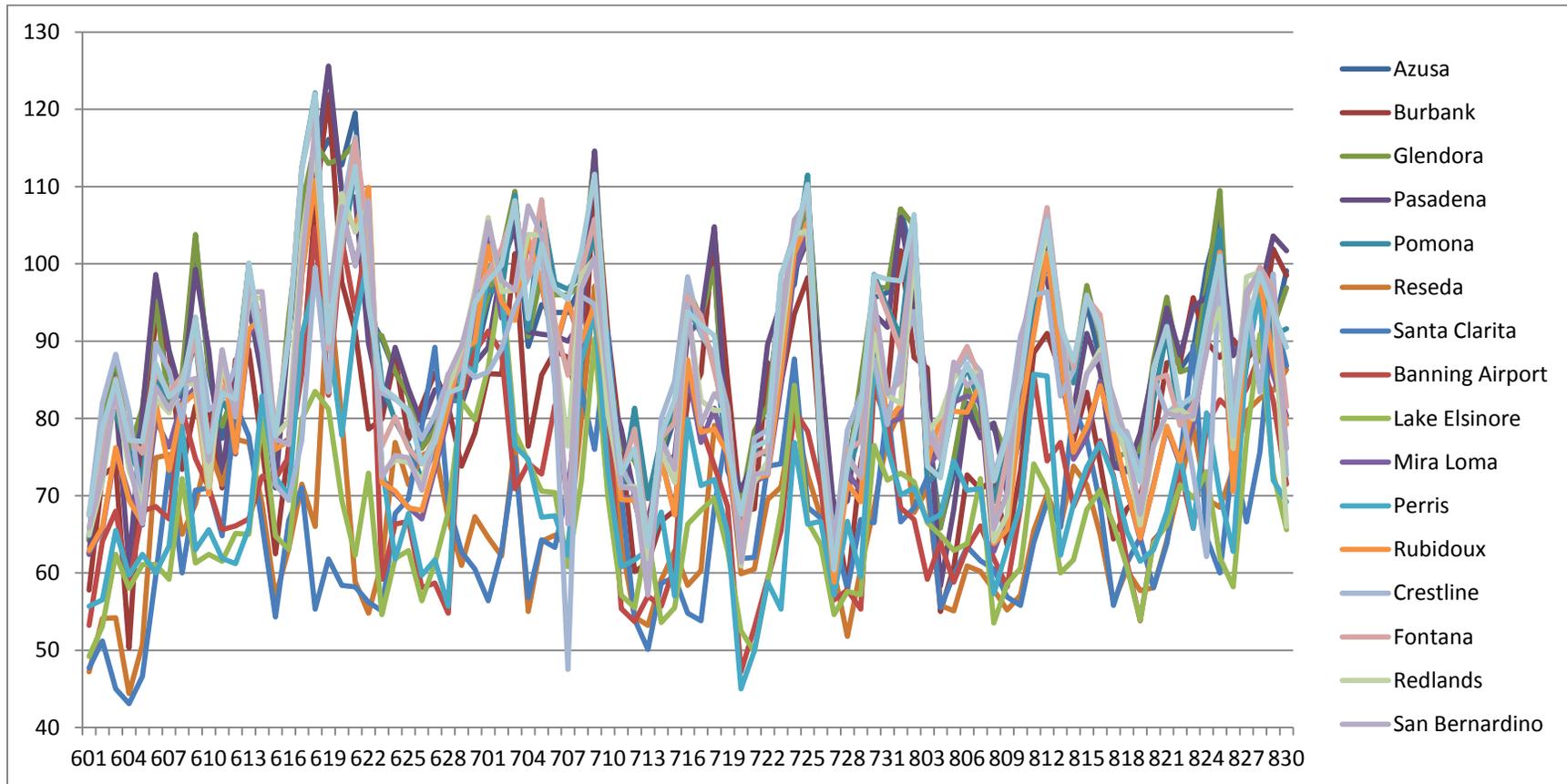


FIGURE VII-5-13

CMAQ Simulated Daily 1-Hour Maximum Ozone for June through August 2022 with the 2022 Controlled Summer Emissions. (The green dashed line depicts the 124.4 PPB threshold for the attainment demonstration).

TABLE VII-5-8

Predicted Maximum 1-Hour Ozone (PPB) for the June 19th Episode for the 2022 Baseline and Selected Controlled Summer Planning Day Emissions

Station	Baseline	92 Day Max (PPB)	Days > 124.4 PPB	NOx 180			NOx 160			NOx 150		
	Emissions June 19 Max (PPB)			TPD June 19 Max (PPB)	92 Day Max (PPB)	Days > 124.4 PPB	TPD June 19 Max (PPB)	92 Day Max (PPB)	Days > 124.4 PPB	TPD June 19 Max (PPB)	92 Day Max (PPB)	Days > 124.4 PPB
Azusa	113.5	133.1	1	120.1	124.8	1	119.1	121.9	0	116.1	119.5	0
Burbank	129.3	129.3	1	127.0	127.0	1	124.5	124.5	1	121.9	121.9	0
Glendora	112.9	132.4	1	117.0	121.3	0	115.8	118.4	0	113.0	115.6	0
Pasadena	122.4	122.4	0	128.4	128.4	1	127.2	127.2	1	125.6	125.6	1
Pomona	104.8	126.1	1	92.4	123.7	0	92.5	123.0	0	89.5	122.1	0
Reseda	111.4	111.4	0	101.8	101.8	0	99.6	99.7	0	97.6	97.6	0
Santa Clarita	67.7	108.2	0	63.2	105.1	0	62.3	104.4	0	61.8	93.8	0
Banning Airport	96.4	124.5	1	86.8	111.6	0	85.2	109.7	0	83.0	104.9	0
Lake Elsinore	98.8	107.7	0	85.2	102.3	0	82.8	100.7	0	81.2	98.0	0
Mira Loma	110.6	126.4	2	94.3	116.7	0	91.4	114.8	0	90.9	111.9	0
Perris	110.6	115.6	0	94.4	107.8	0	91.6	106.9	0	90.9	101.1	0
Rubidoux	109.8	127.1	2	93.8	116.6	0	90.8	115	0	90.5	110.8	0
Crestline	102.9	136.7	2	86.9	123.9	0	84.1	121.1	0	83.4	116.4	0
Fontana	106.0	131.7	1	92.5	123.6	0	89.9	121.6	0	89.0	120.1	0
Redlands	114.0	131.0	2	98.1	119.8	0	95	117.5	0	94.5	115.1	0
San Bernardino	113.5	127.8	4	98.4	121.9	0	95.3	120.4	0	95.1	117.8	0
Upland	107.4	127.0	1	93.3	124.5	1	90.6	123.4	0	89.8	122.0	0

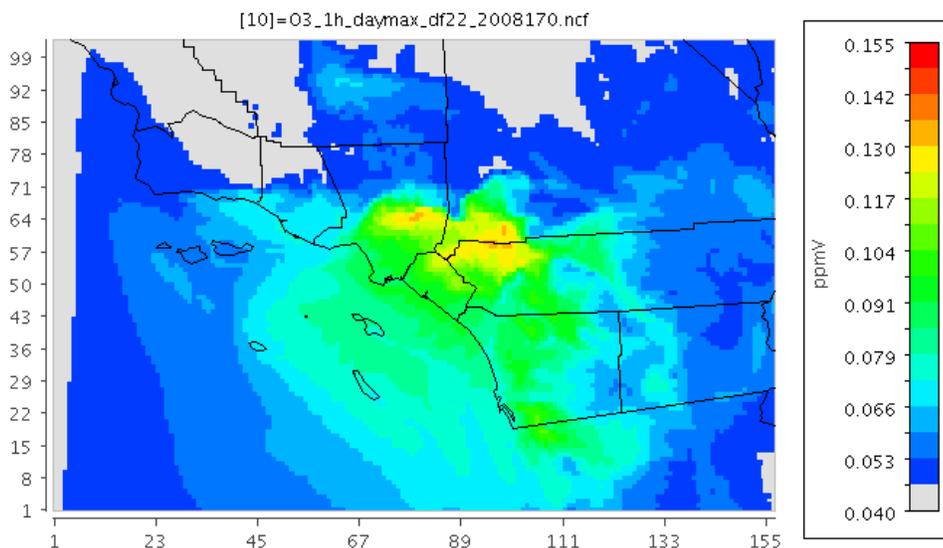


FIGURE VII-5-14

CMAQ predicted 2022 maximum 1-hour ozone (PPB) for June 18, 2008: Baseline Emissions

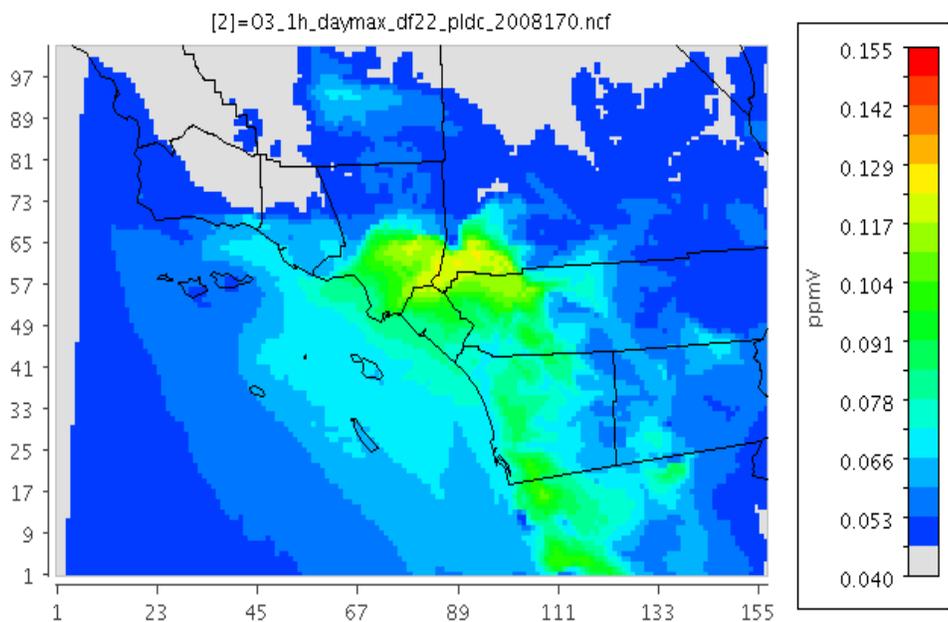


FIGURE VII-5-15

CMAQ predicted 2022 maximum 1-hour ozone (PPB) for June 18, 2008: Controlled Emissions

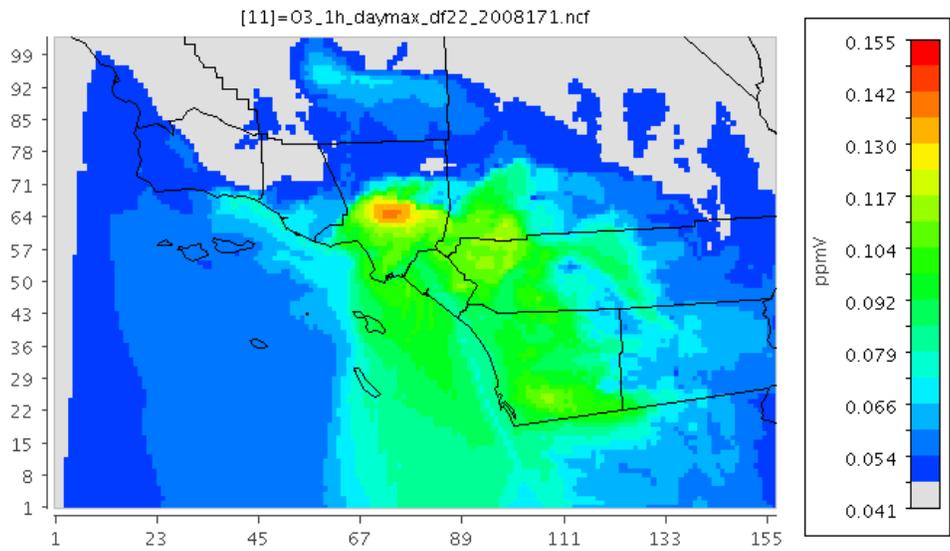


FIGURE VII-5-16

CMAQ predicted 2022 maximum 1-hour ozone (PPB) for June 19, 2008: Baseline Emissions

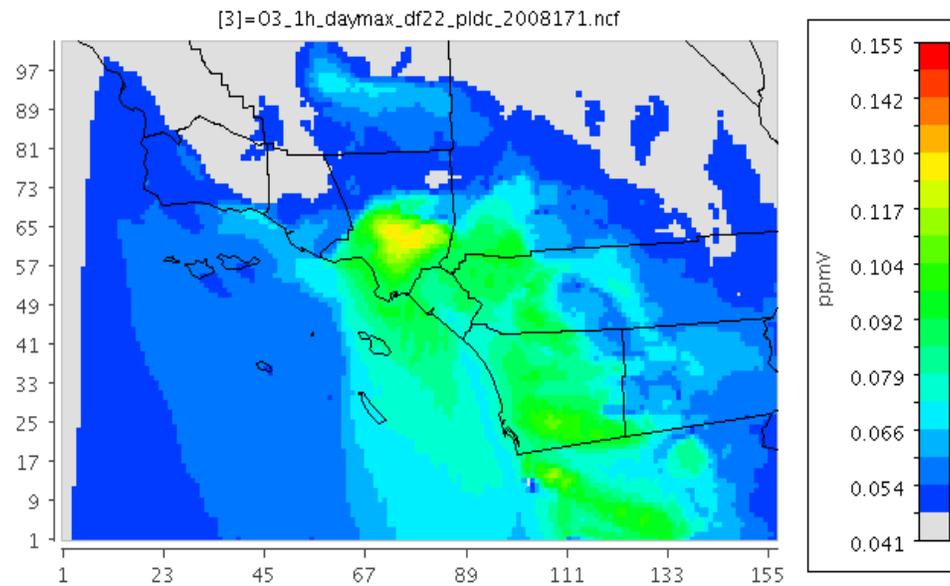


FIGURE VII-5-17

CMAQ predicted 2022 maximum 1-hour ozone (PPB) for June 19, 2008: Controlled Emissions

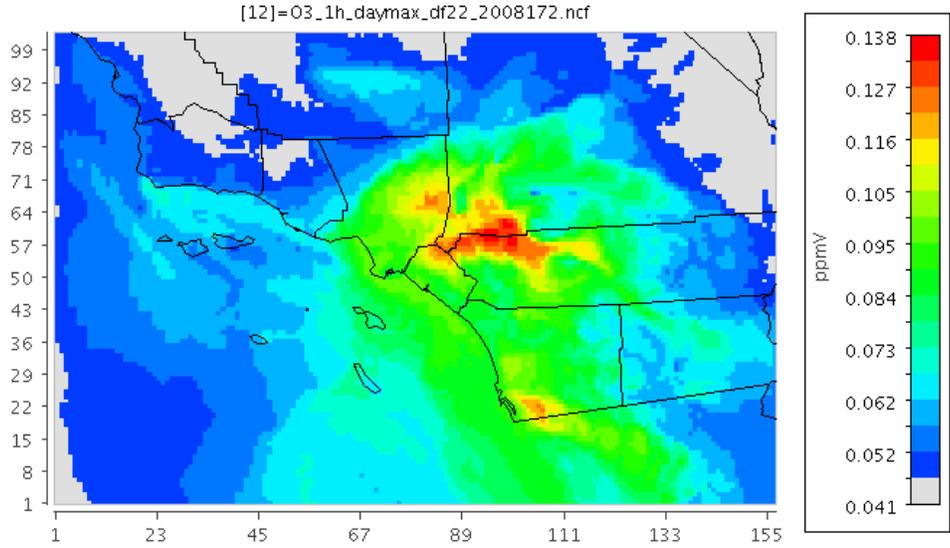


FIGURE VII-5-18

CMAQ predicted 2022 maximum 1-hour ozone (PPB) for June 20, 2008: Baseline Emissions

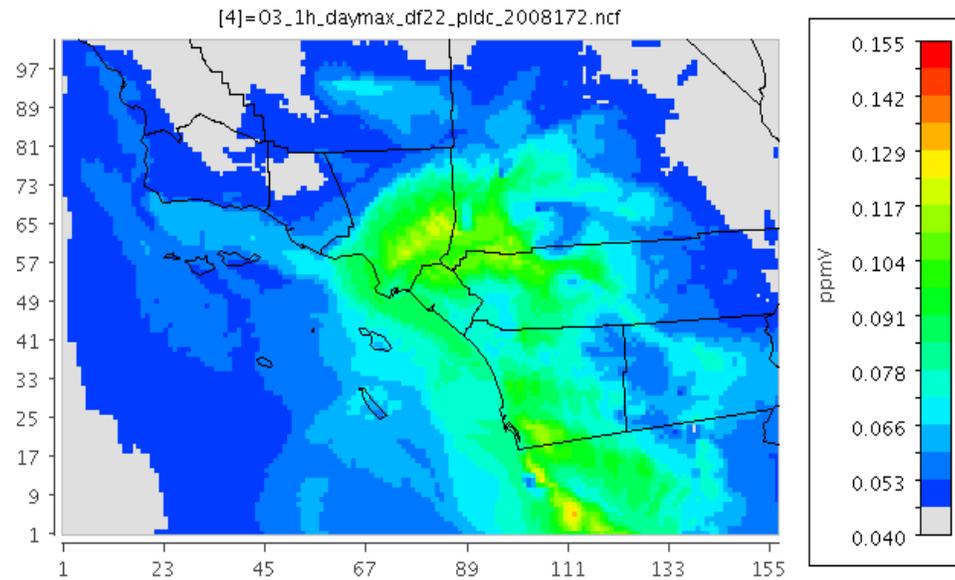


FIGURE VII-5-19

CMAQ predicted 2022 maximum 1-hour ozone (PPB) for June 20, 2008: Controlled Emissions

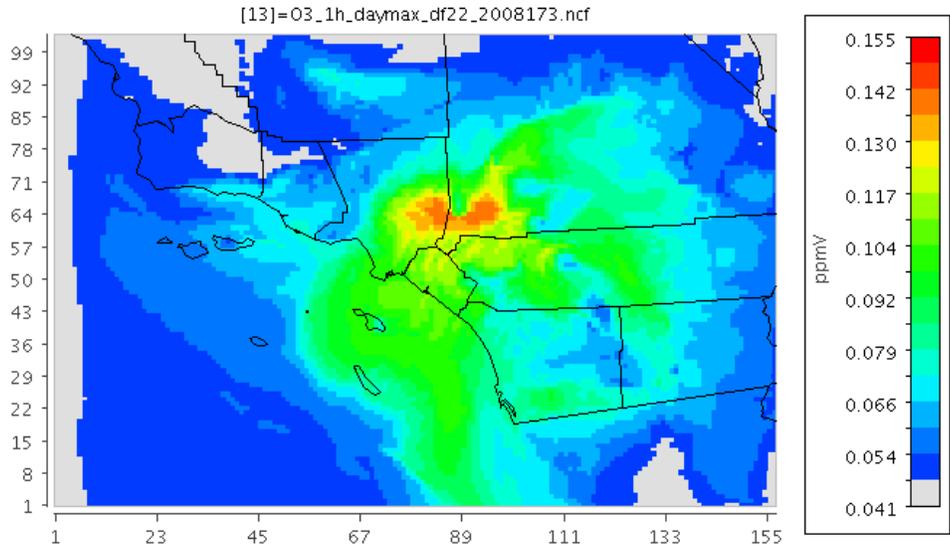


FIGURE VII-5-20

CMAQ predicted 2022 maximum 1-hour ozone (PPB) for June 21, 2008: Baseline Emissions

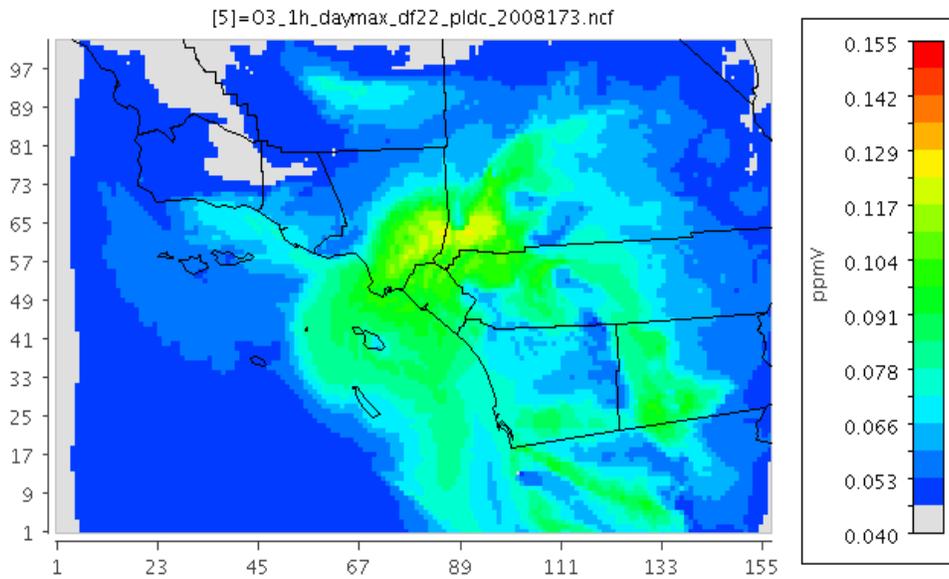


FIGURE VII-5-21

CMAQ predicted 2022 maximum 1-hour ozone (PPB) for June 21, 2008: Controlled Emissions

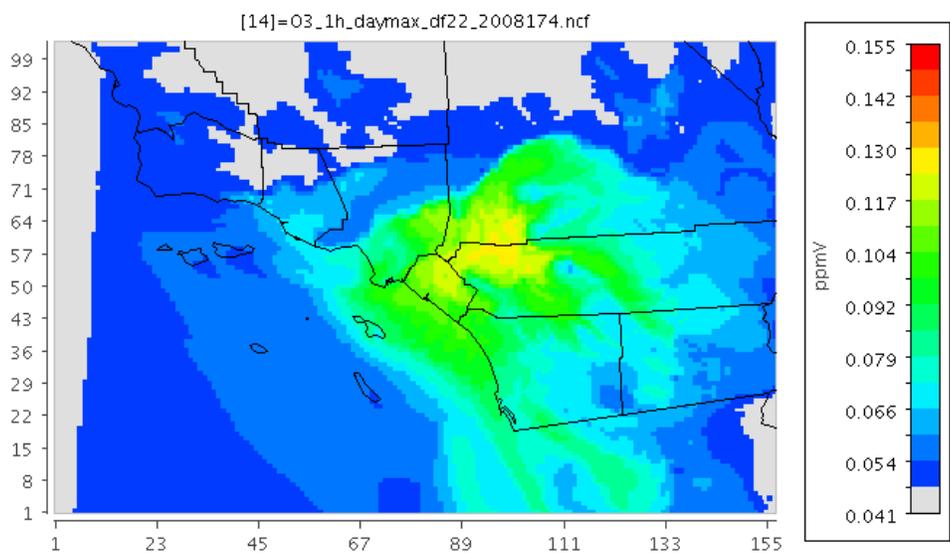


FIGURE VII-5-22

CMAQ predicted 2022 maximum 1-hour ozone (PPB) for June 22, 2008: Baseline Emissions

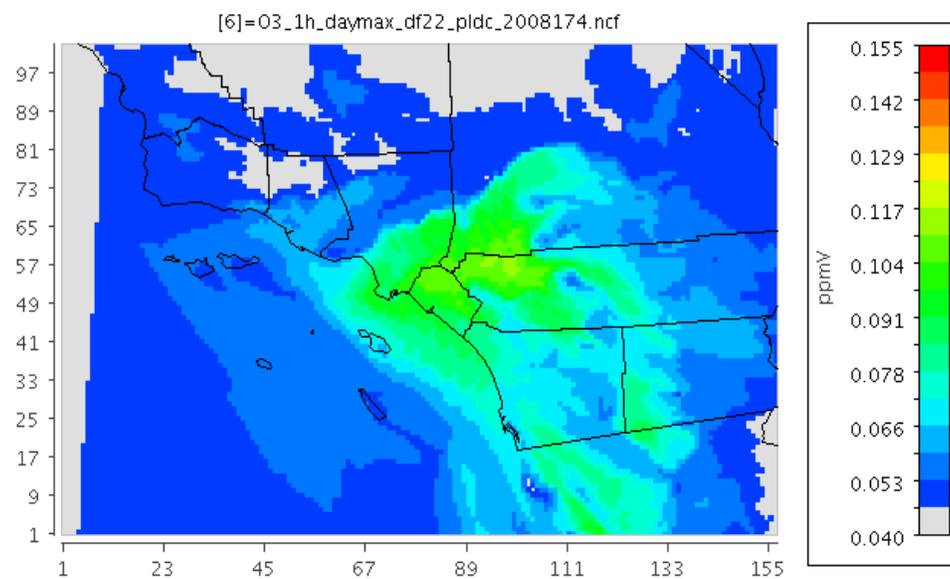


FIGURE VII-5-23

CMAQ predicted 2022 maximum 1-hour ozone (PPB) for June 22, 2008: Controlled Emissions

WEIGHT OF EVIDENCE

The U.S. EPA recommends that a weight of evidence discussion be incorporated with air quality attainment demonstrations, particularly if the future year simulated ozone concentrations are within a certain percent of the standard in question. For 8-hour ozone, U.S. EPA requires a weight of evidence discussion to provide aggregate supplemental analyses to support the modeled attainment test if the future projected concentration falls within 3 percent of the acceptance threshold. Applying this criterion for the 1-hour standard would require a weight of evidence discussion if the projected maximum concentration fell within 4 ppb of the 124.4 threshold. As such, the weight of evidence discussion presented in this section addresses two lines of reasoning why the proposed control strategy and associated emissions reductions will achieve attainment of the 1-hour ozone standard. The first analysis examines the trends of observed ozone and precursor emissions and then projecting those trends forward in time to determine when an empirically projected attainment date would take place and if the emissions trends continued. As previously stated, the second analysis employs a tiered RRF approach to determine if the emissions reductions using the simulation ratio and design value methodology provides further support for the demonstration of attainment.

Figures VII-5-24 and VII-5-25 present the trends of observed annual 1-hour maximum ozone concentrations and the projections of the trend through 2023. Figure VII-5-24(a) depicts the long term trend beginning with 1976 and including all years through 2011. The linear regression best fit line indicates that if the trend is projected forward in time, the Basin would be expected to meet the one hour standard as early as 2013. However, a close examination of the long term trend shows an inflection that occurred post 1996 California Phase II Reformulation creating a “hockey stick” appearance. Reexamining the blade of the hockey stick in Figure VII-5-24(b) from 2000 through 2011, the best fit projection suggests attainment would take until 2023 which is consistent with the attainment demonstration. Similarly, by 2022 the trends of Basin VOC and NO_x emissions with full implementation of the 2007 AQMP will be very consistent with the targeted carrying capacity (410 TPD VOC and 150 TPD NO_x).

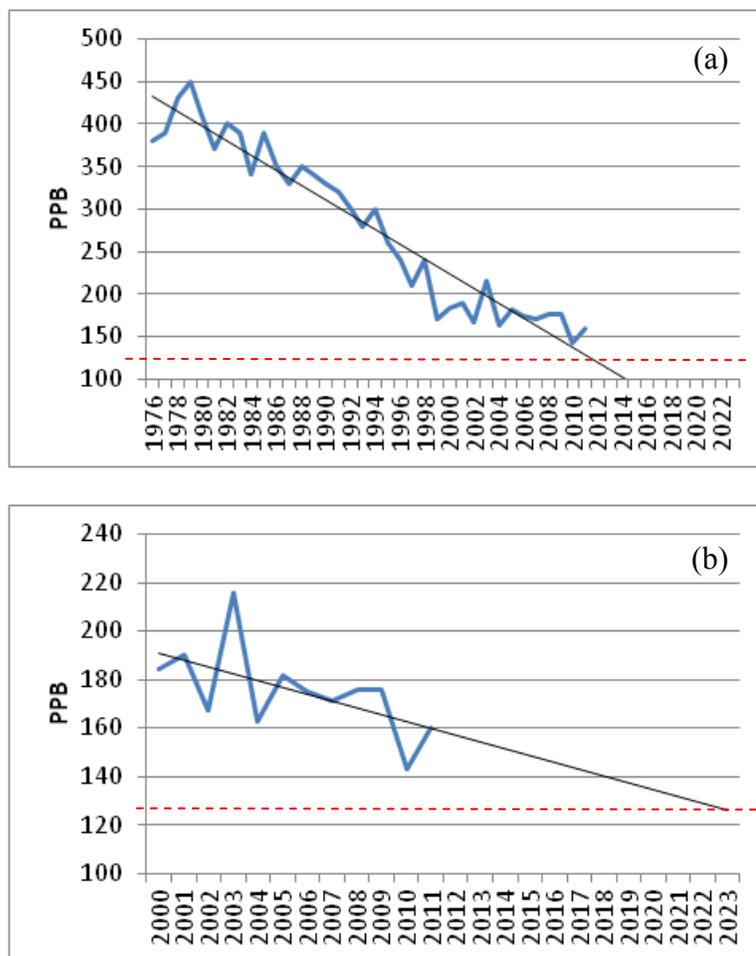


FIGURE VII-5-24

Trends of Annual Basin 1-Hour Maximum Ozone Concentrations with Projections to 2023: (a) 1976 – 2011, (b) Post Phase II Fuel Reformulation: 2000 – 2011. (The dashed red line depicts the attainment threshold 124 PPB).

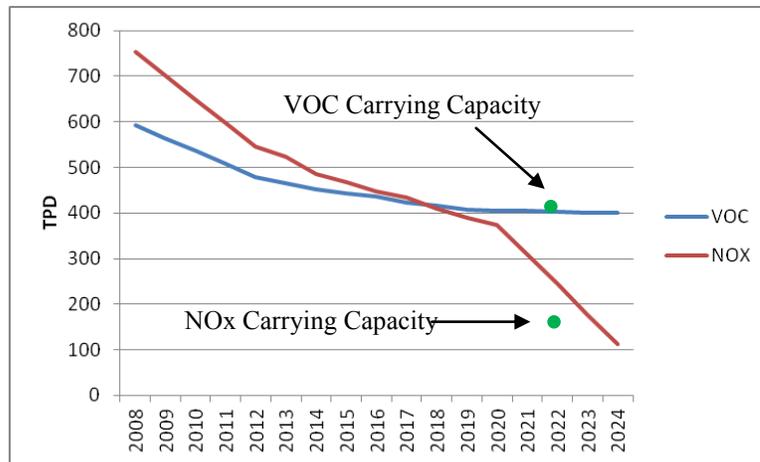


FIGURE VII-5-25

Trends of Annual Basin 1-Hour Maximum Ozone Concentrations with Projections to 2023: (a) 1976 – 2011, (b) Post Phase II Fuel Reformulation: 2000 – 2011. (The dashed red line depicts the attainment threshold 124 PPB).

The second element of the weight of evidence discussion utilizes the tiered RRF approach to determine station specific future year design concentrations based on base year 2008 emissions and 2022 controlled emissions. The proposed methodology tiers the concentration threshold for accepting a simulation station day based on three criteria for evaluation: (1) the base year daily maximum concentration absolute prediction error (calculated for a station per episode day) must be 20 percent or less; (2) the observed station concentration must be within 25 percent of the design value; and (3) a minimum of four station specific days simulated must meet the error at the set concentration threshold for the RRF to be calculated. The 20 percent error criteria is the same level used in the 8-hour ozone analysis and the four day minimum was iteratively determined to provide a measure of robustness to the RRF calculation. Basically, the four day criteria represented a balance between an analyses based on a higher error criteria with potentially more days included at a higher concentration threshold vs. a limited set of better simulated station days with lower prediction error. Table VII-5-9 lists the impacted stations and the threshold concentration used for the RRF calculation. Also listed in Table VII-5-9 are the base year average percentage prediction bias and error for those days included in the future year projection. Overall, the base year tendency is towards under prediction.

It is important to note that the analysis included both weekdays and weekend days. For example, the RRF calculation for the design site, Crestline, included 4 days with

observed concentrations above 140 ppb including one Thursday, two Fridays and one Saturday. In contrast, the RRF for Fontana met the four day criteria at the 120 ppb threshold with one Thursday, two Saturdays and two Sunday episodes respectively. For both Azusa and Glendora, one of the four days included in the analysis was a weekday.

TABLE VII-5-9

Ozone Episode Selection Criteria: Four Days Above Threshold With Daily Absolute Percentage Prediction Error < 20%

Station	Zone	Tier (PPB)	No. Days	Avg Bias (PPB)	Avg Error (PPB)
Burbank	3	100	4	-8.4	8.4
Reseda	3	100	5	-8.0	9.5
Santa Clarita	3	110	6	-12.0	12.0
Azusa	4	115	4	-11.6	11.6
Glendora	4	120	4	-11.3	11.3
Pomona	4	115	5	-2.3	3.1
Banning Airport	4	100	5	-5.6	10.6
Lake Elsinore	4	115	7	-9.9	9.9
Mira Loma	4	120	4	4.3	4.9
Perris	4	115	6	-13.7	13.7
Rubidoux	4	125	4	-1.8	7.4
Crestline	4	140	5	-8.6	10.5
Fontana	4	120	5	-1.2	6.1
Redlands	4	130	4	0.3	4.7
San Bernardino	4	125	5	0.0	11.2
Upland	4	115	6	-4.8	7.0
Pasadena	5	100	5	-5.9	7.1

Tables VII-5-10 and VII-5-11 provide the summaries of the RRF analyses for the June through August period for 2022 baseline (440 TPD VOC and 335 TPD NOx) and 2022 controlled emissions (410 TPD VOC and 150 TPD NOx). The analyses provide future year projected 1-hour ozone design values for two scenarios: with and without the June 19th simulation day included. The difference between the projected future year design values assessed from the 17 and 18 day analyses provides an assessment of the impact a single day can have on the RRF attainment calculation.

The 2022 baseline analysis (Table VII-5-10) indicates that roughly half of the stations with 2008 weighted design values exceeding 120 ppb will not meet the attainment threshold of 124.4 ppb. Future year design values for the eastern portion of the Basin are projected to approach the standard at several sites. However, Crestline and Upland will remain upwards of 11 ppb over the attainment level. The San Gabriel Valley stations of Azusa, Pasadena and Glendora are all projected to be at least 15 ppb above the standard in the baseline scenario. Removing June 19th from the baseline analysis only impacts Pasadena, whereby the projected future design value is lowered by more than 8 ppb. All other future year design values remain \pm 1 ppb of the 18 station estimate.

When the controlled scenario is implemented in 2022 (Table VII-5-11), the predicted future year design values for the eastern portion of the Basin meet the attainment threshold. Only the San Gabriel Valley has projected design values exceeding the threshold. Removing June 19th from the analysis brings Pasadena into compliance and lowers the future design value at Azusa to within 3 ppb of the attainment goal. The removal of June 19th does not impact Glendora because that day was not included in the base year analysis. Of note, the removal of June 19th causes the Upland future year design value to nominally increase by 2 ppb. The RRF analysis demonstrates that the emissions reductions targeted through the implementation of the control program will cause future year air quality to meet the 1-hour standard at the majority of the areas in the Basin. Accounting for a particularly restrictive meteorological episode day, and excluding an episode such as June 19th, narrowed the gap between a projection of attainment and non-attainment. Overall, the 2022 17-day Tiered RRF analysis based on the controlled emissions closely mirrored the deterministic attainment demonstration.

While the tiered RRF analysis attainment projection can provide an approximation of the form of the 1-hour standard, the analysis does not provide an exact comparison. Day selection, the number of days included in the calculation, and the simulation performance for that day, all have critical impacts on the outcome of the future year projections.

The weight of evidence discussion provided in this section shows that the ongoing trends in air quality due to the implementation of the 2007 and 2012 control program and the control strategies already in place is expected to lower the future year 1-hour ozone design value such that the Basin will meet the standard by 2022. This is consistent with the Basin's projected attainment of the 8-hour ozone standard in 2023. Furthermore, while the tiered RRF analysis did not replicate the deterministic attainment projection, the analysis lends support to the level of emissions reduction need for attainment and the areas of the Basin expected to experience most air quality improvements from implementation of the control program.

TABLE VII-5-10Summary of 2022 Tiered RRF Analysis for Baseline Emissions (440 TPD VOC and 335 TPD NO_x)

Station	Days Included	Threshold to Enter Analysis	2008 Design Value	RRF 18- Days	Future Design 18-Days	RRF 17-Days*	Future Design 17-Days*
Azusa	4	115	137	1.021	139.9	1.024	140.3
Burbank	4	100	127	0.969	123	0.969	123
Glendora	4	120	151	0.949	143.3	0.949	143.3
Pasadena	5	100	130	1.089	141.6	1.026	133.4
Pomona	5	115	138	0.902	124.5	0.907	125.2
Reseda	5	100	125	0.899	112.4	0.899	112.4
Santa Clarita	6	110	141	0.849	119.7	0.849	119.7
Banning Airport	5	100	138	0.868	119.7	0.876	120.9
Lake Elsinore	7	115	133	0.818	108.8	0.818	108.8
Mira Loma	4	120	129	0.844	108.9	0.841	108.5
Perris	6	115	134	0.832	111.5	0.832	111.5
Rubidoux	4	125	137	0.853	116.9	0.850	116.4
Crestline	5	140	158	0.854	134.9	0.858	135.6
Fontana	5	120	148	0.867	128.3	0.865	128
Redlands	4	130	149	0.854	127.2	0.842	125.5
San Bernardino	5	125	150	0.851	127.7	0.829	124.4
Upland	6	115	147	0.924	135.9	0.929	136.6

*June 19th is removed from the analysis

TABLE VII-5-11

Summary of 2022 Tiered RRF Analysis for 2022 Controlled Emissions (VOC 410 TPD, NO_x 150 TPD)

Station	Days Included	Threshold to Enter Analysis	2008 Design Value	RRF 18- Days	Future Design 18-Days	RRF 17-Days*	Future Design 17-Days*
Azusa	4	115	137	0.956	131.0	0.930	127.4
Burbank	4	100	127	0.879	111.6	0.879	111.6
Glendora	4	120	151	0.884	133.5	0.884	133.5
Pasadena	5	100	130	1.035	134.6	0.950	123.5
Pomona	5	115	138	0.788	108.8	0.797	110.0
Reseda	5	100	125	0.808	101.0	0.808	101.0
Santa Clarita	6	110	141	0.747	105.3	0.747	105.3
Banning Airport	5	100	138	0.743	102.5	0.751	103.6
Lake Elsinore	7	115	133	0.683	90.9	0.683	90.9
Mira Loma	4	120	129	0.746	96.2	0.760	98.0
Perris	6	115	134	0.705	94.5	0.705	94.5
Rubidoux	4	125	137	0.758	103.8	0.773	105.9
Crestline	5	140	158	0.737	116.4	0.751	118.7
Fontana	5	120	148	0.749	110.8	0.752	111.2
Redlands	4	130	149	0.735	109.6	0.734	109.4
San Bernardino	5	125	150	0.739	110.9	0.727	109.0
Upland	6	115	147	0.824	121.1	0.838	123.2

*June 19th is removed from the analysis

SUMMARY AND CONCLUSIONS

CMAQ regional air quality simulations, conducted for the severe June 18 - 22, 2008 meteorological episode, demonstrate that the Basin will be in attainment of the revoked 1-hour ozone standard with controlled emissions of 410 TPD VOC and 150 TPD NO_x in 2022. The form of the 1-hour standard allows for one day at each station to exceed the threshold of 120 ppb (124.4 for the modeling attainment threshold). When the deterministic modeling was expanded to include 92 days of simulations from June 1 through August 31, the projected number of violations of the standard totaled one station day at Pasadena. The attainment demonstration is supported by the air quality trend analysis and a companion attainment analysis based on a tiered RRF methodology.

The 1997 SIP's 1-hour ozone attainment demonstration defined a 2010 VOC and NO_x emissions carrying capacity 413 and 530 TPD, respectively. The 2003 AQMP's updated attainment demonstration revised the projection to 313 TPD VOC and 541 TPD NO_x. The contribution of the long term emissions reductions measures to the attainment demonstration were 46 percent in 1997 and 76 percent in 2003. The 2007 federally approved 8-hour ozone attainment demonstration defined a 2023 carrying capacity of 420 TPD VOC and 114 TPD NO_x. As presented above, the 1-hour ozone attainment demonstration defines a 2022 carrying capacity of 410 TPD VOC and 150 TPD NO_x. For both the current 8-hour and revoked 1-hour ozone standards, require a control strategy that significantly reduces NO_x emissions and thus a continued reliance on long term measures (CAA Section 182(e)(5) "black box" measures). For the 1-hour ozone attainment demonstration, the "black box" control measures account for 43 percent of the total emissions reductions from the 2022 baseline needed for attainment.

This current 1-hour ozone attainment demonstration requires 7 percent VOC and 55 percent NO_x emissions reductions from 2022 baseline emissions. The targeted emissions reductions to achieve 1-hour ozone attainment are consistent in both the amount of emissions reduction and timing of those reductions with the approved 2007 8-hour ozone SIP inventory. Table VII-5-12 summarizes the emissions reductions required for attainment of the 1-hour ozone standard.

TABLE-VII-5-12

1-hour Ozone Attainment Demonstration Emissions Summary

Scenario	VOC (TPD)	NO _x (TPD)	CO (TPD)
2022 Baseline	440	335	1540
2022 Attainment	410	150	1540
Total Reduction	30	185	0
Percentage Reduction From Baseline	7	55	0

SECTION 6

Environmental and Socioeconomic Impacts

California Environmental Quality Act (CEQA)

In anticipation that U.S. EPA would likely request that the District prepare a one-hour ozone SIP, the Program Environmental Impact Report (EIR) for the 2012 AQMP included a total of 11 project objectives² including the following:

- Continue making expeditious progress towards attaining the federal eight-hour ozone standard and demonstrate attainment of the federal one-hour ozone standard (revoked) by 2022 – 2023;
- Reduce population exposure to ozone through continued progress towards attaining the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023;

The 2012 AQMP reflects a multi-agency effort to identify 2012 AQMP control measures that specifically address the District’s efforts to attain the federal 24-hour PM_{2.5} standard and the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023, respectively. Consistent with CEQA requirements to analyze the whole of the actions from a project, the Program EIR prepared for the 2012 AQMP includes an environmental analysis of all PM_{2.5} control measures, as well as, all of the ozone-related control measures in the 2012 AQMP.

On September 19, 2012, U.S. EPA published in the Federal Register a proposed “SIP call” which, if finalized, would require the District to prepare a demonstration of attainment of the one-hour ozone standard, with attainment required by ten years from the date the SIP call is finalized. The same day, U.S. EPA published in the Federal Register a proposal to withdraw its approval of, and then to disapprove, the transportation control measure (TCM) demonstrations, also referred to as VMT emissions offset demonstrations, in the 2003 one-hour ozone plan and the 2007 eight-hour ozone plan. As explained by U.S. EPA, both of these actions were taken in response to a decision of the Ninth Circuit Court of Appeals in *Association of Irrigated Residents v EPA*, January 27, 2012.

In response to U.S. EPA’s “SIP call” and in anticipation that it will be finalized, District staff has prepared this *1-hour Ozone Attainment Demonstration*, which demonstrates attainment of the federal one-hour (revoked) ozone standard by the year 2022. The federal one-hour ozone attainment demonstration in this document contains all of the same ozone control measures that are included in the 2012 AQMP,

² CEQA Guidelines §15124(b)

as well as the seven remaining mobile source control measures from the 2007 AQMP. No new measures are proposed beyond those in the 2012 AQMP.

Similarly, in connection with the proposed disapproval of the TCM demonstrations for the South Coast Air Basin, U.S. EPA prepared a guidance document³ for Severe and Extreme ozone nonattainment areas on how to address Clean Air Act (CAA) §182(d)(1)(A) (VMT emissions offset demonstrations). District staff conducted a VMT emissions offset analysis pursuant to U.S. EPA guidance and concluded that actual emissions with controls and VMT growth were substantially less than emissions assuming no new measures and no VMT growth ("ceiling"). Based on this conclusion, no new TCMs are required for the one-hour ozone SIP. District staff has prepared the *VMT Offset Requirement Demonstration* (2012 AQMP Appendix VIII) to provide the results of the VMT emissions offset analysis to the public.

With regard to the seven mobile source control measures from the 2007 AQMP, potential environmental impacts from these control measures along with all other 2007 AQMP ozone and PM2.5 control measures were evaluated in the Final Program EIR for the 2007 AQMP (Sch. #2006111064), certified by the District Governing Board on June 1, 2007. These remaining measures would be implemented even without the 2012 AQMP. For this reason, the seven mobile source control measures, as well as four other remaining control measures from the 2007 AQMP, were also evaluated as Alternative 1, the No Project Alternative, in the 2012 AQMP Program EIR, which concluded that implementation of the remaining 2007 AQMP control measures would not generate any significant adverse environmental impacts. The inclusion of existing 2007 AQMP control measures in this *1-hour Ozone Attainment Demonstration* does not require additional environmental review where no changes are being proposed to the 2007 measures.

Based on the above information, no additional control measures or TCMs to address progress in attaining the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023 have been identified beyond those listed in the 2012 AQMP. This means that this *1-hour Ozone Attainment Demonstration* includes all of the same ozone-related control measures that are currently in the 2012 AQMP. Further, the timing or implementation dates of the ozone control measures in this *1-hour Ozone Attainment Demonstration* compared to timing and implementation dates in the 2012 AQMP would not change to meet the one-hour standard. Therefore, by analyzing the 2012 AQMP ozone-related control measures in the Program EIR, the Program

³ U.S. EPA. Office of Transportation and Air Quality. 2012. *Implementing Clean Air Act Section 182(d)(1)(A): Transportation Control Measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Travelled*. EPA-420-B-12-053. August. <http://www.epa.gov/otaq/stateresources/policy/general/420b12053.pdf>.

EIR also serves as the CEQA document for this *1-hour Ozone Attainment Demonstration* and the *VMT Offset Requirement Demonstration* (2012 AQMP Appendix VIII). Finally, potential impacts from the seven remaining mobile source ozone control measures from the 2007 AQMP have been disclosed to the public in the 2007 AQMP and as part of the alternatives analysis in the Program EIR for the 2012 AQMP. Since no changes are being proposed to those existing measures, no additional environmental analysis of the 2007 AQMP control measures is required.

Socioeconomic Analysis

The *1-hour ozone attainment demonstration* provided in this Appendix does not include any new measures beyond those proposed for the 8-hour ozone plan in the Draft Final 2012 AQMP. The socioeconomic impacts of the included new measures are fully analyzed in the Socioeconomic Report for the Draft Final 2012 AQMP. The impacts of the 2007 AQMP ozone attainment strategy and the benefits of ozone attainment were discussed in the Socioeconomic Report associated with the 2007 AQMP. Therefore, no additional socioeconomic impact analysis is necessary.

District staff assesses the socioeconomic impacts of proposed rule amendments or proposed rules pursuant to the Board resolutions and state legislative requirements. As additional information on control requirements becomes more well-defined during the rulemaking process, a detailed assessment of their socioeconomic and environmental impacts will be conducted.

**DRAFT FINAL 2012 AQMP
APPENDIX VIII**

**DEMONSTRATION OF OFFSET OF GROWTH
IN EMISSIONS ASSOCIATED WITH GROWTH IN
VEHICLE MILES TRAVELED UNDER SECTION
182(d)(1)(A) OF THE FEDERAL CLEAN AIR ACT**

NOVEMBER 2012

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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Attachment 1 – Post-1990 California Motor Vehicle Control Program

Attachment 2 – Transportation Control Measures Implemented Since 1990

PREFACE

This appendix is prepared as part of the 2012 Air Quality Management Plan to demonstrate that sufficient transportation control strategies and transportation control measures have been identified to offset growth in emissions due to growth in vehicle miles traveled under Section 182(d)(1)(A) of the federal Clean Air Act. Section 182(d)(1)(a) applies to areas classified as severe or extreme nonattainment of the national ambient air quality standard for ozone. As such, the analysis provided in this Appendix applies to air quality management plans and state implementation plans for both the 8-hour ozone (2007 SIP for the South Coast Air Basin) and the previous 1-hour ozone ambient air quality standards (Draft Final 2012 AQMP, Appendix VII).

SECTION 1

INTRODUCTION

INTRODUCTION

The purpose of the vehicle miles travelled (VMT) emissions offset demonstration for the 1-hour and 8-hour ozone standards is to respond to U.S. EPA's proposed action entitled "Disapproval of Implementation Plan Revisions; State of California; South Coast VMT Emissions Offset Demonstrations" published on September 19, 2012 (77 Fed. Reg. 58067). In that proposal, EPA would withdraw its approval of, and then disapprove, the VMT emissions offset demonstrations in the 2003 1-hour ozone State Implementation Plan (SIP or plan) and the 2007 8-hour ozone plan. In turn, EPA's proposed action is in response to a decision of the Ninth Circuit Court of Appeals in *Association of Irrigated Residents v EPA*, (9th Cir., reprinted as amended on January 27, 2012, 686 F. 3d 668).

BACKGROUND

In 1979, EPA established a primary health-based national ambient air quality standard (NAAQS) for ozone at 0.12 parts per million (ppm) averaged over a 1-hour period. See 44 Fed. Reg. 8220 (February 9, 1979). The Clean Air Act (CAA), as amended in 1990, classified areas that had not yet attained that standard, based on the severity of their ozone problem, ranging from Marginal to Extreme. Extreme areas were provided the most time to attain, until November 15, 2010, but were also subject to the most stringent requirements. In particular, Severe and Extreme areas were subject to CAA Section 182(d)(1)(A), which requires state implementation plans to adopt "specific enforceable transportation control strategies and transportation control measures to offset any growth in vehicle miles traveled or numbers of vehicle trips in such area..." EPA designated the South Coast Air Basin as "Extreme" on November 6, 1991 (56 Fed. Reg. 56694). Thus the South Coast Air Basin was subject to this requirement. EPA has historically interpreted this provision of the CAA (now called "VMT emissions offset requirement") to allow areas to meet the requirement by demonstrating that emissions from motor vehicles decline each year through the attainment year. See, e.g., 57 Fed. Reg. 13498, at 13521-13523 (April 16, 1992).

NEW OZONE STANDARD

In 1997, EPA replaced the 1-hour ozone standard with an 8-hour standard of 0.08 ppm [62 Fed. Reg. 38856 (July 18, 1997)]. EPA promulgated rules implementing the new standard. The "Phase 1" rule was issued on April 30, 2004 (69 Fed. Reg. 23951). That rule includes anti-backsliding requirements that meant that many requirements remained applicable even after the revocation of the 1-hour standard, which was effective June 2005. See 40 CFR §51.905(a)(1) and §51.900(f). In particular, an area that was classified as Extreme for the 1-hour standard would remain subject to the VMT emissions offset requirement even if it would not otherwise have been subject to that requirement based on its classification under the new 8-hour ozone standard [40 CFR

§51.900(f)(11)]. EPA's Phase 2 rule, issued on November 29, 2005 (70 Fed. Reg. 71612) required that areas classified as Severe or Extreme under the new 8-hour standard would also be subject to the VMT offset requirement.

SOUTH COAST SIP SUBMISSIONS FOR VMT OFFSET REQUIREMENT

In 1994, the District, SCAG, and CARB submitted the South Coast 1-hour ozone plan, as required by the 1990 Amendments to the Clean Air Act. The plan included transportation control measures (TCMs). In 1997, EPA approved this plan [62 Fed. Reg. 1150 (January 8, 1997)]. In 1997 and 1999, the District, SCAG, and CARB submitted revisions to the plan, which were approved as amended in 2000 [65 Fed. Reg. 18903 (April 10, 2000)]. In 2004, the state agencies submitted the 2003 South Coast 1-hour ozone SIP. In 2008, the District submitted a VMT offset demonstration to comply with the VMT offset requirement by showing that there would be no increase in motor vehicle emissions between the area's base year for the attainment demonstration and the area's attainment year. EPA approved the VMT offset demonstration [74 Fed. Reg. 10176 (March 10, 2009)]. At the same time, EPA disapproved the overall attainment demonstration which had relied on CARB measures that were subsequently withdrawn. (See 1-hour ozone attainment demonstration Appendix).

EPA initially designated the South Coast Air Basin as Severe-17 for the 8-hour ozone standard, but later granted the State's request to reclassify the area as "Extreme" [69 Fed. Reg. 23858 (April 30, 2004)] and [75 Fed. Reg. 24409 (May 5, 2010)]. In 2007, the state submitted a SIP revision to address the 8-hour ozone requirements, including a VMT offset demonstration in accordance with EPA's prior guidance. In March 2012, EPA approved the 2007 South Coast 8-hour ozone SIP, including the VMT emission offset demonstration [77 Fed. Reg. 12674 (March 1, 2012)].

LITIGATION OVER VMT OFFSET REQUIREMENT

In approving the 2003 VMT offset demonstration, EPA used its longstanding interpretation that no additional TCMs are necessary if aggregate motor vehicle emissions are projected to decline each year from the base year of the plan to the attainment year [74 Fed. Reg. 10176, 10179-80 (March 10, 2009)]. Several environmental and community groups challenged this approval. In February 2011, the Ninth Circuit Court of Appeals ruled against EPA, holding that additional transportation control strategies and transportation control measures are required whenever vehicle emissions are projected to be higher than they would have been had vehicle miles traveled not increased, even where aggregate vehicle emissions are actually decreasing

[*Association of Irrigated Residents v EPA*, 632 F. 3d 584, at 596-597, 686 F. 3d. 668 (reprinted as amended on January 27, 2012, and further amended February 13, 2012)]. EPA had filed a petition for panel rehearing in May 2011, which was denied on January 27, 2012.

In the meantime, as of December 15, 2011, when EPA signed its final approval of the 2007 South Coast 8-hour ozone SIP, the Court had not yet ruled on EPA's petition for rehearing. Thus EPA took final action and approved the VMT offset requirement demonstration based on its long-standing interpretation. The final approval was ultimately published on March 1, 2012 (77 Fed. Reg. 12674). Several environmental and community groups filed a lawsuit challenging that approval (*Communities for a Better Environment, et al. v. EPA*, Ninth Circuit No. 12-71340).

EPA'S PROPOSED WITHDRAWAL OF APPROVAL AND DISAPPROVAL OF 2003 AND 2007 VMT OFFSET REQUIREMENT DEMONSTRATIONS

In response to the decision in *Association of Irrigated Residents*, EPA has now proposed to withdraw its approval of and to disapprove the VMT offset requirement demonstrations in the 2003 and 2007 South Coast 1-hour and 8-hour ozone SIPs. As EPA explains, the demonstrations "are not consistent with the court's ruling ...because they fail to identify, compared to a baseline assuming no VMT growth, the level of increased emissions resulting solely from VMT growth and to show how such increased emissions have been offset through adoption and implementation of transportation control strategies and transportation control measures."

If EPA finalizes the proposed disapprovals, the offset sanction in CAA Section 179(b)(2) would apply in the South Coast Air Basin 18 months after the effective date of the final disapproval, and highway funding sanctions six months after that, unless EPA has taken final approval action on a SIP submission that corrects the deficiency. A federal implementation plan (FIP) would also be triggered 24 months after the final disapproval unless the deficiency has been corrected.

EPA GUIDANCE ON VMT OFFSET REQUIREMENT

In August 2012, EPA issued guidance entitled "Implementing Clean Air Act Section 182(d)(1)(A): Transportation Control Measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Travelled".

Among other things, EPA's guidance points out that the Court in *Association of Irrigated Residents* omitted any reference to "transportation control strategies" which are not

defined in the CAA or EPA regulation, but which are eligible to offset growth in emissions due to growth in VMT. EPA's new guidance indicates that technology improvements such as vehicle technology improvements, motor vehicle fuels, and other control strategies that are transportation-related could be used to offset increases in emissions due to VMT. EPA's revised guidance sets forth a method of calculating what is the actual growth in emissions due to growth in VMT. Essentially, the state would compare projected attainment year emissions assuming no new control measures and no VMT growth with projected actual attainment year emissions (including new control measures and VMT growth). If the latter number is smaller than the former, no additional transportation control measures or strategies would be required. If additional transportation control measures and transportation control strategies are required, they should be clearly identified and distinguished from the measures included in the initial calculations for the base year and the three scenarios identified for the attainment year.

In addition, the guidance recommends that the base year to be used in the demonstration be the base year used in the attainment demonstration for the ozone ambient air quality standard. For the 1-hour ozone attainment demonstration as provided in the Clean Air Act, 1990 was used as the base year. For the 8-hour ozone attainment demonstration, 2002 was used as the base year as provided in the 2007 SIP. The District believes, however, that in all cases the proper "base year" is 1990 since Section 182(d)(1)(A) was part of the 1990 Amendments and clearly contemplated the use of 1990 as a base year.

This Appendix includes a VMT offset demonstration in accordance with EPA's new guidance for both the 8-hour and 1-hour ozone requirements. To address U.S. EPA's guidance on the base year, two analyses are provided, one using 1990 and a second alternative for 8-hour ozone only, an analysis using 2002 as the base year.

TRANSPORTATION CONTROL STRATEGIES AND TRANSPORTATION CONTROL MEASURES

By listing them separately, the Clean Air Act [CAA §182(d)(1)(A)] differentiates between transportation control strategies (TCS) and transportation control measures (TCM), and thus provides for a wide range of strategies and measures as options to offset growth in emissions from vehicle miles traveled (VMT) growth. In addition, the example TCMs listed in Section 108(f)(1)(A) of the CAA include measures that reduce emissions by reducing VMT, reducing tailpipe emissions, and removing dirtier vehicles from the fleet. California's motor vehicle control program includes a variety of strategies and measures including new engine standards and in-use programs (e.g., smog

check, vehicle scrap, fleet rules, idling restrictions). TCMs developed by SCAG provide additional reductions. In addition, SCAG prepares a report every two years that reports on the status of implementation of TCMs.

Based on the provisions in Section 182(d)(1)(A) and the clarifications provided in the U.S. EPA guidance, any combination of transportation control strategies and TCMs may be used to meet the requirement to offset growth in emissions resulting from VMT growth. Since 1990 when this requirement was established, California has adopted more than sufficient enforceable transportation strategies and measures to meet the requirement to offset the growth in emissions from VMT growth. For this demonstration, 1990 level controls serve as the base case since the mandate is to adopt any necessary new strategies and controls needed post-1990.

A list of the state's mobile source control program adopted since 1990 is provided in Attachment 1. In addition, a list of TCMs implemented in the South Coast Air Basin is provided in Attachment 2.

EMISSIONS DUE TO VMT GROWTH

There is no specific guidance in the Clean Air Act, Court Opinion, or the EPA guidance on how to select the base year for determining the increase in emissions from VMT. Since the Clean Air Act was amended in 1990, the 1990 calendar year is assumed as the base year. As discussed above, the EPA guidance does provide a recommended calculation methodology that could be done to determine if sufficient transportation control strategies and TCMs have been adopted and implemented to offset the growth in emissions due solely to growth in VMT. As such, any increase in emissions solely from VMT increases in the future attainment year from calendar year 1990 (assuming that there are no further motor vehicle control programs implemented after 1990) would need to be offset. In addition, a calculation is needed to show the emissions levels if VMT had remained constant from 1990 to the future attainment year. As discussed earlier, a comparison of the projected attainment year emissions assuming no new control measures and no VMT growth with projected actual attainment year emissions (including new control measures and VMT growth) would be made. If the latter number is smaller than the former, no additional transportation control measures or strategies would be required.

METHODOLOGY

The following calculations are based on the U.S. EPA guidance recommended calculation methodology. As discussed above, two sets of calculations are provided. The first set uses 1990 as the base year. An alternative analysis is presented using 2002 as the base year. As part of the 1-hour ozone national ambient air quality standard demonstration provided in Appendix VIII, 1990 serves as the base year and 2022 is the projected attainment year. As provided in the 2007 SIP, 2002 is the base year used for the attainment demonstration and 2023 is the attainment year. However, as mentioned above the District believes that for the Section 182(d)(1)(A) demonstration, 1990 serves as the base year for both ozone air quality standards. The analysis using 2002 as the base year is provided as alternative analysis in conjunction with the 8-hour ozone attainment demonstration provided in the 2007 SIP.

Since VMT is projected to increase from the base year to the attainment year and projected VMT for 2023 is higher than the projected VMT for 2022, an analysis using 2022 as the attainment year is not provided and 2023 serves as a more stringent test. Additional discussion is provided in the “Summary Section” below.

Analysis Using 1990 as the Base Year

Step 1. Provide the emissions levels for the base year.

As mentioned above, the base year assumed for the demonstration is 1990. The following table shows the VOC and NO_x emissions for calendar year 1990 from the EMFAC2011 model.

Description	VMT (miles/day)	VOC (tons/day)	NO _x (tons/day)
1990 Vehicle Miles Travelled and On-Road Emissions	257,490,000	933	854

Step 2. Calculate three emissions levels in the attainment year.

For the attainment year,

- (1) calculate emissions levels with the motor vehicle control program frozen at 1990 levels and with projected VMT in the attainment year. This represents what the emissions in the attainment year would have been if transportation control strategies and TCMs had not been implemented after 1990;

- (2) calculate emission levels with the motor vehicle control program frozen at 1990 levels and assuming VMT do not increase from 1990 levels; and
- (3) calculate an emissions level that represents emissions with full implementation of all transportation control strategies and TCMs since 1990, which represents the projected future year baseline emissions inventory in the attainment year.

Calculation 1. Calculate the emissions in the attainment year assuming no new measures since the base year with growth in VMT

To perform this calculation, the California Air Resources Board (CARB) staff identified the on-road motor vehicle control programs adopted since 1990 and adjusted the EMFAC2011 to reflect the VOC and NO_x emissions levels in 2023 without the benefits of the post-1990 control programs. As mentioned earlier, a list of the control programs adopted by CARB since 1990 and TCMs implemented since 1990 are provided in Attachments 1 and 2 to this Appendix. The projected VOC and NO_x emissions are 546 and 910 tons/day, respectively.

Calculation 2. Calculate the emissions with no growth in VMT

EMFAC2011 allows the user to input different vehicle miles travelled. As such, for this calculation, the EMFAC 2011 was run for calendar year 2023 with the 1990 VMT level of 257,490,000 miles per day. The VOC and NO_x emissions associated with the 1990 VMT level are 484 and 572 tons/day, respectively.

Calculation 3. Calculate emission reductions with full implementation of Transportation Control Strategies & TCMs

The VOC and NO_x emission levels for 2023 assuming the benefits of the post-1990 motor vehicle control program and the projected VMT levels in 2023 are calculated using EMFAC2011. The output of the EMFAC2011 model for 2023 is provided in Appendix III of the Draft Final 2012 AQMP. The projected VOC and NO_x emissions levels are 70 and 117 tons/day, respectively.

VOC and NO_x emissions for the three sets of calculations described above are provided in the following tables.

	Description	VMT* (miles/day)	VOC (tons/day)	NOx (tons/day)
(1)	Emissions with Motor Vehicle Control Program Frozen at 1990 Levels (VMT at 2023 Projected Levels)	395,750,000	546	910
(2)	Emissions with Motor Vehicle Control Program Frozen at 1990 Levels (VMT at 1990 Levels)	257,490,000	484	572
(3)	Emissions with Full Motor Vehicle Control Program in Place (VMT at 2023 Projected Levels)	395,750,000	70	117

* VMT Based on 2012 SCAG Regional Transportation Plan (see 2012 AQMP Appendix III)

As provided in the U.S. EPA guidance, to determine compliance with the provisions of Section 182(d)(1)(A) of the federal Clean Air Act, the emissions levels calculated in Calculation 3 should be less than the emissions levels in Calculation 2:

VOC: $70 < 484$ tons/day

NOx: $117 < 572$ tons/day

Analysis Using 2002 as the Base Year

As mentioned above, this alternative analysis is for the federal 8-hour ozone ambient air quality standard and the attainment year is 2023.

Step 1. Provide the emissions levels for the base year.

The following table shows the VOC and NOx emissions for calendar year 2002 from the EMFAC2011 model.

Description	VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
2002 Vehicle Miles Travelled and On-Road Emissions	330,267,528	310	602

Step 2. Calculate three emissions levels in the attainment year.

For the attainment year,

- (1) calculate emissions levels with the motor vehicle control program frozen at 2002 levels and with projected VMT in the attainment year. This represents what the emissions in the attainment year would have been if transportation control strategies and TCMs had not been implemented after 2002;
- (2) calculate emission levels with the motor vehicle control program frozen at 2002 levels and assuming VMT do not increase from 2002 levels; and
- (3) calculate an emissions level that represents emissions with full implementation of all transportation control strategies and TCMs since 2002, which represents the projected future year baseline emissions inventory in the attainment year.

Calculation 1. Calculate the emissions in the attainment year assuming no new measures since the base year with growth in VMT

To perform this calculation, the California Air Resources Board (CARB) staff identified the on-road motor vehicle control programs adopted since 2002 and adjusted the EMFAC2011 to reflect the VOC and NO_x emissions levels in 2023 without the benefits of the post-2002 control programs. The projected VOC and NO_x emissions are 132 and 483 tons/day, respectively.

Calculation 2. Calculate the emissions with no growth in VMT

EMFAC2011 allows the user to input different vehicle miles travelled. As such, for this calculation, the EMFAC 2011 was run for calendar year 2023 with the 2002 VMT level of 330,267,528 miles per day. The VOC and NO_x emissions associated with the 2002 VMT level are 124 and 391 tons/day, respectively.

Calculation 3. Calculate emission reductions with full implementation of Transportation Control Strategies & TCMs

The VOC and NO_x emission levels for 2023 assuming the benefits of the post-2002 motor vehicle control program and the projected VMT levels in 2023 are calculated using EMFAC2011. The output of the EMFAC2011 model for 2023 is provided in Appendix III of the Draft 2012 AQMP. The projected VOC and NO_x emissions levels are 70 and 117 tons/day, respectively.

VOC and NO_x emissions for the three sets of calculations described above are provided in the following tables.

	Description	VMT* (miles/day)	VOC (tons/day)	NO _x (tons/day)
(1)	Emissions with Motor Vehicle Control Program Frozen at 2002 Levels (VMT at 2023 Projected Levels)	395,750,000	132	483
(2)	Emissions with Motor Vehicle Control Program Frozen at 2002 Levels (VMT at 1990 Levels)	<u>330,267,528</u>	124	391
(3)	Emissions with Full Motor Vehicle Control Program in Place (VMT at 2023 Projected Levels)	395,750,000	70	117

* VMT Based on 2012 SCAG Regional Transportation Plan (see 2012 AQMP Appendix III)

As provided in the U.S. EPA guidance, to determine compliance with the provisions of Section 182(d)(1)(A) of the federal Clean Air Act, the emissions levels calculated in Calculation 3 should be less than the emissions levels in Calculation 2:

VOC: 70 < 124 tons/day

NO_x: 117 < 391 tons/day

SUMMARY

The previous sections provide an analysis to demonstrate complies with the provisions of Section 182(d)(1)(A) of the federal Clean Air Act. To further illustrate the demonstration, Figures 1 and 2 below show graphically the emissions benefits of the motor vehicle control programs in offsetting VOC and NO_x emissions due to VMT increases in the South Coast Air Basin. The left bar (in purple) shows the emissions in the 1990 base year. The three sets of bars on the right in each figure show the emissions levels in 2023 if there were no further motor vehicle controls after 1990 and with projected VMT increases (red bar); the green bar show the emissions if VMT does not increase from 1990 levels and there are no transportation control strategies or TCMs after 1990; and the blue bar shows the emission levels with the post-1990 motor vehicle control program in place. Based on the U.S. EPA guidance, if the blue bar is lower than the green bar, then the identified transportation control strategies and TCMs are sufficient to offset the growth in emissions.

Figure 1. VOC Emissions from On-Road Mobile Sources in the South Coast Air Basin (1990 Base Year)

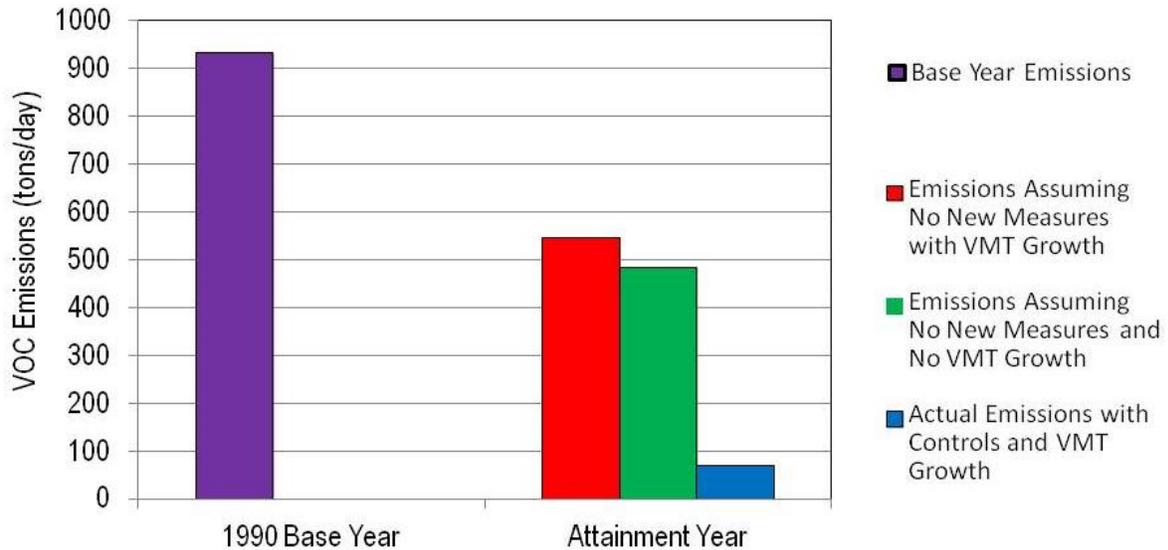
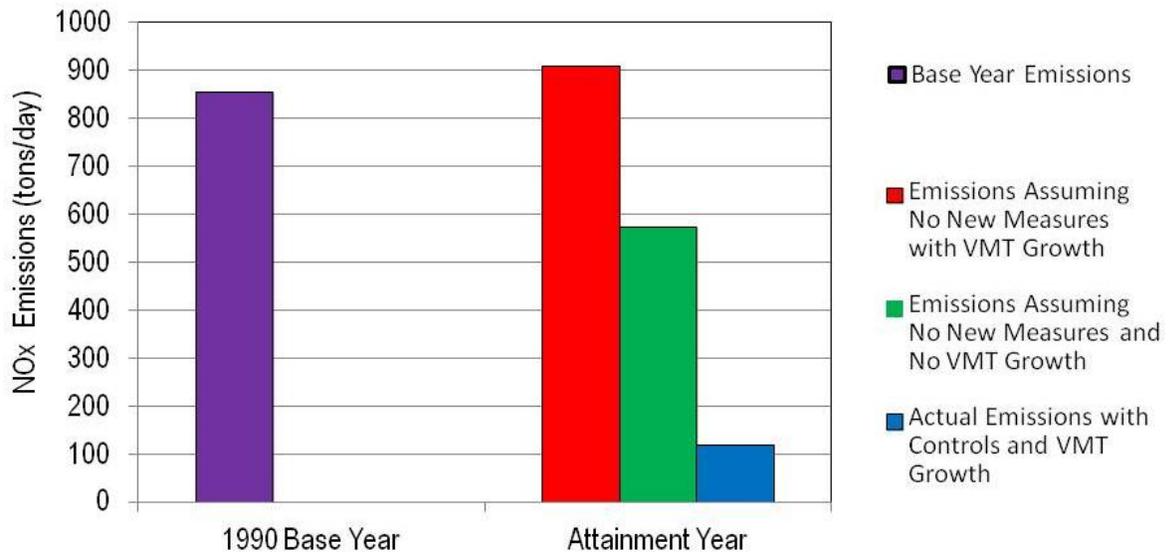


Figure 2. NOx Emissions from On-Road Mobile Sources in the South Coast Air Basin (1990 Base Year)



As discussed above, a similar set of calculations are made using 2002 as the base year. Figures 3 and 4 illustrate the results of the calculation for VOC and NOx, respectively. As with the first analysis, the blue bar is lower than the green bar, the identified transportation control strategies and TCMs are sufficient to offset the growth in emissions.

Figure 3. VOC Emissions from On-Road Mobile Sources in the South Coast Air Basin with 2002 as an Alternative Base Year

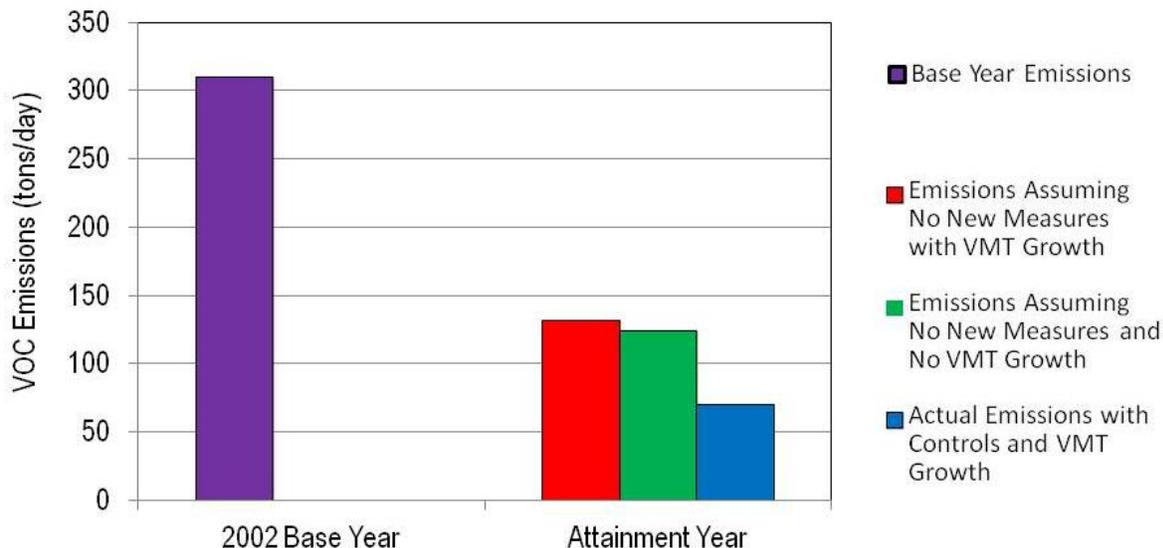
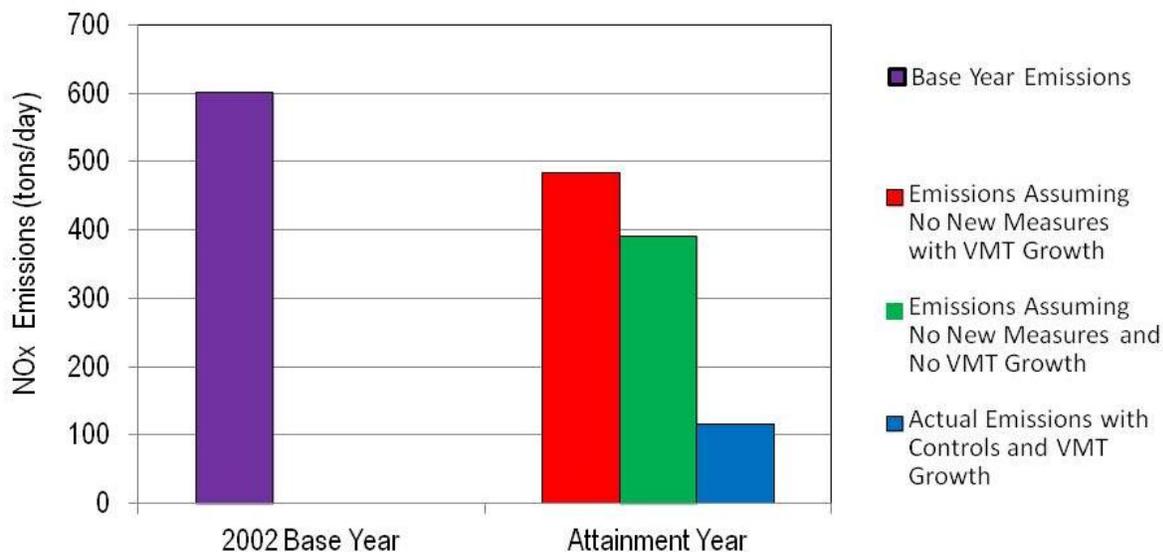


Figure 4. NOx Emissions from On-Road Mobile Sources in the South Coast Air Basin with 2002 as an Alternative Base Year



At this time, based on the 2007 SIP for the 8-hour ozone attainment demonstration, it is projected that the 8-hour ozone ambient air quality standard will be achieved by 2023. It is projected that the previous 1-hour ozone ambient air quality standard will be achieved by 2022. (See 1-hour ozone attainment demonstration Appendix VII.) As provided in Appendix VII Table VII-3-2, the projected VOC and NOx emissions from on-road vehicles is 73 tons/day and

135 tons/day, respectively and are slightly higher than the on-road VOC and NO_x emissions for 2023 (70 and 117 tons/day, respectively). The VMT for 2022 is slightly lower compared to 2023. The demonstration presented for 2023 will be similar for 2022. As such, the above demonstration applies to both the 1-hour ozone and 8-hour ozone national ambient air quality standards. In addition, the District believes that 1990 is the appropriate base year for the demonstration. Regardless, an alternative analysis using 2002 is provided. In both analyses, there are sufficient transportation control strategies and TCMs to offset the emissions increase due to growth in VMT.

ATTACHMENT 1

**CALIFORNIA POST-1990 MOTOR VEHICLE CONTROL
PROGRAM**

Table A-1 Transportation Control Strategies Adopted by the California Air Resource Board Since 1990		
Measure	Hearing Date	Category
Emission Control System Warranty. T 13, CCR, 2035-2041, 1977	12/14/89	On-road
Certification Procedure for Aftermarket Parts. VC 27156 & 38391	02/08/90	On-road
Emission Standards for Medium Duty Vehicles. T 13, CCR, 1900, 1956.8, 1960.1, 1968.1, 2061, 2112, 2139	06/14/90	On-road
Wintertime Limits for Sulfur in Diesel Fuel. T 13, CCR, 2255	06/21/90	Fuels
Evaporative Emission Standards. T 13, CCR, 1976	08/09/90	On-road
California Reformulated Gasoline (CaRFG), Phase I. T 13, CCR, 2251.5	09/27/90	Fuels
Low Emission Vehicles and Clean Fuels. T 13, CCR, 1900, 1904, 1956.8, 1960.1, 1960.1.5, 1960.5 and 2111, 2112, 2125, and 2139, 2061.	09/28/90	On-road
Heavy Duty Diesel Smoke Emission Testing. T 13, CCR, 2180-2187	11/08/90	On-road
Limit on Aromatic Content of Diesel Fuel. T 13, CCR, 2256	12/13/90	Fuels
Onboard Diagnostics for Light-Duty Trucks and Light & Medium-Duty Motor Vehicles. T 13, CCR, 1977, 1968.1	09/12/91	On-road
Onboard Diagnostic, Phase II. T 13, CCR, 1968.1, 1977	11/12/91	On-road
Low Emission Vehicles amendments revising reactivity adjustment factor (RAF) provisions and adopting a RAF for M85 transitional low emission vehicles. T 13, CCR, 1960.1	11/14/91	On-road
California Reformulated Gasoline, Phase II. T 13, CCR, 2250, 2255.1, 2252, 2260 - 2272, 2295	11/21/91	Fuels
Wintertime Gasoline Program. T 13, CCR, 2258, 2298, 2251.5, 2296	11/21/91	Fuels

Table A-1 Transportation Control Strategies Adopted by the California Air Resource Board Since 1990		
Measure	Hearing Date	Category
Specifications for Alternative Motor Vehicle Fuel. T 13, & 26, CCR, 2290, 2291, 2292.1, 2292.2, 2292.3, 2292.5, 2292.6, 2292.7, 1960.1(k), 1956.8(b), 1956.8(d)	12/12/91	Fuels
Specifications for Alternative Motor Vehicle Fuels. T 13, & 26, CCR, 2290-2292.7, 1960.1(k), 1956.8(b), 1956.8(d)	03/12/92	On-road
Standards and Test Procedures for Alternative Fuel Retrofit Systems. T 13, CCR, 2030, 2031	05/14/92	On-road
Phase 2 RFG certification fuel specifications. T 13, CCR, 1960.1, 1956.8(d)	08/13/92	On-road
Substitute Fuel or Clean Fuel Incorporated Test Procedures. T 13, CCR, 1960.1(k), 2317	11/12/92	On-road
Smoke Self Inspection Program for Heavy Duty Diesel & Gasoline Engines. T 13, CCR, 21902194, 2180-2187, 1956.8(b)	12/10/92	On-road
Certification Requirements for Low Emission Passenger Cars, Light-Duty Trucks & Medium Duty Vehicles. T 13, CCR, 1960.1, 1976, 2061, 1900	01/14/93	On-road
Urban Transit Buses. T 13, CCR, 1956.8, 1965, 2112	06/10/93	On-road
Onboard Diagnostic, Phase II. T 13, CCR, 1968.1	07/09/93	On-road
Wintertime Oxygenate Program. T 13, CCR, 2258, 2251.5, 2263(b), 2267, 2298, 2259, 2283, 2293.5	09/09/93	Fuels
Diesel Fuel Regulations -Emergency. T 13, CCR, 2281(h), 2282(1)	10/15/93	Fuels
Evaporative Emission Standards and Test Procedures. T 13, CCR, 1976	02/10/94	On-road

Table A-1 Transportation Control Strategies Adopted by the California Air Resource Board Since 1990		
Measure	Hearing Date	Category
Predictive Model for Phase II CaRFG. T 13, CCR, 2261, 2262-2270	06/09/94	Fuels
Small Refiner Diesel. T 13, CCR, 2282(e)(1)	07/24/94	Fuels
Diesel Fuel Certification. T 13, CCR, 1956.8(b)&(d), 1960.1(k), 2292.6	09/22/94	Fuels
Self Inspection Program for Heavy Duty Diesel & Gasoline Engines. T 13, CCR, 2190-2194, 21802187, 1956.8(b)	11/09/94	On-road
Onboard Diagnostics, Phase II. T 13, CCR, 1963.1, & Certification Procedures	12/08/94	On-road
Periodic Smoke Inspection Program. T 13, CCR, 2190	12/08/94	On-road
Specification for Alternative Motor Vehicle Fuels (M100). T 13 CCR, 2292.1	12/08/94	Fuels
Heavy Duty Vehicle Exhaust Emission Standards. T 13, CCR, 1956.8 and incorporate test procedures.	06/29/95	On-road
Onboard Refueling Vapor Recovery Standards. T 13, CCR, 1976, 1978 and incorporate test procedures	06/29/95	On-road
Test Method for Oxygen in Gasoline. T 13, CCR, 2251.5(c), 2258(c), 2263(b)	06/29/95	Fuels
Retrofit Emission Standards. T 13, CCR, 1956.9, 2030, 2031, and incorporate test procedures	07/27/95	On-road
Low Emission Vehicle Standards 3 (LEV 3). T 13, CCR, 1956.8, 1960.1, 1965, 2101, 2061, 2062, and incorporate test procedures	09/28/95	On-road
Test Methods for CaRFG 13, CCR, 2263(b)	10/26/95	Fuels
Required Additives in Gasoline (Deposit Control Additives). T 13, CCR, 2257 and incorporates testing procedures.	11/16/95	Fuels

Table A-1 Transportation Control Strategies Adopted by the California Air Resource Board Since 1990		
Measure	Hearing Date	Category
CaRFG Housekeeping & CARBOB. T 13, CCR, 2263.7, 2266.5, 2260, 2262.5, 2264, 2265, 2272	12/14/95	Fuels
Exemption of Military Tactical Vehicles. T 13, CCR, 1905, 2400, 2420	12/14/95	On Road/Off Road
CaRFG Variance Requirements. T 13, CCR, 2271 (Emergency)	01/25/96	Fuels
Postpone Zero Emission Vehicle Requirements. T 13, CCR, 1900, 1960.1, 1976	03/28/96	On-road
Regulation Improvements and Repeals (fuel additives). T 13, CCR, 2201, 2202	05/30/96	Fuels
Diesel Fuel Certification Test Methods . T 13, CCR, 1956.8(b), 1960.1(k), 2281(c), 2282(b), (c) and (g)	10/24/96	Fuels
Diesel Fuel Test Methods. T 13, CCR, 1956.8(b), 1960.1(k), 2281(c), 2282(b), (c) and (g)	10/24/96	Fuels
Onboard Diagnostics, Phase II, Technical Status. T 13, CCR, 1968.1, 2030, 2031	12/12/96	On-road
Liquefied Petroleum Gas Propane Limit Specification Delay. T 13, CCR, 2292.6	03/27/97	Fuels
Postpone Enhanced Evaporative Emission Requirements for Ultra-Small Volume Vehicle Manufacturers. T 13, CCR, 1976 and incorporate test procedures	05/22/97	On-road
Off-Cycle Emissions Supplemental Federal Test Procedures (SFTPs). T 13, CCR, 1960.1, 2101 and incorporate test procedures	07/24/97	On-road
Heavy Duty Vehicle Smoke Inspection Program/Periodic Smoke Inspection Program. T 13, CCR, 2180-2188 and 2190-2194	12/11/97	On-road

Table A-1 Transportation Control Strategies Adopted by the California Air Resource Board Since 1990		
Measure	Hearing Date	Category
Heavy Duty Vehicle Regulations: 2004 Standards. T 13, CCR, 1956.8, 1965, 2036, 2112 and test procedures	04/23/98	On-road
Cleaner Burning Gasoline Model Flexibility. T 13, CCR, Sections 2260, 2262.1, 2262.3, 2262.4, 2262.5, 2262.6, 2262.7 and 2265	08/27/98	Fuels
Gasoline Vapor Recovery Systems. T 17, CCR, 94010-94015 and 94150, 94156, 94157, 94158, 94159, 94160, 94162	08/27/98	Vapor Recovery
Gasoline Deposit Control Additive Regulation. T 13, CCR, 2257, and incorporating test procedures	09/24/98	Fuels
Low Emission Vehicles Standards (LEV 2) and Compliance Assurance Program (CAP 2000). T 13, CCR, 1961 & 1962 (both new); 1900, 1960.1, 1965, 1968.1, 1976, 1978, 2037, 2038, 2062, 2101, 2106, 2107, 2110, 2112, 2114, 2119, 2130, 2137-2140, 2143-2148	11/05/98	On-road
Exhaust Standards for (On-Road) Motorcycles. T 13, CCR, 1958	12/10/98	On-road
Voluntary Accelerated Light Duty Vehicle Retirement Regulations. T 13, CCR, 2600-2610	12/10/98	On-road
Cleaner Burning Gasoline (Increasing the Oxygen Content). T 13, CCR, sections 2262.5(b) and 2265(a)(2)	12/11/98	Fuels
Specifications for Liquid Petroleum Gas Used as a Motor Vehicle Fuel. T 13, CCR, 2292.6	12/11/98	Fuels
Cleaner Burning Gasoline, Oxygen Requirement for Wintertime In Lake Tahoe Area/Gas Pump Labeling for MTBE. T 13, CCR, 2262.5, and 2273	06/24/99	Fuels

Table A-1 Transportation Control Strategies Adopted by the California Air Resource Board Since 1990		
Measure	Hearing Date	Category
Clean Fuels Regulation Requirements. T 13, CCR, sections 2300-2317, and 2303.5, 2311.5	07/22/99	On-road
CaRFG Phase 3 Amendments (Phase out of MTBE, standards, predictive model). T 13, CCR, 2260, 2261, 2262.1, 2262.5, 2263, 2264, 2264.2, 2265, 2266 etc...	12/09/99	Fuels
Transit Bus Standards. T 13, CCR, 1956.1, 1956.2, 1956.3, 1956.4, 1956.8, 1965	02/24/00	On-road
CaRFG Phase 3 Follow-up Amendments. T 13, CCR, sections 2260, 2261, 2262.3, 2262.5, 2263, 2264, 2265, 2266, 2266.5, 2270, 2272, 2273, 2282, 2296, 2297, 2262.9 and incorporated test procedures	11/16/00	Fuels
CaRFG Phase 3 Test Methods. T 13, CCR, sections 2263(b)	11/16/00	Fuels
Heavy Duty Diesel Engines "Not-to-Exceed (NTE)" Test Procedures. T 13 CCR, 1956.8, 2065	12/07/00	On-road
Light-and Medium Duty Low Emission Vehicle Alignment with Federal Standards. Exhaust Emission Standards for Heavy Duty Gas Engines. T 13, CCR, 1956.8 &1961	12/07/00	On-road
Zero Emission Vehicle Regulation Update. T 13, CCR, 1900, 1960.1(k), 1961, 1962 & incorporated Test Procedure	01/25/01	On-road
Zero Emission Vehicle Infrastructure and Standardization of Electric Vehicle Charging Equipment. T 13, CCR, 1900(b), 1962(b) 1962.1	06/28/01	On-road
Heavy Duty Diesel Engine Standards for 2007 and Later. T 13, CCR, 1956.8 and incorporated test procedures	10/25/01	On-road

Table A-1 Transportation Control Strategies Adopted by the California Air Resource Board Since 1990		
Measure	Hearing Date	Category
Low Emission Vehicle Regulations. T 13, CCR, 1960.1,1960.5, 1961, 1962 and incorporate test procedures and guidelines	11/15/01	On-road
California Motor Vehicle Service Information Rule. T 13&17, CCR, 1969 & 60060.1 -60060.7	12/13/01	On-road
Voluntary Accelerated Light Duty Vehicle Retirement Regulations. T 13, CCR, 2601-2605, 2606 & appendices C & D, and 2607-2610	02/21/02	On-road
On-Board Diagnostic II Review Amendments. T 13, CCR, 1968.1, 1968.2, 1968.5	04/25/02	On-road
Diesel Retrofit Verification Procedure, Warranty and In-Use Compliance Requirements. T 13, CCR, 2700-2710	05/16/02	On-road
Revision to Transit Bus Regulations Amendments. T 13, CCR, 1956.1, 1956.2, 1956.4,1956.8, and 2112, & documents incorporated by reference	10/24/02	On-road
Airborne Toxic Control Measure for Diesel Particulate from School Bus Idling. T13, CCR, 2480	12/12/02	On-road
Low Emission Vehicles II. Align Heavy Duty Gas Engine Standards with Federal Standards; minor administrative changes. T 13, CCR, 1961, 1965, 1956.8, 1956.1, 1978, 2065 and documents incorporated by reference	12/12/02	On-road
Zero Emission Vehicle Amendments for 2003. T 13, CCR, 1960.1(k), 1961(a) and (d), 1900, 1962, and documents incorporated by reference	03/25/03	On-road
Solid Waste Collection Vehicles. T 13, CCR, 2020, 2021, 2021.1, 2021.2	09/24/03	On-road

Table A-1 Transportation Control Strategies Adopted by the California Air Resource Board Since 1990		
Measure	Hearing Date	Category
Airborne Toxic Control Measure for Diesel Particulate for Transport Refrigeration Units. T 13, CCR, 2022 & 2477	12/11/03	On-road
Diesel Retrofit Verification Procedure, Warranty and In-Use Compliance Requirements (Amendments). T 13, CCR, 2701-2707 & 2709	12/11/03	On-road
CA Motor Vehicle Service Information Rule. T 13, CCR, 1969	01/22/04	On-road
Heavy Duty Diesel Engine-Chip Reflash. T 13, CCR, 2011, 2180.1, 2181, 2184, 2185, 2186, 2192, and 2194	03/27/04	On-road
Engine Manufacturer Diagnostic System Requirements for 2007 and Subsequent Model Heavy Duty Engines. T 13, CCR, 1971	05/20/04	On-road
Urban Bus Engines/Fleet Rule for Transit Agencies. T 13, CCR, 1956.1, 1956.2, 1956.3, and 1956.4,	06/24/04	On-road
Airborne Toxic Control Measure for Diesel Particulate from Diesel Fueled Commercial Vehicle Idling. T 13, CCR, 2485	07/22/04	On-road
Greenhouse Gas. T 13, CCR, 1961.1, 1900, 1961 and Incorporated Test Procedures	09/23/04	On-road
California Reformulated Gasoline, Phase 3. T 13, CCR, 2260, 2262, 2262.4, 2262.5, 2262.6, 2262.9, 2263, 2265 (and the incorporated "California Procedures"), and 2266.5	11/18/04	Fuels
Diesel Fuel Standards for Harborcraft & Locomotives. T 13, CCR, 2299, 2281, 2282, and 2284, and T 17, CCR, 93117	11/18/04	Fuels

Table A-1 Transportation Control Strategies Adopted by the California Air Resource Board Since 1990		
Measure	Hearing Date	Category
Emergency Regulation for Temporary Delay of Diesel Fuel Lubricity Standard. T 13, CCR, 2284	11/24/04	Fuels
Transit Fleet Rule. T 13, CCR, 2023, 2023.1, 2023.2, 2023.3, 2023.4, 1956.1, 2020, 2021, repeal 1956.2, 1956.3, 1956.4	02/24/05	On-road
On-Board Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Engines (HD OBD). T 13, CCR, 1971.1	07/21/05	On-road
2007-2009 Model-Year Heavy Duty Urban Bus Engines and the Fleet Rule for Transit Agencies. T 13, CCR, 1956.1, 1956.2, and 1956.8	09/15/05	On-road
Requirements to Reduce Idling Emissions from New and In-Use Trucks, Beginning in 2008. T 13, CCR section 1956.8 and the incorporated document	10/20/05	On-road
Diesel Particulate Matter Control Measure for On-Road Heavy-Duty Diesel-Fueled Vehicles Owned or Operated by Public Agencies and Utilities. T 13, CCR, 2022 and 2022.1	12/08/05	On-road
AB1009 Heavy-Duty Vehicle Smoke Inspection Program. T 13, CCR, 2180, 2180.1, 2181, 2182, 2183, 2184, 2185, 2186, 2187, and 2188, 2189	01/26/06	On-road
Diesel Verification Procedure, Warranty & In-Use. T 13, CCR, 2702, 2703, 2704, 2706, 2707, and 2709.	03/23/06	On-road
Technical Amendments to Evaporative Exhaust and Evaporative Emissions Test Procedures. T 13, CCR, 1961, 1976 and 1978.	05/25/06	On-road

Table A-1 Transportation Control Strategies Adopted by the California Air Resource Board Since 1990		
Measure	Hearing Date	Category
California Motor Vehicle Service Information Rule. T 13, CCR, 1969 and incorporated documents	06/22/06	On-road
Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	09/28/06	On-road
On-Board Diagnostic II. T 13, CCR, 1968.2, 1968.5, 2035, 2037 and 2038	09/28/06	On-road
Zero Emission Bus Regulation. T13, CCR, 2023.1, 2023.3, & 2023.4	10/19/06	On-road
Voluntary Accelerated Retirement Regulation. T 13, CCR, 2601-2610 and appendices A-D	12/07/06	On-road
Phase 3 Reformulated Gasoline (Ethanol Permeation) T 13, CCR, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2270, 2271, and 2273	06/14/07	On-road
Aftermarket Catalytic Converters and Used Catalytic Converters T 13, CCR, 2222	10/25/07	On-road
Port Truck Modernization T 13, CCR, 2027	12/07/07	On-road
Cleaner In-Use Heavy-Duty Trucks T 13, CCR, 2025	12/11/08	On-road
Enhanced Fleet Modernization Program (formerly "Expanded Vehicle Retirement Program") T 13, CCR, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, and 2630	06/26/09	On-road
Advanced Clean Cars T 13, CCR, 1900, 1956, 1960, 1961, 1962, 1965, 1968, 1976, 1978, 2037, 2038, 2062, 2112, 2139, 2140, 2145, 2147, 2235, 2300, 2302, 2303, 2304, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, and 2318	01/27/12	On-road

ATTACHMENT 2

**TRANSPORTATION CONTROL MEASURES
IMPLEMENTED SINCE 1990**

INTRODUCTION

This Attachment contains a list of transportation control measures implemented in the SCAG region, which includes the South Coast Air Basin, since 1990. The tables are taken from the Federal Transportation Improvement Program [FTIP, formerly Regional Transportation Improvement Program (RTIP)] reports approved by SCAG. Section III of the Technical Appendix to each of the FTIP/RTIP reports contains a list of implemented TCMs. The following section provides a reference list of the FTIP/RTIP reports. The full reports since 2002 can be found on SCAG's website: www.scag.ca.gov/ftip. The specific list of TCMs from each of the referenced reports is provided in the following sections.

REFERENCE

- SCAG (2012). 2013 Federal Transportation Improvement Program (Technical Appendix – Section III), September 2012.
- SCAG (2011). 2011 Federal Transportation Improvement Program (Technical Appendix – Section III), September 2010.
- SCAG (2008). 2008 RTIP Transportation Improvement Program (Technical Appendix – Section III), July 2008.
- SCAG (2006). 2006 RTIP Transportation Improvement Program (Technical Appendix – Section III), July 2006.
- SCAG (2004). 2004 RTIP Transportation Improvement Program (Technical Appendix – Section III), September 2004.
- SCAG (2002). 2002 RTIP Transportation Improvement Program (Technical Appendix – Section III), August 2002.
- SCAG (2000). 2000 RTIP Transportation Improvement Program (Technical Appendix – Section III), September 2000.
- SCAG (1998). 1998 RTIP Transportation Improvement Program (Technical Appendix – Section III), July 1998.
- SCAG (1996). 1996 RTIP Transportation Improvement Program (Technical Appendix – Section III), June 2006.

Table A-1

**Committed Transportation Control Measures (TCMs) by
Southern California Association of Governments since 1990**

2013 FTIP Committed Transportation Control Measures (TCMs)

Project Listing Report

LOS ANGELES COUNTY

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
ARTESIA	LAF1607	SOUTH STREET PEDESTRIAN, BIKEWAY AND TRANSIT IMPROVEMENT. IMPROVE PEDESTRIAN ENVIRONMENT AND TRANSIT STOP LOCATIONS WITH LANDSCAPED MEDIANS, TRANSIT SHELTERS, BENCHES, SIDEWALK ENHANCEMENTS AND LIGHTING. CLOSE EXISTING BIKE LANE GAP.	2014	10/1/2014	10/1/2014	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IN ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)
AVALON	LAF1501	COUNTY CLUB DRIVE BIKEWAY IMPROVEMENT PROJECT. CONSTRUCTION OF A 4-FOOT WIDE CLASS II BIKE LANE IN BOTH DIRECTIONS ALONG A ONE MILE SECTION OF COUNTRY CLUB DRIVE.	2013	10/1/2013	10/1/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IN ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)
AZUSA	LAF3434	AZUSA INTERMODAL TRANSIT CENTER. CONSTRUCT REGIONAL AZUSA INTERMODAL TRANSIT CENTER TO ACCOMMODATE EXISTING AND FUTURE PARKING DEMAND AND SUPPORT EFFECTIVE TRANSIT USE.	6/30/2015	6/30/2015	6/30/2015	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IN ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
BALDWIN PARK	LAE0076	CONSTRUCT ADD'L VEHICLE PARKING (200 TO 400 SPACES), BICYCLE PARKING LOT AND PEDESTRIAN REST AREA AT THE TRANSIT CENTER	2010	12/31/2014	12/31/2014	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IN ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED). BIDS FOR CONSTRUCTION CONTRACTORS BEGAN IN 11-11.
BURBANK	LAF1502	SAN FERNANDO BIKEWAY. IMPLEMENT A CLASS I BIKEWAY ALONG SAN FERNANDO BLVD, VICTORY PLACE AND BURBANK WESTERN CHANNEL TO COMPLETE THE BURBANK LEG OF A 12 MILE BIKEWAY.	2014	6/30/2014	6/30/2015	OBSTACLES ARE BEING OVERCOME. PROJECT SCHEDULE IS CONTINGENT ON ADVANCE OF THE ADJACENT INTERSTATE 5 HOV / EMPIRE INTERCHANGE PROJECT WHICH WILL BE UNDER CONSTRUCTION WITHIN THE SAME RIGHT-OF-WAY. THE I-5 PROJECT IS ADMINISTERED BY CALTRANS AND METRO. DELAY TO THE CALTRANS PROJECT HAS AFFECTED THE SCHEDULE OF THIS PROJECT. THE CITY OF BURBANK IS WORKING WITH CALTRANS TO EXPEDITE THE PROJECT THROUGH THE ENVIRONMENTAL DOCUMENT PROCESSING STAGES TO MINIMIZE ANY FURTHER DELAY. PROJECT IN ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)
CALTRANS	LA000357	ROUTE 5: FROM ROUTE 170 TO ROUTE 118 ONE HOV LANE IN EACH DIRECTION (10 TO 12 LANES) INCLUDING THE RECONSTRUCTION OF THE I-5/SR-170 MIXED FLOW CONNECTOR AND THE CONSTRUCTION OF THE I-5/SR-170 HOV TO HOV CONNECTOR (CFP 345) (2001 CFP 8339; CFP2197).	2008/2010	12/31/2013	12/31/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. UNDER CONSTRUCTION.

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
CALTRANS	LA000358	ROUTE 5: – FROM ROUTE 134 TO ROUTE 170 HOV LANES (8 TO 10 LANES) (CFP 346)(2001 CFP 8355). (EA# 12180, 12181,12182,12183,12184, 13350 PPNO 0142F,151E,3985,3986,3987) SAFETEA LU # 570. CONSTRUCT MODIFIED IC @ I-5 EMPIRE AVE, AUX LNS NB & SB BETWEEN BURB	2012/2010	12/31/2014	12/31/2014	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IS IN ENGINEERING/PLANS, SPECIFICATIONS AND ESTIMATES (PS&E) PHASE.
CALTRANS	LA000548	ROUTE 10: FROM PUENTE TO CITRUS HOV LANES FROM 8 TO 10 LANES (C-ISTEA 77720) (EA# 117080, PPNO# 0309N)	2030/2015	2/12/2016	2/12/2016	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IS IN ENGINEERING/PLANS, SPECIFICATIONS AND ESTIMATES (PS&E) PHASE.
CALTRANS	LA01342	ROUTE 10: RT 10 FROM RT 605 TO PUENTE AVE HOV LANES (8+0 TO 8+2) (EA# 117070, PPNO 0306H) PPNO 3333 3382 AB 3090 REP (TCRP #40)	2008/2010	10/28/2013	10/28/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. UNDER CONSTRUCTION.
CALTRANS	LA0B875	ROUTE 10: HOV LANES FROM CITRUS TO ROUTE 57/210 – (EA# 11934, PPNO# 0310B)	2015	3/15/2016	3/15/2016	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IS IN ENGINEERING/PLANS, SPECIFICATIONS AND ESTIMATES (PS&E) PHASE.

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
CALTRANS	LA0D73	ROUTE 5: LA MIRADA, NORWALK & SANTA FE SPRINGS-ORANGE CO LINE TO RTE 605 JUNCTION. WIDEN FOR HOV & MIXED FLOW LNS, RECONSTRUCT VALLEY VIEW (EA 2159A0, PPNO 2808). TCRP#42.2&42.1	2014	12/1/2016	12/1/2016	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IS IN ENGINEERING/PLANS, SPECIFICATIONS AND ESTIMATES (PS&E) PHASE.
CALTRANS	LA996134	ROUTE 5: RTE. 5/14 INTERCHANGE & HOV LNS ON RTE 14 – CONSTRUCT 2 ELEVATED LANES – HOV CONNECTOR (DIRECT CONNECTORS) (EA# 16800)(2001 CFP 8343) (PPNO 0168M)	2014/2009	5/24/2013	5/24/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IS UNDER CONSTRUCTION.
FOOTHILL TRANSIT ZONE	LA0B311	PARK AND RIDE FACILITY TRANSIT ORIENTED NEIGHBORHOOD PROGRAM SAFETEA-LU # 341 (E-2006-BUSP-092) (E-2006-BUSP-173)	2003/2005	12/31/2013	12/31/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. AGENCY IS FINALIZING PLANS FOR THE NEW SITE FOR THE PARK AND RIDE. PROJECT IN ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED).
GLENDALE	LA0G406	FAIRMONT AVE. PARK-N-RIDE FACILITY (83 PARKING SPACES) TO SERVE COMMUTERS USING SR-134, I-5. THE LOCATION OF THE PARK-N-RIDE IS FAIRMONT AVENUE AND SAN FERNANDO RD.	12/30/2012	12/30/2013	12/30/2014	OBSTACLES ARE BEING OVERCOME. ONE YEAR DELAY DUE TO COORDINATION AND LAG TIME BETWEEN PROJECT COMPONENTS AS THE PROJECT WAS COMBINED WITH FAIRMONT AVE GRADE SEPARATION. AGENCY HAS AN APPROVED MOU WITH METRO AND THE PROJECT IS UNDERWAY.

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
LONG BEACH	LAE1296	LONG BEACH INTELLIGENT TRANSPORTATION SYSTEM	2011	9/30/2012	9/30/2013	OBSTACLES ARE BEING OVERCOME. THE CITY COORDINATED WITH OTHER JURISDICTIONS (SIGNAL HILL, LAKEWOOD AND CALTRANS) TO SELECT AN ADAPTIVE TRAFFIC SIGNAL SYSTEM THAT WAS DEPLOYED IN AN AREA WITH 167 TRAFFIC SIGNALS IN LATE 2010. THE PROJECT WAS DELAYED UNTIL RESEARCH AND TESTING, WHICH WAS PRIVATELY FUNDED, WAS COMPLETED TO ENSURE FEASIBILITY OF THE PROJECT PRIOR TO EXPENDING GRANT FUNDS. IN ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED).
LONG BEACH	LAF1530	BICYCLE SYSTEM GAP CLOSURES & IMPROVED LA RIVER BIKE PATH. PROJECT WILL CONSTRUCT PRIORITY CLASS I & III BICYCLE SYSTEM GAP CLOSURES IN LONG BEACH AND IMPROVE CONNECTION TO LA RIVER.	2014	10/1/2014	10/1/2014	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)
LOS ANGELES COUNTY	LAF1514	EMERALD NECKLACE BIKE TRAIL PROJECT. DESIGN AND CONSTRUCT 1.1 MILES OF CLASS I BIKE PATH TO CONNECT DUARTE ROAD TO THE SAN GABRIEL RIVER BICYCLE TRAIL.	2011	6/30/2013	6/30/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PLANNED OBLIGATION DATE FOR THIS PROJECT IS JUNE 2012 WITH AWARD OF CONTRACT IN SEPTEMBER 2012 AND CONSTRUCTION COMPLETION BY JUNE 2013.
LOS ANGELES COUNTY MTA	LA0C10	MID-CITY/EXPOSITION CORRIDOR LIGHT RAIL TRANSIT PROJECT PHASE I TO VENICE-ROBERTSON STATION	2011/2012	12/31/2012	12/31/2012	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. UNDER CONSTRUCTION.

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
LOS ANGELES COUNTY MTA	LA0C8114	LA CITY RIDESHARE SERVICES; PROVIDE COMMUTE INFO, EMPLOYER ASSISTANCE AND INCENTIVE PROGRAMS THROUGH CORE & EMPLOYER RIDESHARE SERVICES & MTA INCENTIVE PROGRAMS. PPNO 9003	2009	12/30/2016	12/30/2016	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. ONGOING PROJECT.
LOS ANGELES COUNTY MTA	LA0D198	CRENSHAW TRANSIT CORRIDOR	12/31/2018	12/31/2018	12/31/2018	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IS IN ENGINEERING/PLANS, SPECIFICATIONS AND ESTIMATES (PS&E) PHASE.
LOS ANGELES COUNTY MTA	LA0F021	EXPOSITION LIGHT RAIL TRANSIT SYSTEM PHASE II – FROM CULVER CITY TO SANTA MONICA		12/31/2017	12/31/2017	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IN ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)
LOS ANGELES COUNTY MTA	LA0G010	REGIONAL CONNECTOR – LIGHT RAIL IN TUNNEL ALLOWING THROUGH MOVEMENTS OF TRAINS, BLUE, GOLD, EXPO LINES. FROM ALAMEDA / 1ST STREET TO 7TH STREET/METRO CENTER	12/31/2019	12/31/2019	12/31/2019	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IS IN ENGINEERING/PLANS, SPECIFICATIONS AND ESTIMATES (PS&E) PHASE.

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
LOS ANGELES COUNTY MTA	LA0G154	LACRD – EL MONTE TRANSIT CENTER IMPROVEMENTS AND EL MONTE BUSWAY IMPROVEMENTS, INCLUDING BIKE LOCKERS, TICKET VENDING MACHINES AT EL MONTE BUSWAY STATIONS AND UP TO 10 BUS BAYS.	12/31/2010	12/31/2012	12/31/2012	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. LACMTA IS WORKING WITH ITS CONTRACTOR TO REMOVE CONTAMINATED SOIL AS QUICKLY AS POSSIBLE AND WORKING WITH SHPO AND FTA TO EXPEDITE APPROVALS.
LOS ANGELES COUNTY MTA	LA0G447	METRO PURPLE LINE WESTSIDE SUBWAY EXTENSION SEGMENT 1 – WILSHIRE/WESTERN TO FAIRFAX	12/31/2019	12/31/2019	2019/2023	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. 2023 IS COMPLETION DATE FOR SEGMENT 2 PROJECT IS IN ENGINEERING/PLANS, SPECIFICATIONS AND ESTIMATES (PS&E) PHASE.
LOS ANGELES COUNTY MTA	LA29202W	MID -CITY TRANSIT CORRIDOR: WILSHIRE BLVD. FROM VERMONT TO SANTA MONICA DOWNTOWN- MID-CITY WILSHIRE BRT INCL. DIV. EXPANSION AND BUS ONLY LANE	2009/2010	12/31/2013	12/31/2014	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT IN ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED). NOTE: 2012-2035 RTP/SCS TCM TIMELY IMPLEMENTATION REPORT PROJECT DESCRIPTION AND COMPLETION DATE ONLY ACCOUNT FOR FIRST PHASE OF PROJECT.
LOS ANGELES COUNTY MTA	LA963542	ACQUISITION REVENUE VEHICLES – 2,513 CLEAN FUEL BUSES: LEASED VEH, FY02 (370) FY03 (30 HC) + FY04 (70 HC) + (200 ARTICS); FY05-FY10 TOTAL OF 1000 BUSES.	2005	6/30/2014	6/30/2014	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. ONGOING PROJECT.

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LA0B7330	SAN FERNANDO RD ROW BIKE PATH PHSE II – CONSTRUCT 2.75 MILES CLAS I FRM FIRST ST TO BRANFORD ST,ON MTA-OWND ROW PARLEL TO SAN FERNANDO RD. LINK CYCLSTS TO NUMEROUS BUS LNE. PPNO 2868.	2005	1/30/2014	3/30/2014	OBSTACLES ARE BEING OVERCOME. CONSTRUCTION HAD STARTED IN 2010 BUT THERE WAS A BREACH OF A UTILITY LINE WHICH HALTED CONSTRUCTION. THE REPAIR OF THE UTILITY LINE HAD TAKEN APPROXIMATELY 18 MONTHS.
LOS ANGELES, CITY OF	LA0C8164	EXPOSITION BLVD RIGHT-OF-WAY BIKE PATH-WESTSIDE EXTENSION. DESIGN AND CONSTRUCTION OF 2.5 MILES OF CLASS 1 BIKEWAY, LIGHTING, LANDSCAPING & INTERSECTION IMPROVEMENTS. (PPNO# 3184)	2009	2/2/2012	2018	OBSTACLES ARE BEING OVERCOME. IN ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED) DELAYS DUE TO UNANTICIPATED STAGING ISSUES WITH THE CONSTRUCTION OF THE EXPO LINE (PHASE I & II). AGENCY HAD TO WAIT FOR SOME STATION AND ROW CONSTRUCTION ACTIVITIES TO BE COMPLETED BEFORE STARTING CONSTRUCTION ACTIVITIES. THE DESIGN-BUILD OF THE BIKE PATH WILL BEGIN AFTER THE FINAL SIGN-OFF FROM CALTRANS ON THE ENVIRONMENTAL DOCUMENT. THE PROJECT COMPLETION DATE IS JULY 2018, CONSISTENT WITH THE EXPO 2 PHASE.
LOS ANGELES, CITY OF	LAF1450	ENCINO PARK-AND-RIDE FACILITY RENOVATION. RENOVATION OF THE ENCINO PARK-AND-RIDE FACILITY IN ORDER TO ADDRESS PHYSICAL AND STRUCTURAL DEFICIENCIES AND ADD CAPACITY TO THIS HEAVILY UTILIZED FACILITY. INCLUDES 50 NEW PARKING SPACES AND BIKE LOCKERS.	2013	10/1/2013	10/1/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. BID/ADVERTISE PHASE

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LAF1524	SAN FERNANDO RD. BIKE PATH PH. IIIA/IIIB – CONSTRUCTION. RECOMMEND PHASE IIIA- CONSTRUCTION OF A CLASS I BIKE PATH WITHIN METRO OWNED RAIL RIGHT-OF-WAY ALONG SAN FERNANDO RD. BETWEEN BRANFORD ST. AND TUXFORD ST INCL BRIDGE.	10/1/2015	10/1/2015	10/1/2015	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)
LOS ANGELES, CITY OF	LAF1708	HOLLYWOOD INTEGRATED MODAL INFORMATION SYSTEM. INSTALLATION OF ELECTRONIC, DIRECTION AND PARKING AVAILABILITY SIGNS WITH INTERNET CONNECTIVITY TO PROVIDE ADVANCE AND REAL-TIME INFORMATION INTENDED TO INCREASE TRANSIT RIDERSHIP	2015	9/21/2015	9/21/2015	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)
MONROVIA	LAE0039	TRANSIT VILLAGE – PROVIDE A TRANS. FACILITY FOR SATELLITE PARKING FOR SIERRA MADRE VILLA GOLD LINE STA, P-N-R FOR COMMUTERS, A FOOTHILL TRANSIT STORE.	2010	12/31/2012	12/31/2012	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. UNDER CONSTRUCTION
PASADENA	LAE3790	THE PASADENA ITS INTEGRATES 3 COMPONENTS; TRAFFIC SIGNAL COMMUNICATION AND CONTRL, TRANSIT VEHICLE ARRIVAL INFO AND PUBLIC PARKING AVAILABILITY INFO. SAFETEA-LU PRJ #3790 AND #399	2010	6/30/2013	6/30/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. FUNDS HAVE BEEN OBLIGATED. THE PROJECT IS CURRENTLY IN THE DESIGN PHASE.

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
PORT OF LOS ANGELES	LAF3170	PORT TRUCK TRAFFIC REDUCTION PROGRAM: WEST BASIN RAILYARD. INTERMODAL RAILYARD CONNECTING PORT OF LA WITH ALAMEDA CORRIDOR TO ACCOMMODATE INCREASED LOADING OF TRAINS AT THE PORT, THEREBY REDUCING TRUCK TRIPS TO OFF-DOCK RAILYARDS.	12/1/2014	12/1/2014	12/1/2014	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. ENGINEERING/PLANS, SPECIFICATIONS AND ESTIMATES (PS&E)
RANCHO PALOS VERDES	LAF1506	BIKE COMPATIBLE RDWY SAFETY AND LINKAGE ON PALOS VERDES DR. THE PROJECT WILL HAVE A CLASS II BIKE LANE ON BOTH SIDES OF PALOS VERDES DRIVE SOUTH, WITH AN UNPAVED SHOULDER FOR EMERGENCY USE.	2014	10/9/2014	10/9/2014	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)
RANCHO PALOS VERDES	LAF1605	PEDESTRIAN SAFE BUS STOP LINKAGE. LINKING 11 BUS STOPS CURRENTLY INACCESSIBLE BECAUSE OF LACK OF SIDEWALKS ON BOTH THE EAST AND WEST SIDE OF HAWTHORNE BLVD. FROM CREST RD. TO PALOS VERDES DR. SOUTH (ABOUT 13,000')	2013	12/9/2013	12/9/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
ROLLING HILLS ESTATE	LAF1529	PALOS VERDES DRIVE NORTH BIKE LANES. CONSTRUCTION OF CLASS II BIKE LANE AND RELATED IMPROVEMENTS ON PALOS VERDES DRIVE NORTH	12/31/2012	12/31/2013	12/31/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT HAS RECEIVED ITS E-76 FOR PE (PS&E). THE CITY WORKED WITH METRO TO UPDATE THE SCHEDULE AND REPROGRAM THE CONSTRUCTION FUNDS; PLANNING TO OBTAIN CONSTRUCTION ALLOCATION BY JUNE 30, 2013 AND COMPLETE CONSTRUCTION BY DECEMBER 31, 2013.
SAN GABRIEL VALLEY COG	LA990359	GRADE SEP XINGS SAFETY IMPR; 35- MI FREIGHT RAIL CORR. THRGH SAN.GAB. VALLEY – EAST. L.A. TO POMONA ALONG UPRR ALHAMBRA &L.A. SUBDIV – ITS 2318 SAFETEA #2178;1436 #1934 PPNO 2318	2003/2009	6/30/2018	6/30/2018	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. UNDER CONSTRUCTION.
SANTA CLARITA	LAF1424	MCBEAN REGIONAL TRANSIT CENTER PARK AND RIDE. PURCHASE LAND, DESIGN, AND CONSTRUCT A REGIONAL PARK-AND-RIDE LOT ADJACENT TO THE MCBEAN REGIONAL TRANSIT CENTER IN THE CITY OF SANTA CLARITA.	2012	10/1/2013	10/1/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT CURRENTLY IN PRE-CONSTRUCTION PHASE. FUNDING IS IN AN APPROVED FTA GRANT CA-95-X137 AND CA-96-X071
SANTA FE SPRINGS	LA0F096	NORWALK SANTA FE SPRINGS TRANSPORTATION CENTER PARKING EXPANSION AND BIKEWAY IMPROVEMENTS. PROVIDE ADDITIONAL 250 PARKING SPACES FOR TRANSIT CENTER PATRONS AND IMPROVE BICYCLES ACCESS TO THE TRANSIT CENTER	2011	6/30/2012	6/30/2012	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE.

TABLE III-1.1 LOS ANGELES COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
TORRANCE	LA0G358	SOUTH BAY REGIONAL INTERMODAL TRANSIT CENTER PROJECT. THE LAND IS IN THE PROCESS OF BEING PURCHASED AND ESCROW WILL CLOSE ON DECEMBER 17, 2009. PRESENTLY, THE LOT IS VACANT/OPEN LAND WITH NO EXISTING STRUCTURE UPON IT. THE ADDRESS IS 465 N. CRENSHAW BLVD., TORRANCE, CA 90503.	12/31/2015	12/31/2015	12/31/2015	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. RFP IS BEING DEVELOPED. ENVIRONMENTAL DOCUMENT/PRE-DESIGN PHASE (PAED)

TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
BALDWIN PARK	LAF1654	BALDWIN PARK METROLINK PEDESTRIAN OVERCROSSING. CONSTRUCT A PEDESTRIAN OVERCROSSING OVER BOGART AVE AND THE METROLINK LINE TO LINK THE STATION WITH VITAL BUS TRANSFER POINTS AND TO PROVIDE ACCESS TO PARKING OVERFLOW AREAS.	2015	10/1/2015	10/1/2015	NOT A REPORTABLE TCM (LESS THAN ¼ MILE)

TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
BALDWIN PARK	LAF141	BALDWIN PARK METROLINK TRANSPORTATION CENTER. FUNDED THRU STIP AUGMENTATION CONSTRUCTION A TRANSPORTATION CENTER AND PARKING STRUCTURE AT THE BALDWIN PARK METROLINK STATION.	2012	11/1/2014	11/1/2014	DELETE (DUPLICATE OF LAE0076)
CALTRANS	1178A	ROUTE 405: IN LOS ANGELES AND CULVER CITY FROM ROUTE 90 TO ROUTE 10 - HOV LANES (SB 5+0 TO 5+1; NB 5+0 TO 5+1 HOV) (2206LK CFP) OBLIGATED 6207 (034)	3/10/2011		COMPLETE	COMPLETE
CLAREMONT	LAF1510	CLAREMONT PORTION OF THE CITRUS REGIONAL BIKEWAY. THIS PROJECT PROPOSES THE IMPLEMENTATION OF THE CLAREMONT PORTION OF THE CITRUS REGIONAL BIKEWAY UTILIZING BONITA AVENUE AND FIRST STREET AS PRIMARY CLASS II BIKE ROUTES.	10/1/2012	COMPLETE	COMPLETE	COMPLETE
COMPTON	LA0C8223	COMPTON MLK TRANSIT CENTER EXPANSION AND MULTI-MODAL/WILL ALLOW THE TRANSIT SYSTEM TO REDUCE OPERATING COST.	6/30/2011		COMPLETE	COMPLETE
COMPTON	LA996297	TMOC & RETROFIT OF CITY TRAFFIC SIGNAL SYSTEM (TEA21-#940)	6/1/2012		COMPLETE	COMPLETE

TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
CULVER CITY	LA0C8128	FOX HILLS AREA TRAF SIG SYNCH EFFORT & CITY-WIDE AUTO TRAF SIGNAL CONTROL AND MONITORING PROJECT. INCORPORATE 11 SIGNALIZED INTERSECTIONS INTO AN ATSAC / ADAPTIVE TRAF CONTROL SYS.	11/30/2010		COMPLETE	COMPLETE
EL MONTE	LAF1504	EL MONTE: TRANSIT CYCLE FRIENDLY. EL MONTE PROPOSES TO IMPLEMENT THE 1ST PHASE OF THE EL MONTE BIKE-TRANSIT HUB COMPONENT (METRO BICYCLE TRANSPORTATION STRATEGIC PLAN) A COUNTYWIDE EFFORT TO IMPROVE BIKE FACILITIES	2013	10/1/2013	10/1/2013	NOT A REPORTABLE TCM (LESS THAN 1 MILE)
LOS ANGELES COUNTY MTA	LA0G194	ACQUIRE FOUR (4) ALTERNATE FUEL BUSES FOR THE CITY OF ARTESIA TO BE USED FOR NEW FIXED ROUTE SERVICE EARMARK ID #E2008-BUSP-0694	10/31/2011	10/31/2012	10/31/2012	NOT A REPORTABLE TCM (PURCHASE FEWER THAN 5 BUSES)
LOS ANGELES COUNTY MTA	LA0G270	EXPANSION AND IMPROVEMENT TO EXISTING TRANSIT CENTER IN THE CITY OF PALMDALE. E2009-BUSP-137.	9/30/2012	9/30/2013	9/30/2013	NOT A TCM (OUTSIDE SCAB)
LOS ANGELES COUNTY MTA	LA0G431	MULTI-MODAL TRANSIT CENTER AT CSUN TO INCLUDE PASSENGER LOADING AREAS AND BUS SHELTERS	10/1/2012	10/1/2012	10/1/2012	NOT A TCM (NO CAPACITY ENHANCEMENT)

TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
LOS ANGELES COUNTY MTA	LA29202U1	SAN FERNANDO VALLEY E/W BRT (FROM TERMINUS OF METRO RED LINE IN NO HOLLYWOOD TO WARNER CTR)14-MILE EXCLUSIVE BUS LANES AT FORMER RAIL RD ROW (PPNO 3333 AB3090REP) SAFETEA-LU # 326			COMPLETE	COMPLETE
LOS ANGELES COUNTY MTA	LA974165	MACARTHUR PARK STATION IMPROVEMENTS INCLUDE DESIGN AND CONSTRUCTION OF A PLAZA TO ACCOMMODATE PUBLIC ACCESS (PEDESTRIAN ENTRANCES, WALKWAYS, BICYCLE FACILITIES) PPNO# 3417	2002/2007	12/30/2011	12/30/2011	NOT A TCM (NO CAPACITY ENHANCEMENT)
LOS ANGELES COUNTY MTA	LA990305	LIGHT RAIL TRANSIT FLEET- 50 NEW RAIL CAR (26 EXP (10 FOR METRO GOLD LINE EASTSIDE & (16) FOR EXPOSITION LRT) 24 REPLACEMENT CARS - .PPNO 3225.	8/31/2011		COMPLETE	COMPLETE
LOS ANGELES COUNTY MTA	LAE0036	WILSHIRE/ VERMONT PEDESTRIAN PLAZA IMPROVEMENTS AND INTERMODAL PEDESTRIAN LINKAGES	2011	2012	COMPLETE	COMPLETE

TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
LOS ANGELES COUNTY MTA	LAE0195	DESIGN AND CONSTRUCT IMPROVED PEDESTRIAN LINKAGES BETWEEN LOS ANGELES PIERCE COLLEGE AND MTA'S RAPID BUS TRANSIT STOPS TO INCLUDE PASSENGER AMENITIES, 2007 CFP # F1658	2010	10/1/2014	10/1/2014	NOT A TCM (NO CAPACITY ENHANCEMENT)
LOS ANGELES COUNTY MTA	LAE0388A	DESIGN AND CONSTRUCT IMPROVED PEDESTRIAN LINKAGES BETWEEN LOS ANGELES MISSION COLLEGE AND PUBLIC TRANSIT SERVICES TO INCLUDE LIGHTING, LANDSCAPIND, AND PASSENGER AMENITIES	12/31/2010		COMPLETE	COMPLETE
LOS ANGELES, CITY OF	LA002738	BIKEWAY/PEDESTRIAN BRIDGE OVER LA RIVER AT TAYLOR YARD CLASS I (CFP 738, 2077) (PPNO# 3156)	2009	7/31/2015	7/31/2015	NOT A REPORTABLE TCM (LESS THAN 1 MILE)
LOS ANGELES, CITY OF	LA0C8126	HARBOR-GATEWAY ATSAC/ATCS PROJECT; IMPROVEMENTS TO 109 SIGNALIZED INTERSECTIONS THROUGH IMPLEMENTATION OF A COMPUTER-BASED REAL TIME TRAFFIC SIGNAL MONITORING & CONTROL SYSTEM.	4/7/2011		COMPLETE	COMPLETE

TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LA0C8133	RESEDA ATSAC/ATCS PROJ.PROVIDE ATSAC/ATCS TYPE IMPROVEMENTS TO 107 SIGNALIZED INTERSECTIONS THRU IMPLEMENTATION OF A COMPUTER-BASED REAL TIME TRAFFIC SIGNAL MONITORING & CONTRL SYS	7/1/2012		COMPLETE	COMPLETE
LOS ANGELES, CITY OF	LA0G155	LACRD – TRANSIT SIGNAL PRIORITY IN THE CITY OF LOS ANGELES.	12/31/2011	02/28/2012	12/31/2013	NOT A TCM (DEMO PROJECT)
LOS ANGELES, CITY OF	LAF1342	ATSAC/ATCS - PLATT RANCH PROJECT. PROVIDE ATSAC/ATCS TYPE FACILITIES AND BUS PRIORITY INFRASTRUCTURE TO APPROX. 37 SIGNALIZED INTERSECTIONS THROUGH IMPLEMENTATION OF A COMPUTER-BASED REAL-TIME TRAFFIC MONITORING AND CONTROL SYSTEM.	1/1/2012		COMPLETE	COMPLETE
LOS ANGELES, CITY OF	LAF1520	IMPERIAL HIGHWAY BIKE LANES. THIS PROJECT INVOLVES THE MODIFICATION OF THE MEDIAN ISLAND AND THE WIDENING OF IMPERIAL HIGHWAY ALONG 1000 FT EAST OF PERSHING DRIVE TO ACCOMMODATE BIKE LANES.	6/1/2014	6/1/2014	6/1/2014	NOT A REPORTABLE TCM (LESS THAN 1 MILE)
LOS ANGELES, CITY OF	LAF1615	EASTSIDE LIGHT RAIL PEDESTRIAN LINKAGE. IMPROVE LINKAGES WITHIN 1/4 MILE OF METRO’S GOLD LINE LRT.	2012	6/29/2012	6/29/2012	NOT A TCM (NO CAPACITY ENHANCEMENT)

TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LAF1657	LOS ANGELES VALLEY COLLEGE (LAVC) BUS STATION EXTENSION. PROJECT WILL EXTEND THE ORANGE LINE STATION AT THE LA VALLEY COLLEGE BY PROVIDING A DIRECT PEDESTRIAN CONNECTION FROM THE STATION TO A NEW PEDESTRIAN ENTRANCE TO LAVC.	2013	10/1/2013	10/1/2013	NOT A TCM (NO CAPACITY ENHANCEMENT)
LOS ANGELES, CITY OF	LAF1704	DOWNTOWN L.A. ALTERNATIVE GREEN TRANSIT MODES TRIAL PROGRAM. OFFER SHARED RIDE-BICYCLE AND NEIGHBORHOOD ELECTRIC VEHICLE TRANSIT SERVICES TO LA CITY HALL AS AN ALTERNATIVE TO OVERCROWDED DASH SERVICE	2014	6/27/2014	6/27/2014	NOT A TCM (DEMONSTRATION PROJECT)
LOS ANGELES, CITY OF	LAF3419	SUNSET JUNCTION PHASE 2. CREATE A MULTI-MODAL TRANSIT PLAZA TO INTEGRATE PUBLIC TRANSPORTATION, PEDESTRIAN & BICYCLE IMPROVEMENTS THAT WOULD RESULT IN REGIONAL & LOCAL BENEFITS (CFP3844). TRIANGLE PROPERTY ON SUNSET BLVD BWT MANZANITA AND SANTA MONICA.	6/30/2017	6/30/2017	6/30/2017	NOT A TCM (NO NEW SERVICE)

TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
PASADENA	LA0D47	SR 710 MITIGATION PROJECT- TRAFFIC CONTROL AND MONITORING SYSTEM- INTELLIGENT TRANSPORTATION SYSTEMS (ITS). CONSTRUCT AND INSTALL ITS TECHNOLOGY AND VARIOUS DEGREES OF SMART SIGNALS	12/30/2008		COMPLETE	COMPLETE
PICO RIVERA (PREVIOUSLY LEAD AGENCY WAS SGVCOG)	LA0C57	ACE/GATEWAY CITIES- CONSTRUCT GRADE SEP. AT PASSONS BLVD IN PICO RIVERA (& MODIFY PROFILE OF SERAPIS AV.),(PART OF ALAMEDA CORR EAST PROJ.)SAFETEA-LU HPP # 1666 (TCRP #54.3)	2006	12/31/2012	COMPLETE	COMPLETE
SAN DIMAS	LAF1503	BIKEWAY IMPROVEMENTS ON FOOTHILL BLVD. AT SAN DIMAS WASH. THE BWY IMPROVEMENTS ON FOOTHILL BLVD. AT SAN DIMAS WASH; WILL CLOSE THE GAP ON A BRIDGE & CONNECT THE EXISTING CLASS II BIKE LANES TO THE EAST & WEST OF SAN DIMAS WASH CROSSING.	12/1/2013	12/1/2013	12/1/2013	NOT A TCM (RECREATIONAL PURPOSE)
SANTA CLARITA	LA0G285	FINAL EXPANSION OF PARKING AT THE NEWHALL METROLINK STATION WHICH WILL ADD 95 PARKING SPOTS FOR PARK AND RIDE.	12/31/2012		COMPLETE	COMPLETE

TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
SANTA MON-ICA	LAE0364	CONSTRUCT INTERMODAL PARK AND RIDE FACILITY AT SANTA MONICA COLLEGE CAMPUS ON SOUTH BUNDY DRIVE NEAR AIR-PORT AVENUE	2010	12/31/2013	12/31/2013	NOT A TCM (PARKING FACILITY ON CAMPUS FOR FACULTY AND STUDENTS, NOT PARK AND RIDE. THE PARKING FACILITY ALSO INCLUDES BUS STOP AMENITIES IMPROVEMENTS).
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY	LA0G153	LACRD - PLATFORMS AND PARKING IMPROVEMENTS AT THE METROLINK POMONA STATION. ADDITION OF 100 PARKING SPACES AND EXTENSION OF PLATFORM.(G# CA-37-X052-00)	12/31/2010		COMPLETE	COMPLETE
WESTLAKE VILLAGE	LA960142	LINDERO CANYON ROAD FROM AGOURA TO JANLOR DR CONSTRUCT BIKE PATH, RESTRIPE STREET, INTERSECTION WIDENING, SIGNAL COORDINATION	2003/2005	1/30/2013	1/30/2013	NOT A REPORTABLE TCM (SHORTER THAN 1 MILE)

TABLE III-1.2 LOS ANGELES COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
WHITTIER	LA0G257	WHITTIER GREENWAY TRAILHEAD PARK. EXTENSION OF WHITTIER GREENWAY TRAIL FROM MILLS AVENUE TO 300 FEET EAST OF MILLS AVENUE ON CITY OWNED RIGHT-OF-WAY IN CONJUNCTION WITH THE CONSTRUCTION OF NEW TRAILHEAD PARK WITH A PARK AND RIDE PARKING LOT FOR NEARBY PUBLIC TRANSIT STOP. NEW 20 SPACE PARKING LOT WOULD BE CONSTRUCTED OF "GREEN" PERMEABLE PAVEMENT IN COMPLIANCE WITH NPDES REQUIREMENTS. INCLUDES THE INSTALLATION OF PARK AMENITIES, DRINKING FOUNTAIN FOR THE CONVENIENCE OF PEDESTRIAN AND BICYCLE PATRONS OF THE WHITTIER GREENWAY TRAIL. CONSTRUCTION OF NEW SIDEWALKS ALONG MILLS AVENUE TO PROVIDE WHITTIER GREENWAY TRAIL CROSSING CONNECTION AT THE SIGNALIZED INTERSECTION OF MILLS AVENUE AT LAMBERT ROAD.	9/30/2012	9/30/2014	9/30/2014	NOT A TCM (PARK AND RIDE FOR RECREATIONAL PURPOSES)

TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2013 FTIP COMPLETION DATE
BALDWIN PARK	LAF3507	SOUTH BALDWIN PARK COMMUTER BIKEWAY PROJECT. CONSTRUCT 3-MILE COMMUTER CLASS I BIKE PATH ALONG SAN GABRIEL RIVER AND WALNUT CREEK CONNECTING TO MAJOR EMPLOYMENT CENTERS ON BALDWIN PARK BLVD.	9/30/2015
GARDENA	LAF3306	GARDENA MUNICIPAL BUS LINES LINE #1X TSP (TRANSIT SIGNAL SYNCHRONIZATION PROJECT 21-SIGNALS). PROJECT WILL IMPLEMENT TRANSIT SIGNAL PRIORITY ALONG ITS LINE #1X TO REDUCE TRANSIT TRAVEL TIMES AND ENHANCE ON-TIME PERFORMANCE. CITY OF GARDENA: MARINE AVENUE: FROM YUKON AVENUE TO WESTERN AVENUE WESTERN AVENUE: FROM MARINE AVENUE TO 166TH STREET NORMANDIE AVENUE: FROM 166TH STREET TO GARDENA BOULEVARD VERMONT AVENUE: FROM GARDENA BOULEVARD TO 153RD STREET; UP TO 21 LOCATIONS.	6/30/2016
GLENDALE	LA0G202	TRAFFIC LIGHT SYNCHRONIZATION ALONG THREE MAJOR ARTERIALS , GLENDALE AVE, BRAND BLVD.,SAN FERNANDO RD., AND COLORADO ST.	12/1/2014
INDUSTRY	LAF3303	INDUSTRY-ATMS SIGNAL UPGRADE/CCTV VIDEO SURVEILLANCE SYSTEM. DESIGN & IMPLEMENT 20 ATMS SIGNAL UPGRADE, 6 CCTV VIDEO SURVEILLANCE SYSTEM, WIRELESS COMMUNICATIONS & LOCAL CONTROL CENTER (LCC) VIDEO SCREEN SYSTEM.	3/30/2014
LONG BEACH	LA0C8237	LONG BEACH PARK AND RIDE FACILITY AT 4TH AND PACIFIC, SOUTH OF THE MTA BLUE LINE PACIFIC STATION. 100 DEDICATED, TRANSIT ORIENTED SPACES IN MIXED USE DEVELOPMENT	6/30/2014
LONG BEACH	LA996322	DWNTWN. SHORELINE DR. TRAFFIC MGMT. SYSTEM: DEPLOYMENT OF ITS ELEMENTS IN THE DWNTWN AREA TO RESPOND TO SPECIAL GENERATOR TRAFFIC.	3/31/2013
LONG BEACH	LAF1334	ATLANTIC AVE SIGNAL SYNCHRONIZATION & ENHANCEMENT PROJECT. TRAFFIC SIGNAL UPGRADES AND RECONSTRUCTION, INTERCONNECT, BUS PRIORITY TRAFFIC SIGNAL EQUIPMENT, EMERGENCY VEHICLE PREEMPTION, AND ENHANCEMENTS FOR BUS STOPS AND PEDESTRIAN SAFETY.	12/1/2013
LONG BEACH	LAF1341	OCEAN BL. SIGNAL SYNCHRONIZATION AND ENHANCEMENT PROJECT. INSTALLATION OF NEW SIGNALS, INTERCONNECT, PEDESTRIAN SAFETY ENHANCEMENTS, ADA ACCESS RAMPS, TRANSIT INFORMATION SYSTEMS, AND TRAFFIC SIGNAL UPGRADES AND RECONSTRUCTION. OCEAN BL,ALAMITOS TO LIVINGSTON	10/1/2013
LOS ANGELES COUNTY	LA0C8120	SOUTH BAY FORUM TRAFFIC SIGNAL CORRIDORS PROJECT. DESIGN & CONSTRUCTION OF MULTI JURISDICTIONAL, SIGNAL SYSTEM IMPROVEMENTS ON REGIONAL ARTERIALS & ADVANCED ITS TECHNOLOGY. (APROX. 770 INTERSECTIONS)	12/31/2015
LOS ANGELES COUNTY	LAF1511	EASTSIDE LIGHT RAIL BIKE INTERFACE PROJECT. PROJECT INCLUDES DESIGN AND CONSTRUCTION OF BIKE ROUTES WITH APPROPRIATE SIGNAGE AND STRIPING TO ACCESS METRO GOLD LINE STATIONS.	10/21/2014

TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2013 FTIP COMPLETION DATE
LOS ANGELES COUNTY	LAF3308	SAN GABRIEL VALLEY FORUM TRAFFIC SIGNAL CORRIDORS PROJECT. DESIGN AND CONSTRUCTION OF MULTIJURISDICTIONAL TRAFFIC SIGNAL SYNCH, INTERSECTION OPERATIONAL IMPROVEMENTS, AND INTELLIGENT TRANSPORTATION SYSTEM COMPONENTS ON REGIONAL ARTERIALS. APROX. 183 SIGNALS TOTAL.	6/30/2016
LOS ANGELES COUNTY	LAF3310	SOUTH BAY FORUM TRAFFIC SIGNAL CORRIDORS PROJECT. DESIGN AND CONSTRUCTION OF MULTIJURISDICTIONAL TRAFFIC SIGNAL SYNCHRONIZATION, OPERATIONAL IMPROVEMENTS & ITS COMPONENTS ON ARTERIALS IN THE SOUTH BAY AREA OF LA COUNTY. (APROX 40+ SIGNALS)	6/30/2016
LOS ANGELES COUNTY MTA	LA0D198	CRENSHAW/LAX TRANSIT CORRIDOR	12/31/2018
LOS ANGELES COUNTY MTA	LA0F075	LIGHT RAIL TRANSIT FLEET-UP TO 78 NEW CARS SYSTEMWIDE. THESE EXPANSION RAIL CARS WILL BE ASSIGNED TO EXPO I, EXPO II AND GOLD LINE FOOTHILL.	3/30/2018
LOS ANGELES, CITY OF	LA0G181	ATCS - CENTRAL BUSINESS DISTRICT. DEVELOP A FULLY TRAFFIC RESPONSIVE SIGNAL CONTROL SYSTEM TO APPROXIMATELY 180 INTERSECTIONS CURRENTLY OPERATIONAL WITH ATSAC CAPABILITY.	2/1/2014
LOS ANGELES, CITY OF	LA0G182	THE CENTRAL CITY EAST PROJECT WILL PROVIDE A FULLY TRAFFIC RESPONSIVE SIGNAL CONTROL SYSTEM TO APPROXIMATELY 150 INTERSECTIONS CURRENTLY OPERATIONAL WITH ATSAC CAPABILITY.	5/1/2014
LOS ANGELES, CITY OF	LAF1527	MANCHESTER AVENUE BIKE LANES & ISLAND REDUCTION. THE PROJECT CONSISTS OF THE INSTALLATION OF ONE MILE OF BIKE LANES AND THE REDUCTION OF THE LANDSCAPED MEDIAN ISLAND ON MANCHESTER BL BETWEEN SEPULVEDA BL AND OSAGE AV	10/1/2015
LOS ANGELES, CITY OF	LAF1725	WIFI ON THE GOLD LINE. WIFI INTERNET INSTALLED ON GOLD LINE TRAINS, POLES & STATIONS, EASTSIDE EXTENSION, CHINATOWN & LITTLE TOKYO/ARTS DISTRICTS.	12/31/2014
LOS ANGELES, CITY OF	LAF3171	DE SOTO AVE WIDENING: RONALD REAGAN FWY TO DEVONSHIRE ST.. WIDEN DE SOTO AVE FR SR-118 TO DEVONSHIRE ST TO PROVIDE 3 LANES IN EACH DIRECTION & UNIFORM ROADWAY WIDTH. EXISTING ASPHALT BERMS TO BE REPLACED WITH CURB, GUTTER, & 10' SIDEWALK. SIDEWALK IS 1.42 MILES, 90% OF THE SIDEWALKS ALONG THE PROJECT LIMITS WILL BE NEW.	12/1/2015
LOS ANGELES, CITY OF	LAF3314	INTELLIGENT TRANSPORTATION SYSTEM (ITS) COMMUNICATION SYSTEM. UPGRADE AND REPLACE UNDER CAPACITY COMMUNICATION SYSTEM HARDWARE IN ORDER TO PROVIDE A VIABLE AND COST EFFECTIVE COMMUNICATION LINK BETWEEN TRAFFIC CORRIDORS AND THE LA COUNTY IEN.	12/31/2015

TABLE III-1.3 LOS ANGELES COUNTY NEW TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2013 FTIP COMPLETION DATE
LOS ANGELES, CITY OF	LAF3513	DESIGN AND CONSTRUCT 3.85 MILE BIKEWAY ALONG FUTURE EXPOSITION LIGHT RAIL CORRIDOR BETWEEN VENICE/ROBERTSON BLVDS. AND SANTA MONICA CITY LIMITS AT CENTINELA. CLASS I AND CLASS II BIKEWAYS.	12/31/2015
LOS ANGELES, CITY OF	LAF3731	DOWNTOWN LA INTER-MODAL TRANSIT INFORMATION AND WAYFINDING. INSTALL TRANSIT INFORMATION MONITORS, VARIABLE MESSAGE SIGNS, INTERACTIVE KIOSKS & PARKING AVAILABILITY SIGNAGE ALONG BROADWAY CORRIDOR TO OLYMPIC.	12/31/2014
PASADENA	LAF3501	DETECTION OF BICYCLES AT SIGNAL CONTROLLED INTERSECTIONS. BICYCLE DETECTION SYSTEMS AT INTERSECTIONS CONTROLLED BY TRAFFIC SIGNALS ALONG BIKE CORRIDORS. PROJECT CORRIDOR LENGTH IS 15.5 MILES.	5/1/2016
SANTA FE SPRINGS	LAF3402	NORWALK/SANTA FE SPRINGS TRANSPORTATION CTR PHASE II PARKING. CONSTRUCT A TOTAL OF APPROX. 160 PARKING SPACES ON A SITE ADJACENT TO THE METROLINK STATION.	6/30/2014
SANTA MONICA	LA0F062	DESIGN AND CONST. OF REAL-TIME PARKING INF./GUIDANCE SYSTEM. PHASE I COVERS SANTA MONICA AREA, BOUNDED BY COLORADO AVE., OCEAN AVE., WILSHIRE BLVD AND LINCOLN BLVD.	6/30/2013
SANTA MONICA	LAF1343	OCEAN PARK BL, MAIN ST, NEILSON WY SIGNAL SYSTEM. INSTALL COMMUNICATION & SIGNAL MODIFICATIONS NEEDED TO BRING INTERSECTIONS ONTO THE SIGNAL CONTROL SYSTEM ALONG THE OCEAN PARK BL, MAIN ST, AND NEILSON WY CORRIDORS. INCLUDES 26 INTERSECTIONS ON 3 CORRIDORS.	6/30/2015
SANTA MONICA	LAF1728	CITY OF SANTA MONICA ITS IMPROVEMENTS. SANTA MONICA REAL TIME BEACH PARKING SIGNS. THIS PROJECT WILL MAKE INFORMATION REGARDING BEACH PARKING AVAILABLE TO MOTORISTS DESTINED FOR SANTA MONICA BEACH PARKING LOTS.	6/30/2013
SANTA MONICA	LAF3703	A 'NO NET NEW TRIPS' RIDESHARE TOOLKIT. DEVELOP A TDM TOOLKIT WITH ONLINE MULTI-MODAL MOBILITY INFORMATION, BIKE ACCOMMODATIONS, 300 WALKING-ROLLING CARTS, 75 BIKE LOCKERS & INCENTIVE PROGRAMS FOR EMPLOYERS, SCHOOLS & NEIGHBORHOODS. WITHIN THE CITY OF SANTA MONICA IN DEMAND MANAGEMENT AREAS AS DEFINED IN THE LAND USE AND CIRCULATION ELEMENT (LUCE) ADOPTED JULY 2010.	6/30/2014
TEMPLE CITY	LA0G668	ROSEMEAD BLVD SAFETY ENHANCEMENTS & BEAUTIFICATION PROJECT: INSTALLATION OF BICYCLE LANES, SIDEWALK IMPROVEMENTS, LANDSCAPING, WAYFINDING SIGNAGE FROM PENTLAND TO CALLITA (1.7 MI).	10/31/2013

ORANGE COUNTY

TABLE III-2.1 ORANGE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
ANAHEIM	ORA000100	GENE AUTRY WAY WEST @ I-5 (I-5 HOV TRANSITWAY TO HASTER) ADD OVERCROSSING ON I-5 (S)/MANCHESTER AND EXTEND GENE AUTRY WAY WEST FROM I-5 TO HASTER (3 LANES IN EA DIR.)	2004	11/16/2012	01/2013	OBSTACLES ARE BEING OVERCOME. PROJECT UNDER CONSTRUCTION. DELAY DUE TO UTILITIES RELOCATION.
CALTRANS	ORA000193	HOV CONNECTORS FROM SR-22 TO I-405, BETWEEN SEAL BEACH BLVD. (I-405 PM 022.558) AND VALLEY VIEW ST. (SR-22 PM R000.917), WITH A SECOND HOV LANE IN EACH DIRECTION ON I-405 BETWEEN THE TWO DIRECT CONNECTORS.	2010	2/1/2015	2/1/2015	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. UNDER CONSTRUCTION.
CALTRANS	ORA000194	HOV CONNECTORS FROM I-405 TO I-605, BETWEEN KATELLA AVE. (I-605 PM R001.104) AND SEAL BEACH BLVD. (I-405 PM 022.643), WITH A SECOND HOV LANE IN EACH DIRECTION ON I-405 BETWEEN THE TWO DIRECT CONNECTIONS.	2010	7/1/2015	7/1/2015	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. UNDER CONSTRUCTION.
FULLERTON	ORA020113	FULLERTON TRAIN STATION – PARKING STRUCTURE, PHASE I AND II. TOTAL OF 800 SPACES (PPNO 2026)	2004	5/31/2012	6/11/2012	OBSTACLES ARE BEING OVERCOME. CONSTRUCTION STARTED MARCH 2011. SLIGHT DELAY DUE TO INTERNAL SIGNAGE ISSUES.

TABLE III-2.1 ORANGE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA041501	PURCHASE (71) STANDARD 30FT EXPANSION BUSES – ALTERNATIVE FUEL – (31) IN FY08-09, (9) IN FY09-10, (7) IN FY11-12, (6) IN FY12-13 AND (18) IN FY13-14	2012	6/30/2016	6/30/2016	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. DUE TO CUT TO TRANSIT SERVICES, THERE IS NO NEED FOR ADDITIONAL BUSES FOR THE TIME BEING.
OCTA	ORA0826016	PURCHASE (72) PARATRANSIT EXPANSION VANS – (21) IN FY09/10, (51) IN FY10/11.	6/30/2016	6/30/2016	6/30/2016	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. DUE TO CUT TO TRANSIT SERVICES, THERE IS NO NEED FOR ADDITIONAL BUSES FOR THE TIME BEING.
OCTA	ORA082618	PURCHASE PARATRANSIT VEHICLES EXPANSION (MISSION VIEJO) (11) IN FY09/10. ON-GOING PROJECT.	6/30/2030	6/30/2030	6/30/2030	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. DUE TO CUT TO TRANSIT SERVICES, THERE IS NO NEED FOR ADDITIONAL BUSES FOR THE TIME BEING.
OCTA	ORA65002	RIDESHARE SERVICES RIDEGUIDE, DATABASE, CUSTOMER INFO, AND MARKETING (ORANGE COUNTY PORTION).	2010	6/30/2016	12/30/2020	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. ONGOING INFORMATION FOR RIDESHARE SERVICES
TRANSPOR-TATION CORRIDOR AGENCIES (TCA)	10254	SJHC, 15 MI TOLL RD BETWEEN I-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, EXISTING 3/M/F EA.DIR.1 ADD'L M/F EA DIR, PLUS CLIMBING & AUX LNS AS REQ, BY 2020 PER SCAG/TCA MOU 4/5/01	2015/2008	12/31/2020	12/31/2020	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ONGOING IMPLEMENTATION PER SCAG/TCA MOU.

TABLE III-2.1 ORANGE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
TCA	ORA050	ETC (RTE 241/261/133) (RTE 91 TO I-5/JAMBOREE) EXISTING 2 M/F EA.DIR, 2 ADD’L M/F IN EA. DIR, PLUS CLIMB AND AUX LNS AS REQ, BY 2020 PER SCAG/TCA MOU 4/05/01.	2015/2010	12/31/2020	12/31/2020	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ONGOING IMPLEMENTATION PER SCAG/TCA MOU.
TCA	ORA051	(FTC-N) (OSO PKWY TO ETC) (13MI) EXISTING 2 MF IN EA. DIR, 2 ADDITIONAL M/F LANES, PLS CLMBNG & AUX LANS AS REQ BY 2020 PER SCAG/TCA MOU 4/05/01.	2015/2010	12/31/2020	12/31/2020	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ONGOING IMPLEMENTATION PER SCAG/TCA MOU.
TCA	ORA052	(FTC-S) (I-5 TO OSO PKWY) (15MI) 2 MF EA. DIR BY 2013; AND 1 ADDITIONAL M/F EA. DIR. PLS CLMBNG & AUX LANES AS REQ BY 2030 PER SCAG/TCA MOU 4/05/01.	2015/2010	6/15/2030	6/15/2030	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ONGOING IMPLEMENTATION PER SCAG/TCA MOU. TCA IS DEVELOPING ENGINEERING PLANS, ENVIRONMENTAL ASSESSMENTS AND FINANCIAL STRATEGY TO BUILD THE 241 EXTENSION FROM THE EXISTING SOUTHERLY TERMINUS AT OSO PARKWAY TO THE VICINITY OF ORTEGA HIGHWAY WHILE CONTINUING TO PURSUE THE BALANCE OF THE ALIGNMENT THAT CONNECTS TO INTERSTATE 5.

TABLE III-2.2 ORANGE COUNTY COMPLETED/CORRECTED TCMS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
CALTRANS	ORA000195	ON SR-22 (I-405 TO SR55) ADD 2 HOV LANES/1 EA DIR (FRM 0 - 2) & 2 AUX LANES/1 EA DIR (FRM 0-2) (I-5 TO BEACH) & OPERATING IMPROVMENTS (SEE COMMENTS) TCRP PAYBACK WHEN AVAILABLE	6/30/2011		COMPLETE	COMPLETE
OCTA	ORA110633	RIDESHARE VANPOOL PROGRAM – CAPITAL LEASE COSTS	2012	9/30/2012	COMPLETE	COMPLETE
OCTA	ORA120357	TRAFFIC SIGNAL SYNCHRONIZATION SUBSTITUTION TCM (REPLACING BRTS)	6/15/2012	6/15/2012	6/15/2012	COMPLETE
VARIOUS AGENCIES	ORA111225	AGE WELL, INC - 12 MINIVANS FOR EXPANSION SERVICE (UTILIZING \$60,562 IN TOLL CREDIT FOR FY10/11)	10/1/2013		COMPLETE	COMPLETE

TABLE III-2.3 ORANGE COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2013 FTIP COMPLETION DATE
ANAHEIM	ORA100508	DEVELOP AND IMPLEMENT AN ITS MASTER PLAN IN ANAHEIM. INCLUDES NEW CCTV CAMERAS (3) AND MODIFICATIONS TO FIBER OPTICS	6/30/2013
OCTA	ORA085001	ORANGE TRANSPORTATION CENTER PARKING EXPANSION - PROJECT WILL PROVIDE APPROXIMATLY 1,100 ADDITIONAL TRANSIT PARKING SPACES AT THE ORANGE STATION PARKING CENTER.	9/1/2015

TABLE III-2.3 ORANGE COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2013 FTIP COMPLETION DATE
OCTA	ORA085004	ANAHEIM CANYON STATION PROJECT WILL ADD DOUBLE TRACK AND ANOTHER PLATFORM AS WELL AS EXTEND THE EXISTING PLATFORM TO BE IN CONFORMANCE WITH THE METROLINK STANDARDS FOR PASSENGER PLATFORM LENGTH. (MAY USE TOLL CREDIT IF CMAQ REQUIRES A MATCH)	6/1/2014
OCTA	ORA111001	INTERSTATE 5 ADD 1 HOV IN EACH DIRECTION FROM SOUTH OF PACIFIC COAST HIGHWAY TO SAN JUAN CREEK ROAD. PPNO:2531F	11/1/2016
OCTA	ORA111002	INTERSTATE 5 ADD 1 HOV IN EACH DIRECTION FROM SOUTH OF AVENIDA VISTA HERMOSA TO SOUTH OF PACIFIC COAST HIGHWAY. PPNO 2531E	10/1/2016
OCTA	ORA990929	INTERSTATE 5 ADD 1 HOV IN EACH DIRECTION FROM SOUTH OF AVENIDA PICO TO SOUTH OF AVENIDA VISTA HERMOSA AND RECONFIGURE AVENIDA PICO INTERCHANGE. PPNO:2531D	7/1/2017
ORANGE COUNTY	ORA112001	MOULTON PARKWAY SMART STREET SEGMENT 3 PHASE II - FROM APPROXIMATELY 400' NORTH OF EL TORO ROAD TO 500' NORTH OF SANTA MARIA AVENUE (0.7 MILES) - IMPROVE ROADWAY TRAFFIC CAPACITY AND SMOOTH TRAFFIC FLOW THROUGH TRAFFIC SIGNAL SYNCHRONIZATION (3), BUS TURNOUTS, INTERSECTION IMPROVEMENTS, ADDITIONAL SIDEWALK, ADDITIONAL TURNING LANES AND ON-ROAD BIKE LANES WITHIN THE PROJECT LIMITS.	9/30/2013

RIVERSIDE COUNTY

TABLE III-3.1 RIVERSIDE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
RIVERSIDE COUNTY TRANSPORTATION COMMISSION (RCTC)	RIV010212	ON SR91 – ADAMS TO 60/215 IC: ADD ONE HOV LN IN EACH DIRECTION, RESTRIPE TO EXTEND 4TH WB MIXED FLOW LANE FROM 60/215 IC TO CENTRAL OFF-RAMP, RESTRIPE TO EXTEND 5TH WB MIXED FLOW LANE FROM 60/215 IC TO 14TH ST OFF-RAMP, AUX LNS (MADISON-CENTRAL), BRIDGE WIDENING & REPLACEMENTS, EB/WB BRAIDED RAMPS, IC MOD/RECONSTRUCT + SOUND/RETAINING WALLS	2002	8/3/2015	8/3/2015	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. UNDER CONSTRUCTION
RCTC	RIV050555	ON I-215 (N/O EUCALYPTUS AVE TO N/O BOX SPRINGS RD) & SR60 (E/O DAY ST TO SR60/I-215 JCT): RECONSTRUCT JCT TO PROVIDE 2 HOV DIRECT CONNECTOR LNS (SR60 PM: 12.21 TO 13.6) AND MINOR WIDENING TO BOX SPRINGS RD FROM 2 TO 4 THROUGH LANES BETWEEN MORTON RD AND BOX SPRINGS RD/FAIR ISLE DR IC (EA: 449311)	2011	4/29/2013	4/29/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. UNDER CONSTRUCTION.

TABLE III-3.1 RIVERSIDE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
RCTC	RIV520109	RECONSTRUCT & UPGRADE SAN JACINTO BRANCH LINE FOR RAIL PASSENGER SERVICE (RIVERSIDE TO PERRIS) (PERRIS VALLEY LINE) (FY 07 5307) (UZA: RIV-SAN)	2012	2014	2014	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. PROJECT CURRENTLY IN LITIGATION OVER DISPUTED EXTENSION OF METROLINK SERVICE TO PERRIS. RCTC IS CLOSELY WORKING WITH FTA TO SECURE THE NEPA APPROVAL BY LATE SUMMER 2012.
RCTC	RIV520111	REGIONAL RIDESHARE – CONTINUING PROGRAM.	2009	ONGOING TCM PROGRAM IN RIVERSIDE COUNTY	6/30/2018	ONGOING PROGRAM.
RIVERSIDE TRANSIT AGENCY	RIV041030	IN THE CITY OF HEMET – CONSTRUCT NEW HEMET TRANSIT CENTER (WITH APPROXIMATELY 4 BUS BAYS) AT 700 SCARAMELLA CR., HEMET, CA (5309C FY 04 + 05 EARMARKS).	6/30/2010	6/30/2013	12/31/2015	OBSTACLES ARE BEING OVER COME. THE CITY OF HEMET HAS IDENTIFIED THE POTENTIAL SITE FOR THE HEMET COURTHOUSE WITH AN ADJACENT TRANSIT CENTER AT STATE AND DEVONSHIRE. ONCE THE HEMET COURTHOUSE FUNDING IS SECURED, THE PROJECT DESIGN AND CONSTRUCTION CAN PROCEED. THE HEMET COURTHOUSE IS CURRENTLY BEING REASSESSED BY THE STATE OF CALIFORNIA. RTA WILL CONTINUE COMMUNICATIONS WITH THE CITY OF HEMET TO MOVE FORWARD WITH THE NEW SELECTED SITE BY THE FUTURE COURTHOUSE AND/OR TO CONSTRUCT AN INTERIM TRANSIT CENTER AT THE RTA OPERATIONS SITE ON SCARAMELLA (PREVIOUS LOCATION).

TABLE III-3.1 RIVERSIDE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
RIVERSIDE TRANSIT AGENCY	RIV050553	IN TEMECULA – CONSTRUCT NEW TEMECULA TRANSIT CENTER AT 27199 JEFFERSON AVE. (SW OF JEFFERSON AVE & SE OF CHERRY ST) (04, 05, 06, 07, E-2006-091, E-2007-0131, & 2008-BUSP-0131, SAFETEA-LU).	12/30/2010	12/30/2014	12/31/2015	<p>OBSTACLES ARE BEING OVERCOME.</p> <p>ORIGINAL SITE AT 27199 JEFFERSON AVE IS NO LONGER FEASIBLE DUE TO ENVIRONMENTAL CONCERNS BY ARMY CORP OF ENGINEERS. TEMECULA & MURRIETA ARE WORKING TO CHOOSE A NEW SITE. A REQUEST FOR PROPOSAL TO CONDUCT A SITE FEASIBILITY STUDY IS SCHEDULED FOR JULY 2012. THE STUDY WILL IDENTIFY THE OPTIMAL LOCATION FOR A TRANSIT CENTER TO SERVE THE COMMUNITIES OF TEMECULA AND MURRIETA, AS WELL AS IDENTIFYING THE SCOPE OF WORK FOR THE PROJECT. THE FEASIBILITY STUDY WILL BE COMPLETED IN SUMMER 2013. ENVIRONMENTAL, RIGHT-OF-WAY, AND CONSTRUCTION WILL FOLLOW – ANTICIPATED COMPLETION YEAR IS 2015</p>
RIVERSIDE TRANSIT AGENCY	RIV090609	IN WESTERN RIVERSIDE COUNTY FOR RTA: INSTALL ADVANCE TRAVELER INFORMATION SYSTEMS (ATIS) ON VARIOUS FIXED ROUTE VEHICLES AND INSTALLATION OF ELECTRONIC MESSAGE SIGNS AT APPROX. 60 BUS STOPS (FY ‘S 05, 07, 08, 09, AND 10 – 5309).	2011	12/30/2012	12/30/2015	<p>OBSTACLES ARE BEING OVERCOME.</p> <p>RTA HAS INSTALLED A TOTAL OF 40 SIGNS.</p> <p>ADDITIONAL SIGNS ARE PLANNED FOR THE MORENO VALLEY MALL TRANSFER LOCATION – RTA IS CURRENTLY NEGOTIATING PERMISSION FOR THE INSTALLATION OF THE ATIS SIGNS WITH THE MORENO VALLEY MALL OWNERS.</p> <p>THE ATIS ELECTRONIC MESSAGE SIGN SYSTEM ALLOWS RTA CUSTOMERS TO DERIVE BUS SCHEDULES AND ROUTE INFORMATION FROM RTA AND GOOGLE TRANSIT DIRECTLY TO WIRELESS DEVICES.</p>

TABLE III-3.1 RIVERSIDE COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
TEMECULA	RIV62029	AT HWY 79 SO AND LA PAZ ST: ACQUIRE LAND, DESIGN AND CONSTRUCT PARK-AND-RIDE LOT – 250 SPACES (FY 05 HR4818 EARMARK)	2004/2007	12/31/2015	12/31/2015	<p>NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE.</p> <p>INTERIM 240-SPACE PARK-N-RIDE FACILITY LOCATED IN SPENCER’S CROSSING AT THE CORNER OF BIGGS AND LOS ALAMOS (NE OF THE CITY IN THE VICINITY OF THE FRENCH VALLEY AREA) ARE OPEN.</p> <p>THE ORIGINAL P-N-R FACILITY AT HWY 79 SO AND LA PAZ WILL BE BUILT BY 2015 – MAX NUMBER OF SPACES IS 157. THE REMAINING 93 SPACES WILL BE PROVIDED THROUGH THE INTERIM FACILITY AT SPENCER’S CROSSING AND/OR A COMBINATION OF SPENCER’S CROSSING AND NEW CIVIC CENTER PARKING STRUCTURE.</p>

TABLE III-3.2 RIVERSIDE COUNTY COMPLETED/CORRECTED TCMS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
CORONA	RIV010227	CORONA ADVANCED TRAFFIC MANAGEMENT SYSTEM (ATMS) - AND REGIONAL ITS INTEGRATION PHASE 2.	12/31/2011		COMPLETE	COMPLETE

TABLE III-3.2 RIVERSIDE COUNTY COMPLETED/CORRECTED TCMS

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
RCTC	RIV051201	IN CORONA – CONTINUE THE IMPLEMENTATION OF A 60 SPACE PARK-AND-RIDE LOT (VIA ANNUAL LEASE AGREEMENT) AT LIVING TRUTH CHRISTIAN FELLOWSHIP AT 1114 W. ONTARIO AVE.	9/30/2009	COMPLETE	COMPLETE	COMPLETE
RCTC	RIV070303	ON SR60 IN NW RIV CO: CONTINUE THE IMPLEMENTATION OF THE EXPANDED SR60 FREEWAY SERVICE PATROL (FSP) (BEAT #7 PATROL , 2 TRUCKS) BETWEEN MILIKEN AVE & MAIN ST (SR60 HOV LN CHANGE TCM SUBSTITUTION PROJECT)	2010	ON GOING TCM PROGRAM IN RIVERSIDE COUNTY	COMPLETE	COMPLETE
RCTC	RIV070304	ON I-215 IN SW RIV CO: CONTINUE THE IMPLEMENTATION OF I-215 FREEWAY SERVICE PATROL (FSP) (BEAT #19, 2 TRUCKS) BETWEEN SR74/4TH ST AND ALESSANDRO BLVD (SR60 HOV LANE CHANGE TCM SUBSTITUTION PROJECT)	2010	ON-GOING TCM PROGRAM IN RIVERSIDE COUNTY	COMPLETE	COMPLETE
RCTC	RIV070307	ON SR60 IN MORENO VALLEY: CONTINUE THE IMPLEMENTATION OF SR60 FREEWAY SERVICE PATROL (FSP) (BEAT #8, 2 TRUCKS) BETWEEN DAY ST AND REDLANDS BLVD (SR60 HOV LANE CHANGE TCM SUBSTITUTION PROJECT)	2010	ON-GOING TCM PROGRAM IN RIVERSIDE COUNTY	COMPLETE	COMPLETE

TABLE III-3.2 RIVERSIDE COUNTY COMPLETED/CORRECTED TCMS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	RIV010214	RCTC SHARE OF PURCHASE OF METROLINK CARS & LOCOMOTIVES - UP TO 47 CARS/CABS & 8 LOCOS TO BE ORDERED BY 6/30/06 (FY 03 & 04 5307) (SHARES AMONG LAOC8231, SBD20020801, & ORA090302)	12/31/2011		COMPLETE	COMPLETE
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	RIV011242	PURCHASE EXPANSION ROLLING STOCK (2 CAB CARS AND 3 LOCOMOTIVES) FOR METROLINK IEOC AND RIVERSIDE/FULLERTON/LA LINES (EA: RIVFUL, PPNO: 0079E)	12/30/2011		COMPLETE	COMPLETE

TABLE III-3.3 RIVERSIDE COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2013 FTIP COMPLETION DATE
MORENO VALLEY	RIV071240	IN THE CITY OF MORENO VALLEY - EAST BOUND CACTUS AVE WIDENING BETWEEN VETERANS WAY & HEACOCK: WIDENING OF EAST BOUND CACTUS AVE FROM 2 TO 3 LANES, INCLUDING TRAFFIC SIGNAL MODIFICATIONS WITHIN THE PROJECT REACH, CHANNELIZATION, AND SIGNAL INTERCONNECT SYSTEM (6 SIGNALS).	6/1/2013
RCTC	RIV071250	ON SR-91/I-15: SR91 - CONST 1 MF LN (SR71-I15)/1 AUX LN VAR LOCS(SR241-PIERCE) (OC PM 14.43-18.91), CD SYSTEM (2/3/4 LNS MAIN-I15), 1 TOLL EXPR LN (TEL) & CONVERT HOV TO TEL EA DIR (OC-I15); I15-CONST TEL MED DIR CONNCT NB15 TO WB91 AND EB91 TO SB15, 1 TEL EA DIR SR91 DIR CONNCT-ONTARIO IC (I15 PM 37.56-42.94).	7/31/2017
RCTC	RIV111207	IN WESTERN RIVERSIDE COUNTY - CONTINUE THE IMPLEMENTATION OF PARK-N-RIDE FACILITIES THROUGH PROPERTY LEASES (VARIOUS LOCATIONS THROUGHOUT THE WESTERN COUNTY).	12/30/2018

SAN BERNARDINO COUNTY

TABLE III-4.1 SAN BERNARDINO COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION

LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
OMNITRANS	981118	BUS SYSTEM – PASSENGER FACILITIES: DESIGN AND BUILDING OF ONTARIO TRANSCENTER	2005/2008	5/31/2012	9/30/2012	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO CITY’S EFFORT TO DETERMINE A LOCATION TO HAVE A REAL TRANSIT CENTER. ONTARIO IS PLANNING TO AWARD THE CONSTRUCTION CONTRACT THIS MONTH, WITH COMPLETION OF CONSTRUCTION ESTIMATED IN SEPTEMBER.
RIALTO	200450	RIALTO METROLINK STATION – INCREASE PARKING SPACES FROM 225-775	2006	12/1/2012	12/1/2015	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO DIFFICULTIES GETTING STAKEHOLDERS TO BUY IN ON LEVEL OF EFFECTIVENESS AND LAND VALUE COST ESTIMATES. FTA FUNDS AWARDED FOR JULY 2011 PROJECT IS MOVING FORWARD. RIALTO IS CURRENTLY DRAFTING THE RFP FOR DESIGN OF THE PARKING LOT.
SANBAG	200074	LUMP SUM – TRANSPORTATION ENHANCEMENT ACTIVITIES PROJECTS FOR SAN BERNARDINO COUNTY-BIKE/PED PROJECTS (PROJECTS CONSISTENT W/40CFR PART 93.126,127,128, EXEMPT TABLE 2 & 3).	2004	12/1/2015	12/1/2015	ONGOING PROJECT. PAST PROJECTS HAVE BEEN COMPLETED AND NEW PROJECTS HAVE BEEN AWARDED FUNDING.

TABLE III-4.1 SAN BERNARDINO COUNTY TCMS SUBJECT TO TIMELY IMPLEMENTATION						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
VARIOUS AGENCIES	713	I-215 CORRIDOR NORTH – IN SAN BERNARDINO, ON I-215 FROM RTE 10 TO RTE 210 – ADD 2 HOV & 2 MIXED FLOW LNS (1 IN EA. DIR.) AND OPERATIONAL IMP INCLUDING AUX LANES AND BRAIDED RAMP	2013	9/1/2013	9/1/2013	NO CHANGE IN COMPLETION DATE FROM 2012-2035 RTP/SCS TCM REPORT. ON SCHEDULE. THIS PROJECT IS OPEN TO TRAFFIC ON THE FREEWAY PORTION. INTERCHANGES ARE NOW BEING CONSTRUCTED ON THE NORTH END OF THE PROJECT. ORANGE SHOW RD. INLAND EMPIRE, MILLS AND 5TH STREET INTERCHANGES AND OFFRAMPS ARE COMPLETED. THE LARGER 215/210 INTERCHANGE IS CURRENTLY UNDER CONSTRUCTION ALL FUNDS HAVE BEEN OBLIGATED FOR THIS PROJECT

TABLE III-4.2 SAN BERNARDINO COUNTY COMPLETED/CORRECTED TCMS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
FONTANA	200431	INLAND PACIFIC ELECTRIC TRAIL - ON OLD SP ABANDONED RR BETWEEN I-15 TO MAPLE AVE.- CONSTRUCT CLASS 1 BIKE LANE (APPROX. 7 MILES LONG)	12/1/2011		COMPLETE	COMPLETE
SAN BERNARDINO , CITY OF	20020802	METROLINK ADD'L PARKING STRUCTURE - CONSTRUCT 5 LEVEL PARKING STRUCTURE TO SERVE EXISTING METROLINK STATION AT SANTA FE DEPOT LOCATION	6/30/2009		COMPLETE	COMPLETE

TABLE III-4.2 SAN BERNARDINO COUNTY COMPLETED/CORRECTED TCMS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2012-2035 RTP/SCS COMPLETION DATE	2013 FTIP COMPLETION DATE	2013 FTIP PROJECT STATUS
SANBAG	20040827	RIDESHARE PROGRAM FOR SOUTHCOAST AIR DISTRICT	2009	12/1/2015	COMPLETE	COMPLETE

TABLE III-4.3 SAN BERNARDINO COUNTY NEW TCMS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2013 FTIP COMPLETION DATE
SANBAG	20061012	DOWNTOWN S.B. PASSENGER RAIL – FROM SAN BERNARDINO METROLINK STATION TO APPROX. 1 MILE EAST TO A NEW METROLINK STATION AT RIALTO AVE AND E ST. IN DOWNTOWN SAN BERNARDINO	10/10/2014
UPLAND	20040825	UPLAND METROLINK STATION - ADDITIONAL PARKING FROM 200 TO 500 spaces	12/1/2013

2011 FTIP Committed Transportation Control Measures (TCMs)

Project Listing Report

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
ARTESIA	LAF1607	SOUTH STREET PEDESTRIAN, BIKEWAY AND TRANSIT IMPROVEMENT. IMPROVE PEDESTRIAN ENVIRONMENT AND TRANSIT STOP LOCATIONS WITH LANDSCAPED MEDIANS, TRANSIT SHELTERS, BENCHES, SIDEWALK ENHANCEMENTS AND LIGHTING. CLOSE EXISTING BIKE LANE GAP.	2014	2014	10/1/2014	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. WAITING FOR METRO APPROVAL FOR DESIGN PHASE OF PROJECT. ON SCHEDULE.
AVALON	LAF1501	COUNTY CLUB DRIVE BIKEWAY IMPROVEMENT PROJECT. CONSTRUCTION OF A 4-FOOT WIDE CLASS II BIKE LANE IN BOTH DIRECTIONS ALONG A ONE MILE SECTION OF COUNTRY CLUB DRIVE.	2013	2013	10/1/2013	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
BALDWIN PARK	LAE0076	CONSTRUCT ADD'L VEHICLE PARKING (200 TO 400 SPACES), BICYCLE PARKING LOT AND PEDESTRIAN REST AREA AT THE TRANSIT CENTER	2010	2010	2014	OBSTACLES ARE BEING OVERCOME. DELAY BECAUSE THE ENVIRONMENTAL DOCUMENT WAS REJECTED BY FTA. THE FTA IS REVIEWING THIS PROJECT TO SEE IF IT SHOULD BE REASSIGNED TO FOOTHILL TRANSIT AUTHORITY.
BALDWIN PARK	LAF1654	BALDWIN PARK METROLINK PEDESTRIAN OVERCROSSING. CONSTRUCT A PEDESTRIAN OVERCROSSING OVER BOGART AVE AND THE METROLINK LINE TO LINK THE STATION WITH VITAL BUS TRANSFER POINTS AND TO PROVIDE ACCESS TO PARKING OVERFLOW AREAS.	2015	2015	10/1/2015	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
BALDWIN PARK	LAF141	BALDWIN PARK METROLINK TRANSPORTATION CENTER. FUNDED THRU STIP AUGMENTATION CONSTRUCTION A TRANSPORTATION CENTER AND PARKING STRUCTURE AT THE BALDWIN PARK METROLINK STATION.	2012	2012	11/1/2012	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. PROJECT FUNDING UPDATED. ON SCHEDULE.
BURBANK	LAF1502	SAN FERNANDO BIKEWAY. IMPLEMENT A CLASS I BIKEWAY ALONG SAN FERNANDO BLVD, VICTORY PLACE AND BURBANK WESTERN CHANNEL TO COMPLETE THE BURBANK LEG OF A 12 MILE BIKEWAY.	2014	2014	6/30/2014	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
CALTRANS	LA000357	ROUTE 5: --- FROM ROUTE 170 TO ROUTE 118 ONE HOV LANE IN EACH DIRECTION (10 TO 12 LANES) INCLUDING THE RECONSTRUCTION OF THE I-5/SR-170 MIXED FLOW CONNECTOR AND THE CONSTRUCTION OF THE I-5/SR-170 HOV TO HOV CONNECTOR (CFP 345) (2001 CFP 8339; CFP2197).	2008/2010	2011	12/31/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
CALTRANS	LA000358	ROUTE 5: --- FROM ROUTE 134 TO ROUTE 170 HOV LANES (8 TO 10 LANES) (CFP 346)(2001 CFP 8355). (EA# 12180, 12181,12182,12183,12184, 13350 PPNO 0142F,151E,3985,3986,3987) SAFETEA LU # 570. CONSTRUCT MODIFIED IC @ I-5 EMPIRE AVE, AUX LNS NB & SB BETWEEN BURB	2012/2010	2011	12/31/2014	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO RAILROAD WORK AND COMPLEX CONSTRUCTION STAGING AND COORDINATION OF THE RAILROAD AND ROADWAY ELEMENTS.
CALTRANS	LA000548	ROUTE 10: FROM PUENTE TO CITRUS HOV LANES FROM 8 TO 10 LANES (C-ISTEA 77720) (EA# 117080, PPNO# 0309N)	2030/2015	2015	2/12/2016	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO ACCOMMODATING THE COMBINING OF TWO SOUND WALL PROJECTS IN THE SAME POST MILE. THE SOUND WALL ALIGNMENT CAN NOT BE FINALIZED WITHOUT THE I-10 HOV WIDENING PROJECT CENTER LINE REALIGNMENT. THE SCHEDULE OF THE SOUND WALL PROJECT WILL BE MATCHED WITH THE HOV PROJECT TO AVOID SCHEDULE CHANGES.
CALTRANS	LA01342	ROUTE 10: RT 10 FROM RT 605 TO PUENTE AVE HOV LANES (8+0 TO 8+2) (EA# 117070, PPNO 0306H) PPNO 3333 3382 AB 3090 REP (TCRP #40)	2008/2010	2011	10/28/2013	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO RW AND UTILITIES RELOCATION COMPLICATIONS.
CALTRANS	LA0B875	ROUTE 10: HOV LANES FROM CITRUS TO ROUTE 57/210 - (EA# 11934, PPNO# 0310B)	2015	2015	3/15/2016	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO NEW REQUIREMENTS TO SWITCH FROM METRIC TO ENGLISH AND NEW MAPPING AS RESULT.

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
CALTRANS	LA0D73	ROUTE 5: LA MIRADA, NORWALK & SANTA FE SPRINGS-ORANGE CO LINE TO RTE 605 JUNCTION. WIDEN FOR HOV & MIXED FLOW LNS, RECONSTRUCT VALLEY VIEW (EA 2159A0, PPNO 2808). TCRP#42.2&42.1	2014	2016	12/1/2016	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. CARRYOVER FROM 2008 FTIP WITH SCHEDULE & FUNDING UPDATES. ON SCHEDULE.
CALTRANS	LA996134	ROUTE 5: RTE. 5/14 INTERCHANGE & HOV LNS ON RTE 14 - CONSTRUCT 2 ELEVATED LANES - HOV CONNECTOR (DIRECT CONNECTORS) (EA# 16800)(2001 CFP 8343) (PPNO 0168M)	2014/2009	2013	5/24/2013	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
CALTRANS	LA996137	ROUTE 60: RTE. 60 HOV LNS. FROM RTE. 605 TO BREA CANYON RD. -- CONSTRUCT ONE HOV LANE IN EACH DIRECTION) (CFP: 358, 4262, 6137=67,150+IIP: 5,100) (EA#129410, 129421, PPNO 0482R,0482RA)	2008/2007	2011	5/1/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
CARSON	LAE2932	213TH ST. PEDESTRIAN SIDEWALK BRIGE OVER DOMINGUEZ CHANNEL. CONSTRUCT 213TH ST. PEDESTRIAN BRIDGE TO PROVIDE SAFE PASSAGE FOR PEDESTRIANS & WHEELCHAIRS OVER DOMINGUEZ CHANNEL.	2010	2010	12/31/2012	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO FUNDING ISSUES. CITY HAS SUBMITTED 2009 HSIP APPLICATION FOR ADDITIONAL FUNDS. AWAITING THE RESULT.
CULVER CITY	LAF1717	REAL-TIME MOTORIST PARKING INFORMATION SYSTEM DEMONSTRATION. THIS PROJECT WILL PROVIDE A REAL-TIME INFORMATION SYSTEM TO COMMUNICATE AND GUIDE MOTORISTS TO AVAILABLE PARKING SPACES IN SELECTED PARKING STRUCTURES IN THE CITY OF CULVER CITY.	2011	2011	6/30/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. REVISED PROJECT FUNDING SCHEDULE. ON SCHEDULE.
CULVER CITY MUNI BUS LINES	LA0C8382	SEPULVEDA BLVD BUS STOP IMPROVEMENT PROGRAM. BUS STOP AMENITIES INC LIGHTING SIGNAGE, LANDSCAPING, SHELTERS, SEATING, LANDINGS AND TRASH RECEPTACLES.	2008/2010	2010	6/30/2010	SUBSTITUTED WITH LAF1601-SAN GABRIEL CITY-WIDE BUS SHELTER INSTALLATION IN APRIL 2009.

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
EL MONTE	LAF1504	EL MONTE: TRANSIT CYCLE FRIENDLY. EL MONTE PROPOSES TO IMPLEMENT THE 1ST PHASE OF THE EL MONTE BIKE-TRANSIT HUB COMPONENT (METRO BICYCLE TRANSPORTATION STRATEGIC PLAN) A COUNTYWIDE EFFORT TO IMPROVE BIKE FACILITIES	2013	2013	10/1/2013	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. MOU AGREEMENT BETWEEN METRO AND THE CITY APPROVED BY THE CITY. MOU IS IN PROCESS AT METRO. AGENCY IS PREPARING ENVIRONMENTAL DOCUMENTS FOR CALTRANS REVIEW. ON SCHEDULE.
FOOTHILL TRANSIT ZONE	LA0B311	PARK AND RIDE FACILITY TRANSIT ORIENTED NEIGHBORHOOD PROGRAM SAFETEA-LU # 341 (E-2006-BUSP-092) (E-2006-BUSP-173)	2003/2005	2010	12/31/2013	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO THE ACTION BY THE CITY COUNCIL TO DENY THE ORIGINAL LOCATION OF THE PARK N RIDE LOT. FOOTHILL TRANSIT HAS BEEN AGGRESSIVELY EXPLORING OTHER ALTERNATIVE LOCATIONS AND HAS IDENTIFIED THREE PROSPECT PARKING LOCATIONS.
GLENDALE	LAE0001A	PURCHASE OF CNG BUSES FOR GLENDALE BEELINE TRANSIT SYSTEM	2010	2010	12/1/2011	MANUFACTURING DELAY OBSTACLES ARE BEING OVERCOME.
LA MIRADA	LA0D349	PURCHASE EXPANSION BUSES WITH ALTERNATE FUEL (HYBRID/ELECTRIC)	2008	2008	6/30/2011	MANUFACTURING DELAY OBSTACLES ARE BEING OVERCOME.
LONG BEACH	LAE1296	LONG BEACH INTELLIGENT TRANSPORTATION SYSTEM	2011	2011	9/30/2012	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO COORDINATION WITH ANOTHER ITS PROJECT UNDER DEVELOPMENT.

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
LONG BEACH	LAF1530	BICYCLE SYSTEM GAP CLOSURES & IMPROVED LA RIVER BIKE PATH. PROJECT WILL CONSTRUCT PRIORITY CLASS I & III BICYCLE SYSTEM GAP CLOSURES IN LONG BEACH AND IMPROVE CONNECTION TO LA RIVER.	2014	2014	10/1/2014	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. PROJECT START DELAYED BUT PROJECT COMPLETION IS ON SCHEDULE.
LOS ANGELES COUNTY	LAF1514	EMERALD NECKLACE BIKE TRAIL PROJECT. DESIGN AND CONSTRUCT 1.1 MILES OF CLASS I BIKE PATH TO CONNECT DUARTE ROAD TO THE SAN GABRIEL RIVER BICYCLE TRAIL.	2011	2011	12/31/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
LOS ANGELES COUNTY MTA	LA0C10	MID-CITY/EXPOSITION CORRIDOR LIGHT RAIL TRANSIT PROJECT PHASE I TO VENICE-ROBERTSON STATION	2011/2012	2010	12/31/2012	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO PS&E ISSUES.
LOS ANGELES COUNTY MTA	LA0C8114	LA CITY RIDESHARE SERVICES; PROVIDE COMMUTE INFO, EMPLOYER ASSISTANCE AND INCENTIVE PROGRAMS THROUGH CORE & EMPLOYER RIDESHARE SERVICES & MTA INCENTIVE PROGRAMS. PPNO 9003	2009	2010	12/30/2016	NO DELAY. ON-GOING PROJECT.
LOS ANGELES COUNTY MTA	LA29202U3	SAN FERNANDO VALLEY NORTH/SOUTH BRT EXTENSION PHASE I: METRO RAPID SERVICE ALONG RESEDA BLVD. AND SEPULVEDA BLVD. SAFETEA-LU # 183	2005	2009	12/31/2011	OBSTACLES ARE BEING OVERCOME THROUGH ON GOING CONTRACT NEGOTIATION WITH THE CITY OF LOS ANGELES.
LOS ANGELES COUNTY MTA	LA29202U5	SAN FERNANDO VALLEY NORTH/ SOUTH BRT EXTENSION PHASE III: STATION ACCESSIBILITY AND PEDESTRIAN ENHANCEMENTS ON RESEDA BLVD., SEPULVEDA BLVD., AND LANKERSHIM BLVD.	2005/2008	2010	2012	PROJECT IN PROGRESS, ALL FUNDS OBLIGATED. PROJECT OBSTACLES BEING OVERCOME THROUGH ON GOING CONTRACT NEGOTIATION WITH THE CITY OF LOS ANGELES.
LOS ANGELES COUNTY MTA	LA29202U6	SAN FERNANDO VALLEY NORTH/ SOUTH BRT EXTENSION PHASE IV: COMPLETION OF A NORTHBOUND BUS ONLY LANE ON A PORTION OF SEPULVEDA BLVD. AND OTHER IMPROVEMENTS.	2005/2009	2010	2012	PROJECT IN PROGRESS, ALL FUNDS OBLIGATED. PROJECT OBSTACLES BEING OVERCOME THROUGH ON GOING CONTRACT NEGOTIATION WITH THE CITY OF LOS ANGELES.

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
LOS ANGELES COUNTY MTA	LA29202W	MID -CITY TRANSIT CORRIDOR: WILSHIRE BLVD. FROM VERMONT TO SANTA MONICA DOWNTOWN- MID-CITY WILSHIRE BRT INCL. DIV. EXPANSION AND BUS ONLY LANE	2009/2010	2011	12/31/2012	OBSTACLES ARE BEING OVERCOME. PROJECT IS GOING THROUGH ENVIRONMENTAL REVIEW PROCESS.
LOS ANGELES COUNTY MTA	LA963542	ACQUISITION REVENUE VEHICLES - 2,513 CLEAN FUEL BUSES: LEASED VEH, FY02 (370) FY03 (30 HC) + FY04 (70 HC) + (200 ARTICS); FY05-FY10 TOTAL OF 1000 BUSES.	2005	2012	6/30/2014	ON-GOING BUS PURCHASE PROJECT.
LOS ANGELES COUNTY MTA	LA974165	MACARTHUR PARK STATION IMPROVEMENTS INCLUDE DESIGN AND CONSTRUCTION OF A PLAZA TO ACCOMMODATE PUBLIC ACCESS (PEDESTRIAN ENTRANCES, WALKWAYS, BICYCLE FACILITIES) PPNO# 3417	2002/2007	2011	12/30/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. UNDER CONSTRUCTION. ON SCHEDULE.
LOS ANGELES COUNTY MTA	LA990305	LIGHT RAIL TRANSIT FLEET- 50 NEW RAIL CAR (26 EXP (10 FOR METRO GOLD LINE EASTSIDE & (16) FOR EXPOSITION LRT) 24 REPLACEMENT CARS - .PPNO 3225.	7/2/1905	2010	2012	PROJECT ON-GOING. NO DELAY. ALL FUNDS OBLIGATED. ALL VEHICLES WILL BE IN SERVICE IN 2012.
LOS ANGELES COUNTY MTA	LAE0036	WILSHIRE/ VERMONT PEDESTRIAN PLAZA IMPROVEMENTS AND INTERMODAL PEDESTRIAN LINKAGES	2011	2011	2012	PROJECT ON-GOING. NO DELAY. ALL FUNDS OBLIGATED. ALL VEHICLES WILL BE IN SERVICE IN 2012.
LOS ANGELES COUNTY MTA	LAE0195	DESIGN AND CONSTRUCT IMPROVED PEDESTRIAN LINKAGES BETWEEN LOS ANGELES PIERCE COLLEGE AND MTA'S RAPID BUS TRANSIT STOPS TO INCLUDE PASSENGER AMENITIES, 2007 CFP # F1658	2010	2014	10/1/2014	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
LOS ANGELES COUNTY MTA	LAE0388A	DESIGN AND CONSTRUCT IMPROVED PEDESTRIAN LINKAGES BETWEEN LOS ANGELES MISSION COLLEGE AND PUBLIC TRANSIT SERVICES TO INCLUDE LIGHTING, LANDSCAPING, AND PASSENGER AMENITIES	2010	2010	12/31/2010	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
LOS ANGELES, CITY OF	LA002738	BIKEWAY/PEDESTRIAN BRIDGE OVER LA RIVER AT TAYLOR YARD CLASS I (CFP 738, 2077) (PPNO# 3156)	2009	2012	7/31/2015	OBSTACLES ARE BEING OVERCOME. DESIGN IS ON HOLD, PENDING MTA'S SECURING OF AT-GRADE CROSSING OF SERVICE TRACKS FROM UP/SCRRRA.

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LA0B7330	SAN FERNANDO RD ROW BIKE PATH PHSE II- CONSTRUCT 2.75 MILES CLASS I FROM FIRST ST TO BRANFORD ST, ON MTA-OWNED ROW PARALLEL TO SAN FERNANDO RD. LINK CYCLISTS TO NUMEROUS BUS LINES. PPNO 2868.	2005	2010	11/30/2011	OBSTACLES ARE BEING OVERCOME. MINOR DELAY DUE TO ENVIRONMENTAL CLEARANCE DOCUMENTATION. PROJECT CONSTRUCTION HAS STARTED (SIGNAL WORK). CIVIL CONSTRUCTION IS SCHEDULED TO BEGIN IN NOVEMBER, 2009.
LOS ANGELES, CITY OF	LA0C8164	EXPOSITION BLVD RIGHT-OF-WAY BIKE PATH- WESTSIDE EXTENSION. DESIGN AND CONSTRUCTION OF 2.5 MILES OF CLASS 1 BIKEWAY, LIGHTING, LANDSCAPING & INTERSECTION IMPROVEMENTS. (PPNO# 3184)	2009	2010	2/2/2011	OBSTACLES ARE BEING OVERCOME. PROJECT WILL BE COMPLETED BY EXPOSITION CONSTRUCTION AUTHORITY AS A DESIGN-BUILD PROJECT, IN CONJUNCTION WITH EXPOSITION PHASE II LIGHT RAIL PROJECT. PROJECT IS SCHEDULED TO BEGIN IN EARLY 2010.
LOS ANGELES, CITY OF	LA0C8171	GAYLEY AVE BIKE LANES & STREET WIDENING. DESIGN AND CONSTRUCTION OF .25 MILES OF CLASS II BIKE LANES ON GAYLEY AVE FROM EXISTING BIKE LANES AT LEVERING AVENUE TO THE UCLA CAMPUS	2010	2013	5/31/2013	SUBSTITUTED WITH LAF1505 – SAN FERNANDO PACOIMA WASH BIKE PATH IN APRIL 2009.
LOS ANGELES, CITY OF	LA0C8380	CHINATOWN/COLLEGE STREET GOLD LINE STATION - INTERMODEL TRANS. CENTER ENHANCEMENT (PEDESTRIAN WALKWAY BRIDGE, BUS STATION, AND A BIKE STATION)	2004/2008	2008	2012	SEVERE OBSTACLES ARE BEING OVERCOME. DELAY IN CONSTRUCTION DUE TO ISSUES WITH EXISTING DEVELOPMENTS SURROUNDING THE CHINA TOWN GOLD LINE STATION. CITY OF LA HAS HAD DIFFICULTY ACQUIRING PROPERTY TO JOIN THE STATION TO BROADWAY THAT IS NEEDED TO BUILD BIKE STATION AND BRIDGE. CITY IS IN NEGOTIATION WITH THE BANK THAT OWNS THE PROPERTY NEEDED FOR THE PROJECT.

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LAF1450	ENCINO PARK-AND-RIDE FACILITY RENOVATION. RENOVATION OF THE ENCINO PARK-AND-RIDE FACILITY IN ORDER TO ADDRESS PHYSICAL AND STRUCTURAL DEFICIENCIES AND ADD CAPACITY TO THIS HEAVILY UTILIZED FACILITY. INCLUDES 50 NEW PARKING SPACES AND BIKE LOCKERS.	2013	2013	10/1/2013	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
LOS ANGELES, CITY OF	LAF1615	EASTSIDE LIGHT RAIL PEDESTRIAN LINKAGE. IMPROVE LINKAGES WITHIN 1/4 MILE OF METRO'S GOLD LINE LRT.	2012	2012	6/29/2012	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. PE PHASE IS IN PROGRESS. ON SCHEDULE.
LOS ANGELES, CITY OF	LAF1657	LOS ANGELES VALLEY COLLEGE (LAVC) BUS STATION EXTENSION. PROJECT WILL EXTEND THE ORANGE LINE STATION AT THE LA VALLEY COLLEGE BY PROVIDING A DIRECT PEDESTRIAN CONNECTION FROM THE STATION TO A NEW PEDESTRIAN ENTRANCE TO LAVC.	2013	2013	10/1/2013	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
LOS ANGELES, CITY OF	LAF1704	DOWNTOWN L.A. ALTERNATIVE GREEN TRANSIT MODES TRIAL PROGRAM. OFFER SHARED RIDE-BICYCLE AND NEIGHBORHOOD ELECTRIC VEHICLE TRANSIT SERVICES TO LA CITY HALL AS AN ALTERNATIVE TO OVERCROWDED DASH SERVICE	2014	2014	6/27/2014	NOT A TCM UNTIL PERMENANT.
LOS ANGELES, CITY OF	LAF1708	HOLLYWOOD INTEGRATED MODAL INFORMATION SYSTEM. INSTALLATION OF ELECTRONIC, DIRECTION AND PARKING AVAILABILITY SIGNS WITH INTERNET CONNECTIVITY TO PROVIDE ADVANCE AND REAL-TIME INFORMATION INTENDED TO INCREASE TRANSIT RIDERSHIP	2015	2015	9/21/2015	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. BEGINNING WORK ON FIELD REVIEW AND PES CALTRANS FORMS. ON SCHEDULE.
LOS ANGELES, CITY OF	LAOB416	ROUTE 101: IN LOS ANGELES - DOWNTOWN OVER FREEWAY 101 - PEDESTRIAN BRIDGE ENHANCEMENT	2010	2010	6/30/2010	NOT A TCM AS JUST AN UPGRADE PROJECT.
MONROVIA	LAE0039	TRANSIT VILLAGE - PROVIDE A TRANS. FACILITY FOR SATELLITE PARKING FOR SIERRA MADRE VILLA GOLD LINE STA, P-N-R FOR COMMUTERS, A FOOTHILL TRANSIT STORE.	2010	2010	12/31/2012	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO ENVIRONMENTAL CLEARANCE ISSUES.

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
PALMDALE	LAF1507	AVENUE S BIKEWAY PHASE 2. CLASS I BIKEWAY IMPROVEMENTS ALONG THE GENERAL ALIGNMENT OF AVENUE S IN THE CITY OF PALMDALE. THIS PROJECT WILL INCLUDE CLOSING GAPS IN OUR LOCAL BICYCLE PLAN.	2014	2014	10/1/2014	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. PROJECT IN PRE-DESIGN. ON SCHEDULE.
PASADENA	LA0D372	SOUTH ACCESS PEDESTRIAN BRIDGE TO SIERRA MADRE VILLA LIGHT RAIL STATION. THIS PEDESTRIAN BRIDGE OVER THE ROUTE 210 FREEWAY WILL PROVIDE A DIRECT AND SAFE APPROACH FOR PEDESTRIANS	6/29/1905	2010	9/30/2012	OBSTACLES ARE BEING OVERCOME. DELAY AS A RESULT OF THE PROJECT BEING REQUIRED TO BE RE-DESIGNED TO MEET CURRENT AASHTO AND CALTRANS BRIDGE DESIGN STANDARDS.
PASADENA	LA0D47	SR 710 MITIGATION PROJECT-TRAFFIC CONTROL AND MONITORING SYSTEM-INTELLIGENT TRANSPORTATION SYSTEMS (ITS). CONSTRUCT AND INSTALL ITS TECHNOLOGY AND VARIOUS DEGREES OF SMART SIGNALS	2008	2008	12/30/2010	OBSTACLES ARE BEING OVERCOME. SUBSTANTIALLY COMPLETE. DELAY DUE TO OVERALL PROJECT INTEGRATION WITH EXISTING ITS STREET INFRASTRUCTURE. LAST STAGE OF SYSTEM INTEGRATION AND TIMING IS CURRENTLY BEING COMPLETED.
PASADENA	LAE3790	THE PASADENA ITS INTEGRATES 3 COMPONENTS; TRAFFIC SIGNAL COMMUNICATION AND CONTRL, TRANSIT VEHICLE ARRIVAL INFO AND PUBLIC PARKING AVAILABILITY INFO. SAFETEA-LU PRJ #3790 AND #399	2010	2013	6/2011	PROJECT IS AHEAD OF SCHEDULE TO BE COMPLETED BY JUNE 2011.
RANCHO PALOS VERDES	LAF1506	BIKE COMPATIBLE RDWY SAFETY AND LINKAGE ON PALOS VERDES DR. THE PROJECT WILL HAVE A CLASS II BIKE LANE ON BOTH SIDES OF PALOS VERDES DRIVE SOUTH, WITH AN UNPAVED SHOULDER FOR EMERGENCY USE.	2014	2014	10/9/2014	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. CITY STAFF IN THE PROCESS OF COMPLETING THE CULTURAL RESOURCES SERVICES REPORT REQUIRED BY CALTRANS. ON SCHEDULE.

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
RANCHO PALOS VERDES	LAF1605	PEDESTRIAN SAFE BUS STOP LINKAGE. LINKING 11 BUS STOPS CURRENTLY INACCESSIBLE BECAUSE OF LACK OF SIDEWALKS ON BOTH THE EAST AND WEST SIDE OF HAWTHORNE BLVD. FROM CREST RD. TO PALOS VERDES DR. SOUTH (ABOUT 13,000')	2013	2013	12/9/2013	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
SAN GABRIEL VALLEY COG	LA0C57	ACE/GATEWAY CITIES-CONSTRUCT GRADE SEP. AT PASSONS BLVD IN PICO RIVERA (& MODIFY PROFILE OF SERAPIS AV.)(PART OF ALAMEDA CORR EAST PROJ.)SAFETEA-LU HPP # 1666 (TCRP #54.3)	2006	2010	12/31/2010	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
SAN GABRIEL VALLEY COG	LA990359	GRADE SEP XINGS SAFETY IMPR; 35- MI FREIGHT RAIL CORR. THRGH SAN.GAB. VALLEY - EAST. L.A. TO POMONA ALONG UPRR ALHAMBRA &L.A. SUBDIV - ITS 2318 SAFETEA #2178;1436 #1934 PPNO 2318	2003/2009	2010	6/30/2018	NO DELAY. ON-GOING PROJECT. ADD NEW PHASE AND MODIFY SCOPE AND COMPLETION DATE.
SANTA CLARITA	LAF1424	MCBEAN REGIONAL TRANSIT CENTER PARK AND RIDE. PURCHASE LAND, DESIGN, AND CONSTRUCT A REGIONAL PARK-AND-RIDE LOT ADJACENT TO THE MCBEAN REGIONAL TRANSIT CENTER IN THE CITY OF SANTA CLARITA.	2012	2012	10/1/2012	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
SANTA FE SPRINGS	LA0F096	NORWALK SANTA FE SPRINGS TRANSPORTATION CENTER PARKING EXPANSION AND BIKEWAY IMPROVEMENTS. PROVIDE ADDITIONAL 250 PARKING SPACES FOR TRANSIT CENTER PATRONS AND IMPROVE BICYCLES ACCESS TO THE TRANSIT CENTER	2011	2011	8/23/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. PROJECT DESIGN HAS BEEN COMPLETED AND AGENCY IS READY TO ADVERTISE FOR BIDS. CITY IS WORKING WITH METRO AND CALTRANS TO SWAP ISTEAF FUNDS FOR PROP C FUNDS. ON SCHEDULE.
SANTA MONICA	LAE0364	CONSTRUCT INTERMODAL PARK AND RIDE FACILITY AT SANTA MONICA COLLEGE CAMPUS ON SOUTH BUNDY DRIVE NEAR AIRPORT AVENUE	2010	2010	12/31/2012	OBSTACLES ARE BEING OVERCOME. AWAITING A PROJECT TITLE CHANGE IN THE LEGISLATURE AS FUNDS ARE EARMARKS. ONCE APPROVED, PROJECT WILL BE READY TO MOVE FORWARD.

LOS ANGELES COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
SANTA MONICA	LAF1534	BIKE TECHNOLOGY DEMONSTRATION. PROJECT WILL CONSIST OF DESIGN, INSTALLATION AND EVALUATION OF SEVERAL BICYCLE TECHNOLOGIES, INCLUDING BICYCLE ACTIVATED DETECTION AT INTERSECTIONS, BIKE BOXES, AND BIKE PARKING.	2015	2015	6/30/2015	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. REVISED TO MATCH METRO LOASP000F1534. ON SCHEDULE.
TORRANCE	LA0D379	AUTOMATIC VEHICLE LOCATOR (AVL) PROJECT-PHASE 2	2007	2008	12/31/2011	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO FINANCIAL DIFFICULTIES. THE FINAL BID AMOUNT WAS MUCH HIGHER THAN THE ESTIMATE PROJECT COST AND THE AGENCY NEEDED TO FIND ADDITIONAL LOCAL FUNDING TO COMPLETE THE PROJECT. PROJECT IS IN FINAL BAFO STAGE. CONTRACT TO BE AWARDED IN EARLY 2010, WITH WORK TO BEGIN SOON AFTER. ESTIMATED COMPLETION DATE OF AVL PROJECT IS 12/31/11.
WESTLAKE VILLAGE	LA960142	LINDERO CANYON ROAD FROM AGOURA TO JANLOR DR CONSTRUCT BIKE PATH, RESTRIPE STREET, INTERSECTION WIDENING, SIGNAL COORDINATION	2003/2005	2013	1/30/2013	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. UNDER CONSTRUCTION. ON SCHEDULE.

LOS ANGELES COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
ALAMEDA CORRIDOR EAST	LA990353	ALAMEDA CORRIDOR EAST – NOGALES ST GRADE SEP	2006	2010	12/29/2010	DELETE PROJECT. PROJECT TRANSFERRED TO ALAMEDA CORRIDOR EAST (ACE).TRANSFERRED TO ACE ON APRIL 2008 AND IS NOW INCLUDED IN OUR TIP (LA990359) WITH TARGET COMPLETION OF JUNE 2012. DELAY DUE TO ISSUES TRANSFERRING THE PROJECT FROM ONE AGENCY TO ANOTHER.
ANTELOPE VALLEY TRANSIT AUTHORITY	LA0D428	PURCHASE PROPERTY/CONSTRUCT PASSENGER TRANSFER STATION	2010	2010	6/30/2010	CORRECTED. NOT A TCM - EXPANSION OF EXISTING FACILITIES.
BELL GARDENS	LA0F099	TRANSIT CENTER AND PARK AND RIDE; CONSIST OF BUS STOP AMENITIES INCLUDING NEW BUS SHELTER, BENCHES, LANDSCAPING ETC.THE TRANSIT CENTER WILL BE SUPPORTED BY A 283 SPACE PARK & RIDE	2009	2010	6/30/2010	CORRECTED. NOT A TCM - UPGRADE OF EXISTING PARKING LOT AND BUS TRANSFER FACILITY.
BELLFLOWER	LA996275	WEST BRANCH GREENWAY MULTI-MODAL TRANS. CORRIDOR DESIGN AND CONSTRUCT 2.5 MILE CLASS I BIKE PATH ALONG MTA-OWNED SANTA ANA BRANCH ROW INCL. PEDESTRIAN AND LANDSCAPING (3145)	2006	2008	12/1/2009	COMPLETED.
BURBANK	LAF1455	CROSS-TOWN TRANSIT CONNECTOR AND SERVICE EXPANSION. FUNDS TO ACQUIRE TWO (2) OF FOUR (4) REQUESTED CNG BUSES TO IMPLEMENT NEW LOCAL TRANSIT SERVICE.	2013	2013	10/1/2013	CORRECTED. NOT REPORTABLE TCM PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 55).
CALABASAS	LA974100	U.S. 101 INTERJURISDICTIONAL BIKE LANE GAP CLOSURE CONSTRUCTION 4.5 MILES OF BIKEWAY IMPROVEMENTS TO CLOSE SEVERAL GAPS WITHIN A 12 MILE CORRIDOR(TEA21-#69) (PPNO# 3147)	2003/2006	2008	12/31/2008	COMPLETED.
CALTRANS	1178A	ROUTE 405: IN LOS ANGELES AND CULVER CITY FROM ROUTE 90 TO ROUTE 10 - HOV LANES (SB 5+0 TO 5+1; NB 5+0 TO 5+1 HOV) (2206LK CFP) OBLIGATED 6207 (034)	2006	2008	3/15/2009	COMPLETED.

LOS ANGELES COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
CALTRANS	LA01344	ROUTE 5: RT 5 FROM RT 118 TO RT 14 FROM 10 TO 12 LANES HOV LANES. EA# 122001, PPNO 0162P. GARVEE PROJECT.	2005/2006	2008	5/20/2008	COMPLETED.
CALTRANS	LA0C8344	ROUTE 405: EXTENSION OF N/B I-405 HOV LANE- TO EXTEND THE HOV LANE ON N/B I-405 FROM SOUTH OF VENTURA BL TO SO. BURBANK BLVD WHERE IT WILL JOIN THE EXISTING HOV LANE. (EA# 199620, PPNO# 2788).	2007	2008	10/1/2007	COMPLETED.
CALTRANS	LA195900	ROUTE 405: RTE. 405 - WATERFORD AVE. TO RTE 10 - AUX LANE: LOS ANGELES - WATERFORD AV. TO RTE 10 - CONSTRUCT S/B AUX LANE & S/B HOV LN (2001 CFP 8354) (EA# 195900 ,PPNO 2333). GARV 12/03	2006/2007	2009	4/3/2009	COMPLETED.
CALTRANS	LA963724	ROUTE 210: IN LA VERNE AND CLAREMONT, FROM FOOTHILL BOULEVARD TO SAN BERNARDINO COUNTY LINE - CONSTRUCT 8-LANE FREEWAY INCLUDING 2-HOV LANES (12620, 12640, 12630, 10501, 17210) 24270	2003	2010	3/2/2010	COMPLETED.
CALTRANS	LA996138	ROUTE 5: RTE.5 HOV LNS. FROM FLORENCE AVE TO RTE.19 - ADD ONE LANE IN EACH DIRECTION		2016		CORRECTED. DUPLICATE OF LA0D73.
CARSON	LA0C8219	SOUTH BAY PAVILION REGIONAL TRANSIT CTR. CONSTRUCTION OF A TRANSIT CTR AT THE SOUTH BAY PAVILION SHOPPING CTR TO BE SERVED BY ALL 8 CARSON CIRCUIT RTES & MTA LINES #205 & #446-447.	2006	2010	2/28/2010	CORRECTED. NOT A TCM BECAUSE THE FACILITY IS TO SERVE EXISTING BUS ROUTES.
CLAREMONT	LA0D103	PARKING FACILITY EXPANSION FOR TRANSIT PATRONS. THE CITY AND THE REDEVELOPMENT AGENCY WILL EXPAND ON AN EXISTING PARKING FACILITY (500 PARKING SPACE) FOR ADDITIONAL USE BY TRANSIT PATRONS.	2006	2009	12/31/2009	COMPLETED.
COMPTON	LAOB7326	COMPTON CREEK BIKEWAY EXTNS - PHASE III.DSIGN & CNSTRUCT .6 MI OF CLAS 1 BIKE/PED PATH FRM GREENLEAF BL TO ARTESIA FWY.WILL INC BIKE PATH, PED WALKWAY SIGNAGE, STRPNG. (PPNO 2869).	2005/2006	2009	12/30/2010	CORRECTED. NOT A REPORTABLE TCM PROJECT PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).
CULVER CITY MUNI BUS LINES	LA0B400	PURCHASE CNG BUSES AND EXPAND NATURAL GAS FUELING FACILITY (SAFETEA-LU TRANSIT PROJECT #207) PROCUREMENT OF SIX (6) 40' CNG EXPANSION BUSES.	2004	2008	7/1/2008	COMPLETED.

LOS ANGELES COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
FOOTHILL TRANSIT ZONE	LA963526	BUS STOP ENHANCEMENT	2005	2008	12/31/2011	CORRECTED. NOT A TCM.
FOOTHILL TRANSIT ZONE	LA9811007	AVL SYSTEM, ARRIVAL SIGNS, (SMART BUS PROJECT) AND LINE 187 SIGNAL PRIORITY	2005	2008	12/31/2008	COMPLETED.
GARDENA	LA0D340	PURCHASE FIVE (5) 40 FT. ALTERNATIVE FUEL BUSES FOR SERVICE EXPANSION. PART OF SAFETEA-LU TRANSIT PROJECT #260 ALONG WITH LA0D308, LA000507, AND LA0D307	2010	2010	6/30/2010	COMPLETED.
GLENDALE	LAF144	PURCHASE OF 4-40' CNG BUSES FOR THE GLENDALE BEELINE.		2012		COMPLETED.
LA CANADA-FLINTRIDGE	LA0C8159	LA CANADA FLINTRIDGE EAST/WEST BIKEWAY CORRIDOR. DESIGN AND CONSTRUCTION OF 3.42 MILES OF EAST/WEST DIRECTIONAL CLASS II AND CLASS III BIKEWAY IN THE CITY OF LA CANADA FLINTRIDGE.	2008	2008	12/30/2009	COMPLETED.
LONG BEACH	LA0C8163	BIKEWAY AND PEDESTRIAN IMPROVEMENTS. 1.2 MILE CLASS I BIKE/PED PATH FROM WALNUT AVE TO WILLOW ST AT THE BLUE LINE STATION. (PPNO# 3408)	2005	2011	8/1/2010	COMPLETED.
LONG BEACH	LA0C8331	LONG BEACH WAYFINDING/TRANSIT CONNECTION PROGRAM OF SIGNS WILL BE PEDESTRIAN, VEHICULAR, A PARKING AND WILL INCLUDE MAPPING THAT DISPLAYS DESTINATIONS AND TRANSIT OPTIONS.	2004	2009	9/30/2010	COMPLETED.
LONG BEACH	LAF1528	SAN GABRIEL RIVER BIKE PATH GAP CLOSURE AT WILLOW STREET. CREATION OF OFF-STREET BICYCLE PATH TO ACHIEVE BICYCLE ROUTE GAP CLOSURE ON WILLOW STREET FROM THE SAN GABRIEL RIVER BIKE PATH WEST TO STUDEBAKER ROAD	2014	2014	6/30/2014	CORRECTED. NOT A COMMITTED TCM.
LONG BEACH PUBLIC TRANSPORTATION COMPANY	LA0C8383	LONG BEACH TRANSIT: BUS STOP IMPROVEMENT PROJ. ENHANCE 9 OF RAIL STATION FEEDER BUS STOPS TO EASE TRANSFERS, MAKE PUBLIC TRANSIT MORE AESTHETICALLY PLEASING & SAFER, INC RIDERSHIP.	2004	2010	12/31/2010	COMPLETED.
LOS ANGELES COUNTY	LA0C8364	NORTH LA COUNTY NON-ADVERTISING BUS STOP SHELTERS. INSTALLATION OF BUS SHELTERS WITH SEATING AT BUS STOPS WITH GREATEST # OF DAILY BOARDING IN NORTH LOS ANGELES COUNTY. PPNO 3229.	2006/2007	2010	6/30/2010	CORRECTED. NOT REPORTABLE TCM PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).

LOS ANGELES COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
LOS ANGELES COUNTY	LA996289	SOUTH BAY BIKE TRAIL PED. ACCESS RAMPS/SIDEWALKS - DESIGN OF RAMPS, WALKWAYS TO PROVIDE ACCESS TO THE STH. BAY TRAIL AT DOCKWEILER STATE BEACH (2006 STIP)	2010	2010	12/30/2011	CORRECTED. NOT A TCM SINCE IT IS AN ACCESS IMPROVEMENT TO A RECREATIONAL PEDESTRIAN TRAIL.
LOS ANGELES COUNTY	LAF1414	THIRD STREET & LA VERNE AVENUE PARKING STRUCTURE. CONSTRUCT A PARKING STRUCTURE AT THIRD STREET AND LA VERNE AVENUE TO PROVIDE PARK AND RIDE SPACES FOR AREA TRANSIT USERS.	2016	2016	6/30/2015	CORRECTED. NOT A COMMITTED TCM.
LOS ANGELES COUNTY	LAF1511	EASTSIDE LIGHT RAIL BIKE INTERFACE PROJECT. PROJECT INCLUDES DESIGN AND CONSTRUCTION OF BIKE ROUTES WITH APPROPRIATE SIGNAGE AND STRIPING TO ACCESS METRO GOLD LINE STATIONS.	2014	2014	10/21/2014	CORRECTED. NOT A COMMITTED TCM.
LOS ANGELES COUNTY	LAF1513	FIJI WAY BICYCLE LANE PROJECT. WIDEN THE SOUTH SIDE OF FIJI WAY FROM WEST OF ADMIRALTY WAY FOR BIKE LANES.	2014	2014	10/9/2014	CORRECTED. NOT A COMMITTED TCM
LOS ANGELES COUNTY MTA	LA0C8413	METRO RAPID BUS STATIONS-PHASE II: INCLUDES COMMUNICATIONS & EQUIPMENT	2006/2007	2012	10/1/2016	CORRECTED. NOT A TCM PROJECT SINCE IT IS PROVIDING ONLY EQUIPMENT AND BUS SHELTERS FOR EXISTING RAPID PROGRAM AND SUPPLEMENTAL TO LA29202W - WILSHIRE RAPID PHASE I & II WHICH IS A TCM.
LOS ANGELES COUNTY MTA	LA0F021 NOT IN 2008 REPORT.	EXPOSITION LIGHT RAIL TRANSIT SYSTEM PHASE II - TO SANTA MONICA	6/30/2016	6/30/2016	12/31/2015	CORRECTED. NOT A COMMITTED TCM
LOS ANGELES COUNTY MTA	LA29202U4	SAN FERNANDO VALLEY NORTH/ SOUTH BRT EXTENSION PHASE II: BUS SPEED IMPROVEMENTS ALONG METRO RAPID CORRIDORS AND EXPANSION OF EXISTING PARK & RIDE FACILITY.	2005/2007	2010	12/31/2010	COMPLETED.
LOS ANGELES COUNTY MTA	LA29202V	EASTSIDE TRANSIT CORRIDOR - UNION STATION TO ATLANTIC VIA 1ST ST. TO LORENA, THEN 3RD ST. VIA 3RD/BEVERLY BLVD. TO ATLANTIC (EASTSIDE LRT PPNO 3358)	2009/2010	2010	6/30/2010	COMPLETED.

LOS ANGELES COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
LOS ANGELES COUNTY MTA	LA29202V	EASTSIDE TRANSIT CORRIDOR - UNION STATION TO ATLANTIC VIA 1ST ST. TO LORENA, THEN 3RD ST. VIA 3RD/BEVERLY BLVD. TO ATLANTIC (EASTSIDE LRT PPNO 3358)		6/30/2010	6/30/2010	COMPLETED.
LOS ANGELES, CITY OF	LA0C53	HOLLYWOOD INTERMODAL TRANSPORTATION AND PUBLIC PARKING CENTER ON HAWTHORNE AVE. BETWEEN HIGHLAND AVENUE AND NORTH ORANGE DRIVE (EXIST 500 SP PARK STRUCTURE).TCRP#49.2	2004	2011	10/1/2020	CORRECTED. NOT A TCM BECAUSE THIS IS A REPLACEMENT PROJECT.
LOS ANGELES, CITY OF	LA0C8123	SAN PEDRO ATSAC/ATSC PROJ. PROVIDE ATSAC/ATCS RELATED IMPROVEMENTS TO 57 SIGNALIZED INTERSECTIONS THRU IMPLEMENTATION OF A COMPUTER-BASED REAL TIME TRFFC SIGNAL MONITORING CNTRL SYS.		2011	4/1/2012	COMPLETED.
LOS ANGELES, CITY OF	LA0C8173	NORTHRIDGE METROLINK STN PARKING IMPRVMENT. CONSTRUCT ADDT'L 100 PRKING SPCS & RECONFIGURE SOUTHERN PRTION OF EXISTING PRKNG LOT TO YIELD AN ADDT'L 40 NET PRKING SPCES TOTAL 400 SPC.	2007	2009	12/31/2009	COMPLETED.
LOS ANGELES, CITY OF	LA0C8174	LITTLE TOKYO PEDESTRIAN LINKAGES. CONSTRUCTN OF IMPRVEMNTS: SIDEWLK & CROSSWALK ENHANCMENTS, STREET FURNITURE & LANDSCAPING TO PROMOTE PEDESTRIAN TRAVEL W/IN LITTLE TOKYO. PPNO 3116.	2004/2006	2009	6/30/2009	COMPLETED.
LOS ANGELES, CITY OF	LA0C8209	HOLLYWOOD MEDIA DISTRICT-PED IMPRV. STREETScape ELEMNts: LANDSCAPE MEDIAN ISLANDS, PED LIGHTING, STAMPED XWALK, ON SANTA MONICA BL- VINE ST TO HIGHLAND & HIGHLAND - MELROSE TO FOUNTAIN	2005	2009	6/30/2011	CORRECTED. NOT A REPORTABLE TCM PROJECT PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).
LOS ANGELES, CITY OF	LA0C8242	BUS STOP IMPROVEMENTS ON SAN FERNANDO ROAD & TC LIGHTING; ENHANCE PASSENGER FACILITIES AT VARIOUS BUS STOPS WITH GREATEST NUMBER OF DAILY BOARDINGS ON EAST SIDE OF SAN FERNANDO RD.	2008	2010	7/31/2010	COMPLETED.

LOS ANGELES COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LA0G157	LACRD - CITY OF LOS ANGELES INTELLIGENT PARKING MANAGEMENT PROGRAM.		12/31/2010	12/31/2010	COMPLETED.
LOS ANGELES, CITY OF	LAE0566	PURCHASE OF SIX (6) ALTERNATIVE FUELED VEHICLES TO BE USED IN THE EXPANSION OF THE LAX REMOTE TERMINAL FLYAWAY SHUTTLE BUS SYSTEM. LOS ANGELES WORLD AIRPORTS WILL OPERATE THESE BUSES BETWEEN NEW PARK-N-RIDE LOTS AND LAX AIRPORT.	2011	2011	12/31/2011	COMPLETED.
LOS ANGELES, CITY OF	LAE0567	INTERMODAL TRANSPORTATION CENTER WHICH WOULD ENHANCE PASSENGER SERVICE BETWEEN AREA RAIL AND BUS TRANSIT AND THE LAX AIRPORT.	2010	2013	10/1/2018	CORRECTED. NOT A REPORTABLE TCM PROJECT BASED ON EXISTING PROJECT DESCRIPTION PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).
LOS ANGELES, CITY OF	LAF1609	MAIN STREET BUS STOP AND PEDESTRIAN IMPROVEMENTS. DESIGN AND CONSTRUCT BUS STOP AND PEDESTRIAN IMPROVEMENTS THAT WILL INCREASE THE USAGE AND CAPACITY OF PEDESTRIAN FACILITIES ALONG A 0.4 MILE STRETCH OF MAIN STREET.		2015	10/1/2015	CORRECTED. NOT A REPORTABLE TCM PROJECT PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).
LOS ANGELES, CITY OF	LAF1611	CESAR CHAVEZ TRANSIT CORRIDOR (110 FWY TO ALAMEDA). INSTALLATION OF PEDESTRIAN/TRANSIT RIDER AMENITIES INC. BUS STOP GARDENS AT THREE INTERSECTIONS, NEW PEDESTRIAN LIGHTING, STREET TREES IN A LANDSCAPED PARKWAY & WAYFINDING SIGNAGE.	2015	2015	10/1/2015	CORRECTED. NOT A TCM PROJECT – INSTALLATION OF AMENITIES.
LOS ANGELES, CITY OF	LAF1612	CENTURY CITY URBAN DESIGN AND PEDESTRIAN CONNECTION PLAN. PROJECT WILL IMPLEMENT SIDEWALK IMPROVEMENTS, DECORATIVE CROSSWALKS, MEDIAN ISLAND, CURB RAMPS, PEDESTRIAN LIGHTING, SHELTERS, BENCHES, TRASH RECEPTACLES & STREET TREES.		2013	12/31/2015	CORRECTED. NOT A REPORTABLE TCM PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).

LOS ANGELES COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
LOS ANGELES, CITY OF	LAF1613	EXPO LINE STN STREETScape PROJECT-EAST CRENSHAW TO JEFFERSON. DESIGN & CONSTRUCTION OF PEDESTRIAN RELATED STREETScape IMPROVEMENTS WITHIN 1/4 MILE FROM EACH OF 3 LIGHT RAIL STATIONS ALONG EXPOSITION BLVD BETWEEN CRENSHAW & JEFFERSON.	2013	2013	9/30/2012	CORRECTED. NOT A TCM PROJECT – STREETScape IMPROVEMENTS.
LOS ANGELES, CITY OF	LAF1617	HOLLYWOOD PEDESTRIAN/TRANSIT CROSSROADS PHASE II. DESIGN AND INSTALL PEDESTRIAN AND TRANSIT USER ENHANCEMENTS, EXTENDING THE ORIGINAL HOLLYWOOD PEDESTRIAN/TRANSIT IMPROVEMENT PROJECT TO INCLUDE HIGHLAND AVENUE AND VINE STREET.	2013	2013	12/25/2013	CORRECTED. NOT A TCM PROJECT. PROJECT IS A PEDESTRIAN ENHANCEMENT PROJECT WHICH INCLUDES SIDEWALK RECONSTRUCTION, TREES AND STREET FURNITURE.
LOS ANGELES, CITY OF	LAF1630	WASHINGTON BLVD TRANSIT ENHANCEMENTS. WASHINGTON BL TRANSIT ENHANCEMENT IS A STREETScape DESIGN PROJECT THAT ENCOURAGES INCREASED USE OF PUBLIC TRANSIT WHILE SUPPORTING LAND USES THAT ARE COMPATIBLE W/TOD		2014	12/31/2014	CORRECTED. NOT A REPORTABLE TCM PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).
LOS ANGELES, CITY OF	LAF1662	SOLANO CANYON-ZANJA MADRE-CHINATOWN-BROADWAY BUS STOP IMPROV. IMPROVE 8 BUS STOPS ALONG BROADWAY-BERNARD ST TO SOLANO AV WITH STREET FURNITURE & LANDSCAPING, INCREASING ACCESSIBILITY, TRANSFERS & TRANSIT USE		2014	6/30/2011	CORRECTED. NOT A REPORTABLE TCM PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).
LOS ANGELES, CITY OF	LAF1663	SUNSET JUNCTION TRANSIT PLAZA. CONVERT AN UNUSED ROADWAY SECTION INTO A TRANSIT PLAZA WITH NEW CONCRETE PLATFORM, STREET FURNITURE, PED LIGHTS, & LANDSCAPING, INCREASING ACCESSIBILITY, TRANSFERS & TRANSIT USE.		2014	6/30/2013	CORRECTED. NOT A REPORTABLE TCM PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).
MONTEBELLO	LA55201	CONTINUING PROJECT - BUS STOP IMPROVEMENTS ,AMENITIES ,SHELTERS ,ETC	2010	2010	12/31/2010	COMPLETED.
PALMDALE	LAF1508	6TH STREET EAST BIKEWAY EXTENSION. THIS PROJECT WILL PROVIDE A MISSING LINK IN THE CLASS I BWY TO CONNECT THE EXISTING SIERRA HWY BIKEWAY TO THE TRANSPORTATION CENTER AND AN EXISTING BIKEWAY IN CLOCK TOWER PLAZA	2015	2015	10/1/2015	CORRECTED. NOT A COMMITTED TCM

LOS ANGELES COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
PASADENA	LA0D99	PURCHASE 2 EXPANSION LOW-FLOOR, HANDICAPPED ACCESSIBLE, ALTERNATIVE FUEL TRANSIT BUSES.	2004	2010	12/31/2010	COMPLETED.
PASADENA	LAF1655	EAST COLORADO BOULEVARD PEDESTRIAN ENHANCEMENTS (PHASE I). INSTALLATION OF PEDESTRIAN-SCALE STREET LIGHTING ON REGIONALLY SIGNIFICANT STREET IN A SPECIFIC PLAN AREA OF PASADENA IN ORDER TO INCREASE LIVABILITY/ENHANCE PEDESTRIAN MOVEMENT.		2014	9/30/2014	CORRECTED. NOT A REPORTABLE TCM PROJECT PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).
REDONDO BEACH	LA0D299	ACQUISITION OF (6) ALTER FUEL TRANSIT/PARATRANSIT VEHICLES NOT TO EXCEED 35' SAFETEA-LU TRANSIT #251	2010	2010	12/31/2012	CORRECTED. NOT A TCM PROJECT BECAUSE THIS IS A BUS REPLACEMENT PROJECT.
SAN FERNANDO	LAE0127	PROCUREMENT OF (3) CNG TRANSIT VEHICLES AND RELATED INFRASTRUCTURE EQUIPMENT FOR FIXED ROUTE PUBLIC TRANSPORTATION.	2010	2010	9/29/2012	CORRECTED. NOT A TCM PROJECT BECAUSE THIS IS A BUS REPLACEMENT PROJECT.
SAN FERNANDO	LAF1640	SAN FERNANDO DOWNTOWN PEDESTRIAN IMPROVEMENT PROJECT. DESIGN AND CONSTRUCTION OF THE DOWNTOWN PORTION OF THE SAN FERNANDO CORRIDORS PLAN. THE PROJECT WILL INCREASE PEDESTRIAN ACTIVITY, PROMOTE PUBLIC TRANSIT AND ENHANCE SAFETY.		2014	9/30/2014	CORRECTED. NOT A REPORTABLE TCM PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).
SANTA CLARITA	LA0C8130	INCIDENT MANAGEMENT - TRAVELER INFORMATION SUBSYSTEM;INSTALLATION OF SYSTEM DETECTORS, FIBER OPTIC CABLE, CCTV'S, AND TRAVELER INFO SYSTEM VIA WEBSITE, EMAIL OR CELL PHONE.	2006	2008	6/1/2009	COMPLETED.
SANTA CLARITA	LA0C8156	SANTA CLARITA REG'L COMUTR TRAIL - I-5 TO RAILROAD BRIDGE & FROM RAILROAD BRIDGE TO ANZA DRIVE- CONSTRUCT & ACQUISITION OF 1.0 MI OF CLASS I BIKE PATH (PPNO 3127). NON-CAP.	2006	2011	12/31/2011	COMPLETED.
SANTA CLARITA	LA0D363	SANTA CLARITA TRANSIT PHASE 2 - EXPANSION BUSES - 2 OVER THE ROAD COMMUTER BUSES.	2009	2009	10/1/2010	CORRECTED. NOT A REPORTABLE TCM PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 55).

LOS ANGELES COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
SANTA CLARITA	LA0F018	PURCHASE (2) EXPANSION BUSES FOR ROUTE 8 TO THE SAN FERNANDO VALLEY	2009	2009	CANCELED	CORRECTED. NOT A REPORTABLE TCM PROJECT PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 55).
SANTA MONICA	LA57101	BUS FACILITY IMPROVEMENTS	2005	2010	12/30/2010	CORRECTED. NOT A REPORTABLE TCM PROJECT PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 56).
SOUTH PASADENA	LA0B7271	BLUE LINE PEDESTRIAN LINKAGE AND SAFETY IMPROVEMENTS-INCLUDE SIGNAGE, UPGRADES CROSSWALKS, PEDESTRIAN LIGHTING, ENHANCED SIDEWALK AROUND THE STATION IN THE AREA MISSION ST STATION		2008	12/30/2008	COMPLETED.
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY	LA29204	LA-SAN BERNARDINO CR (SF UNION STATION-SAN BERNARDINO) CAPACITY IMPROVEMENTS (3037) (JARC \$1982). DEMOT21 = 3037	2003/2005	2009	12/31/2010	COMPLETED.
WHITTIER	LA0B7322	WHITTIER GREENWAY TRAIL-ACQUISITION, DESIGN, AND CONSTRUCTION MANAGEMENT OF 2 MILES CLASS I BIKE/PED PATH ON AN ABANDONED RAIL ROW FROM NORWALK TO FIVE POINTS.PPNO 2872	2004	2011	12/1/2009	COMPLETED.
WHITTIER	LA0C8161	WHITTIER GREENWAY TRAIL: PICKERING BRIDE SEG 1 DEVT& SEG 3 P/E & DEVT. DESIGN, CONST& ACQUIST OF 2.86 MLES CLASS I BIKE/PED FAC ON ABANDONED ROW IN WHITTIER PPNO#3440-EA07-932045	2008	2008	12/7/2009	COMPLETED.

LOS ANGELES COUNTY – NEW COMMITTED TCM PROJECTS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2011 FTIP COMPLETION DATE
ANTELOPE VALLEY TRANSIT AUTHORITY	LA0G490	THREE (3) EXPANSION HYBRID LOCAL TRANSIT BUSES	1/31/2011
AZUSA	LAF3434	AZUSA INTERMODAL TRANSIT CENTER. CONSTRUCT REGIONAL AZUSA INTERMODAL TRANSIT CENTER TO ACCOMMODATE EXISTING AND FUTURE PARKING DEMAND AND SUPPORT EFFECTIVE TRANSIT USE.	6/30/2015
BALDWIN PARK	LA0D281	DESIGN AND CONSTRUCT PARKING IMPROVEMENTS AT AND ADJACENT TO THE CITY'S EXISTING METROLINK STATION	12/30/2010
CALTRANS	LA0G138	ROUTE 010: LACRD - HOT LANES ON THE I-10 FROM ALAMEDA ST./UNION STATION TO I-605, AND ON I-110 FROM 182 ST./ARTESIA TRANSIT CENTER TO ADAMS BLVD. CONVERSION OF HOV LANES TO HOT LANES.(INFRASTRUCTURE/PAVEMENT)(1HL08D01, 1HL08D03)	12/30/2011
CALTRANS	LA0G139	ROUTE 010: LACRD - EXPAND CAPACITY OF THE I-10 HOT LANE (RESTRIPING AND BUFFER CHANGES). RESTRIPE TO ADD A SECOND LANE (WB - SANTA ANITA TO I-710; EB - I-710 TO BALDWIN AVE) FOR HOT LANES ON THE I-10. (RTP# 1HL08D01)	12/30/2011
CLAREMONT	LAF1510	CLAREMONT PORTION OF THE CITRUS REGIONAL BIKEWAY. THIS PROJECT PROPOSES THE IMPLEMENTATION OF THE CLAREMONT PORTION OF THE CITRUS REGIONAL BIKEWAY UTILIZING BONITA AVENUE AND FIRST STREET AS PRIMARY CLASS II BIKE ROUTES.	10/1/2012
COVINA	LA0D206	METROLINK PEDESTRIAN BRIDGE PROJECT. THIS FACILITY WILL BE CONSTRUCTED ON THE WEST SIDE OF CITRUS AVE. THE METROLINK STATION IS ON THE EAST SIDE OF CITRUS AVE.	12/31/2012
FOOTHILL TRANSIT ZONE	LA0G142	LACRD - 10 BUSES FOR THE I-10 EL MONTE BUSWAY. HOT LANE. (RTP# 1TR08D08 & 1TR08D07A)	12/31/2012
FOOTHILL TRANSIT ZONE	LA0G149	LACRD - I-10 HOT LANE OPERATIONS - NEW TRANSIT SERVICES.(RTP# 10M08D02).	12/31/2011
GARDENA MUNICIPAL BUS LINES	LA0G147	LACRD - I-110 HOT LANE OPERATIONS - NEW TRANSIT SERVICES.(CITY OF GARDENA)(RTP# 1TR204)	12/31/2011
GLENDALE	LA0G406	FAIRMONT AVE. PARK-N-RIDE FACILITY (83 PARKING SPACES) TO SERVE COMMUTERS USING SR-134, I-5. THE LOCATION OF THE PARK-N-RIDE IS FAIRMONT AVENUE AND SAN FERNANDO RD.	12/30/2012
LOS ANGELES COUNTY	LA990353	ALAMEDA CORRIDOR EAST - NOGALES ST GRADE SEP (T21-491, SGVCG)	12/29/2010
LOS ANGELES COUNTY MTA	LA0D198 *	CRENSHAW TRANSIT CORRIDOR	12/31/2018
LOS ANGELES COUNTY MTA	LA0G010 *	REGIONAL CONNECTOR - LIGHT RAIL IN TUNNEL ALLOWING THROUGH MOVEMENTS OF TRAINS, BLUE, GOLD, EXPO LINES. FROM ALAMEDA / 1ST STREET TO 7TH STREET/METRO CENTER	12/31/2019
LOS ANGELES COUNTY MTA	LA0G150	LACRD - I-10 AND I-110 HOT LANE OPERATIONS (O & M), INCLUDING SECURITY, TVM AND REVENUE COLLECTION SERVICES, MARKETING, NEW TRANSIT (RTP ID 1TR08D7B & 10M08D01; LA0G150, LA0G151, LA0G152,10M08D02)	12/31/2011
LOS ANGELES COUNTY MTA	LA0G154	LACRD - EL MONTE TRANSIT CENTER IMPROVEMENTS AND EL MONTE BUSWAY IMPROVEMENTS, INCLUDING BIKE LOCKERS, TICKET VENDING MACHINES AT EL MONTE BUSWAY STATIONS AND UP TO 10 BUS BAYS.	12/31/2010
LOS ANGELES COUNTY MTA	LA0G194	ACQUIRE ALTERNATE FOUR (4) FUEL BUSES FOR THE CITY OF ARTESIA TO BE USED FOR NEW FIXED ROUTE SERVICE EARMARK ID #E2008-BUSP-0694	10/31/2011

LOS ANGELES COUNTY – NEW COMMITTED TCM PROJECTS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2011 FTIP COMPLETION DATE
LOS ANGELES COUNTY MTA	LA0G196	ACQUIRE ALTERNATE FUEL BUSES FOR RIO HONDO COLLEGE	10/31/2011
LOS ANGELES COUNTY MTA	LA0G270	EXPANSION AND IMPROVEMENT TO EXISTING TRANSIT CENTER IN THE CITY OF PALMDALE. E2009-BUSP-137.	9/30/2012
LOS ANGELES COUNTY MTA	LA0G431	MULTI-MODAL TRANSIT CENTER AT CSUN TO INCLUDE PASSENGER LOADING AREAS AND BUS SHELTERS	10/1/2012
LOS ANGELES COUNTY MTA	LA0G447 *	METRO PURPLE LINE WESTSIDE SUBWAY EXTENSION SEGMENT 1 - WILSHIRE/WESTERN TO FAIRFAX	12/31/2019
LOS ANGELES, CITY OF	LA0G155	LACRD - TRANSIT SIGNAL PRIORITY IN THE CITY OF LOS ANGELES.	12/31/2011
LOS ANGELES, CITY OF	LAF1520 *	IMPERIAL HIGHWAY BIKE LANES. THIS PROJECT INVOLVES THE MODIFICATION OF THE MEDIAN ISLAND AND THE WIDENING OF IMPERIAL HIGHWAY ALONG 1000 FT EAST OF PERSHING DRIVE TO ACCOMMODATE BIKE LANES.	6/1/2014
LOS ANGELES, CITY OF	LAF1524	SAN FERNANDO RD. BIKE PATH PH. IIIA/IIIB - CONSTRUCTION. RECOMMEND PHASE IIIA-CONSTRUCTION OF A CLASS I BIKE PATH WITHIN METRO OWNED RAIL RIGHT-OF-WAY ALONG SAN FERNANDO RD. BETWEEN BRANFORD ST. AND TUXFORD ST INCL BRIDGE.	10/1/2015
LOS ANGELES, CITY OF	LAF3419	SUNSET JUNCTION PHASE 2. CREATE A MULTI-MODAL TRANSIT PLAZA TO INTEGRATE PUBLIC TRANSPORTATION, PEDESTRIAN & BICYCLE IMPROVEMENTS THAT WOULD RESULT IN REGIONAL & LOCAL BENEFITS (CFP3844). TRIANGLE PROPERTY ON SUNSET BLVD BWT MANZANITA AND SANTA MONICA.	6/30/2017
MONTEBELLO	LA0G354	CONSTRUCTION OF TRANSIT CENTER AT THE COMMUNITY REC FACILITY LOCATED AT THE TAYLOR RANCH PARK AND RIDE FACILITY, 737 NORTH MONTEBELLO BOULEVARD, MONTEBELLO.	12/31/2010
PORT OF LOS ANGELES	LAF3170	PORT TRUCK TRAFFIC REDUCTION PROGRAM: WEST BASIN RAILYARD. INTERMODAL RAILYARD CONNECTING PORT OF LA WITH ALAMEDA CORRIDOR TO ACCOMMODATE INCREASED LOADING OF TRAINS AT THE PORT, THEREBY REDUCING TRUCK TRIPS TO OFF-DOCK RAILYARDS.	12/1/2014
ROLLING HILLS ESTATE	LAF1529	PALOS VERDES DRIVE NORTH BIKE LANES. CONSTRUCTION OF CLASS II BIKE LANE AND RELATED IMPROVEMENTS ON PALOS VERDES DRIVE NORTH	12/31/2012
SAN DIMAS	LAF1503	BIKEWAY IMPROVEMENTS ON FOOTHILL BLVD. AT SAN DIMAS WASH. THE BWY IMPROVEMENTS ON FOOTHILL BLVD. AT SAN DIMAS WASH; WILL CLOSE THE GAP ON A BRIDGE & CONNECT THE EXISTING CLASS II BIKE LANES TO THE EAST & WEST OF SAN DIMAS WASH CROSSING.	12/1/2013
SANTA MONICA	LAF1533	DOWNTOWN SANTA MONICA BIKE TRANSIT STATION. STORE FRONT BIKE CENTER IN DOWNTOWN PARKING STRUCTURE WITH ATTENDED & SELF PARKING FOR 250 BIKES.	6/30/2012
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY	LA0G153	LACRD - PLATFORMS AND PARKING IMPROVEMENTS AT THE METROLINK POMONA STATION. ADDITION OF 100 PARKING SPACES AND EXTENSION OF PLATFORM.(G# CA-37-X052-00)	12/31/2010
TORRANCE	LA0G145	LACRD - 4 BUSES FOR THE I-110 HARBOR TRANSITWAY HOT LANE(TORRANCE TRANSIT). (RTP# 1TR204)	12/31/2010
TORRANCE	LA0G148	LACRD - I-110 HOT LANE OPERATIONS - NEW TRANSIT SERVICES. (RTP# 1TR204)	12/31/2011
TORRANCE	LA0G358	SOUTH BAY REGIONAL INTERMODAL TRANSIT CENTER PROJECT. THE LAND IS IN THE PROCESS OF BEING PURCHASED AND ESCROW WILL CLOSE ON DECEMBER 17, 2009. PRESENTLY, THE LOT IS VACANT/OPEN LAND WITH NO EXISTING STRUCTURE UPON IT. THE ADDRESS IS 465 N. CRENSHAW BLVD., TORRANCE, CA 90503.	12/31/2015

LOS ANGELES COUNTY – NEW COMMITTED TCM PROJECTS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2011 FTIP COMPLETION DATE
WHITTIER	LA0G257	WHITTIER GREENWAY TRAILHEAD PARK. EXTENSION OF WHITTIER GREENWAY TRAIL FROM MILLS AVENUE TO 300 FEET EAST OF MILLS AVENUE ON CITY OWNED RIGHT-OF-WAY IN CONJUNCTION WITH THE CONSTRUCTION OF NEW TRAILHEAD PARK WITH A PARK AND RIDE PARKING LOT FOR NEARBY PUBLIC TRANSIT STOP. NEW 20 SPACE PARKING LOT WOULD BE CONSTRUCTED OF "GREEN" PERMEABLE PAVEMENT IN COMPLIANCE WITH NPDES REQUIREMENTS. INCLUDES THE INSTALLATION OF PARK AMENITIES, DRINKING FOUNTAIN FOR THE CONVENIENCE OF PEDESTRIAN AND BICYCLE PATRONS OF THE WHITTIER GREENWAY TRAIL. CONSTRUCTION OF NEW SIDEWALKS ALONG MILLS AVENUE TO PROVIDE WHITTIER GREENWAY TRAIL CROSSING CONNECTION AT THE SIGNALIZED INTERSECTION OF MILLS AVENUE AT LAMBERT ROAD.	9/30/2012

* No right-of-way or construction funding programmed in first two years. Therefore, this is not a committed TCM.

ORANGE COUNTY – TCMs REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
ANAHEIM	ORA000100	GENE AUTRY WAY WEST @ I-5 (I-5 HOV TRANSITWAY TO HASTER) ADD OVERCROSSING ON I-5 (S)/MANCHESTER AND EXTEND GENE AUTRY WAY WEST FROM I-5 TO HASTER (3 LANES IN EA DIR.)	2004	2009	2/28/2012	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO RIGHT OF WAY ISSUES. CONSTRUCTION EXPECTED TO START BY DECEMBER 2010.
CALTRANS	ORA000193	HOV CONNECTORS FROM SR-22 TO I-405, BETWEEN SEAL BEACH BLVD. (I-405 PM 022.558) AND VALLEY VIEW ST. (SR-22 PM R000.917), WITH A SECOND HOV LANE IN EACH DIRECTION ON I-405 BETWEEN THE TWO DIRECT CONNECTORS. LOCAL FUNDS IN THE AMOUNT OF \$72,383 ARE PROGRAMMED IN FY 09/10 IN ORDER TO AC FUTURE YEAR CMAQ FUNDS.	2010	2013	9/1/2013	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. THE LOW BIDDER IS BEING RECOMMENDED TO BE AWARDED WITH THE CONTRACT. ON SCHEDULE.
CALTRANS	ORA000194	HOV CONNECTORS FROM I-405 TO I-605, BETWEEN KATELLA AVE. (I-605 PM R001.104) AND SEAL BEACH BLVD. (I-405 PM 022.643), WITH A SECOND HOV LANE IN EACH DIRECTION ON I-405 BETWEEN THE TWO DIRECT CONNECTIONS.	2010	2013	9/1/2013	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. SPLIT FROM ORA000193. ON SCHEDULE.
FULLERTON	ORA020113	FULLERTON TRAIN STATION - PARKING STRUCTURE, PHASE I AND II. TOTAL OF 800 SPACES (PPNO 2026)	2004	2011	6/30/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA041501	PURCHASE (71) STANDARD 30FT EXPANSION BUSES - ALTERNATIVE FUEL - (31) IN FY08-09, (9) IN FY09-10, (7) IN FY11-12, (6) IN FY12-13 AND (18) IN FY13-14	2012	2012	6/30/2016	ONGOING BUS PURCHASE PROJECT.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA110501	BUS RAPID TRANSIT - 28MI FIXED BRT FRM BREA MALL TO IRVINE TRANS CNTR. INCLUDES STRUCTURES, (32) ROLLING STOCK, AND FEEDER SVC & IBC SHUTTLE- CNG SHUTTLES FROM JWA TO IBC.	2010	2010	6/15/2010	SUBSTITUTED WITH TRAFFIC SIGNALIZATION ALONG THE SAME CORRIDOR. SCAG REGIONAL COUNTIL ADOPTION OF THE SUBSTITUTION WAS FORWARDED TO ARB AND EPA FOR CONCURRENCE.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA110633	RIDESHARE VANPOOL PROGRAM - CAPITAL LEASE COSTS	2012	2012	9/30/2012	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. FUND SWAP. ON SCHEDULE.
ORANGE COUNTY TRANS AUTHORITY	ORA120531	BUS RAPID TRANIST (HARBOR BOULEVARD BRT) - 19MILE FIXED RT BRT	NA	2011	6/30/2011	SUBSTITUTED WITH TRAFFIC SIGNALIZATION ALONG THE SAME

ORANGE COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
(OCTA)		BETWEEN FULLERTON AND COSTA MESA; INCLUDES STRUCTURES AND (23) ROLLING STOCK				CORRIDOR. SCAG REGIONAL COUNCIL ADOPTION OF THE SUBSTITUTION WAS FORWARDED TO ARB AND EPA FOR CONCURRENCE.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA120532	BUS RAPID TRANIST (WESTMINSTER/17TH BRT) - 22MILE FIXED RT BRT BETWEEN SANTA ANA AND LONG BEACH; INCLUDES STRUCTURES AND (23) ROLLING STOCK	2011	2011	6/30/2011	SUBSTITUTED WITH TRAFFIC SIGNALIZATION ALONG THE SAME CORRIDOR. SCAG REGIONAL COUNCIL ADOPTION OF THE SUBSTITUTION WAS FORWARDED TO ARB AND EPA FOR CONCURRENCE.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA55241	PURCHASE (87) STANDARD 40 FT EXPAN ALT FUEL BUSES - (14) IN FY08 - 09, (44) IN FY10-11, (14) IN FY11-12, (2) IN FY12 - 13 AND (13) IN FY13 -14	2007/2010	2012	6/30/2016	NO DELAY. ON-GOING PROJECT.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA65002	RIDESHARE SERVICES RIDEGUIDE, DATABASE, CUSTOMER INFO, AND MARKETING (ORANGE COUNTY PORTION).	2010	2015	6/30/2016	NO DELAY. ON-GOING PROJECT.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA041502	PURCHASE (48) PARATRANSIT EXPANSION VANS - (22) IN FY10/11, (12) IN FY11/12, AND (14) IN FY13/14	2012	2012	6/30/2012	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
TCA	10254	SJHC, 15 MI TOLL RD BETWEEN I-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, EXISTING 3/M/F EA.DIR.1 ADD'L M/F EA DIR, PLUS CLIMBING & AUX LNS AS REQ, BY 2020 PER SCAG/TCA MOU 4/5/01	2015/2008	2015	12/31/2020	NO CHANGE IN TCM STATUS FROM 2008 RTIP TCM REPORT. ON-GOING IMPLEMENTATION PER SCAG/TCA MOU.
TCA	ORA050	ETC (RTE 241/261/133) (RTE 91 TO I-5/JAMBOREE) EXISTING 2 M/F EA.DIR, 2 ADD'L M/F IN EA. DIR, PLUS CLIMB AND AUX LNS AS REQ, BY 2020 PER SCAG/TCA MOU 4/05/01.	2015/2010	2015	12/31/2020	NO CHANGE IN TCM STATUS FROM 2008 RTIP TCM REPORT. ON-GOING IMPLEMENTATION PER SCAG/TCA MOU.
TCA	ORA051	(FTC-N) (OSO PKWY TO ETC) (13MI) EXISTING 2 MF IN EA. DIR, 2 ADDITIONAL M/F LANES, PLS CLMBNG & AUX LANS AS REQ BY 2020 PER SCAG/TCA MOU 4/05/01.	2015/2010	2015	12/31/2020	NO CHANGE IN TCM STATUS FROM 2008 RTIP TCM REPORT. ON-GOING IMPLEMENTATION PER SCAG/TCA MOU.
TCA	ORA052	(FTC-S) (I-5 TO OSO PKWY) (15MI) 2 MF EA. DIR BY 2013; AND 1 ADDITIONAL M/F EA. DIR. PLS CLMBNG & AUX LANES AS REQ BY 2030 PER SCAG/TCA MOU 4/05/01. #1988	2015/2010	2030	6/15/2030	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.

ORANGE COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
VARIOUS AGENCIES	ORA990906	LUMP SUM. TEA FUNDS FOR BICYCLE AND PEDESTRIAN FACILITY PROJECTS THROUGHOUT ORANGE COUNTY (PROJECTS ARE CONSISTENT WITH 40 CFR PART 93.126,127,128, EXEMPT TABLES 2 & 3)	2009	2009	12/30/2015	NO DELAY. ON-GOING PROJECT.

ORANGE COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
ANAHEIM	ORA120318	ANAHEIM REGIONAL TRANS INTERMODAL CENTER (ARTIC) PHASE I - INCLUDE EXPAND OF EXIST AMTRAK/METROLINK STATION AT ANA STAD TO PROVIDE ACCESS W/ TRANS SVC	2010	2010	6/30/2018	CORRECTED. NOT A COMMITTED TCM BECAUSE ROW FUNDS THAT HAVE BEEN EXPENDED WERE FOR RELOCATION AND IMPROVEMENTS TO THE EXISTING STATION AND NOT SPECIFICALLY FOR THE ARTIC.
CALTRANS	10167	I-5 FROM SR-91 TO LA COUNTY LINE IN BUENA PARK - ADD 1 MIXED FLOW LN AND 1 HOV LN IN EACH DIRECTION. FROM 6 - 0 TO 8 - 2 LANES.	2008	2008	12/31/2008	COMPLETED.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA000104	TRANSITWAY IMPROVEMENTS AT IRVINE TRANSPORTATION CENTER; BUILD 900 SPACE PARKING STRUCTURE, INCLUDING ENVIRONMENTAL, DESIGN AND CONSTRUCTION. PPNO 9511	2007	2007	6/15/2007	COMPLETED
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA020119	PURCHASE PARATRANSIT VEHICLES EXPAN (142) - (66) IN FY04/05, (21) IN FY05/06, (14) IN FY06/07, (13) IN FY07/08, (14) IN FY08/09, (14) IN FY09/10	2007/2010	2010	6/30/2010	COMPLETED.

ORANGE COUNTY – NEW COMMITTED TCM PROJECTS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2011 FTIP COMPLETION DATE
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA0826016	PURCHASE (72) PARATRANSIT EXPANSION VANS - (21) IN FY09/10, (51) IN FY10/11.	6/30/2016
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA082618	PURCHASE PARATRANSIT VEHICLES EXPANSION (MISSION VIEJO) (11) IN FY09/10. ON-GOING PROJECT.	6/30/2030

RIVERSIDE COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
CORONA	RIV010227	CORONA ADVANCED TRAFFIC MANAGEMENT SYSTEM (ATMS) - AND REGIONAL ITS INTEGRATION PHASE 2.	2005	2010	12/31/2010	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. TOTAL PROJECT COST INCREASED FROM \$1,362 TO \$6,011 - ADDITIONAL FUNDING COST COVERED BY LOCAL CITY FUNDS AND TLSP FUNDING. ON SCHEDULE.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV010212	ON SR91 - ADAMS TO 60/215 IC: ADD ONE HOV LN IN EACH DIRECTION, RESTRIPE TO EXTEND 4TH WB MIXED FLOW LANE FROM 60/215 IC TO CENTRAL OFF-RAMP, RESTRIPE TO EXTEND 5TH WB MIXED FLOW LANE FROM 60/215 IC TO 14TH ST OFF-RAMP, AUX LNS (MADISON-CENTRAL), BRIDGE WIDENING & REPLACEMENTS, EB/WB BRAIDED RAMPS, IC MOD/RECONSTRUCT + SOUND/RETAINING WALLS	2002	2015	8/3/2015	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. R/W PHASE HAS STARTED; ADDITIONAL R/W FUNDING NEEDED TO COVER THE EXTENSIVE UTILITY RELOCATION ASSOCIATED TO THE PROJECT IMPLEMENTATION. ON SCHEDULE.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV011211	AT N. MAIN ST/E. GRAND BLVD - CONSTRUCT NEW 1,000 SPACE PARKING STRUCTURE & CCTV/SEC ENHANCE. AT CORONA N. MAIN METROLINK STN (EA: CORSTN, PPNO: 0079D) (FY 07 5307) (UZA: RIV-SAN)	2005	2011	6/30/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. PROJECT WAS COMPLETED IN SUMMER 2009 BUT IT'S PENDING THE APPROVAL OF THE CHANGE ORDERS AND REPORT OF COMPLETION ON THE FEDERAL-AID PROJECT. ON SCHEDULE.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV050555	ON I-215 (N/O EUCALYPTUS AVE TO N/O BOX SPRINGS RD) & SR60 (E/O DAY ST TO SR60/I-215 JCT): RECONSTRUCT JCT TO PROVIDE 2 HOV DIRECT CONNECTOR LNS (SR60 PM: 12.21 TO 13.6) AND MINOR WIDENING TO BOX SPRINGS RD FROM 2 TO 4 THROUGH LANES BETWEEN MORTON RD AND BOX SPRINGS RD/FAIR ISLE DR IC (EA: 449311)	2011	2011	4/29/2013	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO RIGHT-OF-WAY ISSUES. PROJECT IS READY TO START CONSTRUCTION IN THE FALL 2010.

RIVERSIDE COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV051201	IN CORONA - CONTINUE THE IMPLEMENTATION OF A 60 SPACE PARK-AND-RIDE LOT (VIA ANNUAL LEASE AGREEMENT) AT LIVING TRUTH CHRISTIAN FELLOWSHIP AT 1114 W. ONTARIO AVE.	9/30/2009	9/30/2009	6/30/2013	OBSTACLES ARE BEING OVERCOME. PARK-N-RIDE FACILITY WILL CONTINUE TO OPERATE IN FY'S 09/10, 10/11, 11/12, AND 12/13, UNDER A LEASE AGREEMENT.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV061162	AT DOWNTOWN RIVERSIDE METROLINK STATION FOR UCR (CE-CERT): IMPLEMENT UCR INTELLISHARE SYSTEM (INTELLIGENT SHARED-USE VEHICLE SYSTEM) AT 2 DESIGNATED PARKING SPACES	2007	2007	12/30/2010	OBSTACLES ARE BEING OVERCOME. COMPLETION DATE CHANGED TO 12/30/2010 TO ALLOW UCR TO PROCESS CLAIM REIMBURSEMENT/FINAL REPORT OF COMPLETION TO CALTRANS LOCAL ASSISTANCE.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV070303	ON SR60 IN NW RIV CO: CONTINUE THE IMPLEMENTATION OF THE EXPANDED SR60 FREEWAY SERVICE PATROL (FSP) (BEAT #7 PATROL , 2 TRUCKS) BETWEEN MILIKEN AVE & MAIN ST (SR60 HOV LN CHANGE TCM SUBSTITUTION PROJECT)	2010	2010	2010	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. RCTC WILL CONTINUE THE IMPLEMENTATION OF THE FREEWAY SERVICE PATROL ALONG SR60 (BEAT # 7, 2 TRUCKS), BETWEEN MILLIKEN AVE & MAIN STREET IN FY'S 09/10. ON SCHEDULE.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV070304	ON I-215 IN SW RIV CO: CONTINUE THE IMPLEMENTATION OF I-215 FREEWAY SERVICE PATROL (FSP) (BEAT #19, 2 TRUCKS) BETWEEN SR74/4TH ST AND ALESSANDRO BLVD (SR60 HOV LANE CHANGE TCM SUBSTITUTION PROJECT)	2010	2010	2010	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. RCTC WILL CONTINUE THE IMPLEMENTATION OF THE FREEWAY SERVICE PATROL ALONG I-215 (BEAT # 19, 2 TRUCKS), BETWEEN SR74/4TH STREET AND ALESSANDRO BOULEVARD IN FY'S 09/10. ON SCHEDULE.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV070307	ON SR60 IN MORENO VALLEY: CONTINUE THE IMPLEMENTATION OF SR60 FREEWAY SERVICE PATROL (FSP) (BEAT #8, 2 TRUCKS) BETWEEN DAY ST AND REDLANDS BLVD (SR60 HOV LANE CHANGE TCM SUBSTITUTION PROJECT)	2010	2010	2010	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. RCTC WILL CONTINUE THE IMPLEMENTATION OF THE FREEWAY SERVICE PATROL ON SR 60 BETWEEN DAY STREET AND REDLANDS BOULEVARD IN FY'S 09/10. ON SCHEDULE.

RIVERSIDE COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV520109	RECONSTRUCT & UPGRADE SAN JACINTO BRANCH LINE FOR RAIL PASSENGER SERVICE (RIVERSIDE TO PERRIS) (PERRIS VALLEY LINE) (FY 07 5307) (UZA: RIV-SAN)	2012	2011	12/30/2012	OBSTACLES ARE BEING OVERCOME. ADDITIONAL FUNDING SECURED FOR PERRIS VALLEY LINE - RIVERSIDE TO PERRIS.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV520111	REGIONAL RIDESHARE - CONTINUING PROGRAM.	2009	2009	12/30/2011	NO DELAY. ON-GOING PROJECT.
RIVERSIDE TRANSIT AGENCY	RIV031207	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF CORONA - CONSTRUCT NEW CORONA TRANSIT CENTER AT 31 EAST GRAND BLVD (5309C FY 03+04+06+08 (E-2006-BUSP-080 & E-2008-BUSP-0688) EARMARKS)).	2009	2009	12/31/2010	OBSTACLES ARE BEING OVERCOME. SLIGHT DELAY DUE TO MINOR CHANGES NEEDED TO REFLECT THE 5309(C) ANNUAL APPROPRIATION.
RIVERSIDE TRANSIT AGENCY	RIV041029	IN RIVERSIDE - CONSTRUCT NEW RIVERSIDE TRANSIT CENTER AT 4141 VINE ST., IN THE VICINITY OF DOWNTOWN METROLINK STATION (5309C FY 03+04+06+08, E-2006-BUSP-156 & E-2008-BUSP-0688 EARMARKS) (FY 09 5309) (UZA: RIV-SAN) (TE)	12/30/2010	12/30/2010	12/30/2012	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO OPTIONS AVAILABLE FOR LOCATIONS. THE LOCATION SELECTION HAS BEEN APPROVED FOR THE VICINITY OF THE DOWNTOWN METROLINK STATION, AND THE CITY OF RIVERSIDE AND RTA ARE WORKING TOGETHER TO MOVE THE PROJECT FORWARD - CURRENTLY WORKING ON A SITE FEASIBILITY STUDY AND A TRAFFIC STUDY.
RIVERSIDE TRANSIT AGENCY	RIV041030	IN THE CITY OF HEMET - CONSTRUCT NEW HEMET TRANSIT CENTER (WITH APPROXIMATELY 4 BUS BAYS) AT 700 SCARAMELLA CR., HEMET, CA (5309C FY 04 + 05 EARMARKS).	6/30/2010	12/30/2010	6/30/2012	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO THE OPTIONS FOR THE LOCATION OF THE TRANSIT CENTER. RTA DECIDED TO CONSTRUCT THE HEMET TRANSIT CENTER AT THEIR CURRENT HEMET OFFICE ON SCARAMELLA CR.
RIVERSIDE TRANSIT AGENCY	RIV050553	IN TEMECULA - CONSTRUCT NEW TEMECULA TRANSIT CENTER AT 27199 JEFFERSON AVE. (SW OF JEFFERSON AVE & SE OF CHERRY ST) (04, 05, 06, 07, E-2006-091, E-2007-0131, & 2008-BUSP-0131, SAFETEA-LU).	12/30/2010	12/30/2010	6/30/2013	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO FUNDING SHORTFALL - TOTAL PROJECT COST IS \$8 MILLION AND ONLY \$2 MILLION HAS BEEN SECURED. RTA CONTINUES TO LOBBY FOR FEDERAL, REGIONAL, AND LOCAL FUNDING TO MAKE UP THE PROJECT SHORTFALL AND IMPLEMENT THE PROJECT AS SOON

RIVERSIDE COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
						AS POSSIBLE. RTA IS CURRENTLY WORKING ON THE FEASIBILITY STUDY FOR THE PROJECT AND EXPECTS TO COMPLETE THE PROJECT BY 2013.
RIVERSIDE TRANSIT AGENCY	RIV051008	INSTALL MULTI-JURISDICTIONAL ATIS AT TRANSIT CENTERS & HIGH TRAFFIC CORRIDOR BUS STOPS INCLUDING REAL TIME SCHEDULES, IMPROVED SIGNAGE & LIGHTING (MAGNOLIA CORRIDOR PHASE)	2007	2009	12/30/2010	OBSTACLES ARE BEING OVERCOME. COMBINED WITH RIV061121, RIV061135, AND RIV 071234 RIV090609.
RIVERSIDE TRANSIT AGENCY	RIV061121	IN WESTERN RIVERSIDE COUNTY FOR RTA: INSTALL AUTOMATED TRAVELER INFORMATION SYSTEM (ATIS) ON VARIOUS FIXED ROUTE VEHICLES (APPROX 97) (SAFETEA LU EARMARK - #171, E-2006-BUSP-157)	2008	2009	12/30/2010	OBSTACLES ARE BEING OVERCOME. COMBINED WITH RIV051008, RIV061135, RIV071234 INTO RIV090609.
RIVERSIDE TRANSIT AGENCY	RIV061135	IN WESTERN RIV COUNTY FOR RTA: INSTALL AUTOMATED TRAVELER INFORMATION SYSTEM (ATIS) ON VARIOUS FIXED ROUTE VEHICLES AND AT APPROX 60 STOPS (SAFETEA LU #171, E-2007-BUSP-0107)	2009	2009	12/30/2010	OBSTACLES ARE BEING OVERCOME. COMBINED WITH RIV051008, RIV061121, RIV071234 INTO RIV090609.
RIVERSIDE TRANSIT AGENCY	RIV071234	IN WESTERN RIV COUNTY FOR RTA: INSTALL AUTOMATED TRAVELER INFORMATION SYSTEM (ATIS) ON VARIOUS FIXED ROUTE VEHICLES AND AT APPROX. 60 STOPS (SAFETEA LU #171, TABLE 4, 5309 PROJECTS).	2010	2010	12/30/2010	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. COMBINED WITH RIV051008, RIV061135, RIV061121 INTO RIV090609. ON SCHEDULE.
RIVERSIDE TRANSIT AGENCY	RIV090609	IN WESTERN RIVERSIDE COUNTY FOR RTA: INSTALL ADVANCE TRAVELER INFORMATION SYSTEMS (ATIS) ON VARIOUS FIXED ROUTE VEHICLES AND INSTALLATION OF ELECTRONIC MESSAGE SIGNS AT APPROX. 60 BUS STOPS (FY 'S 05, 07, 08, 09, AND 10 - 5309).	2011	2011	12/30/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. COMBINE PROJECTS RIV051008, RIV061121, RIV061135, AND RIV071234 INTO THIS PROJECT. ON SCHEDULE.
RIVERSIDE TRANSIT AGENCY	RIV990902	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF PERRIS - CONSTRUCT NEW MULTIMODAL TRANSIT FACILITY (BUS & RAIL) AT 4TH AND D STREETS	2006	2008	12/30/2010	OBSTACLES ARE BEING OVERCOME. PROJECT IS COMPLETE AND OPEN FOR USE BUT THE CHANGE ORDERS AND REPORT OF COMPLETION ARE PENDING.

RIVERSIDE COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	RIV010214	RCTC SHARE OF PURCHASE OF METROLINK CARS & LOCOMOTIVES - UP TO 47 CARS/CABS & 8 LOCOS TO BE ORDERED BY 6/30/06 (FY 03 & 04 5307) (SHARES AMONG LAOC8231, SBD20020801, & ORA090302)	2005/2007	2010	12/30/2012	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO MANUFACTURING.
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	RIV011242	PURCHASE EXPANSION ROLLING STOCK (2 CAB CARS AND 3 LOCOMOTIVES) FOR METROLINK IEOC AND RIVERSIDE/FULLERTON/LA LINES (EA: RIVFUL, PPNO: 0079E)	2004/2009	2009	12/30/2012	OBSTACLES ARE BEING OVERCOME. DELAY DUE TO MANUFACTURING.
TEMECULA	RIV62029	AT HWY 79 SO AND LA PAZ ST: ACQUIRE LAND, DESIGN AND CONSTRUCT PARK-AND-RIDE LOT - 250 SPACES (FY 05 HR4818 EARMARK)	2004/2007	2011	12/31/2012	OBSTACLES ARE BEING OVERCOME. PROJECT DELAYS DUE TO ECONOMIC CONDITIONS.

RIVERSIDE COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
CALTRANS	0121D	ON I-215/SR91/SR60, RIV I215 COR IMPROV PROJ - FROM 60/91/215 JCT TO 60/215 SPLIT - WIDEN 6 TO 8 LNS, INCLUDING MAINLINE/IC IMPROVS, ADD HOV, AUX, & SB TRUCK CLIMB LN (EA: 3348U1)	2006/2007	2009	12/30/2009	COMPLETED.
CALTRANS	354801	JCT RTE 15 TO VALLEY WAY UC - ADD 1 HOV AND 1 M/ F LN IN EA. DIR. INCLUDING OPERATIONAL STRIPING (IN SBD CNTY 9.05 - 9.95 & AT THE EAST END) ALSO WIDEN 5 UC'S & 1 OH (PPNO: 0033)			8/30/2008	COMPLETED.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	46360	IN RIVERSIDE AND MORENO VALLEY ON SR60 FROM RT 215 TO REDLANDS BLVD ADD 2 HOV LANES	12/30/2008	12/30/2008	12/30/2009	COMPLETED.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV051006	IN WESTERN RIVERSIDE COUNTY FOR CARE CONNEXXUS INC.: PURCHASE 1 EXPANSION LARGE BUS (APPROX 16 PASSENGERS, GAS/DIESEL) W/ LIFT AND TIEDOWNS (5310 FY 05/06 CYCLE)	2009	2008		CORRECTED. NOT A REPORTABLE TCM PER 2011 FTIP GUIDELINES TABLE IV-A (PAGE 55).
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV061149	IN WESTERN RIVERSIDE COUNTY FOR PEPPERMINT RIDGE - PURCHASE 2 EXPANSION MODIFIED VANS (APPROX 8 PASS EACH, GAS/DIESEL) (FY 06/07 5310 CYCLE)	2010	2010	6/30/2010	COMPLETED.
RIVERSIDE TRANSIT AGENCY	RIV051005	IN WESTERN RIVERSIDE COUNTY FOR RTA: PURCHASE 7 TYPE II DAR VEHICLES (5310 FY 05/06 CYCLE)	2009	2009		COMPLETED.
RIVERSIDE TRANSIT AGENCY	RIV070705	PURCHASE 5 EXPANSION PARATRANSIT TYPE II VEHICLES (APPROX 12 PASSENGER, GAS/DIESEL) WITH WHEEL CHAIR LIFTS AND ACCESSORIES (FY 08 5307) (UZA: RIV-SAN)	2009	2009		COMPLETED.

RIVERSIDE COUNTY – NEW COMMITTED TCM PROJECTS			
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	2011 FTIP COMPLETION DATE
RIVERSIDE TRANSIT AGENCY	RIV080929	IN WESTERN RIVERSIDE COUNTY FOR RTA - PURCHASE 9 - 40 FT. CNG EXPANSION BUSES TO IMPLEMENT EXPRESS AND/OR BRT TYPE SERVICES IN WESTERN RIVERSIDE COUNTY, PER RECENTLY COMPLETED COMPREHENSIVE ANALYSIS (COA).	12/30/2010

SAN BERNARDINO COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
FONTANA	200431	INLAND PACIFIC ELECTRIC TRAIL - ON OLD SP ABANDONED RR BETWEEN I-15 TO MAPLE AVE.-CONSTRUCT CLASS 1 BIKE LANE (APPROX. 7 MILES LONG)	2006	2011	12/1/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
OMNITRANS	981118	BUS SYSTEM - PASSENGER FACILITIES: DESIGN AND BUILDING OF ONTARIO TRANSCENTER	2005/2008	2009	8/31/2010	OVERCOMING DELAY ASSOCIATED WITH COMPLETION OF CITY REDEVELOPMENT PLAN.
OMNITRANS	20060607	CHAFFEY COLLEGE TRANSCENTER - CONSTRUCT TRANSFER FACILITY AT CHAFFEY COLLEGE	2009	2010	12/1/2010	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
RIALTO	200450	RIALTO METROLINK STATION - INCREASE PARKING SPACES FROM 225-775	2006	2011	12/1/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ENVIRONMENTAL DOCUMENT COMPLETED. ON SCHEDULE.
SAN BERNARDINO, CITY OF	20020802	METROLINK ADD'L PARKING STRUCTURE - CONSTRUCT 5 LEVEL PARKING STRUCTURE TO SERVE EXISTING METROLINK STATION AT SANTA FE DEPOT LOCATION	2008	2009	6/30/2009	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. UNDER CONSTRUCTION. ON SCHEDULE.
SANBAG	SBD031505	VARIOUS LOCATIONS - LUMP SUMS LTF, ARTICLE 3 BICYCLE/PEDESTRIAN PROJECTS (PROJECTS ARE CONSISTENT WITH 40 CFR PART 93.126, 127,128, EXEMPT TABLES 2 & 3)	2004	2010	12/1/2010	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
SANBAG	200074	LUMP SUM - TRANSPORTATION ENHANCEMENT ACTIVITIES PROJECTS FOR SAN BERNARDINO COUNTY- BIKE/PED PROJECTS (PROJECTS CONSISTENT W/40CFR PART 93.126,127,128, EXEMPT TABLE 2 & 3).	2004	2011	12/1/2011	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
SANBAG	20040827	RIDESHARE PROGRAM FOR SOUTHCOAST AIR DISTRICT	2009	2009	12/1/2009	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. FUNDS ARE OBLIGATED. ON SCHEDULE.

SAN BERNARDINO COUNTY – TCMS REPORTED IN THE 2008 RTIP TIMELY IMPLEMENTATION REPORT						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
VARIOUS AGENCIES	713	I-215 CORRIDOR NORTH - IN SAN BERNARDINO, ON I-215 FROM RTE 10 TO RTE 210 - ADD 2 HOV & 2 MIXED FLOW LNS (1 IN EA. DIR.) AND OPERATIONAL IMP INCLUDING AUX LANES AND BRAIDED RAMP	2013	2010	12/1/2010	NO CHANGE IN COMPLETION DATE FROM 2008 RTIP TCM REPORT. ON SCHEDULE.
VARIOUS AGENCIES	20620	UPLAND TO SAN BERNARDINO FROM LA CO LINE TO RTE 215 - 8 LN FREEWAY INCLUDING 2 HOV LNS (6+2)-210 CORR. W/AUX LNS THRUOUT SEGS. 9-11(SEG.11 INCL CONNECTOR BETWEEN 210 & 215 (MORE)	2007/2009	2009	12/1/2010	OBSTACLES ARE BEING OVERCOME. ALL OF THE PROJECT IS COMPLETED EXCEPT FOR THE INTERCHANGE AT 210/215.

SAN BERNARDINO COUNTY – COMPLETED/CORRECTED PROJECTS						
LEAD AGENCY	PROJECT ID	PROJECT DESCRIPTION	ORIGINAL COMPLETION DATE	2008 RTIP COMPLETION DATE	2011 FTIP COMPLETION DATE	2011 FTIP PROJECT STATUS
COLTON	2002164	ON VALLEY BLVD. IN COLTON TO NORTH TO 10TH STREET CONNECTING TO ABANDONED RR CORRIDOR ON WEST SIDE OF COLTON AVE.-CONSTRUCT CLASS I BIKEWAY, LANDSCAPING AND LIGHTING	2003/2006	2008	7/1/2008	COMPLETED.
SANBAG	20020106	MONTCLAIR PEDESTRIAN UNDERCROSSING-CONSTRUCTION OF A 2ND PLATFORM CREATES NEED FOR CONSTRUCTION OF NEW UNDERCROSSING	2003	2008	12/1/2007	COMPLETED.

2008 RTIP Committed Transportation Control Measures (TCMs)

Project Listing Report

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
ALAMEDA CORRIDOR EAST	LA990353	ALAMEDA CORRIDOR EAST – NOGALES ST GRADE SEP	2006	2010	The 2008 RTP identified LA990353 as complete. The Nogales-Alhambra (North) part of project is complete. The Nogales-LA Subdivision (South) part of this project was recently transferred by LA County to ACE, and is scheduled for completion in 2010.
ANTELOPE VALLEY TRANSIT AUTHORITY	LA0D428	PURCHASE PROPERTY/CONSTRUCT PASSENGER TRANSFER STATION	2010	2010	No change from the 2008 TCM Report. ROW acquisition; intend to obligate the funds prior to October 2008.
BALDWIN PARK	LAE0076	CONSTRUCT ADD'L VEHICLE PARKING (200 TO 400 SPACES), BICYCLE PARKING LOT AND PEDESTRIAN REST AREA AT THE TRANSIT CENTER	2010	2010	No change from the 2008 RTP TCM Report. Baldwin Park Metrolink Transit Center recently granted \$4,200,000 through the STIP process. Metro staff working with Caltrans to obligate a portion of the STIP (LAF141) funding to complete the Transit Center design. Anticipated completion date December 2009.
BELL GARDENS	LA0F099	TRANSIT CENTER AND PARK AND RIDE; CONSIST OF BUS STOP AMENITIES INCLUDING NEW BUS SHELTER, BENCHES, LANDSCAPING ETC.THE TRANSIT CENTER WILL BE SUPPORTED BY A 283 SPACE PARK & RIDE	2009	2010	No change from the 2008 RTP TCM Report. Environmental Document/Pre-Design Phase (PAED). On schedule.
BELLFLOWER	LA996275	WEST BRANCH GREENWAY MULTI-MODAL TRANS. CORRIDOR DESIGN AND CONSTRUCT 2.5 MILE CLASS I BIKE PATH ALONG MTA-OWNED SANTA ANA BRANCH ROW INCL. PEDESTRIAN AND LANDSCAPING (3145)	2006	2008	No change from the 2008 RTP TCM Report. Project bids due November 14, 2007; award of contract scheduled for November 26, 2007. E-76 for construction in hand. Delays encountered largely related to requested changes from Caltrans in the license agreement between the City and the MTA for use of the property. Anticipated completion date July 2008.
CALABASAS	LA974100	U.S. 101 INTERJURISDICTIONAL BIKE LANE GAP CLOSURE CONSTRUCTION 4.5 MILES OF BIKEWAY IMPROVEMENTS TO CLOSE SEVERAL GAPS WITHIN A 12 MILE CORRIDOR(TEA21-#69) (PPNO# 3147)	2003/2006	2008	No change from the 2008 RTP TCM Report. Under construction. Anticipated completion date December 2008.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
CALTRANS	1178A	Route 405: IN LOS ANGELES AND CULVER CITY FROM ROUTE 90 TO ROUTE 10 - HOV LANES (SB 5+0 TO 5+1; NB 5+0 TO 5+1 HOV) (2206LK CFP) OBLIGATED 6207 (034)	2006	2008	No change from the 2008 RTP TCM Report. Construction/Implementation. All funds have been obligated. Anticipated completion date 11/30/2008.
CALTRANS	LA000357	Route 5: --- FROM ROUTE 170 TO ROUTE 118 ONE HOV LANE IN EACH DIRECTION (10 TO 12 LANES) INCLUDING THE RECONSTRUCTION OF THE I-5/SR-170 MIXED FLOW CONNECTOR AND THE CONSTRUCTION OF THE I-5/SR-170 HOV TO HOV CONNECTOR (CFP 345) (2001 CFP 8339; CFP2197). (2008/2010	2011	No change from the 2008 RTP TCM Report. Engineering/Plans, Specifications and Estimates (PS&E). Anticipated completion date December 2011.
CALTRANS	LA000358	Route 5: --- FROM ROUTE 134 TO ROUTE 170 HOV LANES (8 TO 10 LANES) (CFP 346)(2001 CFP 8355). (EA# 12180, 12181,12182,12183,12184, 13350 PPNO 0142F,151E,3985,3986,3987) SAFETEA LU # 570. CONSTRUCT MODIFIED IC @ I-5 EMPIRE AVE, AUX LNS NB & SB BETWEEN BURB	2012/2010	2011	No change from the 2008 RTP TCM Report. Engineering/Plans, Specifications and Estimates (PS&E). Anticipated completion date December 2011.
CALTRANS	LA000548	Route 10: FROM PUENTE TO CITRUS HOV LANES FROM 8 TO 10 LANES (C-ISTEA 77720) (EA# 117080, PPNO# 0309N)	2030/2015	2015	No change from the 2008 RTP TCM Report. Engineering/Plans, Specifications and Estimates (PS&E). On schedule.
CALTRANS	LA01342	Route 10: RT 10 FROM RT 605 TO PUENTE AVE HOV LANES (8+0 TO 8+2) (EA# 117070, PPNO 0306H) PPNO 3333 3382 AB 3090 REP (TCRP #40)	2008/2010	2011	No change from the 2008 RTP TCM Report. Bid/Advertise Phase. Anticipated completion date 2012.
CALTRANS	LA01344	Route 5: RT 5 FROM RT 118 TO RT 14 FROM 10 TO 12 LANES HOV LANES. EA# 122001, PPNO 0162P. GARVEE project.	2005/2006	2008	No change from the 2008 RTP TCM Report. Construction/Implementation. All funds have been obligated. Anticipated completion date 7/31/08.
CALTRANS	LA0C8344	Route 405: EXTENSION OF N/B I-405 HOV LANE-TO EXTEND THE HOV LANE ON N/B I-405 FROM SOUTH OF VENTURA BL TO SO. BURBANK BLVD WHERE IT WILL JOIN THE EXISTING HOV LANE. (EA# 199620, PPNO# 2788).	2007	2008	No change from the 2008 RTP TCM Report. In construction Implementation Phase. All funds have been obligated. Project on schedule to be completed 7/22/08.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
CALTRANS	LA0D73	Route 5: LA MIRADA, NORWALK & SANTA FE SPRINGS-ORANGE CO LINE TO RTE 605 JUNCTION. WIDEN FOR HOV & MIXED FLOW LNS, RECONSTRUCT VALLEY VIEW (EA 2159A0, PPNO 2808). TCRP#42.2&42.1	2014	2016	No change from the 2008 RTP TCM Report. Environmental Document/Pre-design Phase (PAED). Anticipated completion date 2016.
CALTRANS	LA195900	Route 405: RTE. 405 - WATERFORD AVE. TO RTE 10 - AUX LANE: LOS ANGELES - WATERFORD AV. TO RTE 10 - CONSTRUCT S/B AUX LANE & S/B HOV LN (2001 CFP 8354) (EA# 195900 ,PPNO 2333). GARV 12/03	2006/2007	2009	No change from the 2008 RTP TCM Report. Construction Implementation phase. Project Completion scheduled 4/3/2009. All funds have been obligated.
CALTRANS	LA963724	Route 210: IN LA VERNE AND CLAREMONT, FROM FOOTHILL BOULEVARD TO SAN BERNARDINO COUNTY LINE - CONSTRUCT 8-LANE FREEWAY INCLUDING 2-HOV LANES (12620, 12640, 12630, 10501, 17210) 24270	2003	2010	No change from the 2008 RTP TCM Report. Construction/Project implementation. Anticipated completion date 2010.
CALTRANS	LA996137	Route 60: RTE. 60 HOV LNS. FROM RTE. 605 TO BREA CANYON RD. -- CONSTRUCT ONE HOV LANE IN EACH DIRECTION) (CFP: 358, 4262, 6137=67,150+IIP: 5,100) (EA#129410, 129421, PPNO 0482R,0482RA)	2008/2007	2011	No change from the 2008 RTP TCM Report. Beginning project implementation. Anticipated completion date 2011.
CALTRANS	LA996134	Route 5: RTE. 5/14 INTERCHANGE & HOV LNS ON RTE 14 - CONSTRUCT 2 ELEVATED LANES - HOV CONNECTOR (DIRECT CONNECTORS) (EA# 16800)(2001 CFP 8343) (PPNO 0168M)	2014/2009	2013	No change from the 2008 RTP TCM Report. Project being awarded. Completion date moved due to contractibility issues. Anticipated completion date 2013.
CARSON, CITY OF	LAE2932	213TH ST. PEDESTRIAN SIDEWALK BRIGE OVER DOMINGUEZ CHANNEL. CONSTRUCT 213TH ST. PEDESTRIAN BRIDGE TO PROVIDE SAFE PASSAGE FOR PEDESTRIANS & WHEELCHAIRS OVER DOMINGUEZ CHANNEL.	2010	2010	No change from the 2008 RTP TCM Report. On schedule.
CARSON, CITY OF	LA0C8219	SOUTH BAY PAVILION REGIONAL TRANSIT CTR. CONSTRUCTION OF A TRANSIT CTR AT THE SOUTH BAY PAVILION SHOPPING CTR TO BE SERVED BY ALL 8 CARSON CIRCUIT RTES & MTA LINES #205 & #446-447.	2006	2010	No change from the 2008 RTP TCM Report. Engineering/Plans , Specifications and Estimates (PS&E)
CLAREMONT	LA0D103	PARKING FACILITY EXPANSION FOR TRANSIT PATRONS. THE CITY AND THE REDEVELOPMENT AGENCY WILL EXPAND ON AN EXISTING PARKING FACILITY (500 PARKING SPACE) FOR ADDITIONAL USE BY TRANSIT PATRONS.	2006	2009	No change from the 2008 RTP TCM Report. Under construction. Anticipated completion date 12/31/09.
COMPTON	LAOB7326	COMPTON CREEK BIKEWAY EXTSN - PHASE III.DSIGN & CNSTRUCT .6 MI OF CLAS 1 BIKE/PED PATH FRM GREENLEAF BL TO ARTESIA FWY.WILL INC BIKE PATH, PED WALKWAY SIGNAGE, STRPNG. (PPNO 2869).	2005/2006	2009	No change from the 2008 RTP TCM Report. On schedule. Anticipated completion date 2009.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
CULVER CITY MUNI BUS LINES	LA0B400	Purchase CNG buses and expand natural gas fueling facility (SAFETEA-LU Transit Project #207) Procurement of six (6) 40' CNG expansion buses.	2004	2008	No change from the 2008 RTP TCM Report. In the process of planning for the implementation of a BRT and are trying to figure out how many buses needed for this program. Have optional add-on program from last bus procurement. Order for the buses will be placed once planning completed. Anticipated completion date 2008.
CULVER CITY MUNI BUS LINES	LA0C8382	SEPULVEDA BLVD BUS STOP IMPROVEMENT PROGRAM. BUS STOP AMENITIES INC LIGHTING SIGNAGE, LANDSCAPING, SHELTERS, SEATING, LANDINGS AND TRASH RECEPTACLES.	2008/2010	2010	Potential implementation obstacles identified. MTA has identified substitute projects and has requested that SCAG initiate the substitution process pursuant to SAFETEA-LU.
FOOTHILL TRANSIT ZONE	LA0B311	PARK AND RIDE FACILITY TRANSIT ORIENTED NEIGHBORHOOD PROGRAM SAFETEA-LU # 341 (E-2006-BUSP-092) (E-2006-BUSP-173)	2003/2005	2010	No change from the 2008 RTP TCM Report. Environmental Document/Pre-Design Phase (PAED). Anticipated completion date 2010.
FOOTHILL TRANSIT ZONE	LA963526	BUS STOP ENHANCEMENT	2005	2008	No change from the 2008 RTP TCM Report. Construction/Project implementation. Anticipated completion date June 2008.
FOOTHILL TRANSIT ZONE	LA9811007	AVL SYSTEM, ARRIVAL SIGNS, (SMART BUS PROJECT) AND LINE 187 SIGNAL PRIORITY	2005	2008	No change from the 2008 RTP TCM Report. Engineering/Plans, Specifications and Estimates. Anticipated completion date December 2008.
GARDENA	LA0D340	PURCHASE FIVE (5) 40 FT. ALTERNATIVE FUEL BUSES FOR SERVICE EXPANSION. PART OF SAFETEA-LU TRANSIT PROJECT #260 ALONG WITH LA0D308, LA000507, AND LA0D307	2010	2010	No change from the 2008 RTP TCM Report. PAED Phase. Anticipated completion date June 2010.
GLENDALE	LAE0001A	PURCHASE OF CNG BUSES FOR GLENDALE BEELINE TRANSIT SYSTEM	2010	2010	No change from the 2008 RTP TCM Report. Order additional 17 buses in 08/09. Anticipated completion date 2010.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
LA CANADA-FLINTRIDGE	LA0C8159	LA CANADA FLINTRIDGE EAST/WEST BIKEWAY CORRIDOR. DESIGN AND CONSTRUCTION OF 3.42 MILES OF EAST/WEST DIRECTIONAL CLASS II AND CLASS III BIKEWAY IN THE CITY OF LA CANADA FLINTRIDGE.	2008	2008	No change from the 2008 RTP TCM Report. Anticipated completion date December 2008.
LA MIRADA	LA0D349	PURCHASE EXPANSION BUSES WITH ALTERNATE FUEL (HYBRID/ELECTRIC)	2008	2008	No change from the 2008 RTP TCM Report. Project is in the planning stage. Funds obligated.
LONG BEACH	LA0C8163	BIKEWAY AND PEDESTRIAN IMPROVEMENTS. 1.2 MILE CLASS I BIKE/PED PATH FROM WALNUT AVE TO WILLOW ST AT THE BLUE LINE STATION. (PPNO# 3408)	2005	2011	Delay due to environmental review issues and purchase of site. CEQA review done originally but NEPA review also needed. Negotiations on alternate property facilitated by interim funding from City of Long Beach.
LONG BEACH	LA0C8331	LONG BEACH WAYFINDING/TRANSIT CONNECTION PROGRAM OF SIGNS WILL BE PEDESTRIAN, VEHICULAR, A PARKING AND WILL INCLUDE MAPPING THAT DISPLAYS DESTINATIONS AND TRANSIT OPTIONS.	2004	2009	No change from the 2008 RTP TCM Report. Project under construction and implementation. Anticipated completion date December 2009.
LONG BEACH	LAE1296	LONG BEACH INTELLIGENT TRANSPORTATION SYSTEM	2011	2011	No change from the 2008 RTP TCM Report. New Project. On schedule.
LONG BEACH PUBLIC TRANSPORTATION COMPANY	LA0C8383	LONG BEACH TRANSIT: BUS STOP IMPROVEMENT PROJ. ENHANCE 9 OF RAIL STATION FEEDER BUS STOPS TO EASE TRANSFERS, MAKE PUBLIC TRANSIT MORE AESTHETICALLY PLEASING & SAFER, INC RIDERSHIP.	2004	2010	No change from the 2008 RTP TCM Report. Construction/Project implementation begins. On schedule.
LOS ANGELES COUNTY	LA0C8364	NORTH LA COUNTY NON-ADVERTISING BUS STOP SHELTERS. INSTALLATION OF BUS SHELTERS WITH SEATING AT BUS STOPS WITH GREATEST # OF DAILY BOARDING IN NORTH LOS ANGELES COUNTY. PPNO 3229.	2006/2007	2010	No change from the 2008 RTP TCM Report. Still coordinating with local transit providers for shelter locations. On schedule.
LOS ANGELES COUNTY	LA996289	SOUTH BAY BIKE TRAIL PED. ACCESS RAMPS/SIDEWALKS - DESIGN OF RAMPS, WALKWAYS TO PROVIDE ACCESS TO THE STH. BAY TRAIL AT DOCKWEILER STATE BEACH (2006 STIP)	2010	2010	No change from the 2008 RTP TCM Report. Preliminary Engineering
LOS ANGELES COUNTY MTA	LA0C10	MID-CITY/EXPOSITION CORRIDOR LIGHT RAIL TRANSIT PROJECT PHASE I TO VENICE-ROBERTSON STATION	2011/2012	2010	No change from the 2008 RTP TCM Report. Under construction. Anticipated completion date 2010.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
LOS ANGELES COUNTY MTA	LA0C8114	LA CNTY RIDESHARE SERVICES; PROVIDE COMMUTE INFO, EMPLOYER ASSISTANCE AND INCENTIVE PROGRAMS THROUGH CORE & EMPLOYER RIDESHARE SERVICES & MTA INCENTIVE PROGRAMS. PPNO 9003	2009	2010	No change from the 2008 RTP TCM Report. Ongoing. Anticipated completion date December 2010.
LOS ANGELES COUNTY MTA	LA0C8413	METRO RAPID BUS STATIONS-PHASE II: INCLUDES COMMUNICATIONS & EQUIPMENT	2006/2007	2012	No change from 2008 RTP TCM Report. Ongoing installment of bus signal priority system. On schedule.
LOS ANGELES COUNTY MTA	LA29202U3	SAN FERNANDO VALLEY NORTH/SOUTH BRT EXTENSION PHASE I: METRO RAPID SERVICE ALONG RESEDA BLVD. AND SEPULVEDA BLVD. SAFETEA-LU # 183	2005	2009	No change from the 2008 RTP TCM Report. Planning. On schedule.
LOS ANGELES COUNTY MTA	LA29202U4	SAN FERNANDO VALLEY NORTH/ SOUTH BRT EXTENSION PHASE II: BUS SPEED IMPROVEMENTS ALONG METRO RAPID CORRIDORS AND EXPANSION OF EXISTING PARK & RIDE FACILITY.	2005/2007	2010	No change from the 2008 RTP TCM Report. Planning. On schedule.
LOS ANGELES COUNTY MTA	LA29202U5	SAN FERNANDO VALLEY NORTH/ SOUTH BRT EXTENSION PHASE III: STATION ACCESSIBILITY AND PEDESTRIAN ENHANCEMENTS ON RESEDA BLVD., SEPULVEDA BLVD., AND LANKERSHIM BLVD.	2005/2008	2010	No change from the 2008 RTP TCM Report. Planning. On schedule.
LOS ANGELES COUNTY MTA	LA29202U6	SAN FERNANDO VALLEY NORTH/ SOUTH BRT EXTENSION PHASE IV: COMPLETION OF A NORTHBOUND BUS ONLY LANE ON A PORTION OF SEPULVEDA BLVD. AND OTHER IMPROVEMENTS.	2005/2009	2010	No change from the 2008 RTP TCM Report. Planning. On schedule.
LOS ANGELES COUNTY MTA	LA29202V	EASTSIDE TRANSIT CORRIDOR - UNION STATION TO ATLANTIC VIA 1ST ST. TO LORENA, THEN 3RD ST. VIA 3RD/BEVERLY BLVD. TO ATLANTIC (EASTSIDE LRT PPNO 3358)	2009/2010	2010	No change from the 2008 RTP TCM Report. Construction. Anticipated completion date 2010.
LOS ANGELES COUNTY MTA	LA29202W	MID -CITY TRANSIT CORRIDOR: WILSHIRE BLVD. FROM VERMONT TO SANTA MONICA DOWNTOWN- MID-CITY WILSHIRE BRT INCL. DIV. EXPANSION AND BUS ONLY LANE	2009/2010	2011	First phase is complete.
LOS ANGELES COUNTY MTA	LA963542	ACQUISITION REVENUE VEHICLES - 2,513 CLEAN FUEL BUSES: LEASED VEH, FY02 (370) FY03 (30 HC) + FY04 (70 HC) + (200 ARTICS); FY05-FY10 TOTAL OF 1000 BUSES.	2005	2012	No change from the 2008 RTP TCM Report. Bids will be advertised soon. 105 45' Comp CNG and 25 45' gas electric hybus, delivery 6/09. 94 ARTICS 6/07 delivered. 95 ARTICS expect to be delivered 6/08. FY02 (370) FY03 (30 HC) + FY04 (70 HC) + (200 ARTICS), all delivered. On schedule.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
LOS ANGELES COUNTY MTA	LA974165	MACARTHUR PARK STATION IMPROVEMENTS INCLUDE DESIGN AND CONSTRUCTION OF A PLAZA TO ACCOMODATE PUBLIC ACCESS (PEDESTRIAN ENTRANCES, WALKWAYS, BICYCLE FACILITIES) PPNO# 3417	2002/2007	2011	No change from the 2008 RTP TCM Report. Connected to a joint private-public development at the Westlake/MacArthur Park Station. Metro has taken over the project from the City of LA. Anticipated completion date 2011.
LOS ANGELES COUNTY MTA	LA990305	LIGHT RAIL TRANSIT FLEET- 50 NEW RAIL CAR (26 EXP (10 FOR METRO GOLD LINE EASTSIDE & (16) FOR EXPOSITION LRT) 24 REPLACEMENT CARS - .PPNO 3225.	2010	2010	No change from the 2008 RTP TCM Report. All funds have been obligated. Phased project - vehicles will start to be delivered now and will complete all delivery in 2012
LOS ANGELES COUNTY MTA	LAE0036	WILSHIRE/ VERMONT PEDESTRIAN PLAZA IMPROVEMENTS AND INTERMODAL PEDESTRIAN LINKAGES	2011	2011	No change from the 2008 RTP TCM Report. In construction. On schedule
LOS ANGELES COUNTY MTA	LAE0195	DESIGN AND CONSTRUCT IMPROVED PEDESTRIAN LINKAGES BETWEEN LOS ANGELES PIERCE COLLEGE AND MTA'S RAPID BUS TRANSIT STOPS TO INCLUDE PASSENGER AMENITIES, 2007 CFP # F1658	2010	2014	No change from the 2008 RTP TCM Report. Funding to be provided by 2007 Metro Call for Projects process. Anticipated completion date 2014.
LOS ANGELES COUNTY MTA	LAE0388A	DESIGN AND CONSTRUCT IMPROVED PEDESTRIAN LINKAGES BETWEEN LOS ANGELES MISSION COLLEGE AND PUBLIC TRANSIT SERVICES TO INCLUDE LIGHTING, LANDSCAPING, AND PASSENGER AMENITIES	2010	2010	No change from the 2008 RTP TCM Report. In contract/project award phase. Anticipated completion date December 2010.
LOS ANGELES, CITY OF	LA002738	BIKEWAY/PEDESTRIAN BRIDGE OVER LA RIVER AT TAYLOR YARD CLASS I (CFP 738, 2077) (PPNO# 3156)	2009	2012	Environmental Document/Pre-design Phase (PAED); E76 and CTC Allocation request for 06/07 funds have been completed. Project delay from 2009 to 2012 caused by issues with the LOA between LACMTA and the City of LA are being overcome.
LOS ANGELES, CITY OF	LA0B7330	SAN FERNANDO RD ROW BIKE PATH PHSE II- CONSTRUCT 2.75 MILES CLASS I FRM FIRST ST TO BRANFORD ST, ON MTA-OWNED ROW PARALLEL TO SAN FERNANDO RD. LINK CYCLISTS TO NUMEROUS BUS LNE. PPNO 2868.	2005	2010	No change from the 2008 RTP TCM Report. Project is in Final Design phase. Environmental documents have been completed. Anticipated completion date June 2010.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
LOS ANGELES, CITY OF	LA0C53	HOLLYWOOD INTERMODAL TRANSPORTATION AND PUBLIC PARKING CENTER ON HAWTHORNE AVE. BETWEEN HIGHLAND AVENUE AND NORTH ORANGE DRIVE (EXIST 500 SP PARK STRUCTURE).TCRP#49.2	2004	2011	Agency's acquisition of property was challenged. MTA looking at other site opportunities in the vicinity for the facility.
LOS ANGELES, CITY OF	LA0C8164	EXPOSITION BLVD RIGHT-OF-WAY BIKE PATH-WESTSIDE EXTENSION. DESIGN AND CONSTRUCTION OF 2.5 MILES OF CLASS 1 BIKEWAY, LIGHTING, LANDSCAPING & INTERSECTION IMPROVEMENTS. (PPNO# 3184)	2009	2010	No change from the 2008 RTP TCM Report.
LOS ANGELES, CITY OF	LA0C8171	GAYLEY AVE BIKE LANES & STREET WIDENING. DESIGN AND CONSTRUCTION OF .25 MILES OF CLASS II BIKE LANES ON GAYLEY AVE FROM EXISTING BIKE LANES AT LEVERING AVENUE TO THE UCLA CAMPUS	2010	2013	Potential implementation obstacles identified. MTA has identified substitute projects and has requested that SCAG initiate the substitution process pursuant to SAFETEA-LU.
LOS ANGELES, CITY OF	LA0C8173	NORTHRIDGE METROLINK STN PARKING IMPRVMENT. CONSTRCT ADDT'L 100 PRKING SPCS & RECONFIGURE SOUTHERN PRTION OF EXISTNG PRKNG LOT TO YIELD AN ADDT'L 40 NET PRKING SPCES TOTAL 400 SPC.	2007	2009	No change from the 2008 RTP TCM Report. Project is in the PAED (Preliminary Design) phase. E76 and CTC Allocation Request have been completed for 06/07 funds. Anticipated completion date 2009.
LOS ANGELES, CITY OF	LA0C8174	LITTLE TOKYO PEDSTRIAN LINKAGES. CONSTRUCTN OF IMPRVEMNTS: SIDEWLK & CROSSWALK ENHANCMENTS, STREET FURNITURE & LANDSCAPING TO PROMOTE PEDESTRIAN TRAVEL W/IN LITTLE TOKYO. PPNO 3116.	2004/2006	2009	No change from the 2008 RTP TCM Report. Project funded by local funds only. Project is under construction. Project delay as result of prop 218 assessment process. The community opposed the assessment and additional outreach and community meetings were needed. Assessment is approved and project is under way. Anticipated completion date 2009.
LOS ANGELES, CITY OF	LA0C8209	HOLLYWOOD MEDIA DISTRICT-PED IMPRV. STREETSCAPE ELEMNTS: LANDSCAPE MEDIAN ISLANDS, PED LIGHTING, STAMPED XWALK, ON SANTA MONICA BL- VINE ST TO HIGHLAND & HIGHLAND - MELROSE TO FOUNTAIN	2005	2009	No change from the 2008 RTP TCM Report. Engineering/Plans, Specifications and Estimates (PS&E). Anticipated completion date November 2008.
LOS ANGELES, CITY OF	LA0C8380	CHINATOWN/COLLEGE STREET GOLD LINE STATION - INTERMODEL TRANS. CENTER ENHANCE MENT (PEDESTRIAN WALKWAY BRIDGE, BUS STATION, AND A BIKE STATION)	2004/2008	2008	No change from the 2008 RTP TCM Report. Project in Construction. All funds have been obligated.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
LOS ANGELES, CITY OF	LAE0566	PURCHASE OF SIX (6) ALTERNATIVE FUELED VEHICLES TO BE USED IN THE EXPANSION OF THE LAX REMOTE TERMINAL FLYAWAY SHUTTLE BUS SYSTEM. LOS ANGELES WORLD AIRPORTS WILL OPERATE THESE BUSES BETWEEN NEW PARK-N-RIDE LOTS AND LAX AIRPORT.	2011	2011	No change from the 2008 RTP TCM Report. Bid/Advertise Phase. On schedule.
LOS ANGELES, CITY OF	LAE0567	INTERMODAL TRANSPORTATION CENTER WHICH WOULD ENHANCE PASSENGER SERVICE BETWEEN AREA RAIL AND BUS TRANSIT AND THE LAX AIRPORT.	2010	2013	No change from the 2008 RTP TCM Report. LA City Council has required Los Angeles World Airports to complete additional analysis for LAX master plan projects such that the environmental process is expected to take an additional two years. Anticipated completion date 2013.
LOS ANGELES, CITY OF	LA0C8242	BUS STOP IMPROVEMENTS ON SAN FERNANDO ROAD & TC LIGHTING; ENHANCE PASSENGER FACILITIES AT VARIOUS BUS STOPS WITH GREATEST NUMBER OF DAILY BOARDINGS ON EAST SIDE OF SAN FERNANDO RD.	2008	2010	No change from the 2008 RTP TCM Report. Engineering/Plans, Specifications and Estimates (PS&E); Funding has changed. MTA and Bureau of St Lighting has entered into an MOU with PC25 funds. Anticipated completion date 2010.
MONROVIA	LAE0039	TRANSIT VILLAGE - PROVIDE A TRANS. FACILITY FOR SATELLITE PARKING FOR SIERRA MADRE VILLA GOLD LINE STA, P-N-R FOR COMMUTERS, A FOOTHILL TRANSIT STORE.	2010	2010	No change from the 2008 RTP TCM Report. With publication of Draft EIR for the Transit Village Development area, projects are being defined with scope of works developing within the 6 months, with design/construction documents to follow. Construction to begin within 6-9 months. Anticipated completion date 2010.
MONTEBELLO	LA55201	CONTINUING PROJECT - BUS STOP IMPROVEMENTS ,AMENITIES ,SHELTERS ,ETC	2010	2010	No change from the 2008 RTP TCM Report. Construction/Project implementation. On schedule.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
PASADENA	LA0D372	SOUTH ACCESS PEDESTRIAN BRIDGE TO SIERRA MADRE VILLA LIGHT RAIL STATION. THIS PEDESTRIAN BRIDGE OVER THE ROUTE 210 FREEWAY WILL PROVIDE A DIRECT AND SAFE APPROACH FOR PEDESTRIANS	2007	2010	No change from the 2008 RTP TCM Report. Engineering (PS&E) Phase PS&E. ROW completion – Jan. 2009, Construction completion - June 2010. Required revisions to design to comply with new AASHTO standards.
PASADENA	LA0D47	SR 710 MITIGATION PROJECT-TRAFFIC CONTROL AND MONITORING SYSTEM-INTELLIGENT TRANSPORTATION SYSTEMS (ITS). CONSTRUCT AND INSTALL ITS TECHNOLOGY AND VARIOUS DEGREES OF SMART SIGNALS	2008	2008	No change from the 2008 RTP TCM Report. Project in Progress. Anticipated completion date December 2008.
PASADENA	LA0D99	PURCHASE 2 EXPANSION LOW-FLOOR, HANDICAPPED ACCESSIBLE, ALTERNATIVE FUEL TRANSIT BUSES.	2004	2010	No change from the 2008 RTP TCM Report. Vehicles have been purchased and are waiting delivery. All funds have been obligated. Anticipated completion date 2010.
PASADENA	LAE3790	THE PASADENA ITS INTEGRATES 3 COMPONENTS; TRAFFIC SIGNAL COMMUNICATION AND CONTRL, TRANSIT VEHICLE ARRIVAL INFO AND PUBLIC PARKING AVAILABILITY INFO. SAFETEA-LU PRJ #3790 AND #399	2010	2013	Project experienced delays but is now on track. The City is advertising a contract for the Transit Vehicle Arrival Information component to facilitate implementation.
REDONDO BEACH	LA0D299	ACQUISITION OF (6) ALTER FUEL TRANSIT/PARATRANSIT VEHICLES NOT TO EXCEED 35' SAFETEA-LU TRANSIT #251	2010	2010	No change from the 2008 RTP TCM Report. First Vehicle/Equipment Delivered. Anticipated completion date 2010.
SAN FERNANDO	LAE0127	PROCUREMENT OF (3) CNG TRANSIT VEHICLES AND RELATED INFRASTRUCTURE EQUIPMENT FOR FIXED ROUTE PUBLIC TRANSPORTATION.	2010	2010	No change from the 2008 RTP TCM Report. Engineering/Plans, Specifications and Estimates (PS&E). On schedule.
SAN GABRIEL VALLEY COG	LA0C57	ACE/GATEWAY CITIES-CONSTRUCT GRADE SEP. AT PASSONS BLVD IN PICO RIVERA (& MODIFY PROFILE OF SERAPIS AV,)(PART OF ALAMEDA CORR EAST PROJ.)SAFETEA-LU HPP # 1666 (TCRP #54.3)	2006	2010	No change from the 2008 RTP TCM Report. Engineering/Plans, Specifications and Estimates (PS&E). On schedule.
SAN GABRIEL VALLEY COG	LA990359	GRADE SEP XINGS SAFETY IMPR; 35- MI FREIGHT RAIL CORR. THRGH SAN.GAB. VALLEY - EAST. L.A. TO POMONA ALONG UPRR ALHAMBRA &L.A. SUBDIV - ITS 2318 SAFETEA #2178;1436 #1934 PPNO 2318	2003/2009	2010	No change from the 2008 RTP TCM Report. Construction/Project implementation begins. On schedule.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
SANTA CLARITA	LA0D363	SANTA CLARITA TRANSIT PHASE 2 - EXPANSION BUSES - 2 OVER THE ROAD COMMUTER BUSES.	2009	2009	No change from the 2008 RTP TCM Report. This project will continue for several years while we implement our recently adopted Transportation Development Plan (TDP). Additional federal funds will be added at a later time during a TIP Amendment. Anticipated completion date 2010.
SANTA CLARITA	LA0F018	PURCHASE (2) EXPANSION BUSES FOR ROUTE 8 TO THE SAN FERNANDO VALLEY	2009	2009	No change from the 2008 RTP TCM Report. In procurement stage. Anticipated completion date 2009.
SANTA CLARITA	LA0C8130	INCIDENT MANAGEMENT - TRAVELER INFORMATION SUBSYSTEM;INSTALLATION OF SYSTEM DETECTORS, FIBER OPTIC CABLE, CCTV'S, AND TRAVELER INFO SYSTEM VIA WEBSITE, EMAIL OR CELL PHONE.	2006	2008	No change from the 2008 RTP TCM Report. In implementation stage. Anticipated completion date February 2009.
SANTA CLARITA	LA0C8156	SANTA CLARITA REG'L COMUTR TRAIL - I-5 TO RAILROAD BRIDGE & FROM RAILROAD BRIDGE TO ANZA DRIVE- CONSTRUCT & ACQUISITION OF 1.0 MI OF CLASS I BIKE PATH (PPNO 3127). NON-CAP.	2006	2011	No change from the 2008 RTP TCM Report. In construction. Anticipated completion date January 2011.
SANTA FE SPRINGS	LA0F096	NORWALK SANTA FE SPRINGS TRANSPORTATION CENTER PARKING EXPANSION AND BIKEWAY IMPROVEMENTS. PROVIDE ADDITIONAL 250 PARKING SPACES FOR TRANSIT CENTER PATRONS AND IMPROVE BICYCLES ACCESS TO THE TRANSIT CENTER	2009	2011	No change from the 2008 RTP TCM Report. In ROW acquisition phase. The ISTEADemonstration Funds have been allocated to this project by the I-5 JPA. FHWA Caltrans approval for this fund reallocation is pending. Additional funds received from 2007 Call for Project. Project authorization and request to proceed with preliminary engineering and construction (relocation) of a groundwater treatment system on the site is being prepared for submittal to Caltrans. Anticipated completion date 2011.
SANTA MONICA	LA57101	BUS FACILITY IMPROVEMENTS	2005	2010	No change from the 2008 RTP TCM Report. Beginning construction/project implementation. On schedule.

Los Angeles County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
SANTA MONICA MUNICIPAL BUS	LAE0364	CONSTRUCT INTERMODAL PARK AND RIDE FACILITY AT SANTA MONICA COLLEGE CAMPUS ON SOUTH BUNDY DRIVE NEAR AIRPORT AVENUE	2010	2010	No change from the 2008 RTP TCM Report. Engineering/Plans, Specifications and Estimates (PS&E). Anticipated completion date 2010.
SCRAA/LACMTA/SANBAG	LA29204	LA-SAN BERNARDINO CR (SF UNION STATION-SAN BERNARDINO) CAPACITY IMPROVEMENTS (3037) (JARC \$1982). DEMOT21 = 3037	2003/2005	2009	Project under construction.
TORRANCE	LA0D379	AUTOMATIC VEHICLE LOCATOR (AVL) PROJECT-PHASE 2	2007	2008	No change from the 2008 RTP TCM Report. Project ongoing. Planned completion date December 2008.
WESTLAKE VILLAGE	LA960142	LINDERO CANYON ROAD FROM AGOURA TO JANLOR DR CONSTRUCT BIKE PATH, RESTRIPE STREET, INTERSECTION WIDENING, SIGNAL COORDINATION	2003/2005	2013	Project under construction.
WHITTIER	LA0B7322	WHITTIER GREENWAY TRAIL-ACQUISITION, DESIGN, AND CONSTRUCTION MANAGEMENT OF 2 MILES CLASS I BIKE/PED PATH ON AN ABANDONED RAIL ROW FROM NORWALK TO FIVE POINTS.PPNO 2872	2004	2011	This is a portion of a larger bike trail (see LA0C8161 which is on-schedule). This segment of the bike trail is being delayed due to ROW issues.
WHITTIER	LA0C8161	WHITTIER GREENWAY TRAIL: PICKERING BRIDE SEG 1 DEVT& SEG 3 P/E & DEVT. DESIGN, CONST& ACQUIST OF 2.86 MLES CLASS I BIKE/PED FAC ON ABANDONED ROW IN WHITTIER PPNO#3440-EA07-932045	2008	2008	On schedule.

Los Angeles County Completed/Corrected Projects					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
ACCESS SERVICES, INC.	LA900520	PURCHASE OF ADDITIONAL 386 VEHICLES FROM FY06 TO FY09. 100 VEHICLES IN FY06, 114 VEHICLES IN FY07; 110 IN FY08 AND 62 IN FY09.	2005	2005	Corrected. Not a TCM by definition.
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA0D45	ROUTE 47: SR-47 EXPRESSWAY: REPLACEMENT OF SCHUYLER HEIM BRIDGE TO INCLUDE 2 THRU LANES AND 1 AUX LANE NB; AND 3 THRU LANES AND 1 AUX LANE SB; CONSTRUCT EXPRESSWAY AND 2-LANE FLYOVER. SAFETEA-LU # 712 & # 3797	2003/2005	2017	Corrected. Not a TCM - mixed flow project incorrectly labelled as a TCM

Los Angeles County Completed/Corrected Projects					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
ARCADIA	LA990712	NEW & EXPANDED SHUTTLE SERVICE THRU DOWNTOWN ARCADIA CONNECTING HOTELS & BUSINESSES TO SANTA ANITA RACE TRAK & FASHION MALL (HUNTINGTON ST) & PROPOSED METRO GOLD LINE FOOTHILL EXTENSION TRANSIT STATION	2003/2005	2008	Completed
BALDWIN PARK	LA0D281	DESIGN AND CONSTRUCT PARKING IMPROVEMENTS AT AND ADJACENT TO THE CITY'S EXISTING METROLINK STATION	2007	2010	Not a committed TCM - No funding for ROW or construction in the first two years of the RTIP.
BURBANK	LAE0396	UPGRADE EXIST - REG,L TRANSIT & LAYOVER FACILITY ADJACENT TO THE BURBANK-GLENDALE-PASADENA AIRPORT. WILL FACILITATE TRANSFER OF PASSENGERS TO & FROM MANY GROUND TRANS. (PE ONLY)	2011	2011	Not a committed TCM - No funding for ROW or construction in the first two years of the RTIP.
CALABASAS	LA0D322	TRANSIT FACILITY TO INCLUDE BUS MAINTENANCE STRUCTURE, BUS STORAGE, TRANSIT HUB, PARK-N-RIDE, TRAIL HEAD AND A VISITOR SERVING KIOSK.	2007	2008	Not a committed TCM - No funding for ROW or construction in the first two years of the RTIP.
CARSON, CITY OF	LAE0108	PURCHASE TWO TRIPPER BUSES TO RELIEVE OVERCROWDING DURING PEAK PERIODS. ROUTE G AND D, BLUELINE STATION AT DEL AMO BLVD/I-710 TO SOUTH BAY PAVILION MALL, DEL AMO BLVD	2010	2010	Not a committed TCM - No funding for ROW or construction in the first two years of the RTIP.
CARSON, CITY OF	LAE0132	PURCHASE OF ONE BUS.REPLACEMENT OF A 1983 CROWN DIESEL FUEL SCHOOL BUS WITH THE PURCHASE OF A NEW CNG-POWERED SCHOOL BUS. BUS WILL REDUCE EMISSIONS & CONTINUE TO PROVIDE TRANSPORTA	2011	2011	Not a committed TCM - No funding for ROW or construction in the first two years of the RTIP.
CARSON, CITY OF	LAE0407	PURCHASE ONE TROLLEY BUS VEHICLE FOR EXISTING SERVICE ALONG CARSON ST. BETWEEN THE HARBOR TRANSIT WAY STATION AND THE CARSON CIVIC CENTER AT AVALON BLVD	2010	2010	Not a committed TCM - No funding for ROW or construction in the first two years of the RTIP.
COVINA	LA0D206	METROLINK PEDESTRIAN BRIDGE PROJECT. THIS FACILITY WILL BE CONSTRUCTED ON THE WEST SIDE OF CITRUS AVE. THE METROLINK STATION IS ON THE EAST SIDE OF CITRUS AVE.	2006	2012	Not a committed TCM - No funding for ROW or construction in the first two years of the RTIP.
LAC MTA	LA0C8109	COUNTYWIDE TRANSPORTATION SYS. AWARENESS & SATISFACTION. PROJECT WILL USE AND EXPAND UPON IT'S PREDECESSOR'S WORK, THE SERVICE PLANNING MARKET RESEARCH PROGRAM (SPMRP) FOR TRANSIT	2002/2007		Project complete.
LAC MTA	927333	RIDESHARE ACTIVITIES	2005		Project complete.

Los Angeles County Completed/Corrected Projects					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
LOS ANGELES COUNTY	LA002633	THOMPSON CREEK BICYCLE TRAIL (93/97 CFP; BIKE PROGRAM) CLASS I (2 MILES)	2003/2005	2005	Corrected. Not a TCM - Project is recreational and does not meet the definition of a TCM.
LOS ANGELES, CITY OF	LA0C8330	BICYCLE COMMUTER TECHNOLOGY ACCESS, CITY'S WEB PAGE FOR BICYCLE PROGRAM	2006	2009	Not a committed TCM - No funding for ROW or construction in the first two years of the RTIP.
MONTEBELLO	LA0D287	PURCHASE OF 29 REPLACEMENT BUSES. GASOLINE-ELECTRIC HYBRID LOW FLOOR 40' COACH. PURCHASE OF 6 EXPANSION BUSES. GASOLINE-ELECTRIC HYBRID LOW FLOOR 40' COACH	2009	2009	Corrected. Not a TCM – replacement vehicles.
SAN FERNANDO	LA0D284	PROCUREMENT OF TWO EXPANSION CNG TRANSIT VEHICLES AND RELATED INFRASTRUCTURE EQUIPMENT FOR FIXED ROUTE PUBLIC TRANSPORTATION WITHIN THE CITY OF SAN FERNANDO.	2005	2005	Project complete.
SANTA CLARITA	LA0B7335	SANTA CLARA RIVER REGIONAL TRAIL-DESIGNING OF 7 MILES OF CLASS I BIKE/PED PATH ALONG THE NORTH SIDE OF THE RIVER FROM I-5 ON THE WEST TO DISCOVERY PARK ON THE EAST	2005		Corrected. Not a TCM - Project is recreational and does not meet the definition of a TCM.
WEST COVINA	LAE1407	PLAZA DRIVE FROM VINCENT AVE. TO CALIFORNIA AVE. INCLUDING INSTALLATION OF TRAFFIC SIGNAL SYS AT INTERSECTION OF PLAZA DR. & CALIF. THE SYNC. OF TWO TRAFFIC SY, & ADD TURN LANES.	2009	2010	Corrected. Project was incorrectly labeled as a TCM.

Los Angeles County TCMs - New			
Lead Agency	Project ID	Project Description	2008 RTIP Completion Date
BALDWIN PARK	LAF141	BALDWIN PARK METROLINK TRANSPORTATION CENTER. FUNDED THRU STIP AUGMENTATION CONSTRUCTION A TRANSPORTATION CENTER AND PARKING STRUCTURE AT THE BALDWIN PARK METROLINK STATION.	2012
ARTESIA	LAF1607	SOUTH STREET PEDESTRIAN, BIKEWAY AND TRANSIT IMPROVEMENT. IMPROVE PEDESTRIAN ENVIRONMENT AND TRANSIT STOP LOCATIONS WITH LANDSCAPED MEDIANS, TRANSIT SHELTERS, BENCHES, SIDEWALK ENHANCEMENTS AND LIGHTING. CLOSE EXISTING BIKE LANE GAP.	2014

Los Angeles County TCMs - New			
Lead Agency	Project ID	Project Description	2008 RTIP Completion Date
AVALON	LAF1501	COUNTY CLUB DRIVE BIKEWAY IMPROVEMENT PROJECT. CONSTRUCTION OF A 4-FOOT WIDE CLASS II BIKE LANE IN BOTH DIRECTIONS ALONG A ONE MILE SECTION OF COUNTRY CLUB DRIVE.	2013
BALDWIN PARK	LAF1654	BALDWIN PARK METROLINK PEDESTRIAN OVERCROSSING. CONSTRUCT A PEDESTRIAN OVERCROSSING OVER BOGART AVE AND THE METROLINK LINE TO LINK THE STATION WITH VITAL BUS TRANSFER POINTS AND TO PROVIDE ACCESS TO PARKING OVERFLOW AREAS.	2015
BURBANK	LAF1455	CROSS-TOWN TRANSIT CONNECTOR AND SERVICE EXPANSION. FUNDS TO ACQUIRE TWO (2) OF FOUR (4) REQUESTED CNG BUSES TO IMPLEMENT NEW LOCAL TRANSIT SERVICE.	2013
BURBANK	LAF1502	SAN FERNANDO BIKEWAY. IMPLEMENT A CLASS I BIKEWAY ALONG SAN FERNANDO BLVD, VICTORY PLACE AND BURBANK WESTERN CHANNEL TO COMPLETE THE BURBANK LEG OF A 12 MILE BIKEWAY.	2014
CALTRANS	LA996138	ROUTE 5: RTE.5 HOV LNS. FROM FLORENCE AVE TO RTE.19 - ADD ONE LANE IN EACH DIRECTION	2016
CALTRANS	LA0B875	ROUTE 10: HOV LANES FROM CITRUS TO ROUTE 57/210 - (EA# 11934, PPNO# 0310B)	2015
CULVER CITY	LAF1717	REAL-TIME MOTORIST PARKING INFORMATION SYSTEM DEMONSTRATION. THIS PROJECT WILL PROVIDE A REAL-TIME INFORMATION SYSTEM TO COMMUNICATE AND GUIDE MOTORISTS TO AVAILABLE PARKING SPACES IN SELECTED PARKING STRUCTURES IN THE CITY OF CULVER CITY.	2011
EL MONTE	LAF1504	EL MONTE: TRANSIT CYCLE FRIENDLY. EL MONTE PROPOSES TO IMPLEMENT THE 1ST PHASE OF THE EL MONTE BIKE-TRANSIT HUB COMPONENT (METRO BICYCLE TRANSPORTATION STRATEGIC PLAN) A COUNTYWIDE EFFORT TO IMPROVE BIKE FACILITIES	2013
GLENDALE	LAF144	PURCHASE OF 4-40'CNG BUSES FOR THE GLENDALE BEELINE.	2012
LONG BEACH	LAF1528	SAN GABRIEL RIVER BIKE PATH GAP CLOSURE AT WILLOW STREET. CREATION OF OFF-STREET BICYCLE PATH TO ACHIEVE BICYCLE ROUTE GAP CLOSURE ON WILLOW STREET FROM THE SAN GABRIEL RIVER BIKE PATH WEST TO STUDEBAKER ROAD	2014
LONG BEACH	LAF1530	BICYCLE SYSTEM GAP CLOSURES & IMPROVED LA RIVER BIKE PATH. PROJECT WILL CONSTRUCT PRIORITY CLASS I & III BICYCLE SYSTEM GAP CLOSURES IN LONG BEACH AND IMPROVE CONNECTION TO LA RIVER.	2014
LOS ANGELES COUNTY	LAF1414	THIRD STREET & LA VERNE AVENUE PARKING STRUCTURE. CONSTRUCT A PARKING STRUCTURE AT THIRD STREET AND LA VERNE AVENUE TO PROVIDE PARK AND RIDE SPACES FOR AREA TRANSIT USERS.	2016

Los Angeles County TCMs - New			
Lead Agency	Project ID	Project Description	2008 RTIP Completion Date
LOS ANGELES COUNTY	LAF1511	EASTSIDE LIGHT RAIL BIKE INTERFACE PROJECT. PROJECT INCLUDES DESIGN AND CONSTRUCTION OF BIKE ROUTES WITH APPROPRIATE SIGNAGE AND STRIPING TO ACCESS METRO GOLD LINE STATIONS.	2014
LOS ANGELES COUNTY	LAF1513	FIJI WAY BICYCLE LANE PROJECT. WIDEN THE SOUTH SIDE OF FIJI WAY FROM WEST OF ADMIRALTY WAY FOR BIKE LANES.	2014
LOS ANGELES COUNTY	LAF1514	EMERALD NECKLACE BIKE TRAIL PROJECT. DESIGN AND CONSTRUCT 1.1 MILES OF CLASS I BIKE PATH TO CONNECT DUARTE ROAD TO THE SAN GABRIEL RIVER BICYCLE TRAIL.	2011
LOS ANGELES, CITY OF	LA0C8123	SAN PEDRO ATSAC/ATSC PROJ. PROVIDE ATSAC/ATCS RELATED IMPRVMENTS TO 57 SIGNALIZED INTERSECTIONS THRU IMPLEMENTATION OF A COMPUTER-BASED REAL TIME TRFFC SIGNAL MONITORING CNTRL SYS.	2011
LOS ANGELES, CITY OF	LAF1450	ENCINO PARK-AND-RIDE FACILITY RENOVATION. RENOVATION OF THE ENCINO PARK-AND-RIDE FACILITY IN ORDER TO ADDRESS PHYSICAL AND STRUCTURAL DEFICIENCIES AND ADD CAPACITY TO THIS HEAVILY UTILIZED FACILITY. INCLUDES 50 NEW PARKING SPACES AND BIKE LOCKERS.	2013
LOS ANGELES, CITY OF	LAF1609	MAIN STREET BUS STOP AND PEDESTRIAN IMPROVEMENTS. DESIGN AND CONSTRUCT BUS STOP AND PEDESTRIAN IMPROVEMENTS THAT WILL INCREASE THE USAGE AND CAPACITY OF PEDESTRIAN FACILITIES ALONG A 0.4 MILE STRETCH OF MAIN STREET.	2015
LOS ANGELES, CITY OF	LAF1611	CESAR CHAVEZ TRANSIT CORRIDOR (110 FWY TO ALAMEDA). INSTALLATION OF PEDESTRIAN/TRANSIT RIDER AMENITIES INC. BUS STOP GARDENS AT THREE INTERSECTIONS, NEW PEDESTRIAN LIGHTING, STREET TREES IN A LANDSCAPED PARKWAY & WAYFINDING SIGNAGE.	2015
LOS ANGELES, CITY OF	LAF1612	CENTURY CITY URBAN DESIGN AND PEDESTRIAN CONNECTION PLAN. PROJECT WILL IMPLEMENT SIDEWALK IMPROVEMENTS, DECORATIVE CROSSWALKS, MEDIAN ISLAND, CURB RAMPS, PEDESTRIAN LIGHTING, SHELTERS, BENCHES, TRASH RECEPTACLES & STREET TREES.	2013
LOS ANGELES, CITY OF	LAF1613	EXPO LINE STN STREETScape PROJECT-EAST CRENSHAW TO JEFFERSON. DESIGN & CONSTRUCTION OF PEDESTRIAN RELATED STREETScape IMPROVEMENTS WITHIN 1/4 MILE FROM EACH OF 3 LIGHT RAIL STATIONS ALONG EXPOSITION BLVD BETWEEN CRENSHAW & JEFFERSON.	2013
LOS ANGELES, CITY OF	LAF1615	EASTSIDE LIGHT RAIL PEDESTRIAN LINKAGE. IMPROVE LINKAGES WITHIN 1/4 MILE OF METRO'S GOLD LINE LRT.	2012

Los Angeles County TCMs - New			
Lead Agency	Project ID	Project Description	2008 RTIP Completion Date
LOS ANGELES, CITY OF	LAF1617	HOLLYWOOD PEDESTRIAN/TRANSIT CROSSROADS PHASE II. DESIGN AND INSTALL PEDESTRIAN AND TRANSIT USER ENHANCEMENTS, EXTENDING THE ORIGINAL HOLLYWOOD PEDESTRIAN/TRANSIT IMPROVEMENT PROJECT TO INCLUDE HIGHLAND AVENUE AND VINE STREET.	2013
LOS ANGELES, CITY OF	LAF1630	WASHINGTON BLVD TRANSIT ENHANCEMENTS. WASHINGTON BL TRANSIT ENHANCEMENT IS A STREETScape DESIGN PROJECT THAT ENCOURAGES INCREASED USE OF PUBLIC TRANSIT WHILE SUPPORTING LAND USES THAT ARE COMPATIBLE W/TOD	2014
LOS ANGELES, CITY OF	LAF1657	LOS ANGELES VALLEY COLLEGE (LAVC) BUS STATION EXTENSION. PROJECT WILL EXTEND THE ORANGE LINE STATION AT THE LA VALLEY COLLEGE BY PROVIDING A DIRECT PEDESTRIAN CONNECTION FROM THE STATION TO A NEW PEDESTRIAN ENTRANCE TO LAVC.	2013
LOS ANGELES, CITY OF	LAF1662	SOLANO CANYON-ZANJA MADRE-CHINATOWN-BROADWAY BUS STOP IMPROV. IMPROVE 8 BUS STOPS ALONG BROADWAY-BERNARD ST TO SOLANO AV WITH STREET FURNITURE & LANDSCAPING, INCREASING ACCESSIBILITY, TRANSFERS & TRANSIT USE	2014
LOS ANGELES, CITY OF	LAF1663	SUNSET JUNCTION TRANSIT PLAZA. CONVERT AN UNUSED ROADWAY SECTION INTO A TRANSIT PLAZA WITH NEW CONCRETE PLATFORM, STREET FURNITURE, PED LIGHTS, & LANDSCAPING, INCREASING ACCESSIBILITY, TRANSFERS & TRANSIT USE.	2014
LOS ANGELES, CITY OF	LAF1704	DOWNTOWN L.A. ALTERNATIVE GREEN TRANSIT MODES TRIAL PROGRAM. OFFER SHARED RIDE-BICYCLE AND NEIGHBORHOOD ELECTRIC VEHICLE TRANSIT SERVICES TO LA CITY HALL AS AN ALTERNATIVE TO OVERCROWDED DASH SERVICE	2014
LOS ANGELES, CITY OF	LAF1708	HOLLYWOOD INTEGRATED MODAL INFORMATION SYSTEM. INSTALLATION OF ELECTRONIC, DIRECTION AND PARKING AVAILABILITY SIGNS WITH INTERNET CONNECTIVITY TO PROVIDE ADVANCE AND REAL-TIME INFORMATION INTENDED TO INCREASE TRANSIT RIDERSHIP	2015
LOS ANGELES, CITY OF	LAOB416	ROUTE 101: IN LOS ANGELES - DOWNTOWN OVER FREEWAY 101 - PEDESTRIAN BRIDGE ENHANCEMENT	2010
PALMDALE	LAF1507	AVENUE S BIKEWAY PHASE 2. CLASS I BIKEWAY IMPROVEMENTS ALONG THE GENERAL ALIGNMENT OF AVENUE S IN THE CITY OF PALMDALE. THIS PROJECT WILL INCLUDE CLOSING GAPS IN OUR LOCAL BICYCLE PLAN.	2014

Los Angeles County TCMs - New			
Lead Agency	Project ID	Project Description	2008 RTIP Completion Date
PALMDALE	LAF1508	6TH STREET EAST BIKEWAY EXTENSION. THIS PROJECT WILL PROVIDE A MISSING LINK IN THE CLASS I BWY TO CONNECT THE EXISTING SIERRA HWY BIKEWAY TO THE TRANSPORTATION CENTER AND AN EXISTING BIKEWAY IN CLOCK TOWER PLAZA	2015
PASADENA	LAF1655	EAST COLORADO BOULEVARD PEDESTRIAN ENHANCEMENTS (PHASE I). INSTALLATION OF PEDESTRIAN-SCALE STREET LIGHTING ON REGIONALLY SIGNIFICANT STREET IN A SPECIFIC PLAN AREA OF PASADENA IN ORDER TO INCREASE LIVABILITY/ENHANCE PEDESTRIAN MOVEMENT.	2014
RANCHO PALOS VERDES	LAF1506	BIKE COMPATIBLE RDWY SAFETY AND LINKAGE ON PALOS VERDES DR. THE PROJECT WILL HAVE A CLASS II BIKE LANE ON BOTH SIDES OF PALOS VERDES DRIVE SOUTH, WITH AN UNPAVED SHOULDER FOR EMERGENCY USE.	2014
RANCHO PALOS VERDES	LAF1605	PEDESTRIAN SAFE BUS STOP LINKAGE. LINKING 11 BUS STOPS CURRENTLY INACCESSIBLE BECAUSE OF LACK OF SIDEWALKS ON BOTH THE EAST AND WEST SIDE OF HAWTHORNE BLVD. FROM CREST RD. TO PALOS VERDES DR. SOUTH (ABOUT 13,000')	2013
SAN FERNANDO	LAF1640	SAN FERNANDO DOWNTOWN PEDESTRIAN IMPROVEMENT PROJECT. DESIGN AND CONSTRUCTION OF THE DOWNTOWN PORTION OF THE SAN FERNANDO CORRIDORS PLAN. THE PROJECT WILL INCREASE PEDESTRIAN ACTIVITY, PROMOTE PUBLIC TRANSIT AND ENHANCE SAFETY.	2014
SANTA CLARITA	LAF1424	MCBEAN REGIONAL TRANSIT CENTER PARK AND RIDE. PURCHASE LAND, DESIGN, AND CONSTRUCT A REGIONAL PARK-AND-RIDE LOT ADJACENT TO THE MCBEAN REGIONAL TRANSIT CENTER IN THE CITY OF SANTA CLARITA.	2012
SANTA MONICA	LAF1534	BIKE TECHNOLOGY DEMONSTRATION. PROJECT WILL CONSIST OF DESIGN, INSTALLATION AND EVALUATION OF SEVERAL BICYCLE TECHNOLOGIES, INCLUDING BICYCLE ACTIVATED DETECTION AT INTERSECTIONS, BIKE BOXES, AND BIKE PARKING.	2015
SOUTH PASADENA	LA0B7271	BLUE LINE PEDESTRIAN LINKAGE AND SAFETY IMPROVEMENTS-INCLUDE SIGNAGE, UPGRADES CROSSWALKS, PEDESTRIAN LIGHTING, ENHANCED SIDEWALK AROUND THE STATION IN THE AREA MISSION ST STATION	2008

Orange County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
ANAHEIM	ORA000100	GENE AUTRY WAY WEST @ I-5 (I-5 HOV TRANSITWAY TO HASTER) ADD OVERCROSSING ON I-5 (S)/MANCHESTER AND EXTEND GENE AUTRY WAY WEST FROM I-5 TO HASTER (3 LANES IN EA DIR.)	2004	2009	No change from the 2008 RTP TCM Report. City is updating environmental documents and beginning ROW.
ANAHEIM	ORA120318	ANAHEIM REGIONAL TRANS INTERMODAL CENTER (ARTIC) - PLANNING AND ENV PHASE - INCLUD EXPAND OF EXIST AMTRAK/METROLINK STATION AT ANA STAD TO PROVIDE ACCESS W/ TRANS SVC	2010	2010	No change from the 2008 RTP TCM Report. Funds programmed for ROW in 06/07 and construction from 06/07 through 08/09.
CALTRANS	10167	I-5 FROM SR-91 TO LA COUNTY LINE IN BUENA PARK - ADD 1 MIXED FLOW LN AND 1 HOV LN IN EACH DIRECTION. FROM 6 - 0 TO 8 - 2 LANES.	2008	2008	No change from the 2008 RTP TCM Report. Project currently underway - in construction
CALTRANS	ORA000193	HOV CONNECTRS ON 22/405 BTWN SEAL BCH BL. & VALLEY VIEW & ON 405/605 BTWN KATELLA AVE & SEAL BCH BL. W/2ND HOV LN IN EA DIR ON 405 BTWN CONNECTRS EA071631 DUAL LD CALTRANS-OCTA	2010	2013	No change from the 2008 RTP TCM Report. Project is currently in design phase. ROW will begin this fiscal year.
FULLERTON	ORA020113	FULLERTON TRAIN STATION - PARKING STRUCTURE, PHASE I AND II. TOTAL OF 500 SPACES (PPNO 2026)	2004	2011	No change from the 2008 RTP TCM Report. Project is in design phase and ROW is scheduled to start this FY. Construction funding was delayed as part of STIP. Anticipated completion date June 2011.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA110501	BUS RAPID TRANIST - 28MI FIXED BRT FRM BREA MALL TO IRVINE TRANS CNTR. INCLUDES STRUCTURES, (32) ROLLING STOCK, AND FEEDER SVC & IBC SHUTTLE- CNG SHUTTLES FROM JWA TO IBC.	2010	2010	No change from the 2008 RTP TCM Report. Project is in design phase. The RFP's for Design - Service Bus Stop Modifications Technology System Design were let in October 2007.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA120531	BUS RAPID TRANSIT (HARBOR BLVD BRT) - 19 MILE FIXED RT BRT BETWEEN FULLERTON AND COSTA MESA; INCLUDES STRUCTURES AND (23) ROLLING STOCK	NA	2011	No change from the 2008 RTP TCM Report. On schedule.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA120532	BUS RAPID TRANIST (WESTMINSTER/17TH BRT) - 22MILE FIXED RT BRT BETWEEN SANTA ANA AND LONG BEACH; INCLUDES STRUCTURES AND (23) ROLLING STOCK	2011	2011	No change from the 2008 RTP TCM Report. The RFP's for Design - Service Bus Stop Modifications Technology System Design were let in October 2007.

Orange County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA65002	RIDESHARE SERVICES RIDEGUIDE, DATABASE, CUSTOMER INFO, AND MARKETING (ORANGE COUNTY PORTION).	2010	2015	No change from the 2008 RTP TCM Report. Ongoing
ORANGE COUNTY TRANSIT DISTRICT (OCTD)	ORA041501	PURCHASE (71) STANDARD 30FT EXPANSION BUSES - ALTERNATIVE FUEL - (31) IN FY08-09, (9) IN FY09-10, (7) IN FY11-12, (6) IN FY12-13 AND (18) IN FY13-14	2012	2012	No change from the 2008 RTP TCM Report. Ongoing
OCTD	ORA041502	PURCHASE (48) PARATRANSIT EXPANSION VANS - (22) IN FY10/11, (12) IN FY11/12, AND (14) IN FY13/14	2012	2012	No change from the 2008 RTP TCM Report. Ongoing
OCTD	ORA55241	PURCHASE (87) STANDARD 40 FT EXPAN ALT FUEL BUSES - (14) IN FY08 - 09, (44) IN FY10-11, (14) IN FY11-12, (2) IN FY12 - 13 AND (13) IN FY13 -14	2007/2010	2012	No change from the 2008 RTP TCM Report. Ongoing
OCTD	ORA020119	PURCHASE PARATRANSIT VEHICLES EXPAN (142) - (66) IN FY04/05, (21) IN FY05/06, (14) IN FY06/07, (13) IN FY07/08, (14) IN FY08/09, (14) IN FY09/10	2007/2010	2010	No change from the 2008 RTP TCM Report. Ongoing project - project is being implemented consistent with programming
TCA	10254	SJHC, 15 MI TOLL RD BETWEEN I-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, EXISTING 3/M/F EA.DIR.1 ADD'L M/F EA DIR, PLUS CLIMBING & AUX LNS AS REQ, BY 2015 PER SCAG/TCA MOU 4/5/01	2015/2008	2015	No change from the 2008 RTP TCM Report. Ongoing implementation of AVO monitoring requirements of SCAG/TCA MOU
TCA	ORA050	ETC (RTE 241/261/133) (RTE 91 TO I-5/JAMBOREE) EXISTING 2 M/F EA.DIR, 2 ADD'L M/F IN EA. DIR, PLUS CLIMB AND AUX LNS AS REQ, BY 2015 PER SCAG/TCA MOU 4/05/01.	2015/2010	2015	No change from the 2008 RTP TCM Report. Ongoing implementation of AVO monitoring requirements of SCAG/TCA MOU
TCA	ORA051	(FTC-N) (OSO PKWY TO ETC) (13MI) EXISTING 2 MF IN EA. DIR, 2 ADDITIONAL M/F LANES, PLS CLMBNG & AUX LANS AS REQ BY 2015 PER SCAG/TCA MOU 4/05/01.	2015/2010	2015	No change from the 2008 RTP TCM Report. Ongoing implementation of AVO monitoring requirements of SCAG/TCA MOU
TCA	ORA052	(FTC-S) (I-5 TO OSO PKWY) (15MI) 2 MF EA. DIR BY 2013; AND 1 ADDITIONAL M/F EA. DIR. PLS CLMBNG & AUX LANES AS REQ BY 2030 PER SCAG/TCA MOU 4/05/01. #1988	2015/2010	2030	No change from the 2008 RTP TCM Report. Selection of preferred alternative 2/23/06; proceeding to construction with initial phase opening in 2013, second phase opening in 2030; ROD pending 6/08

Orange County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
VARIOUS AGENCIES	ORA990906	LUMP SUM. TEA FUNDS FOR BICYCLE AND PEDESTRIAN FACILITY PROJECTS THROUGHOUT ORANGE COUNTY (PROJECTS ARE CONSISTENT WITH 40 CFR PART 93.126,127,128, EXEMPT TABLES 2 & 3)	2009	2009	No change from the 2008 RTP TCM Report. All projects are proceeding as scheduled.

Orange County Completed/Corrected Projects					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA000104	PARKING EXPANSION AT IRVINE TRANSPORTATION CENTER; BUILD 1500-CAR PARKING STRUCTURE INCLUDING ENVIRONMENTAL, DESIGN, AND CONSTRUCTION. PPNO 9511	2007	2007	Project Complete

Orange County TCMs - New				
Lead Agency	Project ID	Project Description	2008 RTIP Completion Date	
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA110633	RIDESHARE VANPOOL PROGRAM - CAPITAL LEASE COSTS	2012	

Riverside County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
CALTRANS	0121D	ON I-215/SR91/SR60, RIV I215 COR IMPROV PROJ - FROM 60/91/215 JCT TO 60/215 SPLIT - WIDEN 6 TO 8 LNS, INCLUDING MAINLINE/IC IMPROVS, ADD HOV, AUX, & SB TRUCK CLIMB LN (EA: 3348U1)	2006/2007	2009	No change from the 2008 RTP TCM Report. Project under construction. Construction completion scheduled for December 2009.
CORONA	RIV010227	CORONA ADVANCED TRAFFIC MANAGEMENT SYSTEM (ATMS) - AND REGIONAL ITS INTEGRATION PHASE 2.	2005	2010	No change from the 2008 RTP TCM Report. Phase I completed. 2008 RTIP to reflect Phase 2 portion.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV010212	ON SR91 - ADAMS TO 60/215 IC: ADD HOV LNS, AUX LNS (MADISON-CENTRAL), BRIDGE WIDENING & REPLACEMENTS, EB/WB BRAIDED RAMPS, IC MOD/RECONSTRUCT + SOUND/RETAINING WALLS	2002	2015	No change from the 2008 RTP TCM Report. Environmental document signed on Aug. 31, 2007. Project is in design and right-of-way phase. Estimated completion is 2015.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV011211	AT N. MAIN ST/E. GRAND BLVD - CONSTRUCT NEW 1,000 SPACE PARKING STRUCTURE & CCTV/SEC ENHANCE. AT CORONA N. MAIN METROLINK STN (EA: CORSTN, PPNO: 0079D) (FY 07 5307) (UZA: RIV-SAN)	2005	2011	No change from the 2008 RTP TCM Report. The contract has been awarded. Anticipated completion date 2011.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV050555	ON I-215 (N/O EUCALYPTUS AVE TO S/O BOX SPRINGS RD) & SR60 (DAY ST TO SR60/I-215 JCT): RECONSTRUCT JCT TO PROVIDE 2 HOV DIRECT CONNECTOR LNS (SR60 PM: 12.21 to 13.31) AND MINOR WIDENING TO BOX SPRINGS RD FROM 2 TO 4 THROUGH LANES BETWEEN MORTON RD AND BOX SPRINGS RD/FAIR ISLE DR IC (EA: 449311)	2011	2011	No change from the 2008 RTP TCM Report. Project is in design phase. Anticipated completion date April 2012.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV051006	IN WESTERN RIVERSIDE COUNTY FOR CARE CONNEXUS INC.: PURCHASE 1 EXPANSION LARGE BUS (APPROX 16 PASSENGERS, GAS/DIESEL) W/ LIFT AND TIEDOWNS (5310 FY 05/06 CYCLE)	2009	2008	No change from the 2008 RTP TCM Report. Vehicles order completed May 11, 2007; target vehicle delivery is March 2008.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV061149	IN WESTERN RIVERSIDE COUNTY FOR PEPPERMINT RIDGE - PURCHASE 2 EXPANSION MODIFIED VANS (APPROX 8 PASS EACH, GAS/DIESEL) (FY 06/07 5310 CYCLE)	2010	2010	No change from the 2008 RTP TCM Report. Vehicle order anticipated to occur May 2008.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV061162	AT DOWNTOWN RIVERSIDE METROLINK STATION FOR UCR (CE-CERT): IMPLEMENT UCR INTELLISHARE SYSTEM (INTELLIGENT SHARED-USE VEHICLE SYSTEM) AT 2 DESIGNATED PARKING SPACES	2007	2007	No change from the 2008 RTP TCM Report. Project is progressing – environmental clearance is underway. Environmental clearance expected by Spring 2008

Riverside County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV070303	ON SR60 IN NW RIV CO: IMPLEMENT EXPANDED SR60 FREEWAY SERVICE PATROL (FSP) (BEAT #7 PATROL , 2 TRUCKS) BETWEEN MILIKEN AVE & MAIN ST (SR60 HOV LN CHANGE TCM SUBSTITUTION PROJECT)	2010	2010	No change from the 2008 RTP TCM Report. Ongoing since 2007. Daily service provided Monday - Friday.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV070304	ON I-215 IN SW RIV CO: IMPLEMENT NEW I-215 FREEWAY SERVICE PATROL (FSP) (BEAT #19, 2 TRUCKS) BETWEEN SR74/4TH ST AND ALESSANDRO BLVD (SR60 HOV LANE CHANGE TCM SUBSTITUTION PROJECT)	2010	2010	No change from the 2008 RTP TCM Report. Ongoing since 2007. Daily service provided Monday - Friday.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV070307	ON SR60 IN MORENO VALLEY: IMPLEMENT NEW SR60 FREEWAY SERVICE PATROL (FSP) (BEAT #8, 2 TRUCKS) BETWEEN DAY ST AND REDLANDS BLVD (SR60 HOV LANE CHANGE TCM SUBSTITUTION PROJECT)	2010	2010	No change from the 2008 RTP TCM Report. Ongoing since 2007. Daily service provided Monday - Friday.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV520109	RECONSTRUCT & UPGRADE SAN JACINTO BRANCH LINE FOR RAIL PASSENGER SERVICE (RIVERSIDE TO PERRIS) (PERRIS VALLEY LINE) (FY 07 5307) (UZA: RIV-SAN)	2012	2011	Draft EA completed in July 2004. Alternative analysis has also been completed. Project is in the PA/ED phase – working on the environmental assessment; waiting to begin preliminary engineering. FTA Small Starts funding approval must be secured prior to start of the PE. Estimated completion date is December 2010.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV520111	REGIONAL RIDESHARE	2009	2009	No change from the 2008 RTP TCM Report. On-going program for implementation of rideshare activities over life of Measure A (through 2039).
RIVERSIDE TRANSIT AGENCY	RIV051005	IN WESTERN RIVERSIDE COUNTY FOR RTA: PURCHASE 7 TYPE II DAR VEHICLES (5310 FY 05/06 CYCLE)	2009	2009	No change from the 2008 RTP TCM Report. 5310 order changed to 7 Type II – DAR vehicles. Vehicles ordered; delivery expected by 2009.
RIVERSIDE TRANSIT AGENCY	RIV051008	INSTALL MULTI-JURISDICTIONAL ATIS AT TRANSIT CENTERS & HIGH TRAFFIC CORRIDOR BUS STOPS INCLUDING REAL TIME SCHEDULES, IMPROVED SIGNAGE & LIGHTING (MAGNOLIA CORRIDOR PHASE)	2007	2009	No change from the 2008 RTP TCM Report. Project progressing forward – revised completion date per lead agency is December 2009.

Riverside County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
RIVERSIDE TRANSIT AGENCY	RIV061121	IN WESTERN RIVERSIDE COUNTY FOR RTA: INSTALL AUTOMATED TRAVELER INFORMATION SYSTEM (ATIS) ON VARIOUS FIXED ROUTE VEHICLES (Approx 97) (SAFETEA LU Earmark -#171, E-2006-BUSP-157)	2008	2009	No change from the 2008 RTP TCM Report. Project progressing forward – revised completion date per lead agency is December 2009.
RIVERSIDE TRANSIT AGENCY	RIV061135	IN WESTERN RIV COUNTY FOR RTA: INSTALL AUTOMATED TRAVELER INFORMATION SYSTEM (ATIS) ON VARIOUS FIXED ROUTE VEHICLES AND AT APPROX 60 STOPS (SAFETEA LU #171, E-2007-BUSP-0107)	2009	2009	No change from the 2008 RTP TCM Report. On schedule.
RIVERSIDE TRANSIT AGENCY	RIV990902	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF PERRIS - CONSTRUCT NEW MULTIMODAL TRANSIT FACILITY (BUS & RAIL) AT 4TH AND D STREETS	2006	2008	No change from the 2008 RTP TCM Report. Bid Advertisement scheduled for spring 2008.
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	RIV010214	RCTC SHARE OF PURCHASE OF METROLINK CARS & LOCOMOTIVES - UP TO 47 CARS/CABS & 8 LOCOS TO BE ORDERED BY 6/30/06 (FY 03 & 04 5307) (Shares among LAOC8231, SBD20020801, & ORA090302)	2005/2007	2010	No change from the 2008 RTP TCM Report. Cars ordered - delivery of new cars scheduled for 2009.
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	RIV011242	PURCHASE EXPANSION ROLLING STOCK (2 CAB CARS AND 3 LOCOMOTIVES) FOR METROLINK IEOC AND RIVERSIDE/FULLERTON/LA LINES (EA: RIVFUL, PPNO: 0079E)	2004/2009	2009	No change from the 2008 RTP TCM Report. Project is being implemented – the rolling stock contractor was issued a notice to proceed with design & construction of the new cars on 4/13/06. Scheduled completion date is 8/1/2010. The project delay is due to the initial procurement that was protested, causing a significant delay in issuing a second RFP and awarding the contract.
TEMECULA	RIV62029	AT HWY 79 SO AND LA PAZ ST: ACQUIRE LAND, DESIGN AND CONSTRUCT PARK-AND-RIDE LOT - 250 SPACES (FY 05 HR4818 EARMARK)	2004/2007	2011	The project is in design phase (Phase 1). Phase 1 is estimated to be completed by June 2008. Bid advertisement/award and construction to follow (Phase 2), with an estimated completion date of 2011.

Riverside County Completed/Corrected Projects					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
CALTRANS	RIV061163	ON I-15 (R0.0 to R41.8) & I-215 (R8.4 to R38.5): INSTALL APPROX. 75 VEHICLE DETECTION STATIONS FOR IMPROVED INCIDENT RESPONSE, TRAFFIC DATA COLLECTION, & TRAVELER INFO (EA: 0J710G)	2008	2008	Project complete.

Riverside County TCMs - New			
Lead Agency	Project ID	Project Description	2008 RTIP Completion Date
RIVERSIDE TRANSIT AGENCY	RIV031207	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF CORONA - CONSTRUCT NEW CORONA TRANSIT CENTER AT 31 EAST GRAND BLVD (5309c FY 03+04+06 (E-2006-BUSP-080) EARMARKS)	2009
RIVERSIDE TRANSIT AGENCY	RIV070705	PURCHASE 5 EXPANSION PARATRANSIT TYPE II VEHICLES (APPROX 12 PASSENGER, GAS/DIESEL) WITH WHEEL CHAIR LIFTS AND ACCESSORIES (FY 08 5307) (UZA: RIV-SAN)	2009
RIVERSIDE TRANSIT AGENCY	RIV071234	IN WESTERN RIV COUNTY FOR RTA: INSTALL AUTOMATED TRAVELER INFORMATION SYSTEM (ATIS) ON VARIOUS FIXED ROUTE VEHICLES AND AT APPROX. 60 STOPS (SAFETEA LU #171, TABLE 4, 5309 PROJECTS).	2010

San Bernardino County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
COLTON	2002164	ON VALLEY BLVD. IN COLTON TO NORTH TO 10TH STREET CONNECTING TO ABANDONED RR CORRIDOR ON WEST SIDE OF COLTON AVE.-CONSTRUCT CLASS I BIKEWAY, LANDSCAPING AND LIGHTING	2003/2006	2008	No change from the 2008 RTP TCM Report. Under construction. Anticipated completion date August 2008.
FONTANA	200431	INLAND PACIFIC ELECTRIC TRAIL - ON OLD SP ABANDONED RR BETWEEN I-15 TO JUNIPER AVE.- CONSTRUCT CLASS 1 BIKE LANE (APPROX. 7 MILES LONG)	2006	2011	No change from the 2008 RTP TCM Report. Under construction.
OMNITRANS	981118	BUS SYSTEM - PASSENGER FACILITIES: DESIGN AND BUILDING OF ONTARIO TRANSCENTER	2005/2008	2009	Project on schedule for 2009 completion. Schedule delayed slightly from summer 2009 to December 2009 to accommodate a major downtown development that includes the construction of a bus zone, and which creates an opportunity to relocate bus stops for a more effective system.
OMNITRANS	20060607	CHAFFEY COLLEGE TRANSCENTER - CONSTRUCT TRANSFER FACILITY AT CHAFFEY COLLEGE	2009	2010	No change from the 2008 RTP TCM Report. Contract with Chaffey College underway. Construction is planned ahead of original schedule. Anticipated completion date April 2009.
RIALTO	200450	RIALTO METROLINK STATION - INCREASE PARKING SPACES FROM 225-775	2006	2011	Project delayed to accommodate completion of the City's Downtown Vision Plan, which influenced the direction of scoping and proper location for the future parking spaces. Downtown Vision Plan is complete and project is moving forward. Land surveys and traffic studies have been conducted and environmental clearance is expected in 2008. Anticipated completion date 2011.
SAN BERNARDINO, CITY OF	20020802	METROLINK ADD'L PARKING STRUCTURE - CONSTRUCT 5 LEVEL PARKING STRUCTURE TO SERVE EXISTING METROLINK STATION AT SANTA FE DEPOT LOCATION	2008	2009	No change from the 2008 RTP TCM Report. Construction to start April/May 2008. Anticipated completion date June 2009.
SANBAG	20040827	RIDESHARE PROGRAM FOR SOUTHCOAST AIR DISTRICT	2009	2009	No change from the 2008 RTP TCM Report. All project dollars obligated to date; project on-going.

San Bernardino County TCMs Reported on in a Previous TIP					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
SANBAG	20020106	MONTCLAIR PEDESTRIAN UNDERCROSSING- CONSTRUCTION OF A 2ND PLATFORM CREATES NEED FOR CONSTRUCTION OF NEW UNDERCROSSING	2003	2008	Project delayed due to design considerations of Montclair Gold Line Station. Undercrossing currently under construction, completion scheduled for 2008.
SANBAG	200074	LUMP SUM - TRANSPORTATION ENHANCEMENT ACTIVITIES PROJECTS FOR SAN BERNARDINO COUNTY- BIKE/PED PROJECTS (PROJECTS CONSISTENT W/40CFR PART 93.126,127,128, EXEMPT TABLE 2 & 3).	2004	2011	No change from the 2008 RTP TCM Report. Funds have been obligated. Some of these funds are for the Pacific Electric Trail that are included under separate line item detail of the TCM report.
SANBAG	SBD031505	VARIOUS LOCATIONS - LUMP SUMS LTF, ARTICLE 3 BICYCLE/PEDESTRIAN PROJECTS (PROJECTS ARE CONSISTENT WITH 40 CFR PART 93.126, 127,128, EXEMPT TABLES 2 & 3)	2004	2010	Projects Completed with original allocations. New allocations awarded to other projects to be completed by 04/09.
VARIOUS AGENCIES	20620	UPLAND TO SAN BERNARDINO FROM LA CO LINE TO RTE 215 - 8 LN FREEWAY INCLUDING 2 HOV LNS (6+2)-210 CORR. W/AUX LNS THRUOUT SEGS. 9-11(SEG.11 INCL CONNECTOR BETWEEN 210 & 215 (MORE)	2007/2009	2009	No change from the 2008 RTP TCM Report. Segments 1-11 complete and freeway open. The 210/215 connector under construction
VARIOUS AGENCIES	713	I-25 CORRIDOR NORTH - IN SAN BERNARDINO, ON I-215 FROM RTE 10 TO RTE 210 - ADD 2 HOV & 2 MIXED FLOW LNS (1 IN EA. DIR.) AND OPERATIONAL IMP INCLUDING AUX LANES AND BRAIDED RAMP	2013	2010	The project has been broken into segments for construction. The 5th street bridge is under construction, anticipated completion by 2008. Other segments are in various stages of completion (bidding/design). Bidding for seg. 1, 2 & 5 expected in 2009.

San Bernardino County Completed/Corrected Projects					
Lead Agency	Project ID	Project Description	Original Completion Date	2008 RTIP Completion Date	Project Status
RANCHO CUCAMONGA	20020201	PACIFIC ELECTRIC INLAND EMPIRE TRAIL - PHASE 1 - HAVEN AVENUE TO 1200' EAST OF ETIWANDA AVE(3.4 MILES) CONSTRUCT CLASS 1 BIKE TRAIL&ROW ACQ.ETIWANDA DEPOT	2004/2006	2007	Project completed.
SANBAG	94163	RIDESHARE ACTIVITIES FOR SOUTH COAST AIR BASIN	NA	NA	Monies expended for all current years. Remains an ongoing project; ID number changed to 20040827.

2006 RTIP Committed Transportation Control Measures (TCMs)

Project Listing Report

Timely Implementation Report, 2006 RTIP:
Transportation Control Measure (TCM) Project Implementation Status- By County

Los Angeles County**TCMs Reported on in a Previous RTIP**

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
ACCESS SERVICES, INC.	LA900520	PURCHASE OF ADDITIONAL 386 VEHICLES FROM FY06 TO FY09. 100 VEHICLES IN FY06, 114 VEHICLES IN FY07; 110 IN FY08 AND 62 IN FY09.	2005	2009	First Delivery Vehicle. This is a multi-year project, with the final purchasing phase to be completed by 2009. As of 2006, the First Vehicle/Equipment has been delivered; the following vehicles will be delivered in phases in 2006, 2007, 2008 with final delivery in 2009.
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA0D45	ALAMEDA CORRIDOR TRUCK EXPRESSWAY . ELEVATED 4-LANE EXPRESSWAY BETWEEN COMMODORE HELM BRIDGE AND ALAMEDA STREET (SR-47).	2003/2005	2011	Project is in the Environmental Document/Pre-Design Phase. Project delay was due to required re-evaluation and incorporation as part of the multi-year, multi-phased Alameda Transportation Corridor Project from LA/LB harbors to San Bernardino via Los Angeles County. The Project is scheduled to be completed by 2011.
ARCADIA	LA990712	NEW & EXPANDED SHUTTLE SERVICE THRU DOWNTOWN ARCADIA CONNECTING HOTELS & BUSINESSES TO SANTA ANITA RACE TRAK & FASHION MALL (HUNTINGTON ST) & PROPOSED TRANSIT STATION	2003/2005	2010	No Project Activity. The project has been incorporated as part of the City of Arcadia transportation circulation element incorporating the proposed Metro Gold Line Foothill Extension multi-modal transportation hub. The project will be implemented in phases with the first phase scheduled in 2008 and the second phase by 2010.
BELLFLOWER	LA996275	WEST BRANCH GREENWAY MULTI-MODAL TRANS. CORRIDOR DESIGN AND CONSTRUCT 2.5 MILE CLASS I BIKE PATH ALONG MTA-OWNED SANTA ANA BRANCH ROW INCL. PEDESTRIAN AND LANDSCAPING (3145)	2006	2007	Project In Engineering (PS&E) Phase. Problems in reconciling ROW guidelines arose due to the Orange Line potentially intersecting with this project. Plans had to be reconfigured. Estimated completion date is May 2007.

⁷ The dates reflected are the 2004 RTP and RTIP completion dates. If the completion date was identical in both documents only one date is listed.

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
CALABASAS	LA974100	U.S. 101 INTER-JURISDICTIONAL BIKE LANE GAP CLOSURE CONSTRUCTION 4.5 MILES OF BIKEWAY IMPROVEMENTS TO CLOSE SEVERAL GAPS WITHIN A 12 MILE CORRIDOR(TEA21-#69) (PPNO# 3147)	2003/2006	2006	Project In Engineering (PS&E) Phase. During the Environmental Documentation Phase, issues were raised about streams and wetlands in the area, requiring modifications to the plans. This also resulted in a change in Engineers, adding a slight delay.
CALTRANS	12570	RTE. 57/60 HOV CONNECTOR INDUSTRY FROM OLD BREA CANYON ROAD TO GRAND AVENUE - HOV DIRECT CONNECTORS AND COLLECTOR ROAD (BOTH DIRECTIONS) (EA# 12570, PPNO# 0499Q)	2006/2007	2007	Project In Engineering (PS&E) Phase. Opening July 2007.
CALTRANS	1178A	IN LOS ANGELES AND CULVER CITY FROM ROUTE 90 TO ROUTE 10 - HOV LANES (SB 5+0 TO 5+1; NB 5+0 TO 5+1 HOV) (2206LK CFP) OBLIGATED 6207 (034)	2006	2008	Construction project implementation has begun. Increase in material, ROW, surety and low response from bidders, plus re-prioritizing by Caltrans headquarters has meant the project has been delayed. Project is under construction and is expected to be completed in 2008.
CALTRANS	LA000357	FROM ROUTE 170 TO ROUTE 118 HOV LANES (10 TO 12 LANES) (CFP 345) (2001 CFP 8339; CFP2197). (EA# 121901, PPNO 0158K)	2008/2010	2010	Project In Environmental Documents/Pre-design Phase. Scheduled for completion July 1 2010. ROW acquisition and certification issues. Scheduled for completion July 1 2010.
CALTRANS	LA000358	FROM ROUTE 134 TO ROUTE 170 HOV LANES (8 TO 10 LANES) (CFP 346)(2001 CFP 8355). (EA# 121801, PPNO 0142F)	2012/2010	2010	Project In Engineering (PS&E) Phase. Scheduled for completion July 16, 2010. ROW acquisition and certification issues.

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
CALTRANS	LA000359	IN EL MONTE AND BALDWIN PARK FROM BALDWIN AVE TO ROUTE 605 HOV LANES (8+0 TO 8+2) AND TOS PROJECTS. (EA# 10695, 22350, 22340 PPNO 0295M, PPNO 2969, PPNO 2968)	2004/2005	2006	Project In Engineering (PS&E) Phase. Project under construction and implementation.
CALTRANS	LA000548	FROM PUENTE TO CITRUS HOV LANES FROM 8 TO 10 LANES (C-ISTEA 77720) (PE ONLY) (EA# 117080, PPNO# 0309N)	2030/2015	2015	Project In Environmental Documents/Pre-design Phase. Completed PAED PS&E Scheduled Projected Completion date 12-2015. This project has experienced ROW issues and environmental issues. NEPA has not yet been completed; however the segment before this (I-605 to Puente) is currently underway.
CALTRANS	LA01342	RT 10 FROM RT 605 TO PUENTE AVE HOV LANES (8+0 TO 8+2) (EA# 117070, PPNO 0306H) PPNO 3333 3382 AB 3090 REP	2008/2010	2011	Project In Engineering (PS&E) Phase. Project delay was due to administrative changes in implementation design. For the final phase of this project the MTA will identify the program amount in 2006.
CALTRANS	LA01344	RT 5 FROM RT 118 TO RT 14 FROM 10 TO 12 LANES HOV LANES. EA# 122001, PPNO 0162P. GARVEE project	2005/2006	2010	Completed PAED and PS&E and is starting construction. Project delay was due to ROW design issues, increasing material costs that required headquarter approval and re-budgeting. The project is to be completed by 2009.
CALTRANS	LA0B951	ROUTE 10 TO ROUTE 60 - EXPRESSWAY TO FREEWAY CONVERSION - ADD 1 HOV LANE AND 1 MIXED FLOW LANE. (2001 CFP 8349, TCRP #50) (EA# 210600, PPNO 2741)	2030/2010	2012	Project is in right-of-way acquisition phase. Increase in material, ROW, surety and low response from bidders, plus re-prioritizing by Caltrans headquarters has caused the project to be delayed. Project is on schedule to be completed by 2012.
CALTRANS	LA0C8344	EXTENSION OF N/B I-405 HOV LANE- TO EXTEND THE HOV LANE ON N/B I-405 FROM SOUTH OF VENTURA BL TO SO. BURBANK BLVD WHERE IT WILL JOIN THE EXISTING HOV LANE. (EA# 199620, PPNO# 2788).	2007	2008	In construction/implementation phase

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TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
CALTRANS	LA0D73	LA MIRADA, NORWALK & SANTA FE SPRINGS-ORANGE CO LINE TO RTE 605 JUNCTION. WIDEN FOR HOV & MIXED FLOW LNS, RECONSTRUCT VALLEY VIEW (EA 2159A0, PPNO 2808).	2014	2016	Project In Environmental Documents/Pre-design Phase. (Project # LA0B7215 will be incorporated into this project in future Timely Implementation Reports.).
CALTRANS	LA195900	RTE. 405 - WATERFORD AVE. TO RTE 10 - AUX LANE: LOS ANGELES - WATERFORD AV. TO RTE 10 - CONSTRUCT S/B AUX LANE & S/B HOV LANE (2001 CFP 8354) (EA# 195900 ,PPNO 2333). GARVEE 12/03	2006/2007	2009	In construction/implementation phase. Caltrans has experienced greater than anticipated increases in materials, security and ROW costs, and a lower than expected number of bidders, requires programming the project further out than initially budgeted. This component of the project is expected to be completed in 2009.
CALTRANS	LA963519	ADD 3 MILES OF TRIPLE TRACK AT BANDINI, MP 148.5 & 151.7 BETWEEN FULLERTON & LAUS (2002 IIP)	2002/2007	2007	Project under engineering plans review/specification and estimates phase.
CALTRANS	LA996134	RTE. 5/14 INTERCHANGE & HOV LNS ON RTE 14 - CONSTRUCT 2 ELEVATED LANES - HOV CONNECTOR (DIRECT CONNECTORS) (EA# 16800)(2001 CFP 8343) (PPNO 0168M)	2014/2009	2010	PAED Phase completed. PS&E completion end of 2006. Project will start construction 10/06 and has a completion date of 10/2010.
CALTRANS	LA996137	RTE. 60 HOV LNS. FROM RTE. 605 TO BREA CANYON RD. -- CONSTRUCT ONE HOV LANE IN EACH DIRECTION) (CFP: 358, 4262, 6137=67,150+IIP: 5,100) (EA#129410, 129421, PPNO 0482R,0482RA)	2008/2007	2008	Initiated construction phase. Project has multi-year funding out to 2010 to accommodate multi-jurisdictional agency funding approval which may cause delays (CTC, for example).

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
CALTRANS	LA996138	RTE.5 HOV LNS. FROM FLORENCE AVE TO RTE.19 - ADD ONE LANE IN EACH DIRECTION	2025/2016	2016	Combined with LA0D73B/LA0D73. This project has been integrated with the entire I-5 south corridor project. This project has been integrated with larger I-5 south project; Caltrans is still evaluating this particular segment to determine how it will be completed.
CITY OF CARSON	LA0C8219	SOUTH BAY PAVILION REGIONAL TRANSIT CTR. CONSTRUCTION OF A TRANSIT CTR AT THE SOUTH BAY PAVILION SHOPPING CTR TO BE SERVED BY ALL 8 CARSON CIRCUIT RTES & MTA LINES #205 & #446-447	2006	2010	RFP is ready for public distribution. Delay was caused by having changed the exact location of the transit center due to ROW parcel issues. Construction will commence within next 6 months.
CITY OF LOS ANGELES	LA0B7293	SAN PEDRO PEDESTRIAN WAY- PROVIDE PEDESTRIAN ACCESS WAYS LINKING EXISTING TRANSIT FACILITIES AND PROPOSED PARKING STRUCTURE TO SURROUNDING & OTHER DESTINATIONS IN DOWNTOWN SAN PEDRO	2005/2004	2007	Project is in Bid/Advertise Phase. The reason for delay is that this is part of the CRA redevelopment project area, a multi phase pedestrian/transit/re-development upgrade for downtown San Pedro. The Project's TCM components are being implemented and will be completed as part of the overall project in 2007
CITY OF LOS ANGELES	LA0B7330	SAN FERNANDO RD ROW BIKE PATH PHSE II-CONSTRUCT 2.75 MILES CLASS I FROM FIRST ST TO BRANFORD ST, ON MTA-OWND ROW PARCEL TO SAN FERNANDO RD. LINK CYCLISTS TO NUMEROUS BUS LNE. PPNO 2868	2005	2007	Project In Construction/Implementation Phase. The delay involved various concerns over the use of the right of way with the involved agencies and Metrolink/Freight operators. The issues were resolved and the project will be completed in 2007.
CITY OF LOS ANGELES	LA0C8173	NORTHRIDGE METROLINK STN PARKING IMPRVMENT. CONSTRUCT ADDT'L 100 PRKING SPCS & RECONFIGURE SOUTHERN PRTION OF EXISTING PRKING LOT TO YIELD AN ADDT'L 40 NET PRKING SPCS TOTAL 400 SPC.	2007	2007	Project In Engineering (PS&E) Phase.

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
CITY OF LOS ANGELES	LA0C8174	LITTLE TOKYO PEDESTRIAN LINKAGES. CONSTRUCT OF IMPRVMENT: SIDEWALK & CROSSWALK ENHANCEMENTS, STREET FURNITURE & LANDSCAPING TO PROMOTE PEDESTRIAN TRAVEL W/IN LITTLE TOKYO. PPNO 3116.	2004/2006	2007	Project In Engineering (PS&E) Phase. The project was delayed due to changes in project administration. These issues have since been resolved, and the project is now being implemented expeditiously.
CITY OF LOS ANGELES	LA0C8209	HOLLYWOOD MEDIA DISTRICT-PEDESTRIAN IMPROVEMENTS. INCLUDING SMART CROSSWALKS, TRAFFIC SIGNAL, LANDSCAPING ETC. BET. BUS STOPS ALONG SANTA MONICA BLVD, VINE ST AND HIGHLAND AVE.	2005	2008	Project In Bid/Advertise Phase. The reason for the delay is that this is part of the CRA/city of LA Hollywood redevelopment. A multi-phase multi- year program. There had been some delays in getting approvals for specific language in the RFPs. In addition, the City has experienced higher than usual bid prices. This project is expected to be completed by 2008.
CITY OF LOS ANGELES	LA0C8241	PICO UNION/ECHO PARK DASH VEHICLE PROCUREMENT. PURCHASE (3) LOW-FLOOR, PROPANE-POWERED 30' BUSES FOR THE PICO/UNION ECHO PARK SHUTTLE SERVICE.	2004/2010	2010	Project In Bid/Advertise Phase.
CITY OF LOS ANGELES	LA0C8242	BUS STOP IMPROVEMENTS ON SAN FERNANDO ROAD & TC LIGHTING; ENHANCE PASSENGER FACILITIES AT THREE BUS STOPS WITH GREATEST NUMBER OF DAILY BOARDINGS ON EAST SIDE OF SAN FERNANDO ROAD.	2008	2010	Project in Construction/Implementation Phase. The delay was due to the City of Los Angeles outdoor furniture procurement requirement, which obligated Council revisions and approvals to accommodate cost increases. Project will be delivered by 2010.
CITY OF LOS ANGELES	LA0C8318	LA CITY AND SURROUNDING COMMUNITIES BICYCLE MAP-PROJECT WILL UPDATE BIKEWAY MAPPING INFO. FOR THE CITY OF LA AND PLOT BICYCLE LANE AND PATH INFORMATION ON A NEW MAP.	2004	2006	Project In Environmental Documents/Pre-design Phase. The City of Los Angeles has been working with Metro to update the Countywide Bicycle Transportation Strategic Plan. The City of LA maps will form part of the LA County Map which will be used for Bicycle Transportation Account funding. The Countywide Metro maps are now ready, the city will have their maps ready by end of the year.

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
CITY OF LOS ANGELES	LA0C8319	TAXI/SHUTTLE STANDS AT METRO RED LINE STA AT N HLWD & UNIVERSAL CITY AUTHORIZED TAXI STANDS AT TWO METRO RED LINE STATIONS (UNIVERSAL CITY ON LANKERSHIM AND N. HLWD ON CHANDLER.	2003/2004	2006	Project under construction and implementation.
CITY OF LOS ANGELES	LA0C8330	BICYCLE COMMUTER TECHNOLOGY ACCESS, CITY'S WEB PAGE FOR BICYCLE PROGRAM	2006	2006	Project under construction and implementation.
CITY OF LOS ANGELES	LA0C8380	CHINATOWN/COLLEGE STREET GOLD LINE STATION - INTERMODAL TRANS. CENTER ENHANCE MENT (PEDESTRIAN WALKWAY BRIDGE, BUS STATION, AND A BIKE STATION)	2004/2008	2010	Project In Engineering (PS&E) Phase. The reason for delay was that there were disagreements on design parameters between involved agencies. Negotiations are ongoing. Project will be completed by 2010.
CITY OF LOS ANGELES	LA962148	WESTLAKE COMMUNITY BASED INTERCEPT INTERMODAL FACILITY (95 CALL, CAT 2) [CALL #2446]	2003/2007	2007	Project In Contract Negotiation Phase. The project was delayed due to repeated changes in lead agencies. This issue has now been resolved, with MTA designated as the implementing agency. The project is now being expeditiously implemented. PC25 funds from FY 01/02 are still available and will be used to complete this project.
CITY OF LOS ANGELES	LA974165	MACARTHUR PARK STATION IMPROVEMENTS INCLUDE DESIGN AND CONSTRUCTION OF A PLAZA TO ACCOMMODATE PUBLIC ACCESS (PEDESTRIAN ENTRANCES, WALKWAYS, BICYCLE FACILITIES) PPNO# 3417	2002/2007	2008	Project in Project In Engineering (PS&E) Phase. Project Completion date is 2008 and is funded until 2009 for contingency funding approvals by the involved agencies.
COMPTON	LAOB7326	COMPTON CREEK BIKEWAY EXTSN - PHASE III.DSIGN & CNSTRUCT .6 MI OF CLASS 1 BIKE/PED PATH FRM GREENLEAF BL TO ARTESIA FWY.WILL INC BIKE PATH, PED WALKWAY SIGNAGE, STRPNG. (PPNO 2869).	2005/2006	2009	No project activity. The project sponsor has been working with Metro to execute the Memorandum of Understanding. Once executed, project can award contract and be completed by 2009.

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
CULVER CITY MUNI BUS LINES	LA0B400	PROCUREMENT OF FIVE (5) 40' CNG EXPANSION BUSES/420K PER BUS	2004	2008	Project Implementation Phase. The project will support the Sepulveda Rapid Bus project. The project delay is due to on-going coordination with various funding agencies needed to ensure that all components are delivered on time. The project will be completed as part of the Metro Rapid Program by 2008.
CULVER CITY MUNI BUS LINES	LA0C8382	SEPULVEDA BLVD BUS STOP IMPROVEMENT PROGRAM. BUS STOP AMENITIES INC LIGHTING SIGNAGE, LANDSCAPING, SHELTERS, SEATING, LANDINGS AND TRASH RECEPTACLES.	2008/2010	2010	Multi-component Project Underway. Project in Environmental Documents/Pre-design phase. Anticipated completion by end of 2009.
FOOTHILL TRANSIT ZONE	LA0B311	PARK AND RIDE FACILITY TRANSIT ORIENTED NEIGHBORHOOD PROGRAM	2003/2005	2010	Project In Environmental Documents/Pre-design Phase. This is a multi-phased program among Foothill's 21 city service area. Foothill has identified 3 specific sites which are being reviewed by the cities. The reason for delay is that there the coordination/permitting/ROW approvals with the individual cities has taken longer than expected as they each have differing requirements. Once approved, construction is expected to take approximately 6 months. The project is expected to be completed by 2010.
FOOTHILL TRANSIT ZONE	LA0C8362	EL MONTE STATION IMPROVEMENT PROJECT AND TRANSIT STORE EQUIPMENT	2005	2007	Project In Construction/Implementation Phase. The reason for the delay has been some change orders to the original scope of work as various operators are using this facility. Each operator has to agree to the standards and some operators have requested some changes. Operators are working to reach agreement by next six months. Project is expected to be completed by 2008.

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
FOOTHILL TRANSIT ZONE	LA963526	BUS STOP ENHANCEMENT AND SCHEDULE CAROUSELS	2005	2008	Initial Phase. This is a Multi-year program to identify high ridership/low transit amenity bus stops to provide park/ride type improvements including pedestrian and transit amenities to promote ridership. The reason for delay has been the ongoing coordination with the 21 cities and their specific requirements relating to site access and street ROW needs. There are over 3,000 bus stops in the service area with more than 60 identified that qualify for the program. The first phase included 12 sites with transit amenity improvements. The project's budget has been approved and will be completed in 2008.
FOOTHILL TRANSIT ZONE	LA963762	MONROVIA TIMED TRANSFER CENTER	2004	2006	Project in Construction/Implementation phase. The reason for delay was the LA County permitting took longer than anticipated. The land has been purchased and all permits have been approved. Project will be completed by June 2007.
FOOTHILL TRANSIT ZONE	LA9811007	AVL SYSTEM, ARRIVAL SIGNS, FUEL MGMT. SYSTEM (SMART BUS PROJECT)	2005	2007	Project In Construction/Implementation Phase. Project would integrate audio-visual and ADA requirements, interface with the Universal Fare Card, and rider counters. The contract has been signed and the first phases of buses will be online in the next 6-9 months. The project will be completed by end of 2007.
LAC MTA	927333	RIDESHARE ACTIVITIES	2005	2006	Project construction and implementation has commenced.

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
LAC MTA	LA000274	FROM SEPULVEDA TO MORENO CONSTRUCT DIVIDED PKWY WITH TRANSIT PKWY IMPROVEMENTS, BIKE LANES & RT. 2/405 INTERCHANGE (94CFP; CAT. 2, 210, 98STIP00027) TEA21-#1531	2003/2005	2007	Project In Construction/Implementation Phase. There were delays in the Design Phase, and, subsequently, there was a change in implementing agency. The project is now being implemented by the City of Los Angeles).
LAC MTA	LA002633	THOMPSON CREEK BICYCLE TRAIL (93/97 CFP; BIKE PROGRAM) CLASS I (2 MILES)	2003/2005	2005	At the June 20, 2005 Pomona City Council, council members decided that La County Department of Public Works should not move forward with the project. Severe community opposition resulted in project being removed and is now in the de-obligation process LA450022 is substitute project. This project is primarily recreational and therefore does not meet the definition of a TCM. It will not be reported on subsequently.
LAC MTA	LA01B120	EXPANSION OF DIVISION 1 TO ADD ADDITIONAL CAPACITY OF APPROX 67 BUSES AND ADDITIONAL PARKING SPACE OF EMPLOYEES. ACQUISITION OF A VACANT PARCEL SOUTH OF DIV 1	2003/2005	2007	Project In Environmental Documents/Pre-design Phase. The project was substantially expanded to include an additional 100 buses, resulting in a need to also expand the maintenance facilities, as well, which subsequently changed the environmental documentation requirements.
LAC MTA	LA0B7023	GET ABOUT FLEET IMPROVE (POMONA VAL TRANS. AUTHORITY)- PURCHASE 18, 21 PASSENGER VEHIC TO INCR CAPACITY OF SUBREG PARATRANSIT SYS	2002/2004	2008	First Vehicle Delivered. This is a multi-agency multi-phase project that initiated in 2004. The first delivery of 3 vehicles was completed in 2005 with additional phases in 2006, 2007 and 2008. Anticipated delivery completion date by July 2008.
LAC MTA	LA0C8109	'COUNTYWIDE TRANSPORTATION SYS. AWARENESS & SATISFACTION. PROJECT WILL USE AND EXPAND UPON IT'S PREDECESSOR'S WORK, THE SERVICE PLANNING MARKET RESEARCH PROGRAM (SPMRP) FOR TRANSIT	2002/2007	2007	Project In Environmental Documents/Pre-design Phase

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
LAC MTA	LA0C10	MID-CITY/EXPOSITION CORRIDOR LIGHT RAIL TRANSIT PROJECT – DOWNTOWN LA TO SANTA MONICA	2011/2012	2010	Project in Environmental Document/Pre-Design phase
LAC MTA	LA0C8114	'LA CNTY RIDESHARE SERVICES; PROVIDE COMMUTE INFO, EMPLOYER ASSISTANCE AND INCENTIVE PROGRAMS THROUGH CORE & EMPLOYER RIDESHARE SERVICES & MTA INCENTIVE PROGRAMS. PPNO 9003	2009	2010	Project under construction and implementation.
LAC MTA	LA0C8315	ELECTRIC BIKE AND SCOOTER DEMONSTRATION PROJECT. PURCHASE OF ELECTRIC BIKES AND SCOOTERS AS A TEST FOR FEASIBILITY AS SUBSTITUTES FOR SHORT COMMUTE TRIPS TO PARK AND RIDE LOTS.	2004/2005	2007	Project is in Contract/Project Award Phase. The reason for delay included changes in the scope to accommodate specific agency requirements regarding the program participants. Anticipated completion date is July 2007.
LAC MTA	LA0C8364	NORTH LA COUNTY NON-ADVERTISING BUS STOP SHELTERS. INSTALLATION OF BUS SHELTERS WITH SEATING AT BUS STOPS WITH GREATEST # OF DAILY BOARDING IN NORTH LOS ANGELES COUNTY. PPNO 3229.	2006/2007	2010	No project Activity. The project was part of the 2001 Call for Projects and was determined not to be eligible for TE funds. The project was deferred until eligible funds could be identified. The project has now been programmed with CMAQ funds have been programmed in 2007 and is expected to be completed in by 2010.
LAC MTA	LA0C8413	METRO RAPID BUS STATIONS-PHASE II: INCLUDES COMMUNICATIONS & EQUIPMENT	2005/2009	2009	Construction Implementation Phase. The Project is part of an multi-phase, multi-year implementation of the Los Angeles County Metro Rapid System. Currently 15 lines have been implemented since 2000 and 28 will be implemented by 2008. Currently in negotiations with City of LA on bus shelter contract. County of LA bus shelter contract has been approved. One new line in San Fernando Valley will be opening this December.

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TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
LAC MTA	LA29202U3	SAN FERNANDO VALLEY NORTH/SOUTH BRT EXTENSION PHASE I: METRO RAPID SERVICE ALONG RESEDA BLVD. AND SEPULVEDA BLVD.	2005	2009	Environmental Document/Pre Design Phase. The project lost state TCRP funding due to state deficit. The Major Investment study identified four segments along specific corridors running from the North of the Valley to connect with the Metro Orange Line as a more cost effective Metro Rapid style solution.
LAC MTA	LA29202U4	SAN FERNANDO VALLEY NORTH/SOUTH BRT EXTENSION PHASE II: BUS SPEED IMPROVEMENTS ALONG METRO RAPID CORRIDORS AND EXPANSION OF EXISTING PARK & RIDE FACILITY.	2005/2007	2010	Environmental Document/Pre Design Phase. MTA has committed over \$98 million in TCRP funds from 06/07 through 2009/2010 to ensure the project will be completed by 2010.
LAC MTA	LA29202U5	SAN FERNANDO VALLEY NORTH/SOUTH BRT EXTENSION PHASE III: STATION ACCESSIBILITY AND PEDESTRIAN ENHANCEMENTS ON RESEDA BLVD., SEPULVEDA BLVD., AND LANKERSHIM BLVD.	2005/2008	2010	Environmental Document/Pre Design Phase. MTA has committed over \$98 million in TCRP funds from 06/07 through 2009/2010 to ensure the project will be completed by 2010.
LAC MTA	LA29202U6	SAN FERNANDO VALLEY NORTH/SOUTH BRT EXTENSION PHASE IV: COMPLETION OF A NORTHBOUND BUS ONLY LANE ON A PORTION OF SEPULVEDA BLVD. AND OTHER IMPROVEMENTS.	2005/2009	2010	Environmental Document/Pre Design Phase. MTA has committed over \$98 million in TCRP funds from 06/07 through 2009/2010 to ensure the project will be completed by 2010.
LAC MTA	LA29202V	EASTSIDE TRANSIT CORRIDOR - UNION STATION TO ATLANTIC VIA 1ST ST. TO LORENA, THEN 3RD ST. VIA 3RD/BEVERLY BLVD. TO ATLANTIC (EASTSIDE LRT PPNO 3358)	2009/2010	2010	Project In Environmental Documents/Pre-design Phase.

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TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
LAC MTA	LA29202W	MID -CITY TRANSIT CORRIDOR: WILSHIRE BLVD. FROM VERMONT TO SANTA MONICA DOWNTOWN-MID-CITY WILSHIRE BRT INCL. DIV. 10 EXPANSION	2009/2010	2012	Project under environmental document review and pre-design phase. The reason for delay is due to the community concerns over parking loss and other environmental concerns. In addition, the TCRP funding component was removed due to the state deficit, which required Metro to re-prioritize the project in phases to be completed in 2012. The first phase including procurement of 60' articulated buses has been delivered.
LAC MTA	LA962214	PACIFIC COAST HIGHWAY TRAFFIC MANAGEMENT SYSTEM FROM MCCLURE TUNNEL TO TRANCAS CANYON RD TRAFFIC MAN. & BUS SPEED IMPROVEMNT(TEA21-#707). LACDPW LEAD AGENCY INSTEAD CALTRANS.	2003/2005	2007	Project under construction and implementation. The reason for the delay was that LA County Public Works took over as lead agency instead of Caltrans. The project has experienced greater than anticipated increases in materials, security and ROW costs, and a lower than expected number of bidders, requiring re-programming the project further out than initially budgeted to accommodate these increases. The project is under construction and will complete by June 2007.
LAC MTA	LA963542	ACQUISTION REVENUE VEHICLES - 2,513 CLEAN FUEL BUSES: LEASED VEH, FY02 (370) FY03 (30 HC) + FY04 (70 HC) + (200 ARTICS); FY05-FY10 TOTAL OF 1000 BUSES.	2005	2012	The project is in the Implementation Phase. The first part of the project is completed. This is part of the multi-phased, multi-year implementation of Metro's bus fleet expansion program. This includes an additional procurement of 200 60' articulated buses, which were part of a new design that Metro was the lead agency. The vehicles were required to undergo tests and pass the FTA tests. The first delivery of 40' and 60' buses has been received and the additional vehicles will be delivered in phased in 2007, 2008 and 2009.
LAC MTA	LA974083	CHANDLER/BURBANK BIKE PATH-WHITEOAK TO PIERCE COLLEGE A 3.2 MILE CLASS I BIKEWAY ON MTA'S CHANDLER/BURBANK RAIL RIGHT-OF-WAY WILL IMPROVE NON-MOTORIZED ACCESS (COMBINED W/LA974078)	2003/2007	2008	Project is Construction/Implementation Phase. The project is integrated with a busway project, which was delayed due to the discovery of contaminated soil.

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TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
LAC MTA	LA974124	SANTA MONICA BOULEVARD TRANSIT PARKWAY TRANSIT PEDESTRIAN AND BIKEWAY IMPROVEMENTS ALONG SANTA MONICA BLVD IN WEST LOS ANGELES, SPANS 2.5	2002/2005	2007	Project In Construction/Implementation Phase. There were delays in the Design Phase, and, subsequently, a change in implementing agency. The project is now being implemented by the City of Los Angeles.
LAC MTA	LA974181	LAC+USC MEDICAL CENTER BUS TRANSIT STATION FACILITY WILL HAVE 4 BUS BAYS AND 4 LAYOVER BAYS BUS STOP IMPROVEMENT PRJ	2002/2005	2007	Project In Engineering (PS&E) Phase. The project was delayed due to additional coordination and approvals required by the involved agencies including LA County hospital and fire departments regarding emergency circulation requirements. The project has now incorporated these requirements and is has an anticipated completion date is July 2007.
LAC MTA	LA974294	IN LOS ANGELES - DOWNTOWN OVER FREEWAY 101 - PEDESTRIAN BRIDGE ENHANCEMENT	2004	2007	Project is in Construction/Project Implementation phase. The reason for delay was that the City of Los Angeles has to change the Scope of work for the project due to design changes required to meet the necessary inter agency approvals. The project will be completed late 2007.
LAC MTA	LA990305	LIGHT RAIL TRANSIT FLEET- 50 NEW RAIL CAR.PPNO 3225.	2010	2010	Project In Construction/Implementation Phase. The completion date was erroneously reported as 2003 in previous Timely Implementation Reports. First vehicle and equipment delivered.
LAC MTA	LA996044	VEH ACQ FOR EST L.A. SHUTTLE PURCH 4 VEH'S TO REMEDY EXISTING OVERCROWDED CONDITIONS	2002/2004	2006	First Vehicle Delivered. Remaining acquisitions delayed due to backlog in orders at manufacturer's end.
LAC MTA	LA996285	SOUTH BAY BIKE TRAIL RECONSTRUCT AT PLAYA DEL REY - DESIGN AND RECONSTRUCT SEGMENT OF THE TRAIL AT DOCKWEILER STATE BEACH.	2005	2008	Project under bid/advertise phase. This project has experienced greater than anticipated increases in materials, security and ROW costs, and a lower than expected number of bidders. The project will require additional funding approvals from the agencies involved. The completion date is 2008.

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TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
LAC MTA	LA996288	SAN GABRIEL RVR. BIKE TRAIL REHAB PHASE I - FROM WHITTIER NARROWS DAM TO FLORENCE AVE.	2005	2006	Project contract awarded.
LONG BEACH	LA0C8163	BIKEWAY AND PEDESTRIAN IMPROVEMENTS. 1.2 MILE CLASS I BIKE/PED PATH FROM WALNUT AVE TO WILLOW ST AT THE BLUE LINE STATION. (PPNO# 3408)	2005	2006	Project under environmental document review and pre-design phase.
LONG BEACH	LA0C8331	LONG BEACH WAYFINDING/TRANSIT CONNECTION PROGRAM-MAJORITY OF SIGNS WILL BE PEDESTRIAN, AND WILL INCLUDE MAPPING THAT DISPLAYS DESTINATIONS AND TRANSIT OPTIONS.	2004	2006	Project under construction and implementation.
LONG BEACH PUBLIC TRANSPORTATION CO.	LA0C8383	LONG BEACH TRANSIT: BUS STOP IMPROVEMENT PROJ. ENHANCE 9 OF RAIL STATION FEEDER BUS STOPS TO EASE TRANSFERS, MAKE PUBLIC TRANSIT MORE AESTHETICALLY PLEASING & SAFER, INC RIDERSHIP.	2004	2010	All of the environmental document/pre-design phase is completed. Project in the construction/implementation phase. Unanticipated staffing shortages caused the delay. Construction is funded for 2007 - waiting for construction approval from MTA.
LONG BEACH PUBLIC TRANSPORTATION CO.	LA973029	BUS STOP AMENITIES	2004	2006	Project is now being implemented after a delay with Caltrans over specifications and project funding requirements. Project is in the process of executing agreement and will go to contract award end of 2006. Project is going to be implemented in phases and is now expected to be completed by 2007.
LOS ANGELES COUNTY	LA0C8316	TRANSPORTATION INFORMATION PROJECT (TIP) EQUIP COUNTY EMPLOYEES AT 41 SITES THROUGHOUT LA COUNTY WITH THE TOOLS NEEDED TO PROVIDE INDIVIDUALIZED TRANSIT ITINERARIES ETC.	2005	2007	First Vehicle Delivered. The reason for delay included technical and ITS compatibility issues with the existing employee databases and program participants. Anticipated completion date by July 2007

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
LOS ANGELES REDEVELOPMENT AGENCY	LA0C53	'HOLLYWOOD INTERMODAL TRANSPORTATION AND PUBLIC PARKING CENTER ON HAWTHORNE AVE. BETWEEN HIGHLAND AVENUE AND NORTH ORANGE DRIVE.	2004	2007	Project In Environmental Documents/Pre-design Phase. This is a TCRP Project that was defunded. MTA did not get TCRP funds, MTA is programming \$2.85 million of CITY funds for construction in FY 07/08.
MONTEBELLO	LA55201	CONTINUING PROJECT - BUS STOP IMPROVEMENTS ,AMENITIES ,SHELTERS ,ETC	2010	2010	Project In Construction/Implementation Phase.
PASADENA	LA0D47	SR 710 MITIGATION PROJECT- TRAFFIC CONTROL AND MONITORING SYSTEM-INTELLIGENT TRANSPORTATION SYSTEMS (ITS). CONSTRUCT AND INSTALL ITS TECHNOLOGY AND VARIOUS DEGREES OF SMART SIGNALS	2008	2008	Project In Engineering (PS&E) Phase.
PASADENA	LA0D99	PURCHASE 2 EXPANSION LOW-FLOOR, HANDICAPPED ACCESSIBLE, ALTERNATIVE FUEL TRANSIT BUSES.	2004	2006	Project delay due to required revisions and required additional council approval. Project was approved and purchase is now under way.
PASADENA	LA974129	PASADENA GOLD LINE COMMUNITY LINKAGES PEDESTRIAN IMPROVEMENTS TO TWO PLANNED METRO PASADENA GOLD LINE STATIONS WITHIN THE CITY (PPNO# 3422)	2003/2006	2006	Project In Engineering (PS&E) Phase. The project intersects a historic park, and Caltrans had requested significant additional environmental documentation.
SAN GABRIEL VALLEY COG	LA0C56	ACE/GATEWAY CITIES-CONSTRUCT GRADE SEPARATION AT VALLEY VIEW AVENUE IN SANTA FE SPRINGS (PART OF ALAMEDA CORRIDOR EAST PROJECT)	2004/2006	2008	Project In Contract Negotiation Phase. The project is part of the multi-phased, multi-year Alameda Transportation Corridor project from the ports of LA/LB to the San Bernardino County through Los Angeles. Project delay was a result of additional comments from Caltrans requiring the authority to collect additional data and provide un-anticipated analysis. The component of the project is expected to be completed in 2008.

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
SAN GABRIEL VALLEY COG	LA0C57	ACE/GATEWAY CITIES-CONSTRUCT GRADE SEPARATION AT PASSONS BLVD IN PICO RIVERA (AND MODIFY PROFILE OF SERAPIS AVENUE)(PART OF ALAMEDA CORRIDOR EAST PROJECT).	2006	2010	Project In Engineering (PS&E) Phase. The project is part of the multi-phased, multi-year Alameda Transportation Corridor project from the ports of LA/LB to the San Bernardino County through Los Angeles. Project has experienced additional comments from Caltrans requiring the authority to collect additional data and provide un-anticipated analysis. The component of the project is expected to be completed in 2008. <i>The completion date for this project is 2010; the project is funded in 06/07 through 09/10</i>
SAN GABRIEL VALLEY COG	LA990359	GRADE CROSSINGS/SAFETY IMPRVMT & GRADE SEP. ALONG 35-MILE FREIGHT RAIL CORRIDOR THRGH SAN GABRIEL VALLEY - EAST L.A. TO POMONA ALONG UPRR ALHAMBRA & L.A. SUBDIVISIONS - ITS 2318	2003/2009	2010	Project In Engineering (PS&E) Phase
SANTA CLARITA	LA0B7020	ADDITIONAL (150) PARKING AT NEWHALL METROLINK STATION- CONSTRUCT ADEQUATE PARKING AT NEWHALL METROLINK STATION, INCLDE PARK & RIDE, KISS & RIDE & DISABLED -ACCESS SPACES.PPNO 2901	2003/2005	2007	Project in Construction/Implementation Phase. There were unanticipated difficulties with tenant relocation and land procurement.
SANTA CLARITA	LA0B7335	SANTA CLARA RIVER REGIONAL TRAIL-DESIGNING OF 7 MILES OF CLASS I BIKE/PED PATH ALONG THE NORTH SIDE OF THE RIVER FROM I-5 ON THE WEST TO DISCOVERY PARK ON THE EAST	2005	2006	Project In Environmental Documents/Pre-design Phase. Project is going through the environmental process and has received comments from the involved agencies requiring further data collection and analysis. Project will be completed by December 2007.

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TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
SANTA CLARITA	LA0C8130	INCIDENT MANAGEMENT - TRAVELER INFORMATION SUBSYSTEM; INSTALLATION CONSISTS OF 4 STATIONARY ELECTRONIC CHANGEABLE MESSAGE SIGNS & A HIGHWAY ADVISORY RADIO SYSTEM.	2006	2007	Project In Engineering (PS&E) Phase. Preparing Scope of work and MOU amendment. Project is anticipated to begin in September 2006 and be completed by June 2007.
SANTA CLARITA	LA0C8156	SANTA CLARITA REGNL COMUTR TRAIL - I-5 TO FAIRWAYS DRIVE: CNSTRCTN & SOME ACQUISITION OF 1.0 MILES OF CLASS I BIKE PATH & A BRIDGE RESTORATION ADJACENT TO SANTA CLARA.(PPNO 3127).	2006	2007	<i>This project is finishing design phase. Construction scheduled to begin in spring 07.</i>
SANTA CLARITA	LA0C8371	SANTA CLARITA TRANSIT EXPANSION BUSES; WILL ALLOW PHASE 1 OF 5 YEAR MASTER PLAN TO BE IMPLEMENTED WITH SEVEN LOCAL BUSES AND FOUR COMMUTER BUSES.	2008	2008	First Vehicle Delivered
SANTA MONICA	LA030001	CALIFORNIA INCLINE SIDEHILL VIADUCT BR 53C0543 ADD, INCLUDED IN STATE IN STATE HBRR PROGRAM (0.3 MILE, 1-S, 1-N) SIDEWALK/BIKEWAY WIDENING & SEISMIC (53C0543)	2006	2008	Project is in Bid Contract Award Phase. Project delay resulted when the first round of bids were denied due to infeasible cost amounts. Subsequently, the project underwent rebidding, which delayed the Environmental Phase. The bid will be approved this year with expected completion end of 2008.
SANTA MONICA	LA57101	BUS FACILITY IMPROVEMENTS	2005	2008	Currently, it is in the Design Phase. This project is part of the Big Blue Bus improvement project, a multi-year, multi-phased project that involves improvements to several different bus facilities components, center facility improvements, and fleet upgrades to the city of Santa Monica. This is an ongoing project.

Los Angeles County

TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
SCRAA/LACMTA/SANBAG	LA29204	LA-SAN BERNARDINO CR (SF UNION STATION-SAN BERNARDINO) CAPACITY IMPROVEMENTS (3037) (JARC \$1982). DEMOT21 = 3037	2003/2005	2007	Project In Engineering (PS&E) Phase. Project was delayed due to administrative changes to implementation design
SIERRA MADRE	LA0C8372	EXPANSION OF SIERRA MADRE BUS ROUTE. PURCHASE OF 3 CNG VANS TO EXPAND SIERRA MADRE ROUNDABOUT SYSTEM.	2007	2007	First Vehicle Delivered
SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY	LA963758	METROLINK ROLLING STOCK-PHASE II (SCRRRA). PURCHASE ADD'L METROLINK ROLLING STOCK TO ALLOW SYST EXPANSION(4 LOCOMOTIVES AND UPTO 31 CARS (JOINTLY FUNDED LA, ORA,RIV,SBD) LA0C8231	2005/2008	2009	Project In Bid/Advertise Phase. The project was delayed due to FTA request for a change in procurement procedures (this project has been merged with LA0C8231, to consolidate all Metrolink rolling stock purchases, and will not be listed under this ID #).
WEST LAKE VILLAGE	LA960142	LINDERO CANYON ROAD FROM AGOURA RD TO JANLOR DR CONSTRUCT BIKE PATH, RESTRIPE STREET, INTERSECTION WIDENING, SIGNAL COORDINATION, RAMP WIDENING (TEA21-#65)	2003/2005	2008	Project In Engineering (PS&E) Phase. The project was delayed due to unexpected difficulties in permitting and certification with Caltrans and the LA County Flood Control District. These issues have since been resolved, and the project is now being implemented.
WHITTIER	LA0B7322	'WHITTIER GREENWAY TRAIL- ACQUISITION, DESIGN, AND CONSTRUCT OF 2 MILES CLASS I BIKE/PED PATH ON AN ABANDONED RAIL ROW FROM NORWALK TO FIVE POINTS.PPNO 2872	2004	2008	This is the first segment in a two-phased project. The reason for the delay included specific siting and ROW issues with CALTRANS delaying the start of the project. The specific requirements have been satisfied and the project is expected to be completed by mid 2008.

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TCMs Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁷ Completion Date	2006 RTIP Completion Date	Project Status
WHITTIER	LA0C8161	WHITTIER GREENWAY TRAIL: SEGMENT 1 DEVT& SEGMENT 3 P/E AND DEVT. DESIGN, CONSTRUCT & SOME ACQUISITION OF 2.86 MILES CLASS I BIKE/PED FACILITIES ON ABANDONED ROW IN WHITTIER (3440)	2008	2008	This is the second segment in a two-phased project. The reason for the delay included specific siting and ROW issues with CALTRANS delaying the start of the project. The specific requirements have been satisfied and the project is expected to be completed by mid 2008.

Los Angeles County

New TCMs Subject to Timely Implementation (not in the 2004 RTIP)

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
BALDWIN PARK	LA0D281	DESIGN AND CONSTRUCT PARKING IMPROVEMENTS AT AND ADJACENT TO THE CITY'S EXISTING METROLINK STATION	N/A	2006	Project is in the environmental document pre-design phase.
BURBANK	LA0D25	PROCUREMENT OF (3) ALTERNATIVE FUEL TRANSIT VEHICLES	N/A	2005	Project is in the vehicle delivery phase and is an overall expansion of the existing fleet.
CITY OF LOS ANGELES	LA002738	BIKEWAY/PEDESTRIAN BRIDGE OVER LA R RIVER AT TAYLOR YARD CLASS I (CFP 738, 2077)	N/A	2009	Project In Environmental Documents/Pre-design Phase.
CITY OF LOS ANGELES	LA0C8164	EXPOSITION BLVD RIGHT-OF-WAY BIKE PATH-WESTSIDE EXTENSION. DESIGN AND CONSTRUCTION OF 2.5 MILES OF CLASS 1 BIKEWAY, LIGHTING, LANDSCAPING & INTERSECTION IMPROVEMENTS. (PPNO# 3184)	N/A	2009	Project In Construction/Implementation Phase. <i>The FEIR was completed December 2005. Final design completed May 2006</i>
CITY OF LOS ANGELES	LA0C8171	GAYLEY AVE BIKE LANES & STREET WIDENING. DESIGN AND CONSTRUCTION OF .25 MILES OF CLASS II BIKE LANES ON GAYLEY AVE FROM EXISTING BIKE LANES AT LEVERING AVENUE TO THE UCLA CAMPUS	N/A	2010	Project under environmental document review and pre-design phase.
CLAREMONT	LA0D103	THE CITY AND THE REDEVELOPMENT AGENCY WILL EXPAND ON AN EXISTING PARKING FACILITY (500 PARKING SPACE) FOR ADDITIONAL USE BY TRANSIT PATRONS.	N/A	2006	Project is in construction implementation Phase. The project is expected to be completed in late 2006
COVINA	LA0D206	METROLINK PEDESTRIAN BRIDGE PROJECT. THIS FACILITY WILL BE CONSTRUCTED ON THE WEST SIDE OF CITRUS AVE. THE METROLINK STATION IS ON THE EAST SIDE OF CITRUS AVE.	N/A	2006	Project is in Environmental Pre-Design Phase. Project is expected to be completed in late 2006.

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New TCMs Subject to Timely Implementation (not in the 2004 RTIP)

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
LA CANADA-FLINTRIDGE	LA0C8159	LA CANADA FLINTRIDGE EAST/WEST BIKEWAY CORRIDOR. DESIGN AND CONSTRUCTION OF 3.42 MILES OF EAST/WEST DIRECTIONAL CLASS II BIKE LANES IN THE CITY OF LA CANADA FLINTRIDGE.	NA	2007	The project is in the pre-design process and has been scheduled to be completed in late 2007.
LA GARDENA	LA0D340	PURCHASE FIVE (5) 40 FT. ALTERNATIVE FUEL BUSES FOR SERVICE EXPANSION	N/A	2010	Project is in the PAED phase.
LA MIRADA	LA0D349	PURCHASE EXPANSION BUSES WITH ALTERNATE FUEL (HYBRID/ELECTRIC); FY 06=2	N/A	2008	Project is in the PAED phase.
PASADENA	LA0C8155	'8 SEGMENTS OF PASADENA BIKEWAY; INCLUDES IMPROVEMENTS TO SIGNALIZED INTERSECTIONS FOR BICYCLE DETECTION, SIGNAGE, RESTRIPING OF TRAFFIC LANES & STRIPING OF BIKE LANES.	NA	2005	This is a segmented project. The project is scheduled to be completed in late 2007.
SAN FERNANDO	LA0D284	PROCUREMENT OF TWO EXPANSION CNG TRANSIT VEHICLES AND RELATED INFRASTRUCTURE EQUIPMENT FOR FIXED ROUTE PUBLIC TRANSPORTATION WITHIN THE CITY OF SAN FERNANDO.	N/A	2005	Project is in the environmental document pre-design phase

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New TCMs Subject to Timely Implementation (not in the 2004 RTIP)

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
SAN FERNANDO	LA0D314	PROCURE 2 CNG EXPANSION TRANSIT VEHICLES WHICH WILL PROVIDE FIXED ROUTE PUBLIC TRANSPORTATION IN SAN FERNANDO.	N/A	2005	Project is in the PAED phase.
TORRANCE	LA0D379	AUTOMATIC VEHICLE LOCATOR (AVL) PROJECT-PHASE 2	N/A	2007	Project is in the PAED phase.

Los Angeles County

Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
AGOURA HILLS	LA990362	US 101 INTERJURISDICTIONAL BIKE LANE GAP CLOSURE PHASE III (TCSP)	2004	N/A	project completed
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA963731	ALAMEDA CORRIDOR - NORTH END RAIL ROAD/ARTERIAL GRADE SEPS. & RELATED IMPROVEMENTS EIS/EIR COMPLETE; 8100+1394 P.E. 10517+305 R/W; 29483+5300 CONS.	2004	N/A	Project completed.
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA963732	ALAMEDA CORRIDOR - MID CORRIDOR SEGMENT 10 MI TRENCH >20 ARTERIAL GRADE SEPS, ENVIRONMENTAL CLEARANCE	2003	N/A	Project completed.
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA963733	ALAMEDA CORRIDOR - SOUTH END 7 RAILROAD / ARTERIAL GRADE SEPS. + RELATED IMPROVEMENTS ENV. CLEARANCE #NAME?	2002	N/A	Project completed.
ANTELOPE VALLEY TRANSIT AUTHORITY	LA0B7008	3 EXPANSION 40 FT. LOW FLOOR CLEAN DIESEL BUSES; LOCAL FIXED-ROUTE BUSES; TO RELIEVE PEAK PERIOD OVERCROWDING ON CORE ROUTES	2003	N/A	Project completed.
BALDWIN PARK	LA0B7012	LOCAL NTD REPORTERS' BUS FLEET EXPANSION. 19 BUSES FOR 5 CITIES. BALDWIN PARK, COMPTON, EL MONTE, MONTEREY PARK & WEST COVINA (CNG, DIESEL & PROPANE FUEL 30-35 FT. VEH). PPNO 2898.	2005	N/A	Project completed.
CALTRANS	11985	NEAR HAWTHORNE AND CULVER CITY FROM ROUTE 105 TO ROUTE 90 - 6 LANE FREEWAY, ADD 2 HOV LANES AND SOUNDWALLS. (EA# 119851, PPNO# 0824B)	2005	NA	Project completed
CALTRANS	16881	IN LA MIRADA TO SANTA FE SPRINGS FROM ORANGE COUNTY LINE TO ROSECRANS AVENUE - INTERIM HOV LANES; I-5 Rail Grade Crossing between RTE. 605/91. (EA 16681 PPNO# 2008)	2005	Combined with LAOD73	Project In Environmental Documents/Pre-design Phase. (This project has been combined with LA0D73, and will not be listed under this ID # in subsequent Timely Implementation Reports.) Project canceled. Combined with LAOD73.
CALTRANS	9061D	ALAMEDA CORRIDOR IN LOS ANGELES COUNTY AT PACIFIC COAST HIGHWAY - GRADE SEPARATION	2004	N/A	Project completed

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
CALTRANS	LA000543	IN POMONA AND CLAREMONT FROM ROUTE 57 TO SAN BERNARDINO COUNTY LINE HOV LANE IN EACH DIRECTION (C-I: 77719; CFP 350; PPNO 00362) ALSO SOUNDWALL AND REHAB. (EA# 122401, PPNO# 0315P)	2005	N/A	Project completed
CALTRANS	LA092216	TOPANGA CANYON BLVD. BIKE LANE (96 CFP PROJ) CLASS II (RESTRIPE TO ADD LANE - 7 MILES)	2004	N/A	Project completed.
CALTRANS	LA0B7215	RTE 5 CORRIDOR WIDENING & RECONSTRUCT IC SEGMENT A - OCL TO RTE 710 WIDEN FROM 6 TO 10 LNS (1 HOV & ONE MF IN EA. DIR). VALLEY VIEW & CARMENITA IC; MODIFY FWY TO FWY IC @ RTE 605	2014	Combined with LA0D73	Project In Environmental Documents/Pre-design Phase. (This project has been combined into LA0D73, and will not be listed under this ID # in subsequent reports.)
CALTRANS	LA962201	NEAR SANTA CLARITA, FROM RT 5 TO 126/S.F. RD HOV PROJECT (EA# 119843, PPNO# 0380G)	2003	N/A	Project completed.
CALTRANS	LA963724	IN LA VERNE AND CLAREMONT, FROM FOOTHILL BOULEVARD TO SAN BERNARDINO COUNTY LINE - CONSTRUCT 8-LANE FREEWAY INCLUDING 2-HOV LANES (12620, 12640, 12630, 10501, 17210)	2003	N/A	Project completed.
CALTRANS	R615TA	METROLINK - RIV/LA VIA FULLERTON AT COMMERCE METROLINK STATION - PLATFORM CONSTRUCTION. TCI 96-97 (06/7-8/99). CTC FINANCIAL VOTE LIST (06/7-8/99)	2002	N/A	Project completed

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
CITIES & COUNTY	LA0B860	KOREAN HEALTH EDUCATION INFORMATION AND RESEARCH CENTER. EXPANSION VEHICLES - THREE 10 PASSENGER SMALL BUSES	2005	N/A	Project completed.
CITIES & COUNTY	LA0B863	VILLA ESPERANZA. EXPANSION VEHICLE - ONE 17 PASSENGER MEDIUM BUS	2004	N/A	Project completed.
CITIES & COUNTY	LA0C23	HEALTHVIEW - EXPANSION VEHICLE - (1) 17-PASSENGER MEDIUM BUS	2004	N/A	Project completed.
CITIES & COUNTY	LA0C25	KOREAN HEALTH EDUCATION INFORMATION (KHEIR) - EXPANSION VEHICLES - (3) 10-PASSENGER SMALL BUSES	2005	N/A	Project completed.
CITIES & COUNTY	LA0C30	ULTRALIFE ADULT DAY HEALTH CARE- EXPANSION VEHICLE - (1) 10-PASSENGER SMALL BUS.	2003	N/A	Project completed.
CITIES & COUNTY	LA0C31	ULTRALIFE ADULT DAY HEALTH CARE - EXPANSION VEHICLES - (2) 5-PASSENGER MINIVANS	2003	N/A	Project completed.
CITIES & COUNTY	LA990744	KOREAN HEALTH, EDUCATION, INFO & RESEARCH CENTER (KHEIR)- EXPANSION THREE (3) 17-PASSENGER SMALL BUSES.	2003	N/A	Project completed.
CITY OF LOS ANGELES	LA0962071	L.A. RIVER BIKE PATH OVER LOS FELIZ BLVD. CLASS I AND CLASS II [CALL # 2071, MOU P.0002-071 ON 6/30/99]	2003	N/A	Project completed.
CITY OF LOS ANGELES	LA0962129	METROLINK ROW MITIGATION PEDESTRIAN & CROSSING IMPROVEMENTS	2002	N/A	Project completed.
CITY OF LOS ANGELES	LA0B7024	METRO RED LINE MELROSE SHUTTLE- ACQUISITION OF 2 LOW FLOOR, PROPANE-POWERED, 30-FOOT BUSES WILL BE USED IN THE OPERATION OF A NEW HIGH FREQUENCY SHUTTLE	2002	N/A	Project completed.

Los Angeles County

Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
CITY OF LOS ANGELES	LA0B7026	METRO RED LINE/WEST HOLLYWOOD/BEVERLY CENTER/CEDER SINAI SHUTTLE- ACQUIRE 7 NEW 30-FOOT, PROPANE-FUELED, DASH STYLE BUSES FOR THE OPERATION OF A HIGH FREQUENCY SHUTTLE	2002	N/A	Project completed.
CITY OF LOS ANGELES	LA0B7034	SUN VALLEY INTERMODAL TRANSIT CENTER; PEDESTRIAN CROSSING/BUS STOP IMPROVEMENT-PROVIDE PED. CROSSINGS AT EACH END OF THE PLATFORM OF SOON TO BE BUILT SUN VALLEY METROLINK STATION	2003	N/A	Project completed.
CITY OF LOS ANGELES	LA0B7278	NORTHEAST COMMUNITY LINKAGES PHASE II-HIGHLIGHT PEDESTRIAN CONNCTNS W/RAIL & BUS LINES ALONG MARMION WAY AND AT PASADENA AVE, FIGUEROA ST, FRENCH AVE, AND AVE 45, 50, 60, 61.	2002	N/A	Project completed
CITY OF LOS ANGELES	LA0C8321	LA CULTURAL TOURISM WEB PAGE DEVELOP & TRANSIT PROMOTION. ENCOURAGES THE USE OF MASS TRANSIT AT TARGETED TRIP GENERATION NODES AND FACILITATE MASS TRANSIT USE TO REG. DESTINATIONS.	2005	N/A	Ongoing Project
CITY OF LOS ANGELES	LA0C8329	BICYCLE RACKS ON COMMUTER EXPRESS BUSES. ADDITION OF FRONT-LOADING BICYCLE RACKS TO A TOTAL OF 93 COMMUTER EXPRESS BUSES AND SPARES THAT SERVE THE CITY AND COUNTY OF LA.	2004	N/A	Project completed.
CITY OF LOS ANGELES	LA0C8385	EL SERENO DASH PROCUREMENT. PURCHASE (2) LOW-FLOOR, PROPANE POWERED, 30' FOOT BUSES FOR THE EL SERENO DASH SERVICE.	2008	N/A	Project completed.
CITY OF LOS ANGELES	LA962245	WESTLAKE COMMUNITY BASED INTERCEPT INTERMODAL FACILITY	2002	N/A	Project completed.

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
CITY OF LOS ANGELES	LA996000	DASH PICO UNION/ ECHO PRK VEH ACQ PURCHASE ONE BUS TO RELIEVE OVERCROWDING	2003	N/A	Project completed
CITY OF LOS ANGELES	LA996001	DASH EL SERENO/CTY TERR VEH ACQ PURCHASE 2 BUSES TO REDUCE OVERCROWDING	2003	N/A	Project completed
CITY OF LOS ANGELES	LA996002	DASH WILMINGTON VEH ACQUISITION PURCHASE 2 BUSES TO RELIEVE OVERCROWDING	2002	N/A	Project completed
CITY OF LOS ANGELES	LA996003	DASH WATTS VEH ACQUISITION PURCH 2 VEH'S TO REDUCE EXISTING OVERCROWDING	2003	N/A	Project completed
CITY OF LOS ANGELES	LA996004	DASH KING-EAST VEH ACQUISITION FINANCE THE ACQ OF 5 BUSES TO REDUCE OVERCROWDING	2006	N/A	Project completed
CITY OF LOS ANGELES	LA996005	DASH HOLLYWOOD VEH ACQUISITION ACQUIRE TWO BUSES TO REDUCE EXISTING OVERCROWDING	2003	N/A	Project completed
CITY OF LOS ANGELES	LA996006	DASH VERMNT-MAIN VEH ACQUISITION PURCH 5 BUSES TO RELIEVE EXISTING OVERCROWDING	2006	N/A	Project completed

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Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
CITY OF LOS ANGELES	LA996007	DASH MANCHSTR-FLORNC VEH ACQ PURCH 5 BUSES TO RELIEVE EXISTING OVERCROWDING	2006	N/A	Project completed
CITY OF LOS ANGELES	LA996010	COMM EXPRESS 448 VEH ACQUISITION PURCH 3 BUSES TO REDUCE EXISTING OVERCROWDING	2003	N/A	Project completed
CITY OF LOS ANGELES	LA996011	ROWAN SHUTTLE VEH ACQUISITION PURCH 2 BUSES TO REDUCE EXISTING OVERCROWDED CONDITIONS	2003	N/A	Project completed
CITY OF LOS ANGELES	LA996099	METROLINK SHUTTLE (CHATSWORTH)	2003	N/A	Project completed
CITY OF LOS ANGELES	R627TA	METRO RAIL RED LINE AT WESTLAKE COMMUNITY INTERMODAL INTERCEPT FACILITY - DESIGN 1,100 SPACE PARKING STRUCTURE CROSSSTREETS ARE ALVARADO/MACARTHUR. TCI 97-98 (10/29/97).	2002	N/A	Project completed
COMMERCE	927108	ALAMEDA CORRIDOR IN COMMERCE AT ATLANTIC BOULEVARD AND TELEGRAPH ROAD - INTERSECTION IMPROVEMENTS	2002	N/A	Project completed.
COMMERCE	LA963759	TELEGRAPH ROAD TRACK CAPACITY ENHANCEMENT 97-98 TCI	2002	N/A	Project completed
COMPTON	R5046C	ALAMEDA CORRIDOR IN LOS ANGELES COUNTY AT PACIFIC COAST HIGHWAY, SEPULVEDA BOULEVARD, DEL AMO BLVD, & ALAMEDA ST AT LAUREL PARK ROAD - GRADE SEPARATION	2002	N/A	Project completed

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
COVINA	LA0C8216	MITIGATE PARKING DEFICIENCY: COVINA METROLINK STATION-PROJ PROPOSES TO CONSTR. 330 NEW PARKING SPACES IN A STRUCT. ON EXISTING STA. PARKING LOT. (PPNO 3224 3345 AB3090REP	2006	N/A	Project completed
DOWNEY	LA982251	DEVELOP DOWNEY TRANSPORT/TRANSIT CTR AND TRANSIT YARD- BUS SYSTEMS, METROLINK, AND LIGHT RAIL ACCESS IMPROVEMENTS- LA TO ORANGE CO INTERMODAL FACILITY- 68,000 SQ/FT - NANCE/LORENA	2004	N/A	Project completed
EL MONTE	LA0B7296	CROSSWALK IMPROVEMENT PROJECT.LOCATED AT RAMONA BL/VALLEY BL, PECK RD/VALLEY BL, PECK RD/LOWER AZUSA RD, PECK RD/RAMONA BL, RAMONA BL/SANTA ANITA	2004	N/A	Project completed
EL MONTE	LA0C8323	SAN GABRIEL VALLEY METRO HUB-IMPLEMENT NEW TRANSPORTATION STRATEGIES, INCLUDING AN ELECTRIC BIKE/SHUTTLE SERVICE/PARKING CONTROL PROGRAM.	2003	N/A	Project completed
GLENDALE	LA0C8220	PURCHASE OF (8) 35-FOOT LOW FLOOR CNG HEAVY-DUTY TRANSIT VEHICLES.	2005	N/A	All vehicles and equipment delivered.
GLENDALE	LA963751	METROLINK - SANTA CLARITA LINE GLENDALE TRANSPORTATION CENTER - UPGRADE STATION 96-97 TCI	2006	N/A	Project completed.

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
GLENDALE	LA996065	CNG HVY DUTY TRANSIT VEHICLES PURCH 6 BUSES TO REMEDY EXISTING OVERCROWDING	2004	N/A	Project completed.
INGLEWOOD	LA990701	PASSENGER TRANSFER FACILITY: OFF STREET, NE CRNR OF LA BREA & KELSO. WILL NOT ADD NEW SVC. PROVIDES SAFE OFF STREET TRANSFER FOR PASSENGERS.INGLEWOOD BUS. TRANSIT CENTER PHASE 2.	2005	N/A	Project completed
LAC MTA	7050	METRO RAIL BLUE LINE-LONG BEACH/LA WILMINGTON AVENUE AT IMPERIAL HIGHWAY - OVERCROSSING	2002	N/A	Project completed.
LAC MTA	LA000487	PARK AND RIDE LOT (850 SPACES) LANKERSHIM AND CHANDLER - METRO RED LINE	2002	N/A	Project completed.
LAC MTA	LA000489	PARK AND RIDE LOT (700 SPACES) UNIVERSAL CITY - METRO RED LINE	2003	N/A	Project completed.
LAC MTA	LA0B304	PLAYA VISTA EARNMARK, PURCHASE NEW (5) LOW-EMISSION BUSES, TRACKING EQUIP & BUS AMENITIES INCLUDING PASSENGER SHELTERES, INFO KIOSKS & APPURTENANT EQUIP - TRANSIT SERVICE UPGRADE.	2005	N/A	Project completed
LAC MTA	LA0B7288	GRAND AVE. REALIGNMENT AND PEDESTRIAN ENHANCEMENTS-GRAND AVENUE BETWEEN TEMPLE AND SECOND STREET; CONSTRUCTION OF A TWO BLOCK REALIGNMENT OF GRAND AVENUE IN DOWNTOWN L.A	2003	N/A	project completed

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
LAC MTA	LA0B7337	'CHANDLER BLVD ROW BIKE PATH: 170 FWY TO LA VALLEY COLLEGE-DESIGN OF 2.3 MILES OF BIKEWAY AND OPTIONAL PEDESTRIAN WALKWAY FROM 170 FWY TO LOS ANGELES VALLEY COLLEGE	2005	N/A	Project completed
LAC MTA	LA0C8118	TDM PROGRAM ENHANCEMENT	2004	N/A	Project completed.
LAC MTA	LA0C8179	GRAND AVE REALIGN & PED ENHANCE.- TEMPLE ST TO 300 S/O 2ND ST. STREETScape ENHANCE TO IMPROVE PED. CONNECT. BTWEN CULTURAL & GOV'T FACILITY. PPNO 3332 AB3090REP.	2005	N/A	Construction of project has been completed. MTA is currently waiting for the as-built plans to be completed before final acceptance of the project. Anticipated project acceptance date is May 31, 2006.
LAC MTA	LA210465	SO. CENTRAL LOS ANGELES EXPOSITION PARK INTERMODAL URBAN ACCESS PRJ (STATE OF CAL. DEPT. OF GEN. SERV.) RENEW /RENOVATION PARKING FACILITY IMPROVE PARK/TRAFFIC ACCESS PROGRAM	2003	N/A	Project completed.
LAC MTA	LA29202U2	SAN FERNANDO VALLEY NORTH/SOUTH BRT EXTENSION (PE ONLY)	2010	N/A	Project canceled/completed. Divided into four projects LA29202U3, LA29202U4, LA29202U5, AND LA29202U6 (AMENDMENT 6) was listed as key TCM in 2004 RTIP.
LAC MTA	LA29212X	METRO RAIL GOLD LINE - PASADENA EXT UNION STA TO SIERRA MADRE VILLASTA 13.5 MILES, 12 STATIONS; AND 2.9 M TCSP FUNDS FOR EXTENSION TO CLAREMONT PE WORK	2003	N/A	Project completed.
LAC MTA	LA963755	CHINATOWN INTERMODAL IMPROVEMENT TO DEVELOP A CONNECTION FROM BLUE LINE - PASADENA (CHINATOWN STATION TO BROADWAY STREET) TCI 97-98 (06/14-15/00), TCI 97-98 (03/28-29/01)	2002	N/A	Project completed.

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
LAC MTA	LA974235	SIGNAL SYSTEM TECHNICIAN TRAINING PROGRAM CURRICULUM DEVELOPMENT PROGRAM AT COMMUNITY COLLEGE	2002	N/A	Project completed
LAC MTA	LA990306	RAPID BUS PROGRAM - 4 - FORTY FT BUSES. ALSO FACILITY: BUS STOP DESIGN AND CONSTRUCTION, TECHNOLOGY UPGRADING, OPERATING SUPPORT.	2007	N/A	Project completed.
LAC MTA	LA991305	RIDESHARE 2000/CLUB METRO- EXTEND AND EXPAND IMPLEMENT. INCENTIVE PRGM. TO ENCOURAGE USE OF ALT. MODES OF TRAVEL OTHER THAN DRIVING ALONE.	2005	N/A	Project In Construction/Implementation Phase. This project has been combined with LA0C8114 & 92733, and will not be listed under this ID # in subsequent reports.
LAC MTA	R616TA	METROLINK - SANTA CLARITA LINE AT VINCENT HILL/ACTON GRADE METROLINK ST. INSTL TRFIC SGNALS, CANOPY,PVING,LIHTNG.TCI 96-97 (10/29/97),TCI 97-98 (09/21-22/98),TCI 97-98 (07/08/97).	2002	N/A	Project completed
LONG BEACH PUBLIC TRANSPORTATION CO.	LA0C8320	SOUTHEAST REGIONAL TRANSIT INFORMATION NETWORK-WILL MAKE USERS IDENTIFY THE TRANSIT OPTION THAT BEST MEETS THEIR INDIVIDUAL NEEDS BY SERVING AS A ONE STOP SOURCE.	2005	N/A	Project completed.
LONG BEACH PUBLIC TRANSPORTATION COMPANY	LA01B110	BIKE RACKS ON BUSES	2003	N/A	Project completed.
LOS ANGELES COUNTY	LA0B7004	VEHICLE ACQUISITION FOR EAST LOS ANGELES FIXED ROUTE SHUTTLE SERVICE PHASE II-PURCHASE OF 3 VEHICLES WILL INCREASE FREQUENCY OF THE EXISTING 3 SHUTTLES SERVICE ROUTES	2004	N/A	Project Complete

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
MANHATTAN BEACH	LAOB418	IN MANHATTAN BEACH - MARINE AVENUE BETWEEN SEPULVEDA BLVD (STATE ROUTE 1) AND VALLEY/ARDOMOR PEDESTRIAN AND AESTHETIC IMPROVEMENTS. (EA# 220201, PPNO #2841). STATE TEA.	2003	N/A	Project completed
MONTEBELLO	LA000504	PURCHASE AND INSTALLATION OF ON BOARD BIKE RACKS	2004	N/A	Project completed.
MONTEBELLO	LA55012	REPLACE BUSES- 2000 (5) 40' BUSES AND (10) 40' EXPANSION BUSES	2003	N/A	Project completed.
NORWALK	LA0C71	PURCHASE OF (4) FOUR ALTERNATIVELY FUELED EXPANSION BUSES	2004	N/A	Project completed.
NORWALK	LA0D01	NORWALK ON BEHALF OF SANTA FE SPRINGS - ALTERNATIVE FUEL VEHICLES AND TRANSIT RELATED FACILITIES.	2004	N/A	project completed
NORWALK	LA0D02	PURCHASE (2) EXPANSION PARATRANSIT VEHICLES	2003	N/A	Project completed.
NORWALK	LA0D04	NORWALK/SANTA FE SPRINGS TRANSPORTATION CENTER EXPANSION - PARKING & RELATED IMPROVEMENTS	2004	2008	project completed

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
PALOS VERDES ESTATES	LA0C8226	PV TRANSIT CAPITAL IMPROVEMENT PROGRAM II. PURCHASE 3 EXPANSION CLEAN-FUEL VEHICLES.	2005	N/A	First Vehicle Delivered. Project Complete.
PASADENA	LA0B215	PURCHASE OF (5) 30-FOOT ALTERNATIVE FUEL EXTENSION VEHICLES (GTIP)	2004	N/A	Project completed.
REDONDO BEACH	LA0C8072	'PCH TRAFFIC AND INTERSECTION IMPROVEMENT, FROM HERONDO ST TO CATALINA AVE. (PPNO 3126)	2005	2006	Widening/capacity enhancing project; does not meet the definition of a TCM in the SCAB. Not a TCM
SAN GABRIEL VALLEY COG	LA974367	ALAMEDA CORRIDOR EAST - GATEWAY TO AMERICA; RAIL ROAD OVERCROSS SAFETY REALIGNMENT ALONG SO. PACIFIC & UNION PACIFIC RR (SGVCOG)	2006	N/A	Project completed
SAN GABRIEL VALLEY COG	LA990354	ALAMEDA CORRIDOR EAST (SGCG) (T21-1017) RAILROAD CROSSING IMPROVEMENT	2006	N/A	Project completed
SANTA CLARITA	LA0C09	'TRANSIT CENTER PASSENGER AMENITIES	2003	N/A	Project completed.
SANTA CLARITA	LA973024	IMPROVE PEDESTRIAN ACCESS TO TRANSIT STOPS, INSTALLING CROSSWALKS, SIDE- WALKS, AND PEDESTRIAN-ACTUATED TRAFFIC SIGNALS.@ 17 TRANSIT STOPS VARIOUS LOCATIONS, PROJECT EXEMPT	2003	N/A	Project completed

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
SANTA MONICA	LA0B7267	CROSSWALK ENHANCEMENTS ALONG TRANSIT CORRIDOR-ENHANCEMENTS DESIGNED TO IMPROVE PEDESTRIAN ACCESS TO EXISTING AND PLANNED TRANSIT FACILITIES ALONG SANTA	2004	N/A	Project completed.
SANTA MONICA	LA960192	THROUGHOUT THE CITY OF SANTA MONICA VARIOUS BIKE RACKS AND LOCKERS	2002	N/A	Project completed.
SCAG	LA996082	WEB ACCESS VANPOOL INFO SYS DEV & IMPLMENT DATABSE FOR VANPOOLS, VACANCIES	2002	N/A	Ongoing Project
SCAG	LA996083	COMMUTER CHANNEL NON-MONETARY SUBSCRIPTION SRVCE	2002	N/A	Ongoing Project
SCRAA/LACMTA/SANBAG	LA0B7107	CHATSWORTH INTERMODAL PARK AND RIDE-INCLUDE DESIGN AND CONS. OF ADDITIONAL 150 SPACES- CONSTRUCTION WILL INCL GRADING, ASPHALT PAVING, INSTALLATION OF CONCRETE BUMPERS ETC (PE ONLY)	2004	N/A	Project completed.
LAC MTA	LA29202U1	SAN FERNANDO VALLEY EAST/WEST BRT (FROM THE TERMINUS OF METRO RED LINE RAIL IN NO HOLLYWOOD TO WARNER CTR)14-MILE EXCLUSIVE BUS LANES AT FORMER RAIL RD ROW (PPNO 3333 AB3090REP)	2005	2010	Contract/Project Complete.
LAC MTA	LA990353	ALAMEDA CORRIDOR EAST - NOGALES ST GRADE SEP (T21-491, SGVCG)	2006	2008	Project completed.

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
LAC MTA	LA29202X	METRO RED LINE MOS-3: N. HOLLYWOOD 5.9-MILE W/ 3 STATIONS, HIGHLAND TO N.HOLLYWOOD STA. 15,370+ 746= 16,117 118,630+5,754=124,384	N/A	2005	Project completed
NORWALK	LA0B0841	PURCHASE TWO (2) 40-FT GILLIG + SHORTFALL	N/A	2005	Project completed
CALTRANS	LA0D174	ROUTE 138 WIDENING FROM 2 LANES TO 4 LANES-WIDENING AT TWIN BRIDGES (SEG.11B) EA# 127261, PPNO 3330			NOT A TCM – widening project; does not meet the definition of a TCM in the SCAB
CALTRANS	LA0D76	IN DOWNTOWN LA-ON ROUTE 110-TEMPLE STREET. ACCESS IMPROVEMENTS.	2005	2008	Widening/capacity enhancing project; does not meet the definition of a TCM in the SCAB. NOT A TCM -
CITY OF LOS ANGELES	LA0C8303	ANGELS FLIGHT RAILWAY PLAZA. ENHNCMENT OF SYSTM & DEVT OF LOWER PLAZA INCL KIOSKS, INCLDS INSTALLING, WAITING & SEATING AREAS, LIGHTING, CNNCTIONS BET HILL ST & ADJCENT RED LINE ST	2005	N/A	Recreational project; not for use as a mode of transportation. NOT A TCM
CITY OF LOS ANGELES	LA996241	CHANDLER BIKEWAY EXTENSION-DESIGN & CONSTRUCT .5 MILE EXT, CYCLIST SHOWER AND LOCKER FACILITY AT HISTORIC TRAIN STATION ACROSS FROM CHANDLER BLVD. FROM THE METRO RED LINE STATION.	2004	2006	Recreational project; not for use as a mode of transportation. NOT A TCM
CITY OF LOS ANGELES	LA996290	SEPULVEDA BLVD. FROM CENTINELA AVE. TO LINCOLN BLVD - WIDEN SEPUL BLVD. BET. LINCOLN AND CENTINELA	2005	2006	-widening/capacity enhancing project; does not meet the definition of a TCM in the SCAB NOT A TCM
LAC MTA	LA996390	SEPULVEDA BLVD. FROM CENTINELA AVE. TO LINCOLN BLVD - WIDEN SEPUL BLVD. BET. LINCOLN AND CENTINELA	2005	2007	Widening/capacity enhancing project; does not meet the definition of a TCM in the SCAB. NOT A TCM
MONROVIA	LA0C8250	MONROVIA RAILROAD DEPOT MULTI-MODAL TRANSIT CENTER: STABILIZING STRUCTURE AND THEN OVERALL STRUCTURAL ELEMENTS WILL BE REPAIRED FOLLOWED BY RESTORING KEY ARCHITECTURAL. PPNO# 3415	2005	2007	Safety/maintenance project. Does not meet the definition of a TCM in the SCAB. NOT A TCM
MONTEBELLO	LA0D28	PURCHASE OF 2 EXPANSION BUSES AND 3 REPLACEMENT BUSES, ALL HYBRID (GASOLINE-ELECTRIC) LOW FLOOR 40' COACH.	2005	2007	Replacement bus purchase is not a TCM. NOT A TCM

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
MONTEBELLO	LA0D287	PURCHASE OF 29 REPLACEMENT BUSES. GASOLINE-ELECTRIC HYBRID LOW FLOOR 40' COACH. PURCHASE OF 6 EXPANSION BUSES. GASOLINE-ELECTRIC HYBRID LOW FLOOR 40' COACH			Replacement bus purchase is not a TCM. NOT A TCM
MONTEREY PARK	LA0D190	NORTH ATLANTIC BLVD WIDEN AND CHANNELIZATION BETWEEN NEWMARK AVE. HILLMAN AVE WIDEN TO SIX LANES OF OPERATION TO INCLUDE ACCELERATION & DECELERATION LANE OPRTN MDIFCTION.	2006	2008	Widening/capacity enhancing project; does not meet the definition of a TCM in the SCAB. NOT A TCM
PALMDALE	LA0C8326	PALMDALE TRANSPORTATION CENTER COMMUTER SERVICE CENTER-A REGIONAL MULTI-MODAL TRANSIT FACILITY IS CURRENTLY IN DESIGN.			Not in SCAB
PALMDALE	LA0C8361	PALMDALE TRANSIT AMENITIES PROGRAM. PROVIDE BUS SHELTERS ALONG VARIOUS REGIONAL AND LOCAL STOPS WITHIN THE CITY OF PALMDALE.			Not in SCAB
PASADENA	LA0D46	SR 710 MITIGATION PROJ-LAKE AVE/WALNUT ST & HILL AVE/WALNUT ST INTERSECTION MOBILITY IMPRVMENTS. PROJ INCLUDES WIDENING OF THE EAST SIDE OF LAKE AVE. FROM WALNUT FOR TURN LANES.	2005	2006	Widening/capacity enhancing project; does not meet the definition of a TCM in the SCAB. NOT A TCM
PASADENA	LA0D48	SR 710 MITIGATION PROJECT-110 FWY TO 210 FWY CONNECTOR.MARENGO INTERCHANGE EMPHASIS. THIS PROJECT INCLUDES THE INSTALLATION OF DIRECTIONAL SIGNS, CHANGEABLE MESSAGE SIGNS	2006	N/A	Widening/capacity enhancing project; does not meet the definition of a TCM in the SCAB. NOT A TCM
SCRAA/LACMTA/SANBAG	LA0B7009	ANTELOPE VALLEY LINE IMPROVEMENTS- INCREASE CAPACITY AND REDUCE TRAVEL TIME ON THIS COMMUTER RAIL AND FREIGHT SERVICE LINE BETWEEN LANCASTER AND LOS ANGELES	2005	N/A	NOT IN SCAB

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Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
CALTRANS	20090	NEAR SOUTH PASADENA FROM ROUTE 10 TO ROUTE 210 - PARTIAL RIGHT OF WAY FOR NEW 6 LANE FREEWAY WITH 2 HOV LANES (EA# 020090, PPNO 0219M)	2006	2008	PROPERTY MANAGEMENT - NOT A TCM

Orange County

Projects Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁸ Completion Date	2006 RTIP Completion Date	Project Status
CALTRANS	10167	I-5 FROM SR-91 TO LA COUNTY LINE IN BUENA PARK - ADD 1 MIXED FLOW LN AND 1 HOV LN IN EACH DIRECTION. FROM 6 - 0 TO 8 - 2 LANES.	2008	2008	In contract award phase
TCA	10254	SJHC, 15 MI TOLL RD BETWEEN I-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, EXISTING 3/M/F EA.DIR.1 ADD'L M/F EA DIR, PLUS CLIMBING & AUX LNS AS REQ, BY 2015 PER SCAG/TCA MOU 4/5/01	2015/2008	2008	ongoing implementation of AVO monitoring requirements of SCAG/TCA MOU
ANAHEIM	ORA000100	GENE AUTRY WAY WEST@ I-5 (I-5 HOV TRANSITWAY TO HASTER) ADD OVERCROSSING ON I-5 (S)/MANCHESTER AND EXTEND GENE AUTRY WAY WEST FROM I-5 TO HARBOR.	2004	2009	There were difficulties in completing the environmental document. The project is now cleared and in the final design early ROW stage.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA000104	TRANSITWAY IMPROVEMENTS AT IRVINE TRANSPORTATION CENTER; BUILD 900 SPACE PARKING STRUCTURE, INCLUDING ENVIRONMENTAL, DESIGN AND CONSTRUCTION.	2004/2005	2007	Delay due to funding and availability of a viable site. The site has been identified and construction will start 2007.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA000193	SR-22/I-405 AND I-405/I-605 INTERCHANGES. DESIGN HOV TO HOV LANE CONNECTORS	2010	2015	<i>Not a TCM for timely implementation. This project should not have been listed as a TCM in 2004; it was not a committed TCM at that time. It became a committed TCM in 2006 (funds for CON in 05/06). Prior years included funding only for design. This project will be reported on as a TCM in the next Timely Implementation report.</i>
CALTRANS	ORA000195	ON SR-22 (I-405 TO SR55) ADD 2 HOV LANES/1 EA DIR (FRM 0 - 2); & 2 AUX LANES/1 EA DIR (FRM 0- 2) (I-5 TO BEACH) & OPERATING IMPROVMENTS	2007	2007	construction underway

⁸ The dates reflected are the 2004 RTP and RTIP completion dates. If the completion date was identical in both documents only one date is listed.

Orange County

Projects Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁸ Completion Date	2006 RTIP Completion Date	Project Status
FULLERTON	ORA020113	FULLERTON TRAIN STATION - PARKING STRUCTURE, PHASE I AND II. TOTAL OF 670 SPACES.	2004	2008	Project is in environmental phase. Due to the unavailability of previously identified sites, the city is now in the process of procuring a different site. **STIP funds have been programmed to this project as part of the adopted 2006 STIP approved 4/27/06**
ORANGE COUNTY TRANSIT DISTRICT (OCTD)	ORA020119	PURCHASE PARATRANSIT VEHICLES EXPAN (142) - (66) IN FY04/05, (21) IN FY05/06, (14) IN FY06/07, (13) IN FY07/08, (14) IN FY08/09, (14) IN FY09/10	2007/2010	2010	ongoing
VARIOUS AGENCIES	ORA030302	(9) EXPANSION MEDIUM BUSES (TYPE II) AND (11) MOBILE RADIOS - ORANGE COUNTY ARC - PROVIDE SERVICES TO SENIORS AND DISABLED PERSONS.	2004	2006	contract award
TCA	ORA050	ETC (RTE 241/261/133) TOLL RD (RTE 91 TO I-5/JAMBOREE) EXISTING 2 M/F EA, DIR, 2 ADD'L M/F IN EA. DIR, PLUS CLIMB AND AUX LNS AS REQ, BY 2015 PER SCAG/TCA MOU 4/05/01.	2015/2010	2010	ongoing implementation of AVO monitoring requirements of SCAG/TCA MOU
TCA	ORA051	(FTC-N) TOLL RD (OSO PKWY TO ETC) (13MI) EXISTING 2 MF IN EA. DIR; 3 MF EA. DIR BY 2010; 4 MF EA. DIR BY 2015, PLS CLMBNG & AUX LANS PER SCAG/TCA MOU 4/05/01.	2015/2010	2010	ongoing implementation of AVO monitoring requirements of SCAG/TCA MOU
TCA	ORA052	(FTC-S) TOLL RD (I-5 TO OSO PKWY) (15MI) 2 MF EA. DIR BY 2006; AND 2 ADDITIONAL M/F EA. DIR. PLS CLMBNG & AUX LANES AS REQ BY 2015 PER SCAG/TCA MOU 4/05/01.	2015/2010	2010	proceeding toward construction; selection of a preferred alternative 2/23/06; ROD pending 6/06
ORANGE COUNTY TRANSIT DISTRICT (OCTD)	ORA55241	PURCHASE (79) STANDARD 40 FT EXPAN ALT FUEL BUSES - (28) IN FY04/05, (21) IN FY05/06, (14) IN FY06/07, (9) IN FY08/09, (7) IN FY09/10	2007/2010	2010	ongoing

Orange County

Projects Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁸ Completion Date	2006 RTIP Completion Date	Project Status
BUENA PARK	ORA55286	COMMUTER RAIL STATION (DALE STREET AND MALVERN) IN BUENA PARK. CONSTRUCT NEW RAIL STATION. 308 PARKING SPACES.	2006	2006	construction underway
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA65002	RIDESHARE SERVICES RIDEGUIDE, DATABASE, CUSTOMER INFO, AND MARKETING. (ORANGE COUNTY PORTION).	N/A	N/A	ongoing
GARDEN GROVE	ORA981104	RECONSTRUCT HARBOR BLVD INTERCHANGE. 4 LANES EACH DIRECTION. (1/4 MILE BEFORE AND AFTER SR-22 RAMPS) 2 HOV LNES(1 E/B & 1 W/B) AND PROPOSED SR-22 HOV LANES.	2007/2004	2007	Construction underway. Project being completed as part of the overall SR-22 widening project. This project is on the same schedule as that project.
ORANGE, CITY OF	ORA990443	SR-22 AND CITY DRIVE INTERCHANGE IMPROVEMENTS. RECONFIGURE FREEWAY INTERCHANGE AT SR-22 FROM SR-57 TO LEWIS STREET -- FROM 6/0 TO 6/2 LANES (ADDING 2 HOV LANES)	2007/2004	2007	Construction underway. Project being completed as part of the overall SR-22 widening project. This project is on the same schedule as that project.
ORANGE, CITY OF	ORA990452	TUSTIN BRANCH RAIL TRAIL (SANTA ANA RIVER TO FAIRHAVEN ST) CONVERT RAILS TO BIKE TRAIL THROUGH VILLA PARK AND ORANGE. CONNECTS 9 MILE TRAIL.	2003/2005	2006	ROW phase
VARIOUS AGENCIES	ORA990906	LUMP SUM. TEA FUNDS FOR BICYCLE AND PEDESTRIAN FACILITY PROJECTS THROUGHOUT ORANGE COUNTY.	2009	2009	ongoing
VARIOUS AGENCIES	ORA030301	(1) EXPANSION MINIVAN - A.S. FOUNDATION - PROVIDE SERVICES TO SENIORS AND DISABLED PERSONS.	2004	2005	minivans purchased, awaiting delivery

Orange County

Projects Reported on in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁸ Completion Date	2006 RTIP Completion Date	Project Status
MISSION VIEJO	ORA990902	MISSION VIEJO (CITYWIDE) REMOTE TMC AND TRAVLER/PUBLIC INFO ACCESS CENTER. PROVIDES TRAFFIC INFO TO PUBLIC LIBRARIES. EST COMM INTERTIE BETWEEN CITY AND CALTRANS	2003/2004	2006	contract issues caused delay; project is now under construction

Orange County

New TCMs Subject to Timely Implementation (not in the 2004 RTIP)

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA1100501	BUS RAPID TRANSIT - 28MI FIXED BRT FRM BREA MALL TO IRVINE TRANS CNTR. INCLUDES STRUCTURES, ROLLING STOCK, AND FEEDER SVC & IBC SHUTTLE- CNG SHUTTLES FROM JWA TO IBC.	N/A	2010	New Project. This project is being implemented to replace ORA194.

Orange County

Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
CALTRANS	1332	(RTE SR-22 TO RTE SR-91) IN CITY OF ORANGE WIDEN EXIST 8-LN FWY INCL. 2 STND HOV LNS ADD 2 MIXED FLOW LANES AND_AUX LNS; OC @ LAVETA, MEATS & KATELLA (98 STIP PROJECT)	2002	2005	complete
CALTRANS	5242	I-405 TO LA CO LINE -- ADD ONE HOV LANE IN EACH DIRECTION. THIS PROJECT WILL COMPLETE THE I-605 INTERCOUNTY GAP IN THE HOV SYSTEM IN SO. CALIF. (ITIP PROJECT)	2002	2005	complete
CALTRANS	6951	405/55 INTERCHANGE SOUTH TRANSITWAY MOS1_EXISTING 4 MIXED 1 HOV_ON SR55 AND I-405 EXIST IS 5 MF AND 1 HOV ADD HOV DIRECT TRANSITWAY FROM SR55 TO I-405	2005	2005	complete
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA194	CENTRAL ORANGE COUNTY FIXED GUIDEWAY (CENTERLINE) FOR CONSTRUCTION FROM JOHN WAYNE AIRPORT TO SANTA ANA TRANSPORTATION CENTER PLUS LINK TO SANTA ANA COLLEGE	2010	2010	*TCM substitution* this project was modified and will be reported as three separate projects: ORA109, ORA194B and ORA194C. TCM substitution approved by EPA July 27, 2006.
CALTRANS	ORA55073	BIRCH TO I-405 WIDENING; ADD (1) MIXED FLOW LANE IN NB DIR; NB AUX LANE; SOUNDWALLS; AND (1) HOV LANE (2010) IN EACH DIR. NEAR SR55 INTERCHANGE (98 STIP)	2005	2004	complete
LAGUNA NIGUEL	ORA9530	MISSION VIEJO/LAGUNA NIGUEL STATION LOS ANGELES/SAN DIEGO CORRIDOR	2003	2005	complete

Orange County

Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
YORBA LINDA	ORA981103	IN YORBA LINDA, CONSTRUCT COMMUTER RAIL STATION AND PARK AND RIDE (347 SPACES) NEAR ESPERANZA RD AND NEW RIVER ST	2009	2005	*TCM substitution* this project was modified and will be reported as three separate projects: ORA109, ORA194B and ORA194C
IRVINE	ORA990802	IRVINE AMTRAK STATION BUILD PEDESTRIAN OVERCROSSING AND LANDSCAPING	2003	2005	complete
CALTRANS	6951	405/55 INTERCHANGE SOUTH TRANSITWAY MOS1 EXISTING 4 MIXED 1 HOV ON SR55 AND I-405 EXIST IS 5 MF AND 1 HOV ADD HOV DIRECT TRANSITWAY FROM SR55 TO I-405	2005	2006	complete
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA020105	HYBRID ELECTRIC URBAN 40 FT BUSES (10) EXPANSION	2004	2006	complete
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA020114	WEST ORANGE COUNTY TRANSIT GUIDEWAY - BUS RAPID TRANSIT		2007	Only the eng phase is programmed, by definition this does not by definition qualify as a TCM
ANAHEIM	ORA120318	ANAHEIM REGIONAL TRANSPORTATION INTERMODAL CENTER (ARTIC) - NEAR/INCLUDING EXPANSION OF EXISTING AMTRAK/METROLINK STATION AT EDISON FIELD TO PROVIDE ACCESS W/ OTHER TRANSIT SERVICE	N/A	2010	Not a TCM – not fully funded (i.e. not a <i>committed</i> TCM with funds for ROW or construction in first two years of 2004 RTIP)
YORBA LINDA	ORA120322	YORBA LINDA - CONSTRUCT PEDESTRIAN BRIDGE OVER IMPERIAL HWY NEAR MAIN ST	2009	2009	Safety/maintenance project. Not a TCM

Orange County

Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA120325	OCTA - INTER COUNTY EXPRESS BUS SERVICE - VEHICLE CAPITAL LEASE	2010	2010	complete

Riverside County

Projects Reported in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁹ Completion Date	2006 RTIP Completion Date	Project Status
CALTRANS	354801	JCT RTE 15 TO VALLEY WAY - ADD 1 HOV LN AND 1 M/ F LN IN EA. DIR. INCLUDING OPERATIONAL STRIPING (IN SBD CNTY 9.05 - 9.95 & AT THE EAST END) ALSO WIDEN 5 UC'S & 1 OH	2006/2008	2008	STIP funds allocated and CMAQ funds obligated. Construction to begin during FY 05/06.
CALTRANS	0121D	ON I-215/SR91/SR60, RIV I215 COR IMPROV PROJ - FROM 60/91/215 JCT TO 60/215 SPLIT - WIDEN 6 TO 8 LNS, INCLUDING MAINLINE/IC IMPROVS, ADD HOV, AUX, & SB TRUCK CLIMB LN (EA: 3348U1)	2006/2007	2009	Under construction
CORONA	RIV010227	CORONA ADVANCED TRAFFIC MANAGEMENT SYSTEM (ATMS)	2005	2010	This is an ongoing project. Funds for Part 1 were obligated and project is under construction. Part 2 with 5207 funds will be obligated during FY 06/07.
HEMET	RIV990708	CONSTRUCT TRANSPORTATION/ TRANSIT CENTER/PARK-N-RIDE LOT ON CORNER OF HARVARD AND LATHAM AVE, APP 100 SPACES	2003/2004	2006	CMAQ now obligated. Construction to be during 1/06 with the estimated completion by 5/06.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV020902	IN WEST RIV CO FOR EXCEED, A DIVISION OF VALLEY RESOURCE CENTER - PURCHASE 1 EXPANSION 20' MODIFIED VAN, 1 EXPANSION 22' MEDIUM BUS, AND 2 RADIOS - SECTION 5310 FY 02/03 CYCLE	2004	2008	PS&E phase - Local match funding issues now resolved through coordinated effort between Caltrans and RCTC. Final vehicle configuration and order in progress. Project is now moving for expeditiously.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV520111	REGIONAL RIDESHARE	N/A	N/A	Ongoing program for implementation of rideshare activities.

⁹ The dates reflected are the 2004 RTP and RTIP completion dates. If the completion date was identical in both documents only one date is listed.

Riverside County

Projects Reported in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁹ Completion Date	2006 RTIP Completion Date	Project Status
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	RIV010214	PURCHASE/REHAB ROLLING STOCK - RIVERSIDE COUNTY SHARE (13 CARS IN FY02/03 AND 18 CARS IN FY 03/04)	2005/2007	2008	First order phase completed with follow-on order to occur by mid FY 05/06. Estimated delivery to be completed by 6/30/08. The first cab order will be completed in 2008, with follow on order completion in 2010
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	RIV011242	PURCHASE EXPANSION ROLLING STOCK (2 CAB CARS AND 3 LOCOMOTIVES) FOR METROLINK IEOC AND RIVERSIDE/FULLERTON/LA LINES (EA: RIVFUL, PPNO: 0079E)	2004/2009	2009	Received STIP funding April 2006. This project is on schedule.
MORENO VALLEY	32300	AT SR60/NASON ST IC - MODIFY/RECONSTRUCT IC & NASON ST FROM ELDER TO FIR: REALIGN EB, WB EXIT PLUS EB & WB ENTRY RAMPS, ADD EB & WB RAMP HOV LNS, & ADD AUX LANES (EA: 32300)	2007	2007	PS&E - environmental cleared and final design progressing. ROW anticipated soon.
TEMECULA	RIV62029	AT HWY 79 SO AND LA PAZ, ACQUIRE LAND, DESIGN AND CONSTRUCT PARK AND RIDE - 250 SPACES (FY 05 HR4818 EARMARK)	2004/2007	2009	PAED - project is a joint effort between Temecula and RTA. Delay results from delay in implementing new Temecula transit center due to past location safety issues. Programmed in RIV050553 for RTA. Temecula and RTA are moving forward to complete the project. The 2006 RTIP reflects the revised timing

Riverside County

Projects Reported in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ⁹ Completion Date	2006 RTIP Completion Date	Project Status
RIVERSIDE TRANSIT AGENCY	RIV990902	IN WESTERN RIVERSIDE COUNTY IN THE CITY OF PERRIS - CONSTRUCT NEW MULTIMODAL TRANSIT FACILITY (BUS & RAIL) AT 4TH AND D STREETS	2006	2007	Transit bus portion moving forward with implementation estimated during 2007. Metrolink station portion will be completed as part of Perris Valley Line project programmed in RIV520109 (not a committed TCM).

Riverside County

Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
TEMECULA	RIV030301	ITS DEMO - SIGNAL INTERCONNECT ON SR79 NORTH (DESIGN/INSTALL CONDUIT/ INTERCONNECT CABLE) FROM MARGARITA TO MURRIETA HOT SPRINGS & CCTV AT VARIOUS SIGNALIZED LOCATIONS	2005	NA	Completed.
RIVERSIDE TRANSIT AGENCY	RIV030614	IN WESTERN RIVERSIDE COUNTY - PURCHASE 5 EXPANSION 14 PASSENGER DIAL-A-RIDE VANS (FY 04 5307)	2006	NA	completed
RIVERSIDE TRANSIT AGENCY	RIV030610	RTA BUS STOP AMENITIES - INSTALL APPROX. 45 NEW SHELTERS & REHAB APPROX 159 SHELTERS (PARTS, PAINT, SIGNS, POLES, BENCHES, TRASH RECEPTACLES & ANCILLARY HARDWARE) (FY 04 5307)	2005	NA	completed
RIVERSIDE TRANSIT AGENCY	RIV030613	IN WESTERN RIVERSIDE COUNTY - INSTALL AUTOMATED TRAVELER INFORMATION SYSTEM (ATIS) AT APPROXIMATELY 48 BUS STOPS (INCLUDES UPGRADED SIGNAGE AND LIGHTING) (FY 04 5307)	2006	NA	completed
RIVERSIDE CITY	RIV020605	IN WESTERN RIVERSIDE COUNTY FOR THE CITY OF RIVERSIDE SPECIAL SERVICES - PURCHASE 2 EXPANSION 25' TWELVE PASSENGER DIAL-A-RIDE VEHICLES	2004	NA	completed
RIVERSIDE CITY	RIV030606	CITY OF RIVERSIDE SPECIAL SERVICES - PURCHASE 1 EXPANSION 20 PASSENGER ALT-FUEL DIAL-A-RIDE VEHICLE WITH LIFT, TIEDOWNS, RADIO, AND FAREBOX (FY 04 5307)	2005	NA	completed

Riverside County

Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	46360	IN RIVERSIDE AND MORENO VALLEY ON SR60 FROM RT 215 TO REDLANDS BLVD ADD 2 HOV LANES	2006	NA	completed
CORONA	RIV030602	IN THE CITY OF CORONA - PURCHASE/INSTALL MOBILE DATA TERMINAL (MDT) & AUTOMATIC VEHICLE LOCATOR (AVL) IN 14 TRANSIT VEHICLES & INTEGRATE W/ DISPATCHING SOFTWARE (FY 04 5307)	2005	NA	completed
SCAG	RIV62103	ITS TRANSIT PROJECT; INCLUDES AUTOMATED VEHICLE LOCATOR, GLOBAL POSITION SAT; MOBILE DATA TERMINALS;		NA	completed
CORONA	RIV010511	CITY OF CORONA -- PURCHASE 3 EXPANSION VEHICLES -- RED LINE FIXED ROUTE	2006	NA	Deleted - TCM Substitution. . New Park and Ride lot to be constructed and submitted as replacement TCM project: 60 spaces, located at 1114 W. Ontario Ave, Corona CA. Estimated date for implementation - April 2006. Expansion bus purchase will be deleted from RTIP. Estimated date for implementation - April 2006. The TCM substitution was approved by EPA July 27, 2006
RIVERSIDE TRANSIT AGENCY	RIV030626	IN WESTERN RIVERSIDE COUNTY - DEBT FINANCING (FY 03/04 PORTION) FOR 57 TRANSIT COACHES, 25 REPLACEMENT, 32 EXPANSION (FY 04 5307)	2005	NA	Construction/Implementation Complete, Project Open for Use
TEMECULA	990914	I-15 TRAFFIC SURVEILLANCE AND SIGNAL SYSTEM INTEGRATION (I-215/ County Line) TEA 21 Demonstration Project	2004	NA	Construction/Implementation Complete, Project Open for Use

Riverside County

Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
RIVERSIDE TRANSIT AGENCY	RIV041024	IN WESTERN RIVERSIDE COUNTY FOR RTA - PURCHASE 5 PARATRANSIT 12 PASSENGER DIAL-A-RIDE VEHICLES (FY 05 5307)	2006	N/A	Completed Project: Funds obligated in TEAM and expended. Vehicle delivery expected to be completed by 5/12/06.

Riverside County

New TCMs Subject to Timely Implementation (not in the 2004 RTIP)

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV030902	IN WESTERN RIVERSIDE COUNTY FOR EXCEED, A DIVISION OF VALLEY RESOURCE CENTER - PURCHASE 2 EXPANSION SMALL BUSES AND 1 EXPANSION MINIVAN (5310 FY 03/04 CYCLE)	N/A	2008	Match issues appear to be resolved and project is progressing forward. Funds anticipated to be obligated and vehicles on order by October 2006.
RIVERSIDE TRANSIT AGENCY	RIV041009	IN WESTERN RIVERSIDE COUNTY FOR RTA - DEBT FINANCING (FY 04/05 PORTION) FOR 57 TRANSIT COACHES, 25 REPLACEMENT, 32 EXPANSION (FY 05 5307)	N/A	2006	Construction/project implementation phase - debt financing project -
RIVERSIDE TRANSIT AGENCY	RIV050538	IN WESTERN RIVERSIDE COUNTY FOR RTA - DEBT FINANCING (FY 05/06 PORTION) FOR 57 TRANSIT COACHES, 25 REPLACEMENT, 32 EXPANSION (FY 06 5307, UZA: RIV-SAN)	N/A	2007	In PS&E
RIVERSIDE TRANSIT AGENCY	RIV051005	IN WESTERN RIVERSIDE COUNTY FOR RTA: PURCHASE 10 EXPANSION MINIVANS (APPROX 5 PASSENGERS EACH, GAS/DIESEL) (5310 FY 05/06 CYCLE)	N/A	2009	In PS&E

Riverside County

New TCMs Subject to Timely Implementation (not in the 2004 RTIP)

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV051006	IN WESTERN RIVERSIDE COUNTY FOR CARE CONNEXUS INC.: PURCHASE 1 EXPANSION LARGE BUS (APPROX 16 PASSENGERS, GAS/DIESEL) W/ LIFT AND TIEDOWNS (5310 FY 05/06 CYCLE)	N/A	2009	In PS&E
RIVERSIDE TRANSIT AGENCY	RIV051008	INSTALL MULTI-JURISDICTIONAL ATIS AT TRANSIT CENTERS & HIGH TRAFFIC CORRIDOR BUS STOPS INCLUDING REAL TIME SCHEDULES, IMPROVED SIGNAGE & LIGHTING (MAGNOLIA CORRIDOR PHASE)	N/A	2007	Project implementation now in progress and should be completed by 6/30/07. 5309c funds obligated. Maintain project in prior obligated section. project split also (RIV041028)
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV011243	METROLINK-SAN BERNARDINO SUBDIVISION TIER 11 CONSTRUCT NEW STATION AT 3360 VAN BUREN BLVD IN RIVERSIDE (PARKING 550 SPACES)	2003	Replaced 2004	<i>This project went through the substitution process in 2004; therefore does not need to be included in the 2006 RTIP</i> Downtown Riverside and La Sierra stations were expanded to provide additional parking spaces.

San Bernardino County

Projects Reported in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ¹⁰ Completion Date	2006 RTIP Completion Date	Project Status
VARIOUS	713	I-215 CORRIDOR NORTH - IN SAN BERNARDINO, ON I-215 FROM RTE 10 TO RTE 30- ADD 2 HOV LANES 1 LANE IN EA. DIR. AND OPERATIONAL IMPROVEMENTS	2005/2010	2010	Project in Engineering (PS&E) Phase. The project was delayed because of conflicting findings between the environmental and engineering analysis with regard to the preferred alternative, necessitating substantial revisions to the environmental analysis and to the traffic studies. Project is still having design issues with FHWA
VARIOUS	20620	UPLAND TO SAN BERNARDINO FROM LOS ANGELES COUNTY LINE TO ROUTE 215 - 8 LANE FREEWAY INCLUDING 2 HOV LANES (6+2) - 210 CORRIDOR PROJECT W/AUX LANES THROUGHOUT SEGMENT 9-11	2007/2009	2009	segments 1-9 complete; finishing up last 2 segments-environmental reevaluation is taking place o the last two segments
SANBAG	94163	RIDESHARE ACTIVITIES FOR SOUTH COAST AIR BASIN	N/A	N/A	On Going Operational Project-monies expended for all current years - still an on-going project new number 20040827
SANBAG	200074	LUMP SUM - TRANSPORTATION ENHANCEMENT ACTIVITIES PROJECTS FOR SAN BERNARDINO COUNTY- BIKE/PED PROJECTS	2004	2006	Project in Construction/Implementation Phase-funds have been obligated and projects underway
RIALTO	200450	RIALTO METROLINK STATION - INCREASE PARKING SPACES FROM 225-775	2006	2007	starting feasibility study

¹⁰ The dates reflected are the 2004 RTP and RTIP completion dates. If the completion date was identical in both documents only one date is listed.

San Bernardino County

Projects Reported in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ¹⁰ Completion Date	2006 RTIP Completion Date	Project Status
OMNITRANS	981118	BUS SYSTEM - PASSENGER FACILITIES: DESIGN AND BUILDING OF ONTARIO TRANSCENTER	2005/2008	2008	starting design
COLTON	2002164	ON VALLEY BLVD. IN COLTON TO NORTH TO 10TH STREET CONNECTING TO ABANDONED RR CORRIDOR ON WEST SIDE OF COLTON AVE.- CONSTRUCT CLASS I BIKEWAY, LANDSCAPING AND LIGHTING	2003/2006	2007	Project in ROW Clearance Phase. Project was delayed due to protracted negotiations with BNSF Railroad on ROW. Environmental completed in 2004. The \$659,000 of TEA 3. Environmental issues and delayed 1 year and doing historical site. Looking for construction being underway by June 06.
OMNITRANS	2002171	(1) EXPANSION PARATRANSIT VAN	2003	2003	Combined in 2004 with ID 20020110
SANBAG	20020106	MONTCLAIR PEDESTRIAN UNDERCROSSING-CONSTRUCTION OF A 2ND PLATFORM CREATES NEED FOR CONSTRUCTION OF NEW UNDERCROSSING	2003	2006	<i>The platform is complete and in use with an at-grade crossing. The undercrossing is currently in the design phase; however, the lead agency had to reconsider the design to accommodate the Gold Line which is currently planned to terminate in Montclair. SCRRA is the lead agency for the design and construction</i>
RANCHO CUCAMONGA	20020201	PACIFIC ELECTRIC INLAND EMPIRE TRAIL – PHASE 1 – HAVEN AVENUE TO 1200' EAST OF ETIWANDA AVE (3.4 MILES) CONSTRUCT CLASS 1 BIKE TRAIL & ROW ACQ, ETIWANDA DEPOT	2004/2006	2007	finishing PS&E

San Bernardino County

Projects Reported in a Previous RTIP

Lead Agency	Project ID	Description	2004 RTP/RTIP ¹⁰ Completion Date	2006 RTIP Completion Date	Project Status
SANBAG	SBD031505	VARIOUS LOCATIONS - LUMP SUMS LTF, ARTICLE 3 BICYCLE/PEDESTRIAN PROJECTS (PROJECTS ARE CONSISTENT WITH 40 CFR PART 93.126, 127, 128, EXEMPT TABLES 2 & 3)	2004	2008	3 million obligated - 3.9 left to obligate; ongoing allocations

San Bernardino County

New TCMs Subject to Timely Implementation (not in the 2004 RTIP)

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
FONTANA	200431	INLAND PACIFIC ELECTRIC TRAIL - ON OLD SP ABANDONED RR BETWEEN I-15 TO JUNIPER AVE.-CONSTRUCT CLASS 1 BIKE LANE (APPROX. 7 MILES LONG)	N/A	2007	working with caltrans to get federal funds obligated - obligation of funds expected by 9/06

San Bernardino County

Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
SANBAG	SBD031505	VARIOUS LOCATIONS - LUMP SUMS LTF, ARTICLE 3 BICYCLE/PEDESTRIAN PROJECTS	2004	N/A	Project in Construction/Implementation Phase - projects awarded funds and projects completed for the 2004 FY
CHINO	SBD41220	CHINO AVENUE/CENTRAL TO 6TH STS. MULTI-MODAL TRANSPORTATION CENTER INCLUDES PARK-N-RIDE LOT WITH 125 SPACES(PHASE 1 FUNDED-PHASE 2 AWAITING FUNDING)	2004	N/A	Project In Construction/Implementation Phase-project should be completed by 6/06-monies obligated and underway
OMNITRANS	SBD31088	BUS FLEET EXPANSION-PURCHASE 40' EXPANSION HEAVY DUTY COACHES & AUX. EQUIPMT, CNG 01-9, 03-1 (Note: The 'OTHER' FUNDS ARE CARL MAYER FUNDS)		N/A	completed
SANBAG	SBD0194	NEAR FONTANA FROM 0.5 MI E OF HEMLOCK TO 0.2 MI E OF SIERRA AVE CONSTRUCT 6-LANE FWY & 2 HOV LANES	2002	N/A	completed
OMNITRANS	981119	TRANSIT INTERMODAL FACILITIES - FONTANA TRANSCENTER - EXPAND BUS BAYS, IMPROVE LANDSCAPING, SIGNALS AND PEDESTRIAN AND PASSENGER FACILITIES	2002	N/A	completed
PERRIS	RIV990709	IN THE CITY OF PERRIS - RECONSTRUCT INTERSECTION AT 4TH ST AND REDLANDS AVE INCLUDING ROUND ABOUT, MINOR LANDSCAPING AND MINOR R/W ACQUISITION	2004	2012	Per the request for Caltrans and the City of Perris, RIV990709 has been re-scoped to be a standard intersection signal installation which is now stated in the 2006 RTIP. This project does not meet the definition of a TCM per EPA/TCWG 5/2/06.

San Bernardino County

Completed and Corrected Projects

Lead Agency	Project ID	Description	2004 RTIP Completion Date	2006 RTIP Completion Date	Project Status
RIVERSIDE CITY	RIV0084	AT VAN BUREN ST IC RECONSTRUCT RAMPS (INCLDS HOV RAMPS), WIDEN OC ON VAN BUREN FROM 4 TO 6 LN & ADD AUX LANES; ADD NEW EB ONRAMP W/ENTRANCE @ INDIANA	2005	2009	HOV does not include a bypass. Not a TCM - should be labeled as EXEMPT per EPA 5/2/06

2004 RTIP Committed Transportation Control Measures (TCMs)

Project Listing Report

Timely Implementation Report, 2004 RTIP: Transportation Control Measure (TCM) Project Implementation Status- By County

Los Angeles County

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	2004 RTP PROJECT COMPLETION DATE	2004 RTIP PROJECT COMPLETION DATE	Project Status
ACCESS SERVICES INC.	LA900520	SCAB	0	PURCHASE OF ADD'L 591 VEHICLES FROM FY01 TO FY05. 110 VEHICLES IN FY01, 161 VEHICLES IN FY02, 125 VEHICLES IN FY03, 149 VEHICLES IN FY04, AND 92 VEHICLES IN FY05.	2005	2005	Project Implementation Phase
AGOURA HILLS	LA990362	SCAB	0	CITYWIDE STREET AND BIKE PATH PROJ (T21-939). US 101 REGIONAL BIKE LANE GAP CLOSURE. TCSP	2003	2004	Project In Engineering (PS&E) Phase. This project has been delayed somewhat due to unforeseen design difficulties. The issues are now being resolved and the project is expected to be expeditiously implemented.
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA963731	SCAB	0	ALAMEDA CORRIDOR - NORTH END RAIL ROAD/ARTERIAL GRADE SEPS. & RELATED IMPROVEMENTS EIS/EIR COMPLETE; 8100+1394 P.E. 10517+305 R/W; 29483+5300 CONS.	2004	2004	Project Completed
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA963732	SCAB	0	ALAMEDA CORRIDOR - MID CORRIDOR SEGMENT 10 MI TRENCH >20 ARTERIAL GRADE SEPS, ENVIRONMENTAL CLEARANCE	2003	2003	Project Completed
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA963733	SCAB	0	ALAMEDA CORRIDOR - SOUTH END 7 RAILROAD / ARTERIAL GRADE SEPS. + RELATED IMPROVEMENTS ENV. CLEARANCE #NAME?	2002	2002	Project Completed
ANTELOPE VALLEY TRANSIT AUTHORITY	LA0B7008	VAR	0	3 EXPANSION 40 FT. LOW FLOOR CLEAN DIESEL BUSES; LOCAL FIXED-ROUTE BUSES; TO RELIEVE PEAK PERIOD OVERCROWDING ON CORE ROUTES.	2003	2003	Project Completed
BALDWIN PARK	LA0B7012	SCAB	0	LOCAL NTD REPORTERS' BUS FLEET EXPANSION.19 BUSES FOR 5 CITIES.BALDWIN PARK, COMPTON, EL MONTE, MONTEREY PARK & WEST COVINA (CNG,DIESEL & PROPANE FUEL 30-35 FT. VEH).	2005	2005	Project In Engineering (PS&E) Phase
BELLFLOWER	LA996275	SCAB	0	WEST BRANCH GREENWAY MULTI-MODAL TRANS. CORRIDOR DESIGN AND CONSTRUCT 2.5 MILE CLASS I BIKE PATH ALONG MTA-OWNED SANTA ANA BRANCH ROW INCL. PEDESTRIAN AND LANDSCAPING	2003	2006	Project In Engineering (PS&E) Phase. There were problems in reconciling ROW guidelines; there was the potential that the Orange Line might intersect with this project, so the plans had to be reconfigured. These issues have since been resolved and the project is now being expeditiously implemented.
BURBANK	LA0D25	SCAB	0	PROCUREMENT OF (3) ALTERNATIVE FUEL TRANSIT VEHICLES	2004	2004	Project Completed
BURBANK	LA8STIP13	SCAB	0	BURBANK LOCAL TRANSIT PURCHASE OF THREE ALT. FUEL BUSES FOR ONGOING TDM PROGRAM	2004	2004	Project Completed

CALABASAS	LA974100	SCAB	0	U.S. 101 INTERJURISDICTIONAL BIKELANE GAP CLOSURE CONSTRUCTION 4.5 MILES OF BIKEWAY IMPROVEMENTS TO CLOSE SEVERAL GAPS WITHIN A 12 MILE CORRIDOR(TEA21-#69)	2003	2006	Project In Engineering (PS&E) Phase. During the Environmental Documentation Phase, issues were raised about streams and wetlands in the area, requiring modifications to the plans. This also resulted in a change in Engineers, adding a slight delay. These issues have since been resolved and the project is now being expeditiously implemented.
CALTRANS	1178A	SCAB	405	IN LOS ANGELES AND CULVER CITY FROM ROUTE 90 TO ROUTE 10 - HOV LANES (SB 5+0 TO 5+1; NB 5+0 TO 5+1 HOV) 98CTIP \$ FUND NB LN, ALSO PAYS FOR SB \$ DELETED FROM 96STIP	2006	2007	Project In Engineering (PS&E) Phase
CALTRANS	11985	SCAB	405	NEAR HAWTHORNE AND CULVER CITY FROM ROUTE 105 TO ROUTE 90 - 6 LANE FREEWAY, ADD 2 HOV LANES AND SOUNDWALLS. (EA# 119851, PPNO# 0824B)	2005	2005	Project In Construction/Implementation Phase
CALTRANS	12570	SCAB	60	RTE. 57/60 HOV CONNECTOR INDUSTRY FROM OLD BREA CANYON ROAD TO GRAND AVENUE - HOV DIRECT CONNECTORS AND COLLECTOR ROAD (BOTH DIRECTIONS)	2006	2007	Project In Engineering (PS&E) Phase
CALTRANS	16881	SCAB	5	IN LA MIRADA TO SANTA FE SPRINGS FROM ORANGE COUNTY LINE TO ROSECRANS AVENUE - INTERIM HOV LANES; I-5 Rail Grade Crossing between RTE. 605/91.	2014	2014	This project has been combined with LA0D73, and will not be listed under this ID # in subsequent Timely Implementation Reports.
CALTRANS	9061D	SCAB	0	ALAMEDA CORRIDOR IN LOS ANGELES COUNTY AT PACIFIC COAST HIGHWAY - GRADE SEPARATION	2002	2002	Project Completed
CALTRANS	LA000357	SCAB	5	--- FROM ROUTE 170 TO ROUTE 118 HOV LANES (10 TO 12 LANES) (CFP 345) (2001 CFP 8339; CFP2197). (EA# 121901, PPNO# 0158K)	2008	2010	Project In Environmental Documents/Pre-design Phase. Project was delayed due to administrative difficulties. MTA is working with Caltrans and other agencies to resolve these issues so as to meet the current completion date.
CALTRANS	LA000358	SCAB	5	--- FROM ROUTE 134 TO ROUTE 170 HOV LANES (8 TO 10 LANES) (CFP 346)(2001 CFP 8355). (EA# 121801, PPNO# 0142F)	2012	2010	Project In Engineering (PS&E) Phase. MTA is working with Caltrans to further expedite the construction schedule.
CALTRANS	LA000359	SCAB	10	IN EL MONTE AND BALDWIN PARK FROM BALDWIN AVE TO ROUTE 605 HOV LANES (8+0 TO 8+2) AND TOS PROJECTS. (EA#10691. PPNO# 0295M)	2004	2005	Project In Engineering (PS&E) Phase
CALTRANS	LA000543	SCAB	10	IN POMONA AND CLAREMONT FROM ROUTE 57 TO SAN BERNARDINO COUNTY LINE HOV LANE IN EACH DIRECTION (C-I: 77719; CFP 350; PPNO 00362) ALSO SOUNDWALL AND REHAB. (EA# 122401,PPNO# 0315P).	2005	2004	Project Completed
CALTRANS	LA01342	SCAB	10	RT 10 FROM RT 605 TO PUENTE AVE HOV LANES(8+0 TO 8+2). (EA# 117070, PPNO# 0306N)	2008	2010	Project In Engineering (PS&E) Phase. Project was delayed due to administrative changes in implementation design. These issues are now being resolved and the project is expected to be expeditiously implemented.
CALTRANS	LA01344	SCAB	5	RT 5 FROM RT 118 TO RT 14 FROM 10 TO 12 LANES HOV LANES. EA# 122001, PPNO# 0162P	2005	2006	Project In Bid/Advertise Phase.
CALTRANS	LA01348	SCAB	14	--- RT 14 FROM ESCONDIDO CYN RD. TO PEARBLOSSOM HWY HOV LANES (4 TO 6 LANES) ONE LANE IN EACH DIRECTION. (EA-117101, PPNO# 0389N)	2002	2003	Project Completed
CALTRANS	LA0B420	SCAB	0	IN VAN NUYS - MULTIMODAL TRANSPORTATION CENTER - PEDESTRIAN IMPROVEMENTS AND LANDSCAPING	2002	2004	Project Completed

CALTRANS	LA0B7215	SCAB	5	RTE 5 CORRIDOR WIDENING & RECONSTRUCT IC SEGMENT A - OCL TO RTE 605 WIDEN FROM 6 TO 10 LNS (1 HOV & ONE MF IN EA. DIR). VALLEY VIEW & CARMENITA IC; MODIFY FWY TO FWY IC @ RTE 605	2014	2014	This project has been combined into LA0D73, and will not be listed under this ID # in subsequent reports.
CALTRANS	LA0B875	SCAB	10	HOV LANES FROM CITRUS TO ROUTE 57/210	2030	2015	Project In Engineering (PS&E) Phase. The project completion date was erroneously reported as 2030 in the 2004 RTP.
CALTRANS	LA0B951	SCAB	71	ROUTE 10 TO ROUTE 60 -- EXPRESSWAY TO FREEWAY CONVERSION -- ADD 1 HOV LANE AND 1 MIXED FLOW LANE . (2001 CFP 8349, TCRP #50) (EA# 210600, PPNO# 2741)	2030	2010	Project In Right-of-way Acquisition Phase. The project completion date was erroneously reported as 2030 in the 2004 RTP.
CALTRANS	LA0C8344	SCAB	405	EXTENSION OF N/B I-405 HOV LANE-TO EXTEND THE HOV LANE ON N/B I-405 FROM SOUTH OF VENTURA BL TO SO. BURBANK BLVD WHERE IT WILL JOIN THE EXISTING HOV LANE. (EA# 199620, PPNO# 2788).	2007	2007	Project In Engineering (PS&E) Phase
CALTRANS	LA0D73	SCAB	5	LA MIRADA, NORWALK & SANTA FE SPRINGS-ORANGE CO LINE TO RTE 605 JUNCTION. WIDEN FOR HOV & MIXED FLOW LNS, RECONSTRUCT VALLEY VIEW & CARMENITA RD I/C. MODEL #1404	2014	2014	Project In Environmental Documents/Pre-design Phase. (Project # LA0B7215 will be incorporated into this project in future Timely Implementation Reports.)
CALTRANS	LA195900	SCAB	405	RTE. 405 - WATERFORD AVE. TO RTE 10 - AUX LANE: LOS ANGELES - WATERFORD AV. TO RTE 10 - CONSTRUCT S/B AUX LANE & S/B HOV LANE (2001 CFP 8354) (EA# 195900,PPNO# 2333)	2006	2007	Project In Engineering (PS&E) Phase
CALTRANS	LA962201	SCAB	14	NEAR SANTA CLARITA, FROM RT 5 TO 126/S.F. RD HOV PROJECT (EA# 119843, PPNO# 0380G)	2003	2003	Project Completed
CALTRANS	LA962216	SCAB	0	TOPANGA CANYON BLVD. BIKE LANE (96 CFP PROJ) CLASS II (RESTRIPE TO ADD LANE_ - 7 MILES)	2003	2004	Project Completed
CALTRANS	LA963519	SCAB	0	ADD 3 MILES OF TRIPLE TRACK AT BANDINI, MP 148.5 & 151.7 BETWEEN FULLERTON & LAUS	2002	2007	Project in Bid/Advertise Phase. The project has been delayed due to unforeseen jurisdictional issues, ROW acquisition issues, and MOU execution. The MOU is now in process, and the other issues have been resolved. The project is expected to be implemented expeditiously, once the MOU is executed.
CALTRANS	LA963724	SCAB	30	IN LA VERNE AND CLAREMONT, FROM FOOTHILL BOULEVARD TO SAN BERNAR- DINO COUNTY LINE - CONSTRUCT 8-LANE FREEWAY INCLUDING 2-HOV LANES (12620, 12640, 12630, 10501, 17210)	2003	2003	Project Completed
CALTRANS	LA996134	SCAB	5	RTE. 5/14 INTERCHANGE & HOV LNS ON RTE. 14 -- CONSTRUCT 2 ELEVATED LANES -- HOV CONNECTOR (DIRECT CONNECTORS) (EA# 16800)(2001 CFP 8343) (PPNO# 0168M)	2014	2009	Project In Engineering (PS&E) Phase
CALTRANS	LA996137	SCAB	60	RTE. 60 HOV LNS. FROM RTE. 605 TO BREA CANYON RD. - HOV LANE (FROM 8 TO 10 LANES TO 10 TO 12 LANES) (CFP: 358, 4262, 6137=67,150+IIP: 5,100)	2008	2007	Project In Engineering (PS&E) Phase
CALTRANS	LA996138	SCAB	5	RTE.5 HOV LNS. FROM FLORENCE AVE TO RTE.19 -- ADD ONE LANE IN EACH DIRECTION	2025	2016	Project In Environmental Documents/Pre-design Phase
CALTRANS	R5046C	SCAB	0	ALAMEDA CORRIDOR IN LOS ANGELES COUNTY AT PACIFIC COAST HIGHWAY, SEPULVEDA BOULEVARD, DEL AMO BLVD, & ALAMEDA ST AT LAUREL PARK ROAD - GRADE SEPARATION	2002	2002	Project Completed

CARSON, CITY OF	LA0C8219	SCAB	0	SOUTH BAY PAVILION REGIONAL TRANSIT CTR. CONSTRUCTION OF A TRANSIT CTR AT THE SOUTH BAY PAVILION SHOPPING CTR TO BE SERVED BY ALL 8 CARSON CIRCUIT RTES & MTA LINES #205 & #446-447.	2006	2006	Project In Environmental Documents/Pre-design Phase.
COMMERCE	927108	SCAB	0	ALAMEDA CORRIDOR IN COMMERCE AT ATLANTIC BOULEVARD AND TELEGRAPH ROAD - INTERSECTION IMPROVEMENTS	2002	2002	Project Completed
COMMERCE	LA0C37	SCAB	0	BUS STOP IMPROVEMENTS, CONSTRUCTION OF PASSENGER SHELTERS AND INFORMATION KIOSKS	2002	2002	Project Completed
COMMERCE	LA963759	SCAB	0	TELEGRAPH ROAD TRACK CAPACITY ENHANCEMENT 97-98 TCI	2002	2002	Project Completed
COMMERCE	R615TA	SCAB	0	METROLINK - RIV/LA VIA FULLERTON AT COMMERCE METROLINK STATION - PLATFORM CONSTRUCTION	2002	2002	Project Completed
COMPTON	LAOB7326	SCAB	0	COMPTON CREEK BIKEWAY EXTENSION - PHASE III.DESIGN & CONSTRUCT .6 MI OF CLASS 1 BIKE/PED PATH FROM GREENLEAF BLVD TO ARTESIA FWY.WILL INC BIKE PATH, PED WALKWAY SIGNAGE, STRIPING	2005	2005	Project In Engineering (PS&E) Phase
COVINA	LA0C8216	SCAB	0	MITIGATE PARKING DEFICIENCY FOR COVINA METROLINK STATION-PROJECT PROPOSES TO CONSTRUCT 330 NEW PARKING SPACES IN A STRUCTURE OVER AN EXISTING STATION PARKING LOT. (PPNO# 3224)	2006	2006	Project In Engineering (PS&E) Phase
COVINA	LA9811080	SCAB	0	EASTLAND SATELLITE PARK n RIDE LOT (REPLACEMENT PARKING FOR EASTLAND SHOPPING CENTER -- 429 SPACES) (CROSS STREETS ARE BARRANCA/WORKMAN)	2002	2002	Project Completed
CULVER CITY MUNI BUS LINES	LA026	SCAB	0	PROCUREMENT OF TWO (2) 30' CNG EXPANSION BUSES FOR SERVICE	2003	2003	Project completed
CULVER CITY MUNI BUS LINES	LA0B400	SCAB	0	PROCUREMENT OF FOUR (4) 40' CNG EXPANSION BUSES/400K PER BUS	2004	2004	Project Implementation Phase
CULVER CITY MUNI BUS LINES	LA0C8382	SCAB	0	SEPULVEDA BLVD BUS STOP IMPROVEMENT PROGRAM. BUS STOP AMENITIES INC LIGHTING SIGNAGE, LANDSCAPING, SHELTERS, SEATING, LANDINGS AND TRASH RECEPTACLES.	2008	2010	Multi-component Project Underway. The project was delayed due to administrative issues, which have since been resolved, and the project is expected to be expeditiously implemented.
DOWNEY	LA982251	SCAB	0	DEVELOP DOWNEY TRANSP/TRANSIT CTR AND TRANSIT YARD- BUS SYSTEMS, METROLINK, AND LIGHT RAIL ACCESS IMPROVEMENTS- LA TO ORANGE CO INTERMODAL FACILITY- 68,000 SQ/FT - NANCE/LORENA	2002	2004	Project Completed
FOOTHILL TRANSIT ZONE	LA0B311	SCAB	0	PARK AND RIDE FACILITY TRANSIT ORIENTED NEIGHBORHOOD PROGRAM	2003	2005	Project In Environmental Documents/Pre-design Phase. The project was delayed due to site environmental factors, requiring the identification of additional mitigation measures. These issues have since been resolved and the project is now being expeditiously implemented.
FOOTHILL TRANSIT ZONE	LA0C8362	SCAB	0	EL MONTE STATION IMPROVEMENT PROJECT-FUNDING WILL PROVIDE FOR NEW LIGHTING, INFORMATION SIGNAGE, AND OTHER PASSENGER AMENITIES.	2004	2005	Project In Construction/Implementation Phase
FOOTHILL TRANSIT ZONE	LA963526	SCAB	0	BUS STOP ENHANCEMENT	2005	2005	Project In Construction/Implementation Phase
FOOTHILL TRANSIT ZONE	LA963762	SCAB	0	MONROVIA TIMED TRANSFER CENTER	2004	2004	Project In Environmental Documents/Pre-design Phase

FOOTHILL TRANSIT ZONE	LA9811007	SCAB	0	AVL SYSTEM, ARRIVAL SIGNS, FUEL MGMT. SYSTEM AND CAROUSEL	2005	2005	Project In Construction/Implementation Phase
GLENDALE	LA0C8220	SCAB	0	PURCHASE OF (8) 35-FOOT LOW FLOOR CNG HEAVY-DUTY TRANSIT VEHICLES.	2005	2005	Project Implementation Phase
GLENDALE	LA963751	SCAB	0	METROLINK - SANTA CLARITA LINE GLENDALE TRANSPORTATION CENTER - UPGRADE STATION 96-97 TCI	2006	2003	Project Completed
GLENDALE	LA996065	SCAB	0	CNG HVY DUTY TRANSIT VEHICLES PURCH 6 BUSES TO REMEDY EXISTING OVERCROWDING	2004	2004	Project Completed
INGLEWOOD	LA990701	SCAB	0	PASSENGER TRANSFER FACILITY: OFF STREET, NE CRNR OF LA BREA & KELSO. WILL NOT ADD NEW SVC. PROVIDES SAFE OFF STREET TRANSFER FOR PASSENGERS.INGLEWOOD BUS. TRANSIT CENTER PHASE 2.	2002	2005	Project In Construction/Implementation Phase. There were difficulties with contractor to whom the work was originally awarded. A new contractor has since been designated, and the project is now being expeditiously implemented.
LONG BEACH	LA0C8163	SCAB	0	BIKEWAY AND PEDESTRIAN IMPROVEMENTS. 1.2 MILE CLASS I BIKE/PED PATH FROM WALNUT AVE TO WILLOW ST AT THE BLUE LINE STATION.	2005	2005	Project In Construction/Implementation Phase
LONG BEACH	LA0C8331	SCAB	0	LONG BEACH WAYFINDING/TRANSIT CONNECTION PROGRAM-MAJORITY OF SIGNS WILL BE PEDESTRIAN, AND WILL INCLUDE MAPPING THAT DISPLAYS DESTINATIONS AND TRANSIT OPTIONS.	2004	2004	Project In Engineering (PS&E) Phase
LONG BEACH PUBLIC TRANSPORTATION COMPANY	LA01B110	SCAB	0	BIKE RACKS ON BUSES	2003	2003	Project Completed
LONG BEACH PUBLIC TRANSPORTATION COMPANY	LA0B7006	SCAB	0	LONG BEACH TRANSIT EXPANSION BUSES - THE PURCHASE OF UP TO 11 40-FOOT, LOW-FLOOR LNG ALTERNATIVE FUEL BUSES WHICH SERVE THE MOST CROWDED ROUTES, INCLUDING 190,7,100 & 171.	2003	2003	Project completed
LONG BEACH PUBLIC TRANSPORTATION COMPANY	LA0C8320	SCAB	0	SOUTHEAST REGIONAL TRANSIT INFORMATION NETWORK-WILL MAKE USERS IDENTIFY THE TRANSIT OPTION THAT BEST MEETS THEIR INDIVIDUAL NEEDS BY SERVING AS A ONE STOP SOURCE.	2003	2005	Pre-design Phase. Project was delayed due to administrative changes in implementation design. These issues have since been resolved and the project is now being expeditiously implemented.
LONG BEACH PUBLIC TRANSPORTATION COMPANY	LA0C8383	SCAB	0	LONG BEACH TRANSIT: BUS STOP IMPROVEMENT PROJ. ENHANCE 9 OF RAIL STATION FEEDER BUS STOPS TO EASE TRANSFERS, MAKE PUBLIC TRANSIT MORE AESTHETICALLY PLEASING & SAFER, INC RIDERSHIP.	2004	2004	Project In Construction/Implementation Phase
LONG BEACH PUBLIC TRANSPORTATION COMPANY	LA973029	SCAB	0	BUS STOP AMENITIES	2004	2004	Project In Construction/Implementation Phase
LOS ANGELES COUNTY	LA002633	SCAB	0	THOMPSON CREEK BICYCLE TRAIL (93/97 CFP; BIKE PROGRAM) CLASS I (2 MILES)	2003	2005	Project In Construction/Implementation Phase. Project was delayed due to changes in implementation program. These issues have since been resolved and the project is now being expeditiously implemented.
LOS ANGELES COUNTY	LA0B416	SCAB	0	IN LOS ANGELES - DOWNTOWN OVER FREEWAY 101 - PEDESTRIAN BRIDGE ENHANCEMENT	2004	2004	Project In Construction/Implementation Phase
LOS ANGELES COUNTY	LA0B7004	SCAB	0	VEHICLE ACQUISITION FOR EAST LOS ANGELES FIXED ROUTE SHUTTLE SERVICE PHASE II-PURCHASE OF 3 VEHICLES WILL INCREASE FREQUENCY OF THE EXISTING 3 SHUTTLES SERVICE ROUTES	2002	2004	Project In Construction/Implementation Phase. Vehicle delivery was delayed due to a backlog at the manufacturer's end. The vehicles are now expected to be delivered by September, 2004.

LOS ANGELES COUNTY	LA0B7288	SCAB	0	GRAND AVE. REALIGNMENT AND PEDESTRIAN ENHANCEMENTS-GRAND AVENUE BETWEEN TEMPLE AND SECOND STREET; CONSTRUCTION OF A TWO BLOCK REALIGNMENT OF GRAND AVENUE IN DOWNTOWN L.A.	2003	2003	Project Completed
LOS ANGELES COUNTY	LA0C8179	SCAB	0	GRAND AVE RALIGN & PED ENHANCEMENTS-TEMPLE ST TO 300 S/O 2ND ST. STREETScape ENHANCEMENTS TO IMPROVE PED. CONNECTIONS BETWEEN MAJOR CULTURAL & GOVERNMENT FACILITY.	2005	2005	Project In Engineering (PS&E) Phase
LOS ANGELES COUNTY	LA0C8315	SCAB	0	ELECTRIC BIKE AND SCOOTER DEMONSTRATION PROJECT. PURCHASE OF ELECTRIC BIKES AND SCOOTERS AS A TEST FOR FEASIBILITY AS SUBSTITUTES FOR SHORT COMMUTE TRIPS TO PARK AND RIDE LOTS.	2005	2005	Project In Engineering (PS&E) Phase
LOS ANGELES COUNTY	LA0C8316	SCAB	0	TRANSPORTATION INFORMATION PROJECT (TIP). EQUIP COUNTY EMPLOYEES AT 41 SITES THROUGHOUT LA COUNTY WITH THE TOOLS NEEDED TO PROVIDE INDIVIDUALIZED TRANSIT ITINERARIES ETC.	2005	2005	First Vehicle Delivered
LOS ANGELES COUNTY	LA0C8364	SCAB	0	NORTH LA COUNTY NON-ADVERTISING BUS STOP SHELTERS. INSTALLATION OF BUS SHELTERS WITH SEATING AT BUS STOPS WITH GREATEST # OF DAILY BOARDING IN NORTH LOS ANGELES COUNTY.	2007	2007	Multi-component Project
LOS ANGELES COUNTY	LA962214	SCAB	1	PACIFIC COAST HIGHWAY TRAFFIC MANAGEMENT SYSTEM FROM MCCLURE TUNNEL TO TRANCAS CANYON RD TRAFFIC MAN. & BUS SPEED IMPROVEMNT(TEA21-#707)	2003	2005	Project In Construction/Implementation Phase. The project was delayed due to unexpected difficulties in inter-agency coordination between Caltrans, County of Los Angeles, and City of Malibu. These issues have since been resolved and the project is now being expeditiously implemented.
LOS ANGELES COUNTY	LA974181	SCAB	0	LAC+USC MEDICAL CENTER BUS TRANSIT STATION FACILITY WILL HAVE 4 BUS BAYS AND 4 LAYOVER BAYS BUS STOP IMPROVEMENT PRJ	2002	2005	Project In Engineering (PS&E) Phase. The project is facing unanticipated ROW acquisition difficulties, which MTA is currently working to resolve.
LOS ANGELES COUNTY	LA990353	SCAB	0	ALAMEDA CORRIDOR EAST - NOGALES ST GRADE SEP (T21-491, SGVCG)	2006	2006	Project In Engineering (PS&E) Phase. The project was delayed due to unanticipated difficulties in design and engineering documentation. These issues have since been resolved and the project is now being expeditiously implemented.
LOS ANGELES COUNTY	LA996044	SCAB	0	VEH ACQ FOR EST L.A. SHUTTLE PURCH 4 VEH'S TO REMEDY EXISTING OVERCROWDED CONDITIONS	2002	2004	First Vehicle Delivered. Remaining acquisitions delayed due to backlog in orders at manufacturer's end. The remaining vehicles are expected to be delivered within 2004.
LOS ANGELES COUNTY	LA996285	SCAB	0	SOUTH BAY BIKE TRAIL RECONSTRUCT AT PLAYA DEL REY - DESIGN AND RECONSTRUCT SEGMENT OF THE TRAIL AT DOCKWEILER STATE BEACH.	2005	2005	Project In Construction/Implementation Phase.
LOS ANGELES COUNTY	LA996288	SCAB	0	SAN GABRIEL RVR. BIKE TRAIL REHAB PHASE I - FROM WHITTIER NARROWS DAM TO FLORENCE AVE.	2005	2005	Project In Engineering (PS&E) Phase
LOS ANGELES COUNTY	R616TA	SCAB	0	METROLINK - SANTA CLARITA LINE AT VINCENT HILL/ACTON GRADE METROLING STATION - INSTALL TRAFFIC SIGNALS, CANOPY, PAVING, LIGHTING	2002	2002	Project Completed
LOS ANGELES COUNTY MTA	7050	SCAB	0	METRO RAIL BLUE LINE-LONG BEACH/LA WILMINGTON AVENUE AT IMPERIAL HIGHWAY - OVERCROSSING	2002	2002	Project Completed

LOS ANGELES COUNTY MTA	927333	SCAB	0	RIDESHARE ACTIVITIES	2005	2005	Project Implementation Phase
LOS ANGELES COUNTY MTA	LA000274	SCAB	2	FROM SEPULVEDA TO MORENO CONTRACT DIVIDED PKWAY WITH TRANSIT PKWAY IMPROVEMENTS, BIKE LANES & RT. 2/405 INTERCHANGE (94CFP; CAT. 2, 210, 98STIP00027) TEA21-#1531	2003	2005	Project In Construction/Implementation Phase. There were delays in the Design Phase, and, subsequently, there was a change in implementing agency. The City of Los Angeles has since been designated as the implementing agency, and the project is now being expeditiously implemented.
LOS ANGELES COUNTY MTA	LA000487	SCAB	0	PARK AND RIDE LOT (850 SPACES) LANKERSHIM AND CHANDLER - METRO RED LINE	2002	2004	Project Completed
LOS ANGELES COUNTY MTA	LA000489	SCAB	0	PARK AND RIDE LOT (700 SPACES) UNIVERSAL CITY - METRO RED LINE	2003	2004	Project Completed
LOS ANGELES COUNTY MTA	LA01B101	SCAB	0	COOPERATIVE PURCHASE OF HYBRID ELECTRIC COACHES BY MTA AND INTERESTED MUNICIPAL OPERATORS AS A TEST PROGRAM (2001 CFP 8116)	2006	2006	Project In Environmental Documents/Pre-design Phase
LOS ANGELES COUNTY MTA	LA01B120	SCAB	0	EXPANSION OF DIVISION 1 TO ADD ADDITIONAL CAPACITY OF APPROX 67 BUSES AND ADDITIONAL PARKING SPACE OF EMPLOYEES. ACQUISITION OF A VACANT PARCEL SOUTH OF DIV 1	2003	2005	Project In Environmental Documents/Pre-design Phase. The project was substantially expanded to include an additional 100 buses, resulting in a need to also expand the maintenance facilities as well, which in turn changed the environmental documentation requirements. These issues have now been resolved and the project is now being expeditiously implemented.
LOS ANGELES COUNTY MTA	LA0B303	SCAB	0	ACQUISITION OF TROLLEY BUSES (2) AND CHARGING STATIONS FOR THE CITY OF MONROVIA'S DOWNTOWN TROLLEY SERVICE	2004	2004	Project Completed
LOS ANGELES COUNTY MTA	LA0B304	SCAB	0	PLAYA VISTA EARNMARK, PURCHASE NEW (5) LOW-EMISSION BUSES, TRACKING EQUIP & BUS AMENITIES INCLUDING PASSENGER SHELTERES, INFO KIOSKS & APPURTENANT EQUIP - TRANSIT SERVICE UPGRADE.	2004	2005	Project In Environmental Documents/Pre-design Phase
LOS ANGELES COUNTY MTA	LA0B7023	SCAB	0	GET-ABOUT FLEET IMPROVE (POMONA VAL TRANS. AUTHORITY)-PURCHASE 18, 21 PASSENGER VEHIC TO INCR CAPACITY OF SUBREG PARATRANSIT SYS	2002	2004	Project Completed
LOS ANGELES COUNTY MTA	LA0C10	SCAB	0	MID-CITY/EXPOSITION CORRIDOR LIGHT RAIL TRANSIT PROJECT - DOWNTOWN LA TO SANTA MONICA	2011	2012	Project In Environmental Documents/Pre-design Phase
LOS ANGELES COUNTY MTA	LA0C8109	SCAB	0	COUNTYWIDE TRANSPORTATION SYS. AWARENESS & SATISFACTION. PROJECT WILL USE AND EXPAND UPON IT'S PREDECESSOR'S WORK, THE SERVICE PLANNING MARKET RESEARCH PROGRAM (SPMRP) FOR TRANSIT	2007	2007	Project In Environmental Documents/Pre-design Phase
LOS ANGELES COUNTY MTA	LA0C8114	SCAB	0	LOS ANGELES COUNTY RIDESHARE SERVICES; PROVIDE COMMUTE INFORMATION, EMPLOYER ASSISTANCE AND INCENTIVE PROGRAMS THROUGH CORE & EMPLOYER RIDESHARE SERVICES & MTA INCENTIVE PROGRAMS.	2009	2009	Project In Engineering (PS&E) Phase
LOS ANGELES COUNTY MTA	LA0C8118	SCAB	0	TDM PROGRAM ENHANCEMENT	2004	2004	Project In Engineering (PS&E) Phase
LOS ANGELES COUNTY MTA	LA0C8413	SCAB	0	METRO RAPID BUS STATIONS-PHASE II; INCLUDES COMMUNICATIONS & EQUIPMENT	2005	2009	Project in Contract Negotiation Phase. The project was delayed due to changes in design. These issues have since been resolved and the project is now being expeditiously implemented.

LOS ANGELES COUNTY MTA	LA0D38	SCAB	0	PURCHASE A MINIMUM OF 200 CLEAN AIR LIGHT-DUTY VEHICLES (UP TO 225, DEPENDING ON ULTIMATE PURCHASE ORDER) ALL VEHICLES WILL BE OPERATIONAL WITHIN 6 TO 12 MONTHS.	2003	2009	Project Implementation Phase. This is an AQMD project, and the apparent change in completion date is due to the addition of vehicles over and above the original purchase order. As such, the change in completion date is due to a rescoping of the project and not due to an actual delay.
LOS ANGELES COUNTY MTA	LA210465	SCAB	0	SO. CENTRAL LOS ANGELES EXPOSITION PARK INTERMODAL URBAN ACCESS PRJ (STATE OF CAL. DEPT. OF GEN. SERV.) RENEW/RENOVATION PARKING FACILITY IMPROVE PARK/TRAFFIC ACCESS PROGRAM	2003	2003	Project Completed
LOS ANGELES COUNTY MTA	LA29202U1	SCAB	0	SAN FERNANDO VALLEY EAST/WEST BRT (FROM THE TERMINUS OF THE METRO RED LINE HEAVY RAIL IN NO HOLLYWOOD TO WARNER CENTER)14-MILE EXCLUSIVE BUS LANES LOCATED IN FORMER RAIL ROAD ROW	2005	2005	Project In Environmental Documents/Pre-design Phase
LOS ANGELES COUNTY MTA	LA29202U2	SCAB	0	SAN FERNANDO VALLEY NORTH/SOUTH BRT EXTENSION	2009	2010	Project In Environmental Documents/Pre-design Phase
LOS ANGELES COUNTY MTA	LA29202V	SCAB	0	EASTSIDE TRANSIT CORRIDOR - UNION STATION TO ATLANTIC VIA 1ST ST. TO LORENA, THEN 3RD ST. VIA 3RD/BEVERLY BLVD. TO ATLANTIC (EASTSIDE LRT)	2009	2010	Project In Environmental Documents/Pre-design Phase
LOS ANGELES COUNTY MTA	LA29202W	SCAB	0	MID -CITY TRANSIT CORRIDOR: WILSHIRE BLVD. METRO RAPID TRANSITWAY FROM VERMONT TO SANTA MONICA DOWNTOWN	2009	2010	Project In Environmental Documents/Pre-design Phase
LOS ANGELES COUNTY MTA	LA29202X	SCAB	0	METRO RED LINE MOS-3: N. HOLLYWOOD 5.9-MILE W/ 3 STATIONS, HIGHLAND TO N.HOLLYWOOD STA. 15,370+746= 16,117 118,630+5,754=124,384	2002	2002	Project Completed
LOS ANGELES COUNTY MTA	LA29212X	SCAB	0	METRO RAIL BLUE LINE - PASADENA EXT UNION STA TO SIERRA MADRE VILLASTA 13.5 MILES, 12 STATIONS	2003	2003	Project Completed
LOS ANGELES COUNTY MTA	LA963542	SCAB	0	ACQUISITION REVENUE VEHICLES - 2,513 CLEAN FUEL BUSES: LEASED VEH, FY02 (370); +30 HC; FY03 -FY06 TOTAL OF 516	2005	2005	Project Implementation Phase
LOS ANGELES COUNTY MTA	LA963755	SCAB	0	CHINATOWN INTERMODAL IMPROVEMENT TO DEVELOP A CONNECTION FROM BLUE LINE - PASADENA (CHINATOWN STATION TO BROADWAY STREET) 97-98 TCI	2002	2002	Project completed
LOS ANGELES COUNTY MTA	LA974083	SCAB	0	CHANDLER/BURBANK BIKE PATH-WHITEOAK TO PIERCE COLLEGE A 3.2 MILE CLASS I BIKEWAY ON MTA'S CHANDLER/BURBANK RAIL RIGHT-OF-WAY WILL IMPROVE NON-MOTORIZED ACCESS (COMBINED W/LA974078)	2003	2007	Project In Construction/Implementation Phase. The project is integrated with a busway project, which was delayed due to the discovery of contaminated soil. This project cannot be completed independent of the busway. These issues are now being resolved and the project is expected to be expeditiously implemented.
LOS ANGELES COUNTY MTA	LA974124	SCAB	0	SANTA MONICA BOULEVARD TRANSIT PARKWAY TRANSIT PEDESTRIAN AND BIKEWAY IMPROVEMENTS ALONG SANTA MONICA BLVD IN WEST LOS ANGELES, SPANS 2.5	2002	2005	Project In Construction/Implementation Phase. There were delays in the Design Phase, and, subsequently, a change in implementing agency. The project is now being administered by the City of Los Angeles, and is expected to be expeditiously implemented.
LOS ANGELES COUNTY MTA	LA974235	SCAB	0	SIGNAL SYSTEM TECHNICIAN TRAINING PROGRAM CURRICULUM DEVELOPMENT PROGRAM AT COMMUNITY COLLEGE	2002	2002	Project Completed
LOS ANGELES COUNTY MTA	LA990305	SCAB	0	LIGHT RAIL TRANSIT FLEET- 50 NEW RAIL CAR	2010	2010	Project In Construction/Implementation Phase. (The completion date was erroneously reported as 2003 in previous Timely Implementation Reports.)

LOS ANGELES COUNTY MTA	LA990306	SCAB	0	RAPID BUS PROGRAM - 4 - FORTY FOOT BUSES. ALSO FACILITY: BUS STOP DESIGN AND CONSTRUCTION, TECHNOLOGY UPGRADING, OPERATING SUPPORT.	2007	2004	Project Completed
LOS ANGELES COUNTY MTA	LA991305	SCAB	0	RIDESHARE 2000/CLUB METRO- EXTEND AND EXPAND IMLEMNT. INCNTIVE PRGM. TO ENCOURAGE USE OF ALT. MODES OF TRAVEL OTHER THAN DRIVING ALONE.	2005	2005	Project In Construction/Implementation Phase. (This project has been combined with LA0C8114 & 92733, and will not be listed under this ID # in subsequent reports.)
LOS ANGELES REDEVELOPMENT AGENCY	LA0C53	SCAB	0	HOLLYWOOD INTERMODAL TRANSPORTATION AND PUBLIC PARKING CENTER ON HAWTHORNE AVE. BETWEEN HIGHLAND AVENUE AND NORTH ORANGE DRIVE.	2004	2004	Project In Environmental Documents/Pre-design Phase
LOS ANGELES, CITY OF	LA002738	SCAB	0	BIKEWAY/PEDESTRIAN BRIDGE OVER LA R RIVER AT TAYLOR YARD CLASS I (CFP 738, 2077)	2002	2007	Project In Environmental Documents/Pre-design Phase. There were significant delays in the ROW Acquisition Phase. These issues have since been resolved and the project is now being expeditiously implemented.
LOS ANGELES, CITY OF	LA0B7002	SCAB	0	ATHENS/LENNOX/WILLOWBROOK/FLORENCE ET AL BUS SHELTER INSTALLATION-ENHANCE PASSENGER FACILITIES AT BUS STOPS, IMPROVE PASSENGER COVENIENCE	2002	2002	Project Completed
LOS ANGELES, CITY OF	LA0B7024	SCAB	0	METRO RED LINE MELROSE SHUTTLE-ACQUISITION OF 2 LOW FLOOR, PROPANE-POWERED, 30-FOOT BUSES WILL BE USED IN THE OPERATION OF A NEW HIGH FREQUENCY SHUTTLE	2002	2002	Project Completed
LOS ANGELES, CITY OF	LA0B7026	SCAB	0	METRO RED LINE/WEST HOLLYWOOD/BEVERLY CENTER/CEDER SINAI SHUTTLE-ACQUIRE 7 NEW 30-FOOT, PROPANE-FUELED, DASH STYLE BUSES FOR THE OPERATION OF A HIGH FREQUENCY SHUTTLE	2002	2002	Project Completed
LOS ANGELES, CITY OF	LA0B7034	SCAB	0	SUN VALLEY INTERMODAL TRANSIT CENTER; PEDESTRIAN CROSSING/BUS STOP IMPROVEMENT- PROVIDE PED. CROSSINGS AT EACH END OF THE PLATFORM OF SOON TO BE BUILT SUN VALLEY METROLINK STATION	2003	2003	Project Completed
LOS ANGELES, CITY OF	LA0B7274	SCAB	0	CITYWIDE ST PEDESTRIAN IMPROVEMENT-CONSISTS OF A SERIES OF STREETScape ENHANCEMENTS WITHIN DOWNTOWN LA DESIGNED TO STRENGTHEN THE PEDESTRIAN LINKAGE BETWEEN DOWNTOWN DESTINATIONS.	2002	2004	Project Completed
LOS ANGELES, CITY OF	LA0B7276	SCAB	0	GRAND AVE RELIGNMENT AND PEDESTRIAN ENHANCEMENTS-REALIGNING GRAND AVE BETWEEN TEMPLE AVE AND FIRST ST WILL INCREASE PEDESTRIAN CAPACITY. SPECIFIC IMPROVEMENTS INCLUDE SIDEWALKS ETC	2003	2003	Project completed
LOS ANGELES, CITY OF	LA0B7278	SCAB	0	NORTHEAST COMMUNITY LINKAGES PHASE II- HIGHLIGHT PEDESTRIAN CONNCTNS W/RAIL & BUS LINES ALONG MARMION WAY AND AT PASADENA AVE, FIGUEROA ST, FRENCH AVE, AND AVE 45, 50, 60, 61.	2002	2002	Project Completed
LOS ANGELES, CITY OF	LA0B7285	SCAB	0	ALISO VILLAGE PEDESTRIAN LINKAGE PROJECT-LINK THE NEW RECONSTRUCTED ALISO VILLAGE PUBLIC HOUSING DEVELOPMENT TO THE 2ND ST TRANSIT WAY & METRO RAIL STATION AT FIRST AND BOYLE ST.	2002	2004	Project Completed

LOS ANGELES, CITY OF	LA0B7290	SCAB	0	VERMONT SIDEWALK WIDENING/TRANSIT AVENIDA: EXPOSITION BLVD TO I-10-ENHANCE THE PEDESTRIAN ENVIRONMENT/INCREASE SAFETY ON VERMONT AVE	2003	2004	Project Completed
LOS ANGELES, CITY OF	LA0B7293	SCAB	0	SAN PEDRO PEDESTRIAN WAY-PROVIDE PEDESTRIAN ACCESS WAYS LINKING EXISTING TRANSIT FACILITIES AND PROPOSED PARKING STRUCTURE TO SURROUNDING & OTHER DESTINATIONS IN DOWNTOWN SAN PEDRO	2003	2004	Project Completed
LOS ANGELES, CITY OF	LA0B7330	SCAB	0	SAN FERNANDO ROAD ROW BIKE PATH PHASE II- CONSTRUCT 2.75 MILES CLASS I FROM FIRST ST TO BRANFORD ST, ON MTA-OWNED ROW PARALLEL TO SAN FERNANDO RD. LINK CYCLISTS TO NUMEROUS BUS LINE	2005	2005	Project In Construction/Implementation Phase
LOS ANGELES, CITY OF	LA0C8173	SCAB	0	NORTHRIDGE METROLINK STN PARKING IMPRVMENT. CONSTRUCT ADD'L 100 PRKNG SPCS & RECONFIGURE SOUTHERN PRTION OF EXISTNG PRKNG LOT TO YIELD AN ADD'T'L 40 NET PRKNG SPCES TOTAL 400 SPC.	2007	2007	Project In Engineering (PS&E) Phase
LOS ANGELES, CITY OF	LA0C8174	SCAB	0	LITTLE TOKYO PEDESTRIAN LINKAGES. CONSTRUCTION OF IMPROVEMENTS: SIDEWALK AND CROSSWALK ENHANCEMENTS, STREET FURNITURE & LANDSCAPING TO PROMOTE PEDESTRIAN TRAVEL W/IN LITTLE TOKYO.	2004	2006	Project In Engineering (PS&E) Phase. The project was delayed due to changes in project administration. These issues have since been resolved and the project is now being expeditiously implemented.
LOS ANGELES, CITY OF	LA0C8209	SCAB	0	HOLLYWOOD MEDIA DISTRICT-PEDESTRIAN IMPROVEMENTS. INCLUDING SMART CROSSWALKS, TRAFFIC SIGNAL, LANDSCAPING ETC. BET. BUS STOPS ALONG SANTA MONICA BLVD, VINE ST AND HIGHLAND AVE.	2005	2005	Project In Bid/Advertise Phase
LOS ANGELES, CITY OF	LA0C8241	SCAB	0	PICO UNION/ECHO PARK DASH VEHICLE PROCUREMENT. PURCHASE (3) LOW-FLOOR, PROPANE-POWERED 30' BUSES FOR THE PICO/UNION ECHO PARK SHUTTLE SERVICE.	2004	2010	Project In Bid/Advertise Phase. There were significant delays in negotiating an MOU between MTA and the City of Los Angeles. These issues have since been resolved and the project is now being expeditiously implemented.
LOS ANGELES, CITY OF	LA0C8242	SCAB	0	BUS STOP IMPROVEMENTS ON SAN FERNANDO ROAD & TC LIGHTING; ENHANCE PASSENGER FACILITIES AT THREE BUS STOPS WITH GREATEST NUMBER OF DAILY BOARDINGSON EAST SIDE OF SAN FERNANDO ROAD.	2008	2008	Project in Construction/Implementation Phase.
LOS ANGELES, CITY OF	LA0C8303	SCAB	0	ANGELS FLIGHT RAILWAY PLAZA. ENHNCMENT OF SYSTM & DEVT OF LOWER PLAZA INCL KIOSKS, INCLDS INSTALLING, WAITING & SEATING AREAS, LIGHTING, CNNCTIONS BET HILL ST & ADJCENT RED LINE ST	2005	2005	Project In Engineering (PS&E) Phase
LOS ANGELES, CITY OF	LA0C8318	SCAB	0	LA CITY AND SURROUNDING COMMUNITIES BICYCLE MAP-PROJECT WILL UPDATE BIKEWAY MAPPING INFO. FOR THE CITY OF LA AND PLOT BYCYCLE LANE AND PATH INFORMATION ON A NEW MAP.	2004	2004	Project In Environmental Documents/Pre-design Phase
LOS ANGELES, CITY OF	LA0C8319	SCAB	0	TAXI/SHUTTLE STANDS AT METRO RED LINE STA AT N HLWD & UNIVERSAL. CITY AUTHORIZED TAXI STANDS AT TWO METRO RED LINE STATIONS (UNIVERSAL CITY ON LANKERSHIM AND N. HLWD ON CHANDLER.	2003	2004	Project In Construction/Implementation Phase

LOS ANGELES, CITY OF	LA0C8321	SCAB	0	LA CULTURAL TOURISM WEB PAGE DEVELOP & TRANSIT PROMOTION. ENCOURAGES THE USE OF MASS TRANSIT AT TARGETED TRIP GENERATION NODES AND FACILITATE MASS TRANSIT USE TO REG. DESTINATIONS.	2005	2005	Project In Construction/Implementation Phase
LOS ANGELES, CITY OF	LA0C8324	SCAB	0	BICYCLE PARKING AT FIVE GOLD LINE STATIONS- PROJECT WILL INSTALL BICYCLE PARKING AND LOCKERS AT FIVE OF THE SIX PASADENA BLUE LINE STATIONS LOCATED WITHIN THE CITY OF LA.	2003	2005	Project In Engineering (PS&E) Phase. This project is programmed for PE only, and thus is not a TCM. It will not be listed in subsequent Timely Implementation Reports.
LOS ANGELES, CITY OF	LA0C8329	SCAB	0	BICYCLE RACKS ON COMMUTER EXPRESS BUSES. ADDITION OF FRONT-LOADING BICYCLE RACKS TO A TOTAL OF 93 COMMUTER EXPRESS BUSES AND SPARES THAT SERVE THE CITY AND COUNTY OF LA.	2003	2004	Project In Construction/Implementation Phase
LOS ANGELES, CITY OF	LA0C8330	SCAB	0	BICYCLE COMMUTER TECHNOLOGY ACCESS, CITY'S WEB PAGE FOR BICYCLE PROGRAM	2006	2006	Project Underway
LOS ANGELES, CITY OF	LA0C8380	SCAB	0	CHINATOWN/COLLEGE STREET BLUE LINE STATION ENHANCEMENT-FEATURES CONSIST OF A PEDESTRIAN WALKWAY BRIDGE; A BUS STATION AND A BIKE STATION.	2004	2008	Project In Engineering (PS&E) Phase. There were disagreements on design parameters between involved agencies. Negotiations are ongoing, and once these are resolved, the project is expected to be expeditiously implemented.
LOS ANGELES, CITY OF	LA0C8385	SCAB	0	EL SERENO DASH PROCUREMENT. PURCHASE (2) LOW-FLOOR, PROPANE POWERED, 30' FOOT BUSES FOR THE EL SERENO DASH SERVICE.	2008	2008	Project In Bid/Advertise Phase.
LOS ANGELES, CITY OF	LA962071	SCAB	0	L.A. RIVER BIKE PATH OVER LOS FELIZ BLVD. CLASS I AND CLASS II [CALL # 2071, MOU P.0002-071 ON 6/30/99]	2003	2003	Project Completed
LOS ANGELES, CITY OF	LA962129	SCAB	0	METROLINK ROW MITIGATION PEDESTRIAN & CROSSING IMPROVEMENTS	2002	2002	Project Completed
LOS ANGELES, CITY OF	LA962148	SCAB	0	WESTLAKE COMMUNITY BASED INTERCEPT INTERMODAL FACILITY (96 CALL, CAT 2) [CALL #2445]	2003	2007	Project In Contract Negotiation Phase. The project was delayed due to repeated changes in lead agencies. This issue has since been resolved, with MTA designated as the implementing agency. The project is now being expeditiously implemented.
LOS ANGELES, CITY OF	LA962445	SCAB	0	WESTLAKE COMMUNITY BASED INTERCEPT INTERMODAL FACILITY	2002	2002	Project Completed
LOS ANGELES, CITY OF	LA974165	SCAB	0	MACARTHUR PARK STATION IMPROVEMENTS INCLUDE DESIGN AND CONSTRUCTION OF A PLAZA TO ACCOMMODATE PUBLIC ACCESS (PEDESTRIAN ENTRANCES, WALKWAYS, BICYCLE FACILITIES)	2002	2007	Project In Contract Negotiation Phase. Project was delayed due to unanticipated environmental issues in the design phase. These issues have since been resolved and the project is now being expeditiously implemented.
LOS ANGELES, CITY OF	LA996000	SCAB	0	DASH PICO UNION/ ECHO PRK VEH ACQ PURCHASE ONE BUS TO RELIEVE OVERCROWDING	2003	2003	Project Completed
LOS ANGELES, CITY OF	LA996001	SCAB	0	DASH EL SERENO/CTY TERR VEH ACQ PURCHASE2 BUSES TO REDUCE OVERCROWDING	2003	2003	Project Completed
LOS ANGELES, CITY OF	LA996002	SCAB	0	DASH WILMINTON VEH ACQUISITION PURCHASE 2 BUSES TO RELIEVE OVERCROWDING	2003	2003	Project Completed
LOS ANGELES, CITY OF	LA996003	SCAB	0	DASH WATTS VEH ACQUISITION PURCH 2 VEH'S TO REDUCE EXISTING OVERCROWDING	2003	2003	Project Completed
LOS ANGELES, CITY OF	LA996004	SCAB	0	DASH KING-EAST VEH ACQUISITION FINANCE THE ACQ OF 5 BUSES TO REDUCE OVERCROWDING	2006	2003	Project Completed
LOS ANGELES, CITY OF	LA996005	SCAB	0	DASH HLLYWOOD VEH ACQUISITION ACQUIRE TWO BUSES TO REDUCE EXISTING OVERCROWDING	2003	2003	Project Completed

LOS ANGELES, CITY OF	LA996006	SCAB	0	DASH VERMNT-MAIN VEH ACQUISITION PURCH 5 BUSESTO RELIEVE EXISTING OVERCROWDING	2006	2003	Project Completed
LOS ANGELES, CITY OF	LA996007	SCAB	0	DASH MANCHSTR-FLORNCE VEH ACQ PURCH 5 BUSES TO RELIEVE EXISTING OVERCROWDING	2006	2003	Project Completed
LOS ANGELES, CITY OF	LA996010	SCAB	0	COMM EXPRESS 448 VEH ACQUISITION PURCH 3 BUSES TO REDUCE EXISTING OVERCROWDING	2003	2003	Project Completed
LOS ANGELES, CITY OF	LA996011	SCAB	0	ROWAN SHUTTLE VEH ACQUISITION PURCH 2 BUSES TO REDUCE EXISTING OVERCROWDED CONDITIONS	2003	2003	Project Completed
LOS ANGELES, CITY OF	LA996099	SCAB	0	METROLINK SHUTTLE (CHATSWORTH)	2003	2003	Project Completed
LOS ANGELES, CITY OF	LA996106	SCAB	0	DOWNTOWN PRKING MGMT ORDINANCE PRKNG ORD. TO MANAGE PRKNG SUPPLY	2003	2004	Project Completed
LOS ANGELES, CITY OF	LA996241	SCAB	0	CHANDLER BIKEWAY EXTENSION-DESIGN & CONSTRUCT .5 MILE EXT, CYCLIST SHOWER AND LOCKER FACILITY AT HISTORIC TRAIN STATION ACROSS FROM CHANDLER BLVD. FROM THE METRO RED LINE STATION.	2004	2004	Project In Engineering (PS&E) Phase
LOS ANGELES, CITY OF	LA996390	SCAB	0	SEPULVEDA BLVD. FROM CENTINELA AVE. TO LINCOLN BLVD - WIDEN SEPUL BLVD. BET. LINCOLN AND CENTINELA TO PROVIDE BUS/CARPOOL PRIORITY LANE.	2004	2005	Project In Environmental Documents/Pre-design Phase
LOS ANGELES, CITY OF	LA996439	SCAB	0	BICYCLE RACK AND PARKING PHASE II INSTALL ESTIMATED 833 INVERTED BIKE RACKS,	2002	2004	Project Completed
LOS ANGELES, CITY OF	R627TA	SCAB	0	METRO RAIL RED LINE AT WESTLAKE COMMUNITY INTERMODAL INTERCEPT FACILITY - DESIGN 1,100 SPACE PARKING STRUCTURE CROSSSTREETS ARE ALVARADO/MACARTHUR	2002	2002	Project Completed
MANHATTAN BEACH	LAOB418	SCAB	1	IN MANHATTAN BEACH - MARINE AVENUE BETWEEN SEPULVEDA BLVD (STATE ROUTE 1) AND VALLEY/ARDOMOR PEDESTRIAN AND AESTHETIC IMPROVEMENTS. (EA# 220201, PPNO #2841). STATE TEA.	2003	2003	Project Completed
MONROVIA	LA0C8250	SCAB	0	MONROVIA RAILROAD DEPOT MULTI-MODAL TRANSIT CENTER; STABILIZING STRUCTURE AND THEN OVERALL STRUCTURAL ELEMENTS WILL BE REPAIRED FOLLOWED BY RESTORING KEY ARCHITECTURAL FEATURES.	2005	2005	Project In Environmental Documents/Pre-design Phase
MONTEBELLO	LA000504	SCAB	0	PURCHASE AND INSTALLATION OF ON BOARD BIKE RACKS.	2003	2003	Project Completed
MONTEBELLO	LA0D28	SCAB	0	PURCHASE OF (1) EXPANSION BUS. ONE HYBRID (DIESEL-ELECTRIC) LOW FLOOR 40' COACH FOR INSERVICE TESTING.	2005	2005	Project In Bid/Advertise Phase
MONTEBELLO	LA55012	SCAB	0	REPLACE BUSES- 2000 (5) 40' BUSES AND (10) 40' EXPANSION BUSES	2003	2003	Project Completed
MONTEBELLO	LA55201	SCAB	0	CONTINUING PROJECT - BUS STOP IMPROVEMENTS AMENITIES ,SHELTERS ,ETC	2010	2010	Project In Construction/Implementation Phase
MONTEREY PARK	LA0D189	SCAB	0	PARAMOUNT BLVD AND GREENWOOD AVE IMPROVEMENT: PROVIDE ADDITIONAL TURNING LANES AT SR 60 ON/OFF RAMP AT PARAMOUNT BLVD INTERSECTION, FREEWAY ACCESS IMPROVEMENT	2006	2006	Project In Engineering (PS&E) Phase
MONTEREY PARK	LA0D190	SCAB	0	NORTH ATLANTIC BLVD WIDEN AND CHANNELIZATION BTWN NEWMARK AVE HILLMAN AVE WIDEN TO SIX LANES OF OPERATION TO INCLUDE ACCELERATION & DECELERATION LANE OPRTN MDIFCTION	2006	2006	Project In Engineering (PS&E) Phase

NORWALK	LA01B103	SCAB	0	PURCHASE 4 - 40' LOW FLOOR BUSES	2003	2003	Project completed
NORWALK	LA0B0841	SCAB	0	PURCHASE TWO (2) 40-FT GILLIG + SHORTFALL	2003	2004	Project Completed
NORWALK	LA0C71	SCAB	0	PURCHASE OF (4) FOUR ALTERNATIVELY FUELED EXPANSION BUSES.	2004	2004	Project Completed
NORWALK	LA0D01	SCAB	0	NORWALK ON BEHALF OF SANTA FE SPRINGS - ALTERNATIVE FUEL VEHICLES AND TRANSIT RELATED FACILITIES.	2004	2004	Project In Construction/Implementation Phase
NORWALK	LA0D02	SCAB	0	PURCHASE (2) EXPANSION PARATRANSIT VEHICLES	2003	2003	Project in Environmental Doucment/Pre-design Phase
NORWALK	LA0D04	SCAB	0	NORWALK/SANTA FE SPRINGS TRANSPORTATION CENTER EXPANSION - PARKING & RELATED IMPROVEMENTS	2004	2004	Contract Award Phase. Anticipated completion March 2005.
NORWALK	LA973500	SCAB	0	BUS STOP AMENITIES AT VARIOUS BUS STOP LOCATIONS	2003	2005	Multi-component Project; Partially Complete, Partially Ongoing. There were changes in the Scope of Work, resulting in a change in architects for the projects. These issues have since been resolved and the project is now being expeditiously implemented.
NORWALK	LA990302	SCAB	0	PROCUREMENT OF (2) PARATRANSIT VEHICLES	2003	2003	Project completed
PALOS VERDES ESTATES	LA0C8226	SCAB	0	PV TRANSIT CAPITAL IMPROVEMENT PROGRAM II. PURCHASE 3 EXPANSION CLEAN-FUEL VEHICLES.	2005	2005	First Vehicle Delivered
PASADENA	LA0B215	SCAB	0	PURCHASE OF (5) 30-FOOT ALTERNATIVE FUEL EXTENSION VEHICLES (GTIP)	2003	2003	Project Completed
PASADENA	LA0B7270	SCAB	0	BLUE LINE PEDESTRIAN ENHANCEMENTS-IMPROVE PEDESTRIAN ACCESS TO PLANNED BLUE LINE STATIONS IN THE CITY OF PASADENA, LOCATED ALONG THE PASADENA BLUE LINE ALIGNMENT	2003	2004	Project In Construction/Implementation Phase
PASADENA	LA0D47	SCAB	0	SR 710 MITIGATION PROJECT-TRAFFIC CONTROL AND MONITORING SYSTEM-INTELLIGENT TRANSPORTATION SYSTEMS (ITS). CONSTRUCT AND INSTALL ITS TECHNOLOGY AND VARIOUS DEGREES OF SMART SIGNALS	2008	2008	Project In Engineering (PS&E) Phase
PASADENA	LA0D48	SCAB	0	SR 710 MITIGATION PROJECT-110 FWY TO 210 FWY CONNECTOR.MARENGO INTERCHANGE EMPHASIS. THIS PROJECT INCLUDES THE INSTALLATION OF DIRECTIONAL SIGNS, CHANGEABLE MESSAGE SIGNS	2006	2006	Project In Engineering (PS&E) Phase
PASADENA	LA0D99	SCAB	0	PURCHASE 2 EXPANSION LOW-FLOOR, HANDICAPPED ACCESSIBLE, ALTERNATIVE FUEL TRANSIT BUSES.	2004	2004	Contract Award Phase
PASADENA	LA974129	SCAB	0	PASADENA GOLD LINE COMMUNITY LINKAGES PEDESTRIAN IMPROVEMENTS TO TWO PLANNED METRO PASADENA GOLD LINE STATIONS WITHIN THE CITY	2003	2006	Project In Engineering (PS&E) Phase. The project intersects a historic park, and Caltrans had requested significant additional environmental documentation. These issues have since been resolved and the project is now being expeditiously implemented.
REDONDO BEACH	LA0C8072	SCAB	1	PCH TRAFFIC AND INTERSECTION IMPROVEMENT, FROM HERONDO ST TO CATALINA AVE. (PPNO 3126)	2005	2005	Project In Engineering (PS&E) Phase
SAN GABRIEL VALLEY COG	LA974367	SCAB	0	ALAMEDA CORRIDOR EAST - GATEWAY TO AMERICA; RAIL ROAD OVERCROSS SAFETY REALIGNMENT ALONG SO. PACIFIC & UNION PACIFIC RR (SGVCOG)	2006	2004	Project Completed

SAN GABRIEL VALLEY COG	LA974423	SCAB	0	ALAMEDA CORRIDOR EAST - GATEWAY TO AMERICA (SGVCOG) IMPLEMENTATION OF TRAFFIC CONTROL MEASURES TO MODIFY OPERATION OF TRAFFIC SIGNALS AT GRADE CROSSINGS (TEA21-#198)	2003	2004	Project Completed
SAN GABRIEL VALLEY COG	LA990354	SCAB	0	ALAMEDA CORRIDOR EAST (SGCG) (T21-1017) RAILROAD CROSSING IMPROVEMENT	2006	2004	Project Completed
SAN GABRIEL VALLEY COG	LA990355	SCAB	0	ALMEDA CORRIDOR EAST - SYNCHRONIZE & TRAFFIC LIGHTS UPGRADE (T21-1138)	2006	2004	Project Completed
SAN GABRIEL VALLEY COG	LA990359	SCAB	0	ALAMEDA CORRIDOR-EAST GRADE SEP (T21-1533)	2003	2009	Project In Engineering (PS&E) Phase. Project was delayed due to unanticipated administrative changes in implementation design. These issues are now being resolved and the project is expected to be expeditiously implemented.
SANTA CLARITA	LA0B7020	SCAB	0	ADDITIONAL (150) PARKING AT NEWHALL METROLINK STATION-CONSTRUCT ADEQUATE PARKING AT THE NEWHALL METROLINK STATION, INCLUDE PARK & RIDE, KISS & RIDE AND DISABLED-ACCESS SPACES	2003	2005	Project in Construction/Implementation Phase. There were unanticipated difficulties with tenant relocation and land procurement. These issues have since been resolved and the project is now being expeditiously implemented.
SANTA CLARITA	LA0C09	SCAB	0	TRANSIT CENTER PASSENGER AMENITIES	2003	2003	Project Completed
SANTA CLARITA	LA0C8130	SCAB	0	INCIDENT MANAGEMENT - TRAVELER INFORMATION SUBSYSTEM; INSTALLATION CONSISTS OF 4 STATIONARY ELECTRONIC CHANGEABLE MESSAGE SIGNS & A HIGHWAY ADVISORY RADIO SYSTEM.	2006	2006	Project In Engineering (PS&E) Phase
SANTA CLARITA	LA0C8156	SCAB	0	SANTA CLARITA REGIONAL COMMUTER TRAIL - I-5 TO FAIRWAYS DRIVE; CONSTRUCTION AND SOME ACQUISITION OF 1.0 MILES OF CLASS I BIKE PATH AND A BRIDGE RESTORATION ADJACENT TO SANTA CLARA.	2006	2006	Project In Engineering (PS&E) Phase
SANTA CLARITA	LA0C8371	SCAB	0	SANTA CLARITA TRANSIT EXPANSION BUSES; WILL ALLOW PHASE 1 OF 5 YEAR MASTER PLAN TO BE IMPLEMENTED WITH SEVEN LOCAL BUSES AND FOUR COMMUTER BUSES.	2008	2008	First Vehicle Delivered
SANTA CLARITA	LA973024	SCAB	0	IMPROVE PEDESTRIAN ACCESS TO TRNSIT STOPS, INSTALLING CROSSWALKS, SIDE- WALKS, AND PEDESTRIAN-ACTUATED TRAFFIC SIGNALS.@ 17 TRANSIT STOPS VARIOUS LOCATIONS, PROJECT EXEMPT	2003	2003	Project Completed
SANTA FE SPRINGS	LA0C56	SCAB	0	ACE/GATEWAY CITIES-CONSTRUCT GRADE SEPARATION AT VALLEY VIEW AVENUE IN SANTA FE SPRINGS (PART OF ALAMEDA CORRIDOR EAST PROJECT)	2007	2006	Project In Contract Negotiation Phase. The project was delayed due to programming error that designated the wrong implementing agency. These issues are now being resolved and the project is expected to be expeditiously implemented.
SANTA MONICA	LA030001	SCAB	0	CALIFORNIA INCLINE SIDEHILL VIADUCT BR 53C0543 ADD, INCLUDED INSTATE IN STATE HBRR PROGRAM (0.3 MILE, I-S, I-N) SIDEWALK/BIKEWAY WIDENING & SEISMIC	2006	2006	Project In Environmental Documents/Pre-design Phase
SANTA MONICA	LA0B7267	SCAB	0	CROSSWAY ENHANCEMENTS ALONG TRANSIT CORRIDOR-ENHANCEMENTS DESIGNED TO IMPROVE PEDESTRIAN ACCESS TO EXISTING AND PLANNED TRANSIT FACILITIES ALONG SANTA	2002	2004	Project Completed
SANTA MONICA	LA57101	SCAB	0	BUS FACILITY IMPROVEMENTS	2005	2005	Contract Award Phase
SANTA MONICA	LA57108	SCAB	0	BUS STOP AMENITIES	2003	2003	Project Completed

SANTA MONICA	LA960192	SCAB	0	THROUGHOUT THE CITY OF SANTA MONICA VARIOUS BIKE RACKS AND LOCKERS	2002	2002	Project Completed
SANTA MONICA	LA990726	SCAB	0	BIKE RACKS (CFP/6089)	2003	2004	Project Completed
SCAG	LA996082	SCAB	0	WEB ACCESS VANPOOL INFO SYS DEV & IMPLMENT DATABSE FOR VANPOOLS, VACANCIES	NA	NA	Ongoing Project
SCAG	LA996083	SCAB	0	COMMUTER CHANNEL NON-MONETARY SUBSCRIPTION SRVCE	NA	NA	Ongoing Project
SCRAA/LACMTA/ SANBAG	LA0B7107	SCAB	0	CHATSWORTH INTERMODAL PARK AND RIDE-INCLUDE DESIGN AND CONS. OF ADDITIONAL 150 SPACES- CONSTRUCTION WILL INCL GRADING, ASPHALT PAVING, INSTALLATION OF CONCRETE BUMPERS ETC (PE ONLY)	2003	2004	Project Completed
SCRRA/LACMTA/ SANBAG	LA29204	SCAB	0	LA-SAN BERNARDINO CR (SF UNION STATION-SAN BERNARDINO) CAPACITY IMPROVEMENTS (DEMO TEA21) (JARC \$991).	2003	2006	Project In Engineering (PS&E) Phase. Project was delayed due to unanticipated administrative changes in implementation design. These issues are now being resolved and the project is expected to be expeditiously implemented.
SIERRA MADRE	LA0C8372	SCAB	0	EXPANSION OF SIERRA MADRE BUS ROUTE. PURCHASE OF 3 CNG VANS TO EXPAND SIERRA MADRE ROUNDABOUT SYSTEM.	2007	2007	First Vehicle Delivered
SOUTH PASADENA	LA0B7271	SCAB	0	BLUE LINE PEDESTRIAN LINKAGE AND SAFETY IMPROVEMENTS-INCLUDE SIGNAGE, UPGRADES CROSSWALKS, PEDESTRIAN LIGHTING, ENHANCED SIDEWALK AROUND THE STATION IN THE AREA MISSION ST STATION	2003	2003	Project Completed
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	LA0B7009	VAR	0	ANTELOPE VALLEY LINE IMPROVEMENTS- INCREASE CAPACITY AND REDUCE TRAVEL TIME ON THIS COMMUTER RAIL AND FREIGHT SERVICE LINE BETWEEN LANCASTER AND LOS ANGELES	2003	2005	Project In Construction/Implementation Phase
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	LA963758	SCAB	0	PURCHASE METROLINK CARS & LOCOMOTIVES	2005	2008	Project In Bid/Advertise Phase. The project was delayed due to FTA request for a change in procurement procedures. These issues have since been resolved and the project is now being expeditiously implemented.
VARIOUS AGENCIES	LA0B853	SCAB	0	WORK TRAINING PROGRAMS, INC. VEHICLE EXPANSION TWO 5 PASSENGER VEHICLES.	2003	2003	Project Completed
VARIOUS AGENCIES	LA0B854	SCAB	0	WHITTIER TRANSIT. EXPANSION VEHICLE - ONE 17 PASSENGER MEDIUM BUS.	2003	2003	Project Completed
VARIOUS AGENCIES	LA0B860	SCAB	0	KOREAN HEALTH EDUCATION INFORMATION AND RESEARCH CENTER. EXPANSION VEHICLES - THREE 10 PASSENGER SMALL BUSES.	2003	2004	Project Completed
VARIOUS AGENCIES	LA0B863	SCAB	0	VILLA ESPERANZA. EXPANSION VEHICLE - ONE 17 PASSENGER MEDIUM BUS.	2003	2004	Project Completed
VARIOUS AGENCIES	LA0C23	SCAB	0	HEALTHVIEW - EXPANSION VEHICLE - (1) 17-PASSENGER MEDIUM BUS	2003	2004	Project Completed
VARIOUS AGENCIES	LA0C25	SCAB	0	KOREAN HEALTH EDUCATION INFORMATION (KHEIR) - EXPANSION VEHICLES - (3) 10-PASSENGER SMALL BUSES.	2003	2004	Project Completed

VARIOUS AGENCIES	LA0C30	SCAB	0	ULTRALIFE ADULT DAY HEALTH CARE- EXPANSION VEHICLE - (1) 10-PASSENGER SMALL BUS.	2003	2003	Project Completed
VARIOUS AGENCIES	LA0C31	SCAB	0	ULTRALIFE ADULT DAY HEALTH CARE - EXPANSION VEHICLES - (2) 5-PASSENGER MINIVANS.	2003	2003	Project Completed
VARIOUS AGENCIES	LA0C33	SCAB	0	WHITE MEMORIAL MEDICAL CENTER - EXPANSION VEHICLES - (5) 10-PASSENGER SMALL BUSES.	2003	2004	Project Completed
VARIOUS AGENCIES	LA0C34	SCAB	0	WHITE MEMORIAL MEDICAL CENTER - EXPANSION VEHICLE - (1) 5-PASSENGER MINIVAN.	2003	2004	Project Completed
VARIOUS AGENCIES	LA0C35	SCAB	0	WHITE MEMORIAL MEDICAL CENTER - EXPANSION VEHICLE - (1) 17-PASSENGER MEDIUM BUS.	2003	2004	Project Completed
VARIOUS AGENCIES	LA973039	SCAB	0	ACCESS SERVICES INC. FLEET EXPANSION VEHICLES 46 MINI -- VANS	2002	2002	Project Completed
VARIOUS AGENCIES	LA990744	SCAB	0	KOREAN HEALTH, EDUCATION, INFO & RESEARCH CENTER (KHEIR)- EXPANSION THREE (3) 17-PASSENGER SMALL BUSES.	2003	2003	Project Completed
WESTLAKE VILLAGE	LA960142	SCAB	0	LINDERO CANYON ROAD FROM AGOURA RD TO JANLOR DR CONSTRUCT BIKE PATH, RESTRIPE STREET, INTERSECTION WIDENING, SIGNAL COORDINATION, RAMP WIDENING (TEA21-#65)	2003	2005	Project In Engineering (PS&E) Phase. The project was delayed due to unexpected difficulties in permitting and certification with Caltrans and the LA County Flood Control District. These issues have since been resolved and the project is now being expeditiously implemented.
WHITTIER	LA0B7322	SCAB	0	WHITTIER GREENWAY TRAIL-ACQUISITION, DESIGN, AND CONSTRUCT OF 2 MILES CLASS I BIKE/PED PATH ON AN ABANDONED RAIL ROW FROM NORWALK TO FIVE POINTS	2004	2004	Project In Engineering (PS&E) Phase
WHITTIER	LA0C8161	SCAB	0	WHITTIER GREENWAY TRAIL: SEGMENT 1 DEVT& SEGMENT 3 P/E AND DEVT. DESIGN, CONSTRUCT & SOME ACQUISITION OF 2.86 MLES CLASS I BIKE/PED FACILITIES ON ABANDONED R.O.W IN WHITTIER	2008	2008	Project In Engineering (PS&E) Phase

Orange County

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	2004 RTP PROJECT COMPLETION DATE	2004 RTIP PROJECT COMPLETION DATE	Project Status
ANAHEIM	ORA000100	SCAB	5	GENE AUTRY WAY WEST@ I-5 (I-5 HOV TRANSITWAY TO HASTER) ADD OVERCROSSING ON I-5 (S)/MANCHESTER AND EXTEND GENE AUTRY WAY WEST FROM I-5 TO HARBOR.	2004	2004	Project In Design Phase - ROW To Begin Jan-04
ANAHEIM	ORA010202	SCAB	0	PURCHASE (10) 22 FOOT ELECTRIC BUSES FOR ANAHEIM RESORT AREA AND MISC. SUPPORT EQUIPMENT.	2003	2003	Project Completed
BUENA PARK	ORA55286	SCAB	0	COMMUTER RAIL STATION (DALE STREET AND MALVERN) IN BUENA PARK. CONSTRUCT NEW RAIL STATION. 308 PARKING SPACES.	2006	2006	Project In Design Phase; Construction To Begin March-04
CALTRANS	10167	SCAB	5	I-5 FROM SR-91 TO LA COUNTY LINE IN BUENA PARK - ADD 1 MIXED FLOW LN AND 1 HOV LN IN EACH DIRECTION. FROM 6 - 0 TO 8 - 2 LANES.	2008	2008	Project In Bid/Advertise Phase. Construction Will Start Aug-04; Estimated Completion Date Is Dec-08
CALTRANS	1332	SCAB	55	(RTE SR-22 TO RTE SR-91) IN CITY OF ORANGE_WIDEN EXIST 8-LN FWY INCL. 2 STND HOV LNS ADD 2 MIXED FLOW LANES AND_AUX LNS; OC @ LAVETA, MEATS & KATELLA (98 STIP PROJECT)	2002	2003	Project Completed
CALTRANS	5242	SCAB	605	I-405 TO LA CO LINE -- ADD ONE HOV LANE IN EACH DIRECTION. THIS PROJECT WILL COMPLETE THE I-605 INTERCOUNTY GAP IN THE HOV SYSTEM IN SO. CALIF. (ITIP PROJECT)	2002	2005	Project In Construction Phase. The project was delayed due to design issues. These issues have since been resolved and the project is now being expeditiously implemented.
CALTRANS	6951	SCAB	405	405/55 INTERCHANGE SOUTH TRANSITWAY MOS1_EXISTING 4 MIXED 1 HOV_ON SR55 AND I-405 EXIST IS 5 MF AND 1 HOV ADD HOV DIRECT TRANSITWAY FROM SR55 TO I-405	2002	2005	Project In Construction Phase. The project was delayed due to design issues. These issues have since been resolved and the project is now being expeditiously implemented.
CALTRANS	ORA000195	SCAB	22	ON SR-22 (I-405 TO SR55) ADD 2 HOV LANES/1 EA DIR (FRM 0 - 2); & 2 AUX LANES/1 EA DIR (FRM 0- 2) (I-5 TO BEACH) & OPERATING IMPROVMENTS	2007	2007	Project In Design And Construction (Design - Build)
CALTRANS	ORA55073	SCAB	73	BIRCH TO I-405 WIDENING; ADD (1) MIXED FLOW LANE IN NB DIR; NB AUX LANE; SOUNDWALLS; AND (1) HOV LANE (2010) IN EACH DIR. NEAR SR55 INTERCHANGE (98 STIP)	2005	2005	Project In Construction
FULLERTON	ORA020113	SCAB	0	FULLERTON TRAIN STATION - PARKING STRUCTURE, PHASE I AND II. TOTAL OF 670 SPACES.	2004	2004	Project In Design Phase. The project was delayed due to changes in project configuration. These issues are now being resolved and the project is expected to be expeditiously implemented.
GARDEN GROVE	ORA981104	SCAB	22	RECONSTRUCT HARBOR BLVD INTERCHANGE. 4 LANES EACH DIRECTION. (1/4 MILE BEFORE AND AFTER SR-22 RAMPS) 2 HOV LNES(1 E/B & 1 W/B) AND PROPOSED SR-22 HOV LANES.	2007	2004	Eng Complete; ROW/Construction To Commence FY03/04 (Design Build)
MISSION VIEJO	ORA990902	SCAB	0	MISSION VIEJO (CITYWIDE) REMOTE TMC AND TRAVLER/PUBLIC INFO ACCESS CENTER. PROVIDES TRAFFIC INFO TO PUBLIC LIBRARIES. EST COMM INTERTIE BETWEEN CITY AND CALTRANS	2003	2004	Project In Contract Award Phase

ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA000104	SCAB	0	TRANSITWAY IMPROVEMENTS AT IRVINE TRANSPORTATION CENTER; BUILD 900 SPACE PARKING STRUCTURE, INCLUDING ENVIRONMENTAL, DESIGN AND CONSTRUCTION.	2004	2005	Project In Construction Phase
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA020105	SCAB	0	HYBRID ELECTRIC URBAN 40 FT BUSES (10) EXPANSION	2004	2004	Prototype buses being tested for technology performance
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA194	SCAB	0	CENTRAL ORANGE COUNTY FIXED GUIDEWAY (CENTERLINE) FOR CONSTRUCTION FROM JOHN WAYNE AIRPORT TO SANTA ANA TRANSPORTATION CENTER PLUS LINK TO SANTA ANA COLLEGE	2010	2010	Project In Design Phase. This project has been modified (see discussion on page 5, above), and now has three components, which will be reported as three projects in subsequent reporting—ORA194, ORA 194B, and ORA194C. The completion date for the replacement projects remains the same.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA65002	SCAB	0	RIDESHARE SERVICES RIDEGUIDE, DATABASE, CUSTOMER INFO, AND MARKETING. (ORANGE COUNTY PORTION).	N/A	N/A	Ongoing Project
ORANGE COUNTY TRANSIT DISTRICT (OCTD)	ORA020119	SCAB	0	PURCHASE PARATRANSIT VEHICLES EXPAN (142) - (66) IN FY04/05, (21) IN FY05/06, (14) IN FY06/07, (13) IN FY07/08, (14) IN FY08/09, (14) IN FY09/10	2007	2010	Acquisition is ongoing. The change in project completion date is due to the fact that the project was substantially expanded from 30 Paratransit vehicles to 142 Paratransit vehicles, and so extended through FY09/10. The project is being expeditiously implemented.
ORANGE COUNTY TRANSIT DISTRICT (OCTD)	ORA55241	SCAB	0	PURCHASE (79) STANDARD 40 FT EXPAN ALT FUEL BUSES - (28) IN FY04/05, (21) IN FY05/06, (14) IN FY06/07, (9) IN FY08/09, (7) IN FY09/10	2009	2010	Project is ongoing. The project was substantially expanded from 17 alternative fuel vehicles to 79 alternative fuel vehicles, and extended through FY 09/10. The project is being expeditiously implemented.
ORANGE, CITY OF	ORA990443	SCAB	22	SR-22 AND CITY DRIVE INTERCHANGE IMPROVEMENTS. RECONFIGURE FREEWAY INTERCHANGE AT SR-22 FROM SR-57 TO LEWIS STREET -- FROM 6/0 TO 6/2 LANES (ADDING 2 HOV LANES)	2007	2004	Project In Engineering Phase; ROW/Construction To Begin FY03/04 (DESIGN BUILD)
ORANGE, CITY OF	ORA990452	SCAB	0	TUSTIN BRANCH RAIL TRAIL (SANTA ANA RIVER TO FAIRHAVEN ST) CONVERT RAILS TO BIKE TRAIL THROUGH VILLA PARK AND ORANGE. CONNECTS 9 MILE TRAIL.	2003	2005	Project In Engineering and ROW Phase - Construction delayed by difficulties with site access for environmental soil sampling on railroad portion of project site. The City is in discussions with Caltrans to resolve the issue, and the project is expected to be expeditiously implemented.
TCA	10254	SCAB	73	SJHC, 15 MI TOLL RD BETWEEN I-5 IN SAN JUAN CAPISTRANO & RTE 73 IN IRVINE, EXISTING 3/M/F EA.DIR.1 ADD'L M/F EA DIR, PLUS CLIMBING & AUX LNS AS REQ, BY 2015 PER SCAG/TCA MOU 4/5/01	2015	2015	Project In Environmental Documentation/Pre-design Phase
TCA	ORA050	SCAB	241	ETC (RTE 241/261/133) TOLL RD (RTE 91TO I-5/JAMBOREE) EXISTING 2 M/F EA.DIR, 2 ADD'L M/F IN EA. DIR, PLUS CLIMB AND AUX LNS AS REQ, BY 2015 PER SCAG/TCA MOU 4/05/01.	2015	2015	Project In Environmental Documentation/Pre-design Phase
TCA	ORA051	SCAB	241	(FTC-N) TOLL RD (OSO PKWY TO ETC) (13MI) EXISTING 2 MF IN EA. DIR; 2 add'l MF EA. DIR BY 2015, PLS CLMBNG & AUX LANS PER SCAG/TCA MOU 4/05/01.	2015	2015	Project In Environmental Documentation/Pre-design Phase

TCA	ORA052	SCAB	241	(FTC-S) TOLL RD (I-5 TO OSO PKWY) (15MI) 2 MF EA. DIR BY 2006; AND 2 ADDITIONAL M/F EA. DIR. PLS CLMBNG & AUX LANES AS REQ BY 2015 PER SCAG/TCA MOU 4/05/01.	2006/2015	2015	Project Engineering (PS&E) Phase
VARIOUS AGENCIES	ORA030301	SCAB	0	(1) EXPANSION MINIVAN - A.S. FOUNDATION - PROVIDE SERVICES TO SENIORS AND DISABLED PERSONS.	2004	2004	Agency progressing with projects based on CT guidelines.
VARIOUS AGENCIES	ORA030302	SCAB	0	(9) EXPANSION MEDIUM BUSES (TYPE II) AND (11) MOBILE RADIOS - ORANGE COUNTY ARC - PROVIDE SERVICES TO SENIORS AND DISABLED PERSONS.	2004	2004	Agency progressing with projects based on CT guidelines
VARIOUS AGENCIES	ORA990906	SCAB	0	LUMP SUM. TEA FUNDS FOR BICYCLE AND PEDESTRIAN FACILITY PROJECTS THROUGHOUT ORANGE COUNTY.	2009	2009	Multipart project – some components underway
YORBA LINDA	ORA981103	SCAB	0	IN YORBA LINDA, CONSTRUCT COMMUTER RAIL STATION AND PARK AND RIDE (347 SPACES) NEAR ESPERANZA RD AND NEW RIVER ST	2005	2009	Project In Environmental Document/Pre-design Phase. Project was delayed due to unanticipated administrative changes in implementation design. These issues have since been resolved and the project is now being expeditiously implemented.

Riverside County

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	2004 RTP PROJECT COMPLETION DATE	2004 RTIP PROJECT COMPLETION DATE	Project Status
CALTRANS	0121D	SCAB	215	ON I-215/SR91/SR60, RIV I215 COR IMPROV PROJ - FROM 60/91/215 JCT TO 60/215 SPLIT - WIDEN 6 TO 8 LNS, INCLUDING MAINLINE/IC IMPROVS, ADD HOV, AUX, & SB TRUCK CLIMB LN (EA: 3348U1)	2006	2007	Project in Construction/Implementation Phase
CALTRANS	354801	SCAB	60	JCT RTE 15 TO VALLEY WAY - ADD 1 HOV LN AND 1 M/ F LN IN EA. DIR. INCLUDING OPERATIONAL STRIPING (IN SBD CNTY 9.05 - 9.95 & AT THE EAST END) ALSO WIDEN 5 UC'S & 1 OH	2006	2008	Project ready to list; will be obligated in August 2004.
CORONA	RIV010227	SCAB	0	CORONA ADVANCED TRAFFIC MANAGEMENT SYSTEM (ATMS)	2005	2005	Pending obligation, on schedule
CORONA	RIV010511	SCAB	0	CITY OF CORONA -- PURCHASE 3 EXPANSION VEHICLES - RED LINE FIXED ROUTE	2003	2006	Project in design evaluation phase. Changes in projected ridership levels required a redesign of the project implementation. These issues are now being resolved and the project is expected to be expeditiously implemented.
CORONA	RIV030602	SCAB	0	IN THE CITY OF CORONA - PURCHASE/INSTALL MOBILE DATA TERMINAL (MDT) & AUTOMATIC VEHICLE LOCATOR (AVL) IN 14 TRANSIT VEHICLES & INTEGRATE W/ DISPATCHING SOFTWARE (FY 04 5307)	2005	2005	Under construction; Expected completion 12/31/04
HEMET	RIV990708	SCAB	0	CONSTRUCT TRANSPORTATION/ TRANSIT CENTER/PARK-N-RIDE LOT ON CORNER OF HARVARD AND LATHAM AVE, APP 100 SPACES	2003	2004	Acquiring right of way, construction to begin Sept 04.
PERRIS	RIV990709	SCAB	0	IN THE CITY OF PERRIS - RECONSTRUCT INTERSECTION AT 4TH ST AND REDLANDS AVE INCLUDING ROUND ABOUT, MINOR LANDSCAPING AND MINOR R/W ACQUISITION	2004	2004	Pending obligation, on schedule
RIVERSIDE CITY	RIV0084	SCAB	91	AT VAN BUREN ST IC RECONSTRUCT RAMPS (INCLDS HOV RAMPS), WIDEN OC ON VAN BUREN FROM 4 TO 6 LN & ADD AUX LANES; ADD NEW EB ONRAMP W/ENTRANCE @ INDIANA	2007	2005	In final design (PS&E) stage.
RIVERSIDE CITY	RIV020605	SCAB	0	IN WESTERN RIVERSIDE COUNTY FOR THE CITY OF RIVERSIDE SPECIAL SERVICES - PURCHASE 2 EXPANSION 25' TWELVE PASSENGER DIAL-A-RIDE VEHICLES	2004	2004	Sec 5307 funds scheduled for release on 6-01-04.
RIVERSIDE CITY	RIV030606	SCAB	0	CITY OF RIVERSIDE SPECIAL SERVICES - PURCHASE 1 EXPANSION 20 PASSENGER ALT-FUEL DIAL-A-RIDE VEHICLE WITH LIFT, TIEDOWNS, RADIO, AND FAREBOX (FY 04 5307)	2005	2005	Sec 5307 funds scheduled for release on 6-01-04.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	0006S	SCAB	0	METROLINK - SAN BERNARDINO SUBDIVISION TIER II NEW STATIONS AT MAIN ST IN CORONA	2003	2003	Project completed
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	46360	SCAB	60	IN RIVERSIDE AND MORENO VALLEY ON SR60 FROM RT 215 TO REDLANDS BLVD ADD 2 HOV LANES	2005	2006	Project in Construction/Implementation Phase.

RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV010908	SCAB	0	IN WESTERN RIVERSIDE COUNTY FOR EXCEED, A DIVISION OF VALLEY RESOURCE CENTER - PURCHASE 6 EXPANSION MINIVANS AND 6 RADIOS - SECTION 5310 FY 2001/02 CYCLE	2003	2004	Project completed
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV011243	SCAB	0	METROLINK-SAN BERNARDINO SUBDIVISION TIER 11 CONSTRUCT NEW STATION AT 3360 VAN BUREN BLVD IN RIVERSIDE (PARKING 550 SPACES)	2003	2003	Project completed. The project was rescoped to substantially expand parking facilities at two adjacent Metrolink stations--the La Sierra Metrolink station (1,025 new parking spaces), and the Riverside Metrolink station (125 new parking spaces), creating 625 new parking spaces over and above those originally proposed at the Van Buren station--in response to a reevaluation of the operational implications of locating a new station only two miles from the existing La Sierra station, and due to substantial increases in ridership demand observed at the La Sierra and Riverside stations on the Metrolink system.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV020902	SCAB	0	IN WEST RIV CO FOR EXCEED, A DIVISION OF VALLEY RESOURCE CENTER - PURCHASE 1 EXPANSION 20' MODIFIED VAN, 1 EXPANSION 22' MEDIUM BUS, AND 2 RADIOS - SECTION 5310 FY 02/03 CYCLE	2004	2004	Vehicles on order, awaiting delivery by 12/30/04
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV52008	SCAB	0	IN RIVERSIDE COUNTY CONSTRUCT PASSENGER OVERCROSSINGS AND SECURITY ENHANCEMENTS @ WEST CORONA, LA SIERRA, AND PEDLEY METROLINK/ PARK-N-RIDE STATIONS	2003	2003	Project completed
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV520111	SCAB	0	REGIONAL RIDESHARE	N/A	N/A	Ongoing program for implementation of rideshare activities.
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV62044	SCAB	0	PEDLEY PLATFORM EXTENSION	2002	2003	Project completed
RIVERSIDE TRANSIT AGENCY	RIV000605	SCAB	0	DEBT FINANCING FOR 57 TRANSIT COACHES, 25 REPLACEMENT, 32 EXPANSION (FY 02/03 PORTION) (FY 03 5307)	2004	2003	Project completed
RIVERSIDE TRANSIT AGENCY	RIV020601	SCAB	0	IN WESTERN RIVERSIDE COUNTY PURCHASE TEN 30' EXPANSION ALT FUEL BUSES IN FY 02/03.	2004	2003	Project completed
RIVERSIDE TRANSIT AGENCY	RIV030610	SCAB	0	RTA BUS STOP AMENITIES - INSTALL APPROX. 45 NEW SHELTERS & REHAB APPROX 159 SHELTERS (PARTS, PAINT, SIGNS, POLES, BENCHES, TRASH RECEPTACLES & ANCILLARY HARDWARE) (FY 04 5307)	2005	2005	Project in Engineering (PS&E) Phase
RIVERSIDE TRANSIT AGENCY	RIV030613	SCAB	0	IN WESTERN RIVERSIDE COUNTY - INSTALL AUTOMATED TRAVELER INFORMATION SYSTEM (ATIS) AT APPROXIMATELY 48 BUS STOPS (INCLUDES UPGRADED SIGNAGE AND LIGHTING) (FY 04 5307)	2006	2006	Project in Engineering (PS&E) Phase
RIVERSIDE TRANSIT AGENCY	RIV030614	SCAB	0	IN WESTERN RIVERSIDE COUNTY - PURCHASE 5 EXPANSION 14 PASSENGER DIAL-A-RIDE VANS (FY 04 5307)	2006	2006	Project in Engineering (PS&E) Phase
RIVERSIDE TRANSIT AGENCY	RIV030626	SCAB	0	IN WESTERN RIVERSIDE COUNTY - DEBT FINANCING (FY 03/04 PORTION) FOR 57 TRANSIT COACHES, 25 REPLACEMENT, 32 EXPANSION (FY 04 5307)	2005	2005	Project in Engineering (PS&E) Phase

RIVERSIDE TRANSIT AGENCY	RIV32666	SCAB	0	IN WESTERN RIVERSIDE COUNTY PURCHASE 10 EXPANSION 14 PASSENGER DAR VANS IN FY 02/03	2004	2004	Project completed
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	RIV010214	SCAB	0	PURCHASE/REHAB ROLLING STOCK - RIVERSIDE COUNTY SHARE (13 CARS IN FY02/03 AND 18 CARS IN FY 03/04)	2005	2007	Project in Contract Award Phase. The project was delayed due to revisions in the contracted delivery date to take account of backlog with the manufacturer. These issues have since been resolved and the project is now being expeditiously implemented.
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	RIV011242	SCAB	0	PURCHASE EXPANSION ROLLING STOCK (2 CAB CARS AND 3 LOCOMOTIVES) FOR METROLINK IEOC AND RIVERSIDE/FULLERTON/LA LINES (EA: RIVFUL, PPNO: 0079E)	2004	2009	Project in Contract Award Phase. This project has been included in the current RFP for RIV010214, which was delayed due to revisions in the contracted delivery date to take account of backlog with the manufacturer. These issues have since been resolved and the project is now being expeditiously implemented.
TEMECULA	RIV030301	SCAB	79	ITS DEMO - SIGNAL INTERCONNECT ON SR79 NORTH (DESIGN/INSTALL CONDUIT/ INTERCONNECT CABLE) FROM MARGARITA TO MURRIETA HOT SPRINGS & CCTV AT VARIOUS SIGNALIZED LOCATIONS	2004	2005	Project in Construction/Implementation Phase

San Bernardino County

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	2004 RTP PROJECT COMPLETION DATE	2004 RTIP PROJECT COMPLETION DATE	Project Status
CALTRANS	44301	SCAB	30	IN UPLAND, LA/SBD CO LINE TO MOUNTAIN AVE. CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES (SEGMENT 1)	2002	2002	Project Completed
CALTRANS	44311	SCAB	30	IN UPLAND, MOUNTAIN AVE. TO 0.1 MILE W/O CUCAMONGA CANNYON WASH CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES & CAMPUS AVE. UC (SEGMENT 2)	2002	2002	Project Completed
CALTRANS	44321	SCAB	30	IN RANCHO CUCAMONGA, 0.1 MILE W/O CUCAMONGA CANYON WASH TO HERMOSA AV CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES (SEGMENT 3)	2002	2002	Project Completed
CALTRANS	44331	SCAB	30	IN RANCHO CUCAMONGA, HERMOSA AVE TO 0.6 KM E/O MILLIKEN AVE. CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES (SEGMENT4)	2002	2002	Project Completed
VARIOUS	713	SCAB	215	I-215 CORRIDOR NORTH - IN SAN BERNARDINO, ON I-215 FROM RTE 10 TO RTE 30- ADD 2 HOV LANES 1 LANE IN EA. DIR. AND OPERATIONAL IMPROVEMENTS	2005	2010	Project in Engineering (PS&E) Phase. The project was delayed because of conflicting findings between the environmental and engineering analysis with regard to the preferred alternative, necessitating substantial revisions to the environmental analysis and to the traffic studies. These issues have since been resolved and the project is now being expeditiously implemented.
CHINO	SBD41220	SCAB	0	CHINO AVENUE/CENTRAL TO 6TH STS. MULTI-MODAL TRANSPORTATION CENTER INCLUDES PARK-N-RIDE LOT WITH 125 SPACES(PHASE 1 FUNDED-PHASE 2 AWAITING FUNDING)	2003	2004	Project In Construction/Implementation Phase
COLTON	2002164	SCAB	0	ON VALLEY BLVD. IN COLTON TO NORTH TO 10TH STREET CONNECTING TO ABANDONED RR CORRIDOR ON WEST SIDE OF COLTON AVE.-CONSTRUCT CLASS I BIKEWAY, LANDSCAPING AND LIGHTING	2003	2005	Project in ROW Clearance Phase. Project was delayed due to protracted negotiations with BNSF Railroad on ROW.
MOUNTAIN REGIONAL TRANSIT AUTHORITY	20010283	SCAB	0	BUS SYSTEM - EXPANSION ALT. FUEL NEW TROLLEY VEHICLE SERVICE TO OPERATE BIG BEAR VISITORS TROLLEY	2003	2003	Project Completed
OMNITRANS	200077	SCAB	0	BUS SYSTEM - PURCHASE EXPANSION ALT FUEL BUSES (01-13), (02-14)	2002	2002	Project Completed
OMNITRANS	2002171	SCAB	0	(1) EXPANSION PARATRANSIT VAN	2003	2003	Project Completed
OMNITRANS	981118	SCAB	0	BUS SYSTEM - PASSENGER FACILITIES: DESIGN AND BUILDING OF ONTARIO TRANSCENTER	2005	2005	Project in Construction/Implementation Phase
OMNITRANS	981119	SCAB	0	TRANSIT INTERMODAL FACILITIES - FONTANA TRANSCENTER - EXPAND BUS BAYS, IMPROVE LANDSCAPING, SIGNALS AND PEDESTRIAN AND PASSENGER FACILITIES	2002	2002	Project Completed

OMNITRANS	SBD31088	SCAB	0	BUS FLEET EXPANSION-PURCHASE 40' EXPANSION HEAVY DUTY COACHES & AUX. EQUIPMT, CNG 01-9, 03-1 (Note: The 'OTHER' FUNDS ARE CARL MOYER FUNDS)	2003	2003	Project Completed
RANCHO CUCAMONGA	20020201	SCAB	0	PACIFIC ELECTRIC INLAND EMPIRE TRAIL – PHASE 1 – HAVEN AVENUE TO 1200' EAST OF ETIWANDA AVE (3.4 MILES) CONSTRUCT CLASS 1 BIKE TRAIL & ROW ACQ, ETIWANDA DEPOT	2004	2004	Project in Engineering (PS&E) Phase
RIALTO	SBD59203	SCAB	0	PEDESTRIAN FACILITY IMPROVEMENTS AT RIALTO METROLINK STATION IN BETWEEN ORANGE AND RIVERSIDE AVENUES (IN ALLEY WAY IN BETWEEN METROLINK AND DOWNTOWN BUSINESS DISTRICT	2003	2003	Project Completed
SANBAG	200074	SCAB	0	LUMP SUM - TRANSPORTATION ENHANCEMENT ACTIVITIES PROJECTS FOR SAN BERNARDINO COUNTY-BIKE/PED PROJECTS	2004	2004	Project in Construction/Implementation Phase
SANBAG	20020106	SCAB	0	MONTCLAIR PEDESTRIAN UNDERCROSSING- CONSTRUCTION OF A 2ND PLATFORM CREATES NEED FOR CONSTRUCTION OF NEW UNDERCROSSING	2003	2003	Project Completed
SANBAG	44340	SCAB	30	IN SAN BERNARDINO COUNTY FROM MILLIKEN AVE TO 0.4 MI WEST OF EAST AVE CONSTRUCT 8-LN FWY WITH 2 HOV LANES **SEE STIP PPNO #193B, C & S FOR	2002	2002	Project Completed
SANBAG	94163	SCAB	0	RIDESHARE ACTIVITIES FOR SOUTH COAST AIR BASIN	N/A	N/A	Project is fully operational and ongoing
SANBAG	SBD0194	SCAB	30	NEAR FONTANA FROM 0.5 MI E OF HEMLOCK TO 0.2 MI E OF SIERRA AVE CONSTRUCT 6-LANE FWY & 2 HOV LANES	2002	2002	Project Completed
SANBAG	SBD031505	SCAB	0	VARIOUS LOCATIONS - LUMP SUMS LTF, ARTICLE 3 BICYCLE/PEDESTRIAN PROJECTS	2004	2004	Project in Construction/Implementation Phase
SCRAA/LACMTA/SANBAG	991213	SCAB	0	SAN BERNARDINO LINE CAPACITY IMPROVEMENTS (TRACK IMPROVEMENTS)-FREMONT & MARENGO SIDINGS	2003	2003	Project Completed
VICTOR VALLEY TRANSIT AUTHORITY	20010281	SCAB	0	BUS SYSTEM - BUS EXPANSION - ALT. FUEL - 5 COMMUTER BUSES FOR COMMUTER DOWN THE HILL BUS SERVICE (IN MDBA & SCAB AIR BASIN)	2004	2004	Project Completed

2002 RTIP Committed Transportation Control Measures (TCMs)

Project Listing Report

2002 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP) (FY2002/2003-2007/2008) – TCM PROJECTS

Update of TCM projects in 2001 RTIP TCM Implementation Status report:
(Same basic report format as 2001 RTIP)

LOS ANGELES COUNTY - TCMS

PROJECT ID:	LA974170
PROJECT DESCRIPTION:	AGOURA HILLS P&R LOT INCREASE CAPACITY IN AGOURA HILLS AREA FROM 93 TO 193 SPACES LOCATED ON THE 101 FWY
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.

PROJECT ID:	16113
PROJECT DESCRIPTION:	ON CATALINA ISLAND FROM AVALON TO NORTH END OF ISLAND - 2 MILE BIKEWAY WITH SCENIC OVERLOOK
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.

PROJECT ID:	LA000777
PROJECT DESCRIPTION:	FROM ROUTE 10 TO ROUTE 101 TO EXISTING 8-10 LANE FWY ADD TWO HOV LANES (SB:4+0; 5+0 TO 5+1 HOV)
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.

PROJECT ID:	LA973005
PROJECT DESCRIPTION:	BUS EXPANSION: ALTERNATIVE FUEL (TROLLEY BUS)
FUNDING YEARS:	1997/98
IMPLEMENTATION STATUS:	Project was completed.

PROJECT ID:	LA962315
PROJECT DESCRIPTION:	POMONA VALLEY TRAFFIC SIGNAL FORUM IMPROVEMENT PROJECT REGIONALLY SIGNIFICANT IMPROVEMENT SIGNAL COORDIN./MONITOR.
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.

PROJECT ID:	4U004
PROJECT DESCRIPTION:	IN LOS ANGELES FROM PICO STATION LOS ANGELES CONVENTION CENTER - SIDEWALKS AND PEDESTRIAN CONNECTIONS
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.

PROJECT ID:	LA79203
PROJECT DESCRIPTION:	LA STANDARD LIGHT RAIL CAR PROCUREMENT FOR GREEN AND BLUE LINES (52) POSSIBLE DEFENSE CONVERSION FUNDS
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.

PROJECT ID:	LA962356
PROJECT DESCRIPTION:	SOUTH BAY JPA SYNCHRONIZATION & BUS SPEED IMPROVEMENTS (TRANSIT PRIORITY SYSTEM)
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.

PROJECT ID:	LA9703001
PROJECT DESCRIPTION:	RIDESHARE EMPLOYER SERVICE INCLUDING RIDEGUIDE/SURVEY REGISTRATION, TDM ASSISTANCE, SPECIAL MARKETING & MONITORING
FUNDING YEARS:	1997/98
IMPLEMENTATION STATUS:	Project was completed.

LOS ANGELES COUNTY - TCMS

PROJECT ID:	LA974006
PROJECT DESCRIPTION:	UNION STA. GATEWAY BIKE STA. (BIKE RACKS/LOCKERS, BICYCLE REPAIR/ ACCESSORY SALES, SHOWERS/CHANGING FACILITIES, LIMITED FOOD SVC.)
FUNDING YEARS:	1997/98
IMPLEMENTATION STATUS:	Project was completed.
PROJECT ID:	4U005
PROJECT DESCRIPTION:	METROLINK VAN NUYS STATION BETWEEN WILLIS AVENUE AND RAYNER STREET - PEDESTRIAN OVERCROSSING
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.
PROJECT ID:	LA962098
PROJECT DESCRIPTION:	BOYLE HEIGHTS ATSAC PROJECT COMPUTER BASED REAL TIME TRAFFIC SIGNAL MONITORING SYSTEM
FUNDING YEARS:	1997/98
IMPLEMENTATION STATUS:	Project was completed.
PROJECT ID:	LA962102
PROJECT DESCRIPTION:	MID-CITIES BUS SPEED IMPROVEMENTS (PEAK-HOUR ONLY)
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.
PROJECT ID:	LA962107
PROJECT DESCRIPTION:	SMART CORRIDOR OPERATION ENHANCEMENT
FUNDING YEARS:	1997/98
IMPLEMENTATION STATUS:	Project was completed.
PROJECT ID:	LA962113
PROJECT DESCRIPTION:	CENTRAL/EAST LA BUS SPEED IMPROVEMENT PROJECT (INCREASES SPEED FOR FIXED-ROUTE TRANSIT BY SIGNAL PRIORITY)
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.
PROJECT ID:	LA962121
PROJECT DESCRIPTION:	VICTORY/VANOWEN BUS PRIORITY TREATMENTS (SIGNAL COORDIN.)
FUNDING YEARS:	1997/98
IMPLEMENTATION STATUS:	Project was completed.
PROJECT ID:	LA55201
PROJECT DESCRIPTION:	CONTINUING PROJECT - BUS STOP IMPROVEMENTS (AMENITIES, SHELTERS)
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project was completed.
PROJECT ID:	LA55206
PROJECT DESCRIPTION:	DAR REPLACEMENT VANS; ONE NEW VAN AND ONE REPLACEMENT VAN
FUNDING YEARS:	1997/98
IMPLEMENTATION STATUS:	Project was completed.
PROJECT ID:	LA973506
PROJECT DESCRIPTION:	ROLLING STOCK ACQUISITION UP TO 5 LOCOMOTIVES & 30 CARS
FUNDING YEARS:	1997/98
IMPLEMENTATION STATUS:	Project was completed.

LOS ANGELES COUNTY - TCMS

PROJECT ID:	LA974096
PROJECT DESCRIPTION:	SANTA CLARITA COMMUTE CONNECT OPERATION - PROPANE-FUELED EXP. BUSES TO LINK EMPLOYMENT CTRS W/ SANTA CLARITA METROLINK STA.
FUNDING YEARS:	1998/99
IMPLEMENTATION STATUS:	Project complete
PROJECT ID:	LA974419
PROJECT DESCRIPTION:	BLUE LINE MISSION STREET STATION PARK-AND-RIDE LOT WILL CONSIST OF 130 SPACES AND 300 SQUARE FEET FOR BICYCLES
FUNDING YEARS:	1999/2000
IMPLEMENTATION STATUS:	Project is now LA996090

TCMs project status using new reporting format for 2002 RTIP:

LOS ANGELES COUNTY - TCMS – LOCAL HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
AGOURA HILLS	LA990362	SCAB	0	CITYWIDE STREET AND BIKE PATH PROJ (T21-939)	00/01 01/02	This project is in the design phase. Project to be completed in December 2003.
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA963731	SCAB	0	ALAMEDA CORRIDOR - NORTH END RAIL ROAD/ARTERIAL GRADE SEPS. & RELATED IMPROVEMENTS EIS/EIR COMPLETE; 8100+1394 P.E. 10517+305 R/W; 29483+5300 CONS.	00/01 01/02	Project is under construction. Completion of project is estimated for June 2002.
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA963732	SCAB	0	ALAMEDA CORRIDOR - MID CORRIDOR SEGMENT 10 MI TRENCH >20 ARTERIAL GRADE SEPS, ENVIRONMENTAL CLEARANCE	00/01 01/02	Project is under construction. Completion of project is estimated for June 2002.
ALAMEDA TRANSPORTATION CORRIDOR AGENCY	LA963733	SCAB	0	ALAMEDA CORRIDOR - SOUTH END 7 RAILROAD / ARTERIAL GRADE SEPS. + RELATED IMPROVEMENTS ENV. CLEARANCE	00/01	Project is under construction. Completion of project is estimated for June 2002.
BELLFLOWER	LA996275	SCAB	0	WEST BRANCH GREENWAY MULTI-MODAL TRANS. CORRIDOR DESIGN AND CONSTRUCT 2.5 MILE CLASS I BIKE PATH ALONG MTA-OWNED SANTA ANA BRANCH ROW INCL. PEDESTRIAN AND LANDSCAPING	01/02	Project has not commenced yet. Waiting for MTA to abandon Rail Road Right of Way.
CALABASAS	LA974100	SCAB	0	U.S. 101 INTERJURISDICTIONAL BIKELANE GAP CLOSURE CONSTRUCTION 4.5 MILES OF BIKEWAY IMPROVEMENTS TO CLOSE SEVERAL GAPS WITHIN A 12 MILE CORRIDOR(TEA21-#69)	00/01 01/02	Project has not commenced yet. Waiting for MOU to be signed by MTA. Estimated completion date August or October of 2002.
CALTRANS	9061D	SCAB	0	ALAMEDA CORRIDOR IN LOS ANGELES COUNTY AT PACIFIC COAST HIGHWAY - GRADE SEPARATION	00/01	In the design phase.
CARSON, CITY OF	LA974042	SCAB	0	HARBOR TRANSITWAY SHUTTLE WEEKDAY AND SATURDAY SERVICE BETWEEN HARBOR TRANSITWAY STATIONS AT CARSON AND	00/01	Completed Project in FY 2000.

LOS ANGELES COUNTY - TCMs – LOCAL HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
				REGIONAL DESTINATIONS AND EMPLOYMENT CENTERS		
COMMERCE	927108	SCAB	0	ALAMEDA CORRIDOR IN COMMERCE AT ATLANTIC BOULEVARD AND TELEGRAPH ROAD - INTERSECTION IMPROVEMENTS	00/01	Completed December 2000.
COMPTON	LAOB7326	SCAB	0	COMPTON CREEK BIKEWAY EXTENSION - PHASE III. DESIGN & CONSTRUCT .6 MI OF CLASS 1 BIKE/PED PATH FROM GREENLEAF BLVD TO ARTESIA FWY. WILL INC BIKE PATH, PED WALKWAY SIGNAGE, STRIPING	01/02	Ongoing. Project will be completed by December 2002.
HERMOSA BEACH	LA974080	SCAB	0	RE-ROUTE HERMOSA BIKEWAY TO STRAND AND RECONSTRUCT BIKEWAY PROJECT WILL RELOCATE THE BIKEWAY FROM HERMOSA AVE TO STRAND AND THEREBY ALLEVIATE CONGESTION	00/01	Completed May 21, 2001.
LONG BEACH	LA003551	SCAB	0	CARSON ST/BIXBY RD. BIKE TR (93/94 CFP, CAT. 8, 551) COMBINATION CLASS I AND CLASS II	00/01	Replaced by #8157 (2001 Call for Projects); 9.2 Class II bike lane in City of Long Beach; part of LA County TEA lump sum projects; funding years – 05, 06, 07
LOS ANGELES COUNTY	9061F	SCAB	0	ALAMEDA CORRIDOR IN LOS ANGELES COUNTY AT DEL AMO BOULEVARD - ACQUISITION OF RIGHT OF WAY FOR GRADE SEPARATION	00/01	Completed
LOS ANGELES COUNTY	LA002633	SCAB	0	THOMPSON CREEK BICYCLE TRAIL (93/97 CFP; BIKE PROGRAM) CLASS I (2 MILES)	00/01	Project is in PE phase.
LOS ANGELES COUNTY	LA996289	SCAB	0	SOUTH BAY BIKE TRAIL PED. ACCESS RAMPS/SIDEWALKS - DESIGN OF RAMPS, WALKWAYS TO PROVIDE ACCESS TO THE STH. BAY TRAIL AT DOCKWEILER STATE BEACH	01/02	LOA fully executed on 04/17/02. Project was programmed FY02/03.
LOS ANGELES COUNTY MTA	927333	SCAB	0	RIDESHARE ACTIVITIES	00/01 01/02	Work in Progress. Completion in FY 2004.
LOS ANGELES COUNTY MTA	LA0B100	SCAB	0	LUMP SUM TRANSPORTATION ENHANCEMENT ACTIVITIES (EXCLUDING CATEGORY 7). INCLUDES BIKEWAY/PEDESTRIAN PROJECTS THAT WILL BE IDENTIFIED SEPARATELY IN AMENDMENT #1 TO THE 2002 RTIP.	00/01 01/02	Projects are on schedule for a timely delivery. Projects will be completed in FY06.
LOS ANGELES COUNTY MTA	LA210465	SCAB	0	SO. CENTRAL LOS ANGELES EXPOSITION PARK INTERMODAL URBAN ACCESS PRJ (STATE OF CAL. DEPT. OF GEN. SERV.) RENEW /RENOVATION PARKING FACILITY IMPROVE PARK/TRAFFIC ACCESS PROGRAM	00/01 01/02	Work in progress. Completion in FY03.
LOS ANGELES COUNTY MTA	LA29202U1	SCAB	0	SAN FERNANDO TRANSIT CORRIDOR - FROM NORTH HOLLYWOOD REDLINE STATION TO WARNER CENTER	00/01 01/02	P/E stage waiting for Environmental clearance. Completion expected FY06.

LOS ANGELES COUNTY - TCMs – LOCAL HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
LOS ANGELES COUNTY MTA	LA974124	SCAB	0	SANTA MONICA BOULEVARD TRANSIT PARKWAY TRANSIT PEDESTRIAN AND BIKEWAY IMPROVEMENTS ALONG SANTA MONICA BLVD IN WEST LOS ANGELES, SPANS 2.5 MI	00/01	Project currently is in design FY03.
LOS ANGELES COUNTY MTA	LA991305	SCAB	0	RIDESHARE 2000/CLUB METRO- EXTEND AND EXPAND IMPLMNT. INCENTIVE PRGM. TO ENCOURAGE USE OF ALT. MODES OF TRAVEL OTHER THAN DRIVING ALONE.	00/01 01/02	Preliminary stage completion by FY05.
LOS ANGELES, CITY OF	LA087330	SCAB	0	SAN FERNANDO ROAD ROW BIKE PATH PHASE II- CONSTRUCT 2.75 MILES CLASS I FROM FIRST ST TO BRANFORD ST, ON MTA-OWNED ROW PARALLEL TO SAN FERNANDO RD. LINK CYCLISTS TO NUMEROUS BUS LINE	00/01	Project under construction, to be completed on 6/30/05.
LOS ANGELES COUNTY MTA	LA087337	SCAB	0	CHANDLER BLVD ROW BIKE PATH: 170 FWY TO LA VALLEY COLLEGE-DESIGN OF 2.3 MILES OF BIKEWAY AND OPTIONAL PEDESTRIAN WALKWAY FROM 170 FWY TO LOS ANGELES VALLEY COLLEGE	00/01	In the PE phase to be completed on 6/30/05.
LOS ANGELES COUNTY MTA	LA974083	SCAB	0	CHANDLER/BURBANK BIKE PATH-WHITEOAK TO PIERCE COLLEGE A 3.2 MILE CLASS I BIKEWAY ON MTA'S CHANDLER/BURBANK RAIL RIGHT-OF-WAY WILL IMPROVE NON-MOTORIZED ACCESS (COMBINED W/LA974078)	00/01 01/02	In construction phase, to be completed on 6/30/03
LOS ANGELES, CITY OF	LA996097	SCAB	0	BUSINESS BICYCLE PARKING PROGRAM	00/01	In construction phase to be completed on 12/31/02.
LOS ANGELES, CITY OF	LA996106	SCAB	0	DOWNTOWN PRKNG MGMT ORDINANCE PRKNG ORD. TO MANAGE PRKNG SUPPLY, CREATE IN-LIEU FEES FOR TRANSIT SERVICE ENHANCEMENTS	00/01	In construction phase, to be completed on 12/31/02.
LOS ANGELES, CITY OF	LA996390	SCAB	0	SEPULVEDA BLVD. FROM CENTINELA AVE. TO LINCOLN BLVD - WIDEN SEPUL BLVD. BET. LINCOLN AND CENTINELA TO PROVIDE BUS/CARPOOL PRIORITY LANE.	01/02	In construction phase, to be completed on 6/30/04.
PASADENA	LA087055	SCAB	110	ARROYO PKWAY CORR TRANS IMP(UPGRADE 6 SIGNALS) -BETWEEN GREEN & HOLLY ST COMPLIMENT & AUGMENT PLANNED CALTRANS RELINQUISHMENT OF ARROYO PKW, BETWEEN COLORADO BLVD & GLENARM ST	00/01 01/02	Ongoing project to be completed in FY03, in the PE phase.
SANTA CLARITA	LA087335	SCAB	0	SANTA CLARA RIVER REGIONAL TRAIL-DESIGNING OF 7 MILES OF CLASS I BIKE/PED PATH ALONG THE NORTH SIDE OF THE RIVER FROM I-5 ON THE WEST TO DISCOVERY PARK ON THE EAST	00/01 01/02	In the PE phase to be completed on 6/30/05.
SCAG	927331	SCAB	0	RIDESHARE ACTIVITIES	00/01	Completed

LOS ANGELES COUNTY - TCMs – LOCAL HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
SCAG	LA996082	SCAB	0	WEB ACCESS VANPOOL INFO SYS DEV & IMPLEMENT DATABASE FOR VANPOOLS, VACANCIES	00/01	Development Phase delayed due to unavoidable staff changes. Completion expected in FY03.
SCAG	LA996083	SCAB	0	COMMUTER CHANNEL NON-MONETARY SUBSCRIPTION SERVICE	00/01	Operational Phase will be complete in December FY02.

LOS ANGELES COUNTY - TCMs - STATE HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
CALTRANS	1178A	SCAB	405	IN LOS ANGELES AND CULVER CITY FROM ROUTE 90 TO ROUTE 10 - HOV LANES (SB 5+0 TO 5+1; NB 5+0 TO 5+1 HOV) 98CTIP \$ FUND NB LN, ALSO PAYS FOR SB \$ DELETED FROM 96STIP	00/01 01/02	Project in the PE phase, will be completed on 1/13/09.
CALTRANS	11985	SCAB	405	NEAR HAWTHORNE AND CULVER CITY FROM ROUTE 105 TO ROUTE 90 - 6 LANE FREEWAY ADD 2 HOV LANES AND SOUNDWALLS	00/01	In the PE phase to be completed on 9/18/06.
CALTRANS	12570	SCAB	60	RTE. 57/60 HOV CONNECTOR INDUSTRY FROM OLD BREA CANYON ROAD TO GRAND AVENUE - HOV DIRECT CONNECTORS AND COLLECTOR ROAD (BOTH DIRECTIONS)	00/01 01/02	In the PE phase, project to be completed by 5/24/06.
CALTRANS	16881	SCAB	5	IN LA MIRADA TO SANTA FE SPRINGS FROM ORANGE COUNTY LINE TO ROSECRANS AVENUE - INTERIM HOV LANES; I-5 Rail Grade Crossing between RTE. 605/91.	00/01 01/02	In the PE phase, project to be completed by 12/7/12.
CALTRANS	2009	SCAB	710	NEAR SOUTH PASADENA FROM ROUTE 10 TO ROUTE 210 - PARTIAL RIGHT OF WAY FOR NEW 6 LANE FREEWAY WITH 2 HOV LANES	00/01	In ROW phase, project to be completed on 7/13/04.
CALTRANS	LA000357	SCAB	5	--- FROM ROUTE 170 TO ROUTE 118 HOV LANES (10 TO 12 LANES) (CFP 345) (2001 CFP 8339)	05/06	In the design phase.
CALTRANS	LA000358	SCAB	5	--- FROM ROUTE 134 TO ROUTE 170 HOV LANES (8 TO 10 LANES) (CFP 346) (2001 CFP 8355)	01/02	In the design phase.
CALTRANS	LA000359	SCAB	10	IN EL MONTE AND BALDWIN PARK FROM BALDWIN AVE TO ROUTE 605 HOV LANES (8+0 TO 8+2)	01/02	In the design phase.
CALTRANS	LA000543	SCAB	10	IN POMONA AND CLAREMONT FROM ROUTE 57 TO SAN BERNARDINO COUNTY LINE HOV LANE IN EACH DIRECTION (C-I: 77719; CFP 350; PPNO 00362) ALSO SOUNDWALL AND REHAB	00/01	In the design phase.
CALTRANS	LA000548	SCAB	10	FROM PUENTE TO CITRUS HOV LANES FROM 8 TO 10 LANES (C-ISTEA 77720) (PE ONLY)	00/01	In the preliminary engineering phase.

LOS ANGELES COUNTY - TCMs - STATE HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
CALTRANS	LA000549	SCAB	605	FROM ORANGE COUNTY LINE TO NORTH OF SOUTH ST HOV LANES (CFP 363) (FROM 8 TO 10 LANES)	01/02	Project completed.
CALTRANS	LA01342	SCAB	10	RT 10 FROM RT 605 TO PUENTE AVE HOV LANES(8+0 TO 8+2)	00/01	The project is in environmental process. Design process will be executed by next year.
CALTRANS	LA01344	SCAB	5	RT 5 FROM RT 118 TO RT 14 FROM 10 TO 12 LANES HOV LANES	00/01	In the design phase.
CALTRANS	LA01348	SCAB	14	RT 14 FROM ESCONDIDO CYN RD. TO PEARBLOSSOM HWY HOV LANES (4 TO 6 LANES) ONE LANE IN EACH DIRECTION. (EA-117101)	00/01	Project is in the construction phase.
CALTRANS	LA962201	SCAB	14	NEAR SANTA CLARITA, FROM RT 5 TO 126/S.F. RD HOV PROJECT (EA# 119843)	00/01	In the construction phase.
CALTRANS	LA963724	SCAB	30	IN LA VERNE AND CLAREMONT, FROM FOOTHILL BOULEVARD TO SAN BERNARDINO COUNTY LINE - CONSTRUCT 8-LANE FREEWAY INCLUDING 2-HOV LANES (12620, 12640, 12630, 10501, 17210)	00/01 01/02	In construction phase.
CALTRANS	LA98STIP	SCAB	5	IN LOS ANGELES ON ROUTE 5 INTERIM HOV LANE FROM ROSECRANS TO FLORENCE - EXISTING 3 MIXED FLOW IN EA. DIRECTION, PROJECT IS TO ADD 1 HOV & 1 MIXED FLOW EA DIRECTION	00/01	In the PE phase, project to be completed by 3/25/13.
CALTRANS	LA996137	SCAB	60	RTE. 60 HOV LNS. FROM RTE. 605 TO BREA CANYON RD. -- HOV LANE (FROM 8 TO 10 LANES TO 10 TO 12 LANES)	00/01 01/02	In the design phase.
CALTRANS	LA996138	SCAB	5	RTE.5 HOV LNS. FROM FLORENCE AVE TO RTE.19 - - ADD ONE LANE IN EACH DIRECTION	00/01 01/02	In the environmental phase.
LOS ANGELES COUNTY	LAOB416	SCAB	101	IN LOS ANGELES - DOWNTOWN OVER FREEWAY 101 - PEDESTRIAN BRIDGE ENHANCEMENT	02/03	In the construction phase to be completed on 12/31/04.
LOS ANGELES COUNTY MTA	LA000274	SCAB	2	FROM SEPULVEDA TO MORENO CONSTRUCT DIVIDED PKWAY WITH TRANSIT PKWAY IMPROVEMENTS, BIKE LANES & RT. 2/405 INTERCHANGE (94CFP; CAT. 2, 210, 98STIP00027) TEA21-#1531	00/01 01/02	Project is in the PE phase. There is no definite date on completion.
LOS ANGELES COUNTY MTA	LA98STIP4	SCAB	101	RT. 101 SOUTHBOUND IMPROVEMENTS FROM LOS ANGELES ST TO CENTER ST ELIMINATE HEWITT ST ON/OFF RAMPs & ADD NEW OFF RAMP @ VIGNES & RESTRIPE EXISTING NON-STDRD LANE WIDTHS	02/03	Currently in design. Completion expected in 09/05.
MANHATTAN BEACH	LAOB418	SCAB	0	IN MANHATTAN BEACH - MARINE AVENUE BETWEEN SEPULVEDA BLVD (STATE ROUTE 1) AND VALLEY/ARDOMOR PEDESTRIAN AND AESTHETIC IMPROVEMENTS	01/02	Project completed 12/01. Paperwork has been turned into Caltrans for reimbursement.

LOS ANGELES COUNTY - TCMs - TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
ACCESS SERVICES INC.	LA900520	SCAB	0	PURCHASE OF ADD'L 591 VEHICLES FROM FY01 TO FY05. 110 VEHICLES IN FY01, 115 VEHICLES IN FY02, 125 VEHICLES IN FY03, 149 VEHICLES IN FY04, AND 92 VEHICLES IN FY05.	00/01 01/02	This project is in the construction phase. Project to be completed in FY06.
ANTELOPE VALLEY TRANSIT AUTHORITY	LA0B7008	VAR	0	3 EXPANSION 40 FT. LOW FLOOR CLEAN DIESEL BUSES; LOCAL FIXED-ROUTE BUSES; TO RELIEVE PK PERIOD OVERCROWDING ON CORE ROUTES.	01/02	Preliminary stages. Completion of project is expected in FY03.
ARCADIA	LA990712	SCAB	0	NEW AND EXPANDED SERVICE THROUGH DOWNTOWN ARCADIA CONNECTING HOTELS AND BUSINESSES TO SANTA ANITA RACE TRACK AND FASHION MALL (HUNTINGTON STREET)	00/01 01/02	This project is in the design phase. Still planning on implementation of the project. Completion expected in FY02/03.
BALDWIN PARK	LA0B7012	SCAB	0	LOCAL NTD REPORTERS' BUS FLEET EXPANSION. 19 BUSES FOR 5 CITIES. BALDWIN PARK, COMPTON, EL MONTE, MONTEREY PARK & WEST COVINA (CNG, DIESEL & PROPANE FUEL 30-35 FT. VEH).	00/01 01/02	Need federal approval. Paperwork to be finalized and project to be completed in FY04.
BELL	LA962379	SCAB	0	NEW SCDC PEAK HOUR INTER-CITY VAN SHUTTLE SUBSCRIPTION SERVICE NO SHUTTLE NUMBER	00/01	Completed
BURBANK	LA8STIP13	SCAB	0	BURBANK LOCAL TRANSIT PURCHASE OF TWO ELECTRIC BUSES FOR ONGOING TDM PROGRAM	00/01	Ongoing. Project near completion.
CALABASAS	LA0B305	SCAB	0	PURCHASE OF 4 CNG BUSES FOR EXPANDED SERVICE. THE BUSES WILL BE A COMBINATION OF 15, 20, AND 25 PASSENGER TYPES, WITH THE EXACT CONFIGURATION TO BE DETERMINED.	00/01	Project is ongoing. To be completed in latter part of 2002.
CALTRANS	LA963519	SCAB	0	ADD 3 MILES OF TRIPLE TRACK AT BANDINI, MP 148.5 & 151.7 BETWEEN FULLERTON & LAUS	00/01	In the construction phase to be completed on 12/31/02.
CLAREMONT	LA990716	SCAB	0	EXPANSION OF BUS FLEET BY 1 VEHICLE (CNG). THE VEHICLE WILL HOLD 21 PASSENGERS AND COST \$65K	00/01 01/02	Project is in the construction phase, to be completed on 12/31/03.
COMMERCE	LA963759	SCAB	0	TELEGRAPH ROAD TRACK CAPACITY ENHANCEMENT 97-98 TC1	00/01	Final phase completed latter part of Feb. FY02
COMPTON	LA974406	SCAB	0	MARTIN LUTHER KING JR PARK AND RIDE EXPANSION PROJECT PURCHASE LAND AND CONSTRUCTING 100 NEW PARKING SPACES AS WELL AS PROVIDING SECURITY SURVEILLANCE	00/01	Completed
COVINA	LA9811080	SCAB	0	EASTLAND SATELLITE PARK n RIDE LOT (REPLACEMENT PARKING FOR EASTLAND SHOPPING CENTER -- 429 SPACES) (CROSS STREETS ARE BARRANCA/WORKMAN)	00/01	Work in progress. Complete in FY03.
CULVER CITY MUNI BUS LINES	LA0B404	SCAB	0	PROCUREMENT OF SIX (6) 30' CNG BUSES. FOUR BUSES TO REPLACE EXISTING 1983 BUSES AND TWO BUSES ARE FOR SERVICE EXPANSION OF LINE 6.	02/03	Grant has not been executed yet. The project is estimated to be complete on FY03.

LOS ANGELES COUNTY - TCMs – TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
CULVER CITY MUNI BUS LINES	LA0B405	SCAB	0	CMAQ FUNDS USED TO FUND SERVICE EXPANSION ON LINE 6	01/02	Grant has not been executed yet. The project is estimated to be complete on FY03.
CULVER CITY MUNI BUS LINES	LA0B406	SCAB	0	MARKET EXPANSION OF LINE 6.	01/02	Grant has not being executed yet. The project is estimated to be complete on FY03.
EL MONTE	LA0B7296	SCAB	0	CROSSWALK IMPROVEMENT PROJECT. LOCATED AT RAMONA BL/VALLEY BL, PECK RD/VALLEY BL, PECK RD/LOWER AZUSA RD, PECK RD/RAMONA BL, RAMONA BL/SANTA ANITA	00/01	In construction, to be completed by 6/30/04.
FOOTHILL TRANSIT ZONE	LA0B307	SCAB	0	EASTLAND SATELLITE PARK AND RIDE LOT - 429 PARKING SPACES, LOCATED AT BARRANCA & CITRUS ON BERKMAN	00/01	Project completed (Duplicate of LA9811080)
FOOTHILL TRANSIT ZONE	LA0B311	SCAB	0	PARK AND RIDE FACILITY ON OAK STREET BETWEEN VINCENT & GLENDORA. 160 PARKING SPACES SERVING BUS LINES #699 AND #272.	00/01	Project in the construction phase. Completion date is on 2004.
GARDENA	LA01B104	SCAB	0	PURCHASE FIVE (5) FIXED-ROUTE EXPANSION BUSES	01/02	Completed.
GLENDALE	LA963751	SCAB	0	METROLINK - SANTA CLARITA LINE GLENDALE TRANSPORTATION CENTER - UPGRADE STATION 96-97 TCI	00/01	Project under construction to be completed on 12/31/06.
GLENDALE	LA996065	SCAB	0	CNG HVY DUTY TRANSIT VEHICLES PURCH 6 BUSES TO REMEDY EXISTING OVERCROWDING	00/01	Project under construction to be completed by 12/31/02.
LONG BEACH PUBLIC TRANSPORTATION CO	LA0B7006	SCAB	0	LONG BEACH TRANSIT EXPANSION BUSES - THE PURCHASE OF UP TO 11 40-FOOT, LOW-FLOOR ALTERNATIVE FUEL BUSES WHICH SERVE THE MOST CROWDED ROUTES, INCLUDING 190, 7, 100 & 171.	00/01 01/02	Pilot stage. Completion FY02.
LONG BEACH PUBLIC TRANSPORTATION CO	LA990719	SCAB	0	(14) EXPANSION 40' BUSES (CLEAN DIESEL)	00/01	Completed.
LOS ANGELES COUNTY	LA0B7004	SCAB	0	VEHICLE ACQUISITION FOR EAST LOS ANGELES FIXED ROUTE SHUTTLE SERVICE PHASE II- PURCHASE OF 3 VEHICLES WILL INCREASE FREQUENCY OF THE EXISTING 3 SHUTTLES SERVICE ROUTES	00/01	Project in the construction phase, to be completed by 12/31/02.
LOS ANGELES COUNTY	LA974005	SCAB	0	LAC+USC MEDICAL CTR AREA EXISTING FLEXIBLE SHUTTLE ALT. FUEL FLEXIBLE FEEDER SHUTTLE- EXPANSION (CONNECTS MEDICAL CTR W/TRANSIT FACILITY)	00/01	Completed
LOS ANGELES COUNTY	LA996044	SCAB	0	VEH ACQ FOR EST L.A. SHUTTLE PURCH 4 VEH'S TO REMEDY EXISTING OVERCROWDED CONDITIONS	00/01	Project under construction to be completed by 12/31/02.
LOS ANGELES COUNTY MTA	7050	SCAB	0	METRO RAIL BLUE LINE-LONG BEACH/LA WILMINGTON AVENUE AT IMPERIAL HIGHWAY – OVERCROSSING	00/01	Under construction. Will be completed in FY02.

LOS ANGELES COUNTY - TCMs – TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
LOS ANGELES COUNTY MTA	LA01B101	SCAB	0	COOPERATIVE PURCHASE OF HYBRID ELECTRIC COACHES BY MTA AND INTERESTED MUNICIPAL OPERATORS AS A TEST PROGRAM	01/02	Project will occur in late Spring 2002. Completion is expected 12/05.
LOS ANGELES COUNTY MTA	LA0B303	SCAB	0	ACQUISITION OF TROLLEY BUSES (2) AND CHARGING STATIONS FOR THE CITY OF MONROVIA'S DOWNTOWN TROLLEY SERVICE	00/01	Pending Grant Approval. Completion 12/05.
LOS ANGELES COUNTY MTA	LA0B304	SCAB	0	PLAYA VISTA EARNMARK, PURCHASE NEW (5) LOW-EMISSION BUSES, TRACKING EQUIP & BUS AMENITIES INCLUDING PASSENGER SHELTERS, INFO KIOSKS & APPURTENANT EQUIP - TRANSIT SERVICE UPGRADE.	00/01	Pending grant approval. Completion 12/05.
LOS ANGELES COUNTY MTA	LA0B7023	SCAB	0	GET ABOUT FLEET IMPROVE (POMONA VAL TRANS. AUTHORITY)-PURCHASE 18, 21 PASSENGER VEHIC TO INCR CAPACITY OF SUBREG PARATRANSIT SYS	00/01	Completion in FY02 in December. Process of allocation request specification development.
LOS ANGELES COUNTY MTA	LA0B7107	SCAB	0	CHATSWORTH INTERMODAL PARK AND RIDE- INCLUDE DESIGN AND CONS. OF ADDITIONAL 150 SPACES-CONSTRUCTION WILL INCL GRADING, ASPHALT PAVING, INSTALLATION OF CONCRETE BUMPERS ETC (PE ONLY)	01/02	Development stages. Discussing project management and funding with a partner agency. Project is delayed. Completion expected in June FY03.
LOS ANGELES COUNTY MTA	LA29202X	SCAB	0	METRO RED LINE MOS-3: N. HOLLYWOOD 5.9-MILE W/ 3 STATIONS, HIGHLAND TO N.HOLLYWOOD STA. 15,370+ 746= 16,117 118,630+5,754=124,384	00/01 01/02	Subway is completed. Construction phase for pedestrian underpass and 101 overpass. Completions February FY04.
LOS ANGELES COUNTY MTA	LA29212X	SCAB	0	METRO RAIL BLUE LINE – PASADENA EXT UNION STA TO SIERRA MADRE VILLA STA 13.5 MILES, 12 STATIONS	00/01 01/02	Project under construction. To be completed by 12/30/06.
LOS ANGELES COUNTY MTA	LA963755	SCAB	0	CHINATOWN INTERMODAL IMPROVEMENT TO DEVELOP A CONNECTION FROM BLUE LINE - PASADENA (CHINATOWN STATION TO BROADWAY STREET) 97-98 TCI	00/01	Under construction. About 10-20% done. Will be open for revenue on 06/03.
LOS ANGELES COUNTY MTA	LA974036	SCAB	0	EL SEGUNDO GREEN LINE SHUTTLE OPERATE THREE SEPARATE PEAK HOUR SHUTTLE SERVICES CONNECTING METRO GREEN LINE WITH EMPLOYMENT DISTRICT SERVICE OPERATES ON WEEKDAYS ONLY	00/01	Project completed in FY01.
LOS ANGELES COUNTY MTA	LA974049	SCAB	0	METRO GREEN LINE SHUTTLE-LAKEWOOD. STATION LINE 631 A RAIL FEEDER SERVICE FIXED ROUTE DURING PEAK HOURS FLEXIBLE UNSCHEDULED STOPS AT MIDDAY	00/01	Still operating will be complete in 09/02.
LOS ANGELES COUNTY MTA	LA990306	SCAB	0	RAPID BUS PROGRAM - 4 – FORTY FOOT BUSES. ALSO FACILITY: BUS STOP DESIGN AND CONSTRUCTION, TECHNOLOGY UPGRADING, OPERATING SUPPORT.	02/03 03/04	Preliminary stages, PE. Completion expected on FY05.

LOS ANGELES COUNTY - TCMs – TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
LOS ANGELES COUNTY MTA	R626TA	SCAB	0	METRO RAIL BLUE LINE – PASADENA EXT AT CHINATOWN METROLINK STATION - ACCESS IMPROVEMENTS	00/01	Project is in the PE phase. Will be completed in July FY03.
LOS ANGELES, CITY OF	LA0B7024	SCAB	0	METRO RED LINE MELROSE SHUTTLE- ACQUISITION OF 2 LOW FLOOR, PROPANE- POWERED, 30-FOOT BUSES WILL BE USED IN THE OPERATION OF A NEW HIGH FREQUENCY SHUTTLE	01/02	In the construction phase to be completed by 12/31/02.
LOS ANGELES, CITY OF	LA0B7026	SCAB	0	METRO RED LINE/WEST HOLLYWOOD/BEVERLY CENTER/CEDAR-SINAI SHUTTLE-ACQUIRE 7 NEW 30-FOOT, PROPANE-FUELED, DASH STYLE BUSES FOR THE OPERATION OF A HIGH FREQUENCY SHUTTLE	00/01	In the construction phase to be completed by 12/31/02.
LOS ANGELES, CITY OF	LA0B7029	SCAB	0	MID-CITIES ET AL TRANSIT HUBS-TWO AREAS INCLUDE MID-CITIES TRANSIT HUBS (5), WINDWARD CIRCLE TRANSIT HUB (1)	01/02	In the construction phase to be completed by 12/31/03.
LOS ANGELES, CITY OF	LA0B7034	SCAB	0	SUN VALLEY INTERMODAL TRANSIT CENTER- PEDESTRIAN CROSSING/BUS STOP IMPROVEMENT- PROVIDE PED. CROSSINGS AT EACH END OF THE PLATFORM OF SOON TO BE BUILT SUN VALLEY METROLINK STATION	00/01 01/02	In the construction phase to be completed by 12/31/03.
LOS ANGELES, CITY OF	LA0B7274	SCAB	0	CITYWIDE ST PEDESTRIAN IMPROVEMENT- CONSISTS OF A SERIES OF STREETScape ENHANCEMENTS WITHIN DOWNTOWN LA DESIGNED TO STRENGTHEN THE PEDESTRIAN LINKAGE BETWEEN DOWNTOWN DESTINATIONS.	00/01	In the construction phase to be completed by 12/31/02.
LOS ANGELES, CITY OF	LA0B7278	SCAB	0	NORTHEAST COMMUNITY LINKAGES PHASE II- HIGHLIGHT PEDESTRIAN CONNECTIONS W/RAIL & BUS LINES ALONG MARMION WAY AND AT PASADENA AVE, FIGUEROA ST, FRENCH AVE, AND AVE 45, 50, 60, 61.	00/01	In the construction phase; to be completed by 12/31/02.
LOS ANGELES, CITY OF	LA0B7285	SCAB	0	ALISO VILLAGE PEDESTRIAN LINKAGE PROJECT- LINK THE NEW RECONSTRUCTED ALISO VILLAGE PUBLIC HOUSING DEVELOPMENT TO THE 2ND ST TRANSIT WAY & METRO RAIL STATION AT FIRST & BOYLE ST.	00/01 01/02	In the ROW phase to be completed by 12/31/02.
LOS ANGELES, CITY OF	LA0B7293	SCAB	0	SAN PEDRO PEDESTRIAN WAY-PROVIDE PEDESTRIAN ACCESS WAYS LINKING EXISTING TRANSIT FACILITIES AND PROPOSED PARKING STRUCTURE TO SURROUNDING & OTHER DESTINATIONS IN DOWNTOWN SAN PEDRO	00/01	In the construction phase to be completed by 12/31/03.
LOS ANGELES, CITY OF	LA962445	SCAB	0	WESTLAKE COMMUNITY BASED INTERCEPT INTERMODAL FACILITY	00/01	In the construction phase to be completed by 12/31/03.

LOS ANGELES COUNTY - TCMs – TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
LOS ANGELES, CITY OF	LA974040	SCAB	0	METRO GREEN LINE SHUTTLE - AVIATION STATION TO CITY BUS CENTER OPERATE TWO WEEKDAY, PEAK HOUR SHUTTLE SERVICE	00/01	In the construction phase to be completed by 12/31/02.
LOS ANGELES, CITY OF	LA974061	SCAB	0	CONEJO VALLEY TO WEST SAN FERNANDO- EXPRESS SHUTTLE NEW PEAK PERIOD COMMUTER SHUTTLE SERVICE RUN ALONG VENTURA FWY	00/01	Completed
LOS ANGELES, CITY OF	LA974165	SCAB	0	MACARTHUR PARK STATION IMPROVEMENTS INCLUDE DESIGN AND CONSTRUCTION OF A PLAZA TO ACCOMMODATE PUBLIC ACCESS (PEDESTRIAN ENTRANCES, WALKWAYS, BICYCLE FACILITIES)	00/01	In the construction phase to be completed by 12/31/02.
LOS ANGELES, CITY OF	LA990304	SCAB	0	LOS ANGELES, CA SAN FERNANDO VALLEY SMART SHUTTLE BUSES T21 TRANSIT DEMO PRJ # 66 6 VEHICLES, 3 GASOLINE, AND 3 CLEAN DIESEL POWERED	00/01	Completed
LOS ANGELES, CITY OF	LA996000	SCAB	0	DASH PICO UNION/ ECHO PRK VEH ACQ PURCHASE ONE BUS TO RELIEVE OVERCROWDING	00/01 01/02	In the construction phase to be completed by 12/31/03.
LOS ANGELES, CITY OF	LA996001	SCAB	0	DASH EL SERENO/CTY TERR VEH ACQ PURCHASE2 BUSES TO REDUCE OVERCROWDING	00/01 01/02	In the construction phase to be completed by 12/31/03.
LOS ANGELES, CITY OF	LA996002	SCAB	0	DASH WILMINGTON VEH ACQUISITION PURCHASE 2 BUSES TO RELIEVE OVERCROWDING	00/01 01/02	In the construction phase to be completed by 12/31/03.
LOS ANGELES, CITY OF	LA996003	SCAB	0	DASH WATTS VEH ACQUISITION PURCH 2 VEH'S TO REDUCE EXISTING OVERCROWDING	00/01 01/02	In the construction phase to be completed by 12/31/03.
LOS ANGELES, CITY OF	LA996004	SCAB	0	DASH KING-EAST VEH ACQUISITION FINANCE THE ACQ OF 5 BUSES TO REDUCE OVERCROWDING	00/01 01/02	In the construction phase to be completed by 12/31/06.
LOS ANGELES, CITY OF	LA996005	SCAB	0	DASH HOLLYWOOD VEH ACQUISITION ACQUIRE TWO BUSES TO REDUCE EXISTING OVERCROWDING	00/01 01/02	In the construction phase to be completed by 12/31/03.
LOS ANGELES, CITY OF	LA996006	SCAB	0	DASH VERMONT-MAIN VEH ACQUISITION PURCH 5 BUSES TO RELIEVE EXISTING OVERCROWDING	00/01 01/02	In the construction phase to be completed by 12/31/06
LOS ANGELES, CITY OF	LA996007	SCAB	0	DASH MANCHSTR-FLORNCE VEH ACQ PURCH 5 BUSES TO RELIEVE EXISTING OVERCROWDING	00/01 01/02	In the construction phase to be completed by 12/31/06
LOS ANGELES, CITY OF	LA996010	SCAB	0	COMM EXPRESS 448 VEH ACQUISITION PURCH 3 BUSES TO REDUCE EXISTING OVERCROWDING	00/01 01/02	In the construction phase to be completed by 12/31/03.
LOS ANGELES, CITY OF	LA996011	SCAB	0	ROWAN SHUTTLE VEH ACQUISITION PURCH 2 BUSES TO REDUCE EXISTING OVERCROWDED CONDITIONS	00/01 01/02	In the construction phase to be completed by 12/31/03.
LOS ANGELES, CITY OF	LA996012	SCAB	0	DNTWN SAN PEDRO TRAN HUB DEV MIXED TRANSIT HUB IN SAN PEDRO P/E ONLY.	00/01 01/02	In the PE phase to be completed by 6/30/03.
LOS ANGELES, CITY OF	R627TA	SCAB	0	METRO RAIL RED LINE AT WESTLAKE COMMUNITY INTERMODAL INTERCEPT FACILITY - DESIGN 1,100 SPACE PARKING STRUCTURE; CROSS STREETS ARE ALVARADO/MACARTHUR	00/01	In the construction phase to be completed by 12/30/02.

LOS ANGELES COUNTY - TCMs – TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
MONTEREY PARK	LA996067	SCAB	0	TRANSIT VEHICLE PURCHASE PURCH 2 HVY DUTY BUSES AND 1 PARATRANSIT VEH TO ACCOMMODATE EXISTING OVERCROWDING	00/01	Completed.
PASADENA	LA0B215	SCAB	0	PURCHASE OF (5) 30-FOOT ALTERNATIVE FUEL EXTENSION VEHICLES (GTIP)	00/01	In the construction phase to be completed by 12/31/03.
SANTA CLARITA	LA0B7019	SCAB	0	SANTA CLARITA REGIONAL TRANSIT CENTER-LOCATE IN VALENCIA TOWN CENTER, SERVE AS A HUB FOR THE 10 TRANSIT ROUTES, REDUCE AVERAGE 15 MINUTES FOR MANY CROSS-TOWN TRIPS	01/02	Completed.
SANTA CLARITA	LA0B7020	SCAB	0	ADDITIONAL (150) PARKING AT NEWHALL METROLINK STATION-CONSTRUCT ADEQUATE PARKING AT THE NEWHALL METROLINK STATION, INCLUDE PARK & RIDE, KISS & RIDE AND DISABLED-ACCESS SPACES	01/02	Appraisals completed. ROW to be acquired by June 2002. Construction to start in August 2002.
SANTA CLARITA	LA973024	SCAB	0	IMPROVE PEDESTRIAN ACCESS TO TRANSIT STOPS, INSTALLING CROSSWALKS, SIDE- WALKS, AND PEDESTRIAN-ACTUATED TRAFFIC SIGNALS @ 17 TRANSIT STOPS VARIOUS LOCATIONS, PROJECT EXEMPT	01/02	Project complete.
SANTA FE SPRINGS	LA974032	SCAB	0	SANTA FE SPRINGS METRO EXPRESS EXPAND ON THE CITY'S FIXED ROUTE CIRCULATOR TO PROVIDE FEEDER SERVICE TO THE NORWALK/SANTA FE SPRINGS METROLINK STATION	00/01	Completed
SANTA MONICA	LA973503	SCAB	0	DOWNTOWN TRANSIT MALL: TRANSFER STOPS IMPROVMENT PROJECT SANTA MONICA BLVD., & BROADWAY FROM OCEAN AVE. TO FIFTH STREET	00/01	Project in the PE phase. Expected to be complete in FY02.
SANTA MONICA	LA990725	SCAB	0	EXPANSION VEHICLES: (22) 40' CLEAN DIESEL TRANSIT VEHICLES (11) 26' ELECTRIC TRANSIT VEHICLES	00/01	Project under construction to be completed by 12/31/03.
SANTA MONICA	LA990726	SCAB	0	BIKE RACKS (CFP/6089)	00/01	Project under construction to be completed by 12/31/06.
SOUTH PASADENA	LA996090	SCAB	0	BLUE LINE - MISSION MERIDIAN TRANSIT ORIENTED PARKING, SOUTH PASADENA – WILL CONSIST OF 194 CAR PARKING GARAGE (PARK-N-RIDE), INCLUDING 134 SPACES FOR TRANSIT USERS AND 30 SPACES FOR BICYCLES ADJACENT TO STRUCTURE	00/01	Environmental and Design stages. Completion 12/03.
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	LA0B7009	VAR	0	ANTELOPE VALLEY LINE IMPROVEMENTS-INCREASE CAPACITY AND REDUCE TRAVEL TIME ON THIS COMMUTER RAIL AND FREIGHT SERVICE LINE BETWEEN LANCASTER AND LOS ANGELES	00/01 01/02	Project hasn't gone out for a bid yet. Expected completion date is July FY03.

LOS ANGELES COUNTY - TCMs – TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
SOUTHERN CALIF REGIONAL RAIL AUTHORITY	LA963758	SCAB	0	PURCHASE METROLINK CARS & LOCOMOTIVES	00/01	Ongoing project. In the process of procuring 28 cars. Completion expected in FY04.
VARIOUS AGENCIES	LA973039	SCAB	0	ACCESS SERVICES INC. FLEET EXPANSION VEHICLES 46 MINI -- VANS	00/01	Paratransit Project in the PE phase.
VARIOUS AGENCIES	LA9811029	SCAB	0	COMMUNITY HEALTH FOUNDATION OF EAST LA - EXPANSION VEHICLE -- 1 8-PASSGENDER MODIFIED VAN	00/01	Completed.
VARIOUS AGENCIES	LA9811033	SCAB	0	SANTA MARTA HOSPITAL -- EXPANSION VEHICLE ONE 6-PASSENGER MINIVAN	00/01	Completed in FY01.
VARIOUS AGENCIES	LA9811034	SCAB	0	SANTA MARTA HOSPITAL -- EXPANSION VEHICLE ONE 8-PASSENGER MODIFIED VAN	00/01	Completed in FY01.
VARIOUS AGENCIES	LA9811037	SCAB	0	DOWNNEY COMMUNITY HOSPITAL EXPANSION VEHICLES - SIX 8-PASSENGER MODIFIED VANS	00/01	Completed in FY01.
VARIOUS AGENCIES	LA9811039	SCAB	0	PEOPLE COORDINATED SERVICES EXPANSION VEHICLE - ONE 17-PASSENGER SMALL BUS	00/01	Completed.
VARIOUS AGENCIES	LA9811045	SCAB	0	TARZANA TREATMENT CENTER EXPANSION VEHICLE - ONE 8-PASSENGER MODIFIED VAN	00/01	Completed in FY01.
VARIOUS AGENCIES	LA9811046	SCAB	0	TARZANA TREATMENT CENTER EXPANSION VEHICLE - ONE 22-PASSENGER MEDIUM BUS	00/01	Completed in FY01.
VARIOUS AGENCIES	LA9811061	SCAB	0	VILLA ESPERANZA EXPANSION VEHICLES 2 8-PSGR. MODIFIED VANS	00/01	Completed.
VARIOUS AGENCIES	LA9811069	SCAB	0	NORTHEAST VALLEY HEALTH CORP EXPANSION VEHICLES -- TWO 6 PASSENGER MINI VANS	00/01	Completed.
VARIOUS AGENCIES	LA990733	SCAB	0	WHITE MEMORIAL MEDICAL CENTER VEHICLE EXPANSION (1) 8 PSGR MODIFIED VAN	00/01	Completed.
VARIOUS AGENCIES	LA990740	SCAB	0	SANTA CLARITA VALLEY COMMITTEE ON AGING - EXPANSION VEHICLES - (2) 17 PASSENGER SMALL BUSES	00/01	Paratransit project in the PE phase.
VARIOUS AGENCIES	LA990741	SCAB	0	PROTOTYPES - EXPANSION VEHICLE ONE (1) 8-PASSENGER MODIFIED VAN	00/01	Completed in FY01.
VARIOUS AGENCIES	LA990742	SCAB	0	PROTOTYPES - EXPANSION VEHICLE ONE (1) 6-PASSENGER MODIFIED VAN	00/01	Completed in FY01.
VARIOUS AGENCIES	LA990743	SCAB	0	KOREAN HEALTH, EDUCATION, INFO & RESEARCH CENTER (KHEIR)- EXPANSION ONE (1) 6-PASSENGER MINIVAN	00/01	Completed.
VARIOUS AGENCIES	LA990744	SCAB	0	KOREAN HEALTH, EDUCATION, INFO & RESEARCH CENTER (KHEIR)- EXPANSION ONE (1) 17-PASSENGER SMALL BUS	00/01	In the PE phase. To be completed in FY02
VARIOUS AGENCIES	LA990745	SCAB	0	HEALTHVIEW, INC - EXPANSION VEH. - TWO (8) PASSENGER MODIFIED VANS	00/01	Completed.
VARIOUS AGENCIES	LA990746	SCAB	0	HEALTHVIEW, INC. - EXPANSION VEH. ONE (1) 17 PASSENGER SMALL BUS	00/01	Completed in FY01.

LOS ANGELES COUNTY - TCMS – TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
VARIOUS AGENCIES	LA990748	SCAB	0	FOUNDATION FOR THE JUNIOR BLIND VEHICLE EXPANSION (2) 8 PSGR VANS	00/01	Paratransit project in the PE phase.
VARIOUS AGENCIES	LA990749	SCAB	0	EASTER SEAL SOUTHERN CALIFORNIA VEHICLE EXPANSION (2) 22 PSGR BUSES	00/01	Paratransit project in the PE phase.
VARIOUS AGENCIES	LA990750	SCAB	0	DOWNEY COMMUNITY HOSPITAL - VEHICLE EXPANSION (1) 22 PSGR BUSES	00/01	In the construction phase to be completed by 12/31/03.
VARIOUS AGENCIES	LA990751	SCAB	0	DOWNEY COMMUNITY HOSPITAL - VEHICLE EXPANSION (6) 8 PSGR VANS	00/01	In the construction phase to be completed by 12/31/06.
VARIOUS AGENCIES	LA990753	SCAB	0	CITY OF COMPTON - VEHICLE EXPANSION (3) 17 PSGR BUSES WITH MOBILE RADIOS	00/01	In the construction phase to be completed by 12/31/03.

2002 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP) (FY2002/2003-2007/2008) – TCM PROJECTS

Update of TCM projects in 2001 RTIP TCM Implementation Status report:
 (Same basic report format as 2001 RTIP)

ORANGE COUNTY - TCMS

PROJECT ID:	ORA55001	
PROJECT DESCRIPTION:	SANTA ANA: PURCHASE AND INSTALLATION OF BICYCLE LOCKERS CITYWIDE.	
FUNDING YEAR:	1997/98	
IMPLEMENTATION STATUS:	COMPLETE	

PROJECT ID:	ORA55229	
PROJECT DESCRIPTION:	BUS STOP ACCESSIBILITY IMPROVEMENTS	
FUNDING YEAR:	1998/99	
IMPLEMENTATION STATUS:	COMPLETE 6/02	

PROJECT ID:	ORA55263	
PROJECT DESCRIPTION:	ITS - ORANGE COUNTY MODEL DEVELOPMENT PROJECT TRAVEL TIP EXPANSION	
FUNDING YEAR:	1998/99	
IMPLEMENTATION STATUS:	COMPLETED 12/01	

PROJECT ID:	ORA008	ROUTE: 22
PROJECT DESCRIPTION:	IN CITY OF GARDEN GROVE EUCLID, BROOKHURST, MAGNOLIA, HARBOR, AND FAIRVIEW SIGNAL COORDINATION AT FREEWAY RAMP	
FUNDING YEAR:	1998/99	
IMPLEMENTATION STATUS:	COMPLETE	

TCMs project status using new reporting format for 2002 RTIP:

ORANGE COUNTY - TCMS - LOCAL HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
HUNTINGTON BEACH	ORA990901	SCAB	0	FIBER OPTIC INTERTIE BETWEEN CITY & CALTRANS. UPGRADE TRAFFIC SIGNAL CONTROL SYSTEM AND ADD CCTV CAMERAS.	00/01	ABOUT TO ENTER CONSTRUCTION COMPLETION DATE: 12/01/02
MISSION VIEJO	ORA980801	SCAB	0	OSO CREEK TRAIL BRIDGE LINKS NORTH/SOUTH SIDES OF TRAIL 150 FT IN LENGTH 300 FT OF S. GERONIMO RD RECREATIONAL TRAILS PROGRAM	00/01	COMPLETED 3/2001
MISSION VIEJO	ORA990902	SCAB	0	REMOTE TMC AND TRAVLER/PUBLIC INFO ACCESS CENTER. PROVIDES TRAFFIC INFO TO PUBLIC LIBRARIES. EST COMM INTERTIE BETWEEN OCTA AND CALTRANS	00/01 01/02	DESIGN COMPLETED 2001. CURRENTLY IN CONSTRUCTION PHASE PENDING FHWA & CALTRANS AUTHORIZATION.
ORANGE, CITY OF	ORA990452	SCAB	0	TUSTIN BRANCH RAIL TRAIL CONVERT RAILS TO BIKE TRAILS FROM TUSTIN THROUGH VILLA PARK AND ORANGE TO THE SANTA ANA RIVER CONNECTS 9 MILE TRAIL	00/01 01/02	Environmental/Design/ROW phase. Extend Design/Engineering to 02/03 and construction to 03/04.
SAN CLEMENTE	ORA990451	SCAB	0	MULTI-USE TRAIL IN SAN CLEMENTE CONSTRUCTED PARALLEL TO RAILROAD TRACKS. 2.6 MILES LONG.	00/01 01/02	Design/Engineering

ORANGE COUNTY - TCMs - LOCAL HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
SANTA ANA	ORA990903	SCAB	0	PACIFIC ELECTRIC BIKE TRAIL. RESURFACE PEROW FROM MACFADDEN TO CHESTNUT. PHASE III ONLY. RECREATIONAL TRAILS PROGRAM.	00/01	COMPLETE
VARIOUS AGENCIES	ORA990906	SCAB	0	LUMP SUM. TEA FUNDS FOR BICYCLE AND PEDESTRIAN FACILITY PROJECTS THROUGHOUT ORANGE COUNTY.	00/01 01/02	ESTIMATED DATE OF COMPLETION: 06/01/03

ORANGE COUNTY - TCMs - STATE HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
CALTRANS	6490	SCAB	5	IN ANAHEIM FROM ROUTE 5/22/57 INTERCHANGE TO BEACH BOULEVARD; CONSTRUCT TMA FOR I-5.	00/01	Under construction (I-5 project, TMC activities, 90% complete).
CALTRANS	10167	SCAB	5	IN BUENA PARK FROM SR-91 TO LA COUNTY LINE ADD 1 HOV LANE IN EACH DIRECTION	00/01	Under construction; 90% complete.
CALTRANS	ORA000195	SCAB	22	BUILD MAINLINE HOV LANES ON SR22 FROM VALLEYVIEW TO GLASSELL. DESIGN, ROW, AND CONSTRUCTION. (PROJECT ADMIN. BY OCTA)	00/01	Under construction
SANTA ANA	550	SCAB	55	IN SANTA ANA AT ALTON AVE CONSTRUCT OVERCROSSING & HOV ACCESS RAMPS	05/06	Environmental clearance delayed due to issues w/ HPSR report
CALTRANS	1332	SCAB	55	IN CITY OF ORANGE WIDEN FREEWAY FROM RTE 22 TO RTE 91 EXIST 8-LN FWY INCL. 2 STND HOV LNS ADD 2 MIXED FLOW LANES AND AUX LNS; OC @ LAVETA, MEATS & KATELLA (98 STIP PROJECT).	00/01 01/02	Under construction; near completion; working on claims issues; completion date 06/30/05
CALTRANS	ORA55073	SCAB	73	WIDEN FROM BIRCH TO I-405; ADD (1) MIXED FLOW LANE IN NB DIR; NB AUX LANE; SOUNDWALLS; AND (1) HOV LANE IN EACH DIR. NEAR SR55 INTERCHANGE (98 STIP)	00/01	Project ready to advertise for construction
CALTRANS	1240	SCAB	91	IN BUENA PARK & BREA FROM L.A. COUNTY LINE TO STE 57 - SEGMENT 2 EXIST 8-LN FWY ADD 2 HOV LANES AND AUXILLIARY LANES.	00/01	Complete
CALTRANS	1250	SCAB	91	IN ANAHEIM AT STE 57/91 - CONSTRUCT 57/91 INTERCHANGE WITH HOV DIRECT CONNECTORS - TRANSITWAY	00/01	Complete
CALTRANS	6951	SCAB	405	405/55 INTERCHANGE SO. TRANSITWAY MOS1 EXISTING 4 MIXED 1 HOV ON SR55 & I-405 EXIST IS 5 MF & 1 HOV ADD HOV DIRECT TRANSITWAY FROM SR55 TO I-405	00/01	Design
CALTRANS	5242	SCAB	605	I-405 TO LA CO LINE ADD 1 HOV LANE IN EA. DIR.; COMPLETES I-605 INTERCOUNTY GAP IN SO. CAL HOV SYSTEM IN (ITIP PROJECT)	00/01 01/02	Design

ORANGE COUNTY - TCMs - TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
ANAHEIM	ORA010202	SCAB	0	PURCHASE (10) 22 FOOT ELECTRIC BUSES FOR ANAHEIM RESORT AREA	01/02	BUSES PURCHASED, ARE BEING TESTED, ONROAD 05/01/02
BUENA PARK	ORA55286	SCAB	0	BUENA PARK COMMUTER RAIL STATION AT DALE STREET AND MALVERN	00/01	DESIGN PHASE. COMPLETE DATE NEEDS TO BE CHANGED TO 12/31/02 DUE TO WORK TO DONE BY RAILROAD.
LAGUNA NIGUEL	ORA9530	SCAB	0	LOS ANGELES/SAN DIEGO CORRIDOR MISSION VIEJO/LAGUNA NIGUEL STATION	00/01	UNDER CONSTRUCTION WILL BE COMPLETE 04/01/02
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA000104	SCAB	0	TRANSITWAY IMPROVEMENTS AT IRVINE TRANSPORTATION CENTER; BUILD 900 SPACE PARKING STRUCTURE, INCLUDING ENVIRONMENTAL, DESIGN AND CONSTRUCTION.	00/01 01/02	WILL INITIATE DESIGN PHASE IN YEAR 2003.
ORANGE COUNTY TRANS AUTHORITY (OCTA)	ORA65002	SCAB	0	RIDESHARE SERVICES RIDEGUIDE, DATABASE, CUSTOMER INFO, AND MARKETING. (ORA. CO. PORTION).	00/01 01/02	6/01 COMPLETE 6/02 COMPLETE
TUSTIN	R612TA	SCAB	0	TUSTIN COMMUTER RAIL STATION. METROLINK - SBD/RIVERSIDE/IRVINE	00/01	COMPLETE
YORBA LINDA	ORA981103	SCAB	0	IN YORBA LINDA, CONSTRUCT COMMUTER RAIL STATION AND PARK AND RIDE (347 SPACES) NEAR ESPERANZA RD AND NEW RIVER ST	00/01 01/02	DESIGN PHASE

2002 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP) (FY2002/2003-2007/2008) – TCM PROJECTS

Update of TCM projects in 2001 RTIP TCM Implementation Status report:
 (Same basic report format as 2001 RTIP)

RIVERSIDE COUNTY - TCMs

PROJECT ID:	41053
PROJECT DESCRIPTION:	VARIOUS LOCATIONS - CLASS I BIKEWAY AND PEDESTRIAN SIDEWALKS WITH HANDICAP RAMPS
FUNDING YEAR:	1997/98
IMPLEMENTATION STATUS:	Completed
PROJECT ID:	41054
PROJECT DESCRIPTION:	RIVER ROAD, PEDLEY ROAD, AND SANTA ANA RIVER TRAIL - TRAFFIC SIGNAL AND TRAIL ACCESS FOR PEDESTRIAN AND EQUESTRIANS
FUNDING YEAR:	1997/98
IMPLEMENTATION STATUS:	Completed
PROJECT ID:	RIV520115
PROJECT DESCRIPTION:	IN COACHELLA VALLEY AREA 2 EXPANSION 30 FOOT ELECTRIC VEHICLE (2 ELECTRIC BUS FOR SHUTTLE SERVICE)
FUNDING YEAR:	1997/98
IMPLEMENTATION STATUS:	Completed
PROJECT ID:	RIV520116
PROJECT DESCRIPTION:	IN COACHELLA VALLEY AREA 5 CNG EXPANSION VANS (2 IN 97/98 & 3 IN 98/99)
FUNDING YEAR:	1998/99
IMPLEMENTATION STATUS:	Completed
PROJECT ID:	RIV520159
PROJECT DESCRIPTION:	PURCHASE ROLLING STOCK FOR EXISTING COMMUTER RAIL LINES (JOINT PROJECT WITH LACMTA - TOTAL ACQUISITION OF 14 CARS)
FUNDING YEAR:	1997/98
IMPLEMENTATION STATUS:	Completed
PROJECT ID:	4632VFF
PROJECT DESCRIPTION:	ROUTE: 60 IN AND NEAR RIVERSIDE FROM VALLEY WAY UNDERCROSSING TO RTE 215 & ON RTE 215 FROM RTE 60 TO UNIV. AVE. UNDERCROSSING - 6 LANE FWY ADD 2 HOV LANES
FUNDING YEAR:	1998/99
IMPLEMENTATION STATUS:	Completed

TCMs project status using new reporting format for 2002 RTIP:

RIVERSIDE COUNTY - TCMs - LOCAL HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
CITIES & COUNTY	19814	SCAB	0	ALONG SANTA ANA RIVER - 1.4 MILE BIKEWAY	00/01	Completed

RIVERSIDE COUNTY - TCMS - STATE HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
CALTRANS	33480 (combined into 0121D in 2002 TIP)	SCAB	215	FROM EL CERRITO DR TO RTE 60/91/215 IC -- CONSTRUCT IC; ADD 2 HOV LANES (1 LANE IN EACH DIRECTION), AND TRUCK CLIMBING LANE (SB)	00/01 01/02	In Design. Combined into 0121D.
CALTRANS	46681 (combined into 0121D in 2002 TIP)	SCAB	215	FROM BOX SPRINGS RD I/C TO EL CERRITO DR I/C ADD 2 HOV LANES, AND TRUCK CLIMBING LANES (SB) -- (ONE IN EACH DIRECTION)	00/01	In Design. Combined into 0121D.
CALTRANS	46730 (combined into 0121D in 2002 TIP)	SCAB	215	FROM BOX SPRINGS OH TO .4 MI N/O FAIR ISLE DR. RECONST IC; ADD 2 HOV LANES, AND TRUCK CLIMBING LANE (SB) -- (1 IN EACH DIRECTION)	02/03	In Design. Combined into 0121D. Five past I-215 corridor improvement TIP projects combined into Project 0121D. I-215/SR91/SR60, RIV I-215 Corridor Improvement Project Funding Years: FY 02/03 to 06/07; Completion Date: 12/30/07.
CALTRANS	354801	SCAB	60	JUNCTION ROUTE 15 TO VALLEY WAY - ADD 1 HOV LANE AND 1 MIXED FLOW LANE IN EACH DIRECTION INCLUDING WIDEN 5 UC'S AND 1 OH	00/01 01/02	Design/Engineering
MORENO VALLEY	RIV520152	SCAB	60	SR60 AT NASON INTERCHANGE CONSTRUCT HOV BYPASS LANES ON EASTBOUND AND WESTBOUND ON RAMP	00/01	Completed
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV010212	SCAB	91	ADD HOV LANES THROUGH DOWNTOWN RIVERSIDE - MARY STREET TO RTE 60/215 JCT IN RIVERSIDE -- (DESIGN AND ENGINEERING PORTION ONLY)	00/01	Design/Engineering
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	46360	SCAB	60	IN RIVERSIDE AND MORENO VALLEY ON SR60 FROM RT 215 TO REDLANDS BLVD ADD 2 HOV LANES	01/02	Design/Engineering
TEMECULA	RIV62029	SCAB	79	AT HWY 79 SO AND LA PAZ, ACQUIRE LAND, DESIGN AND CONSTRUCT PARK AND RIDE - 250 SPACES	02/03	Design/Engineering

RIVERSIDE COUNTY - TCMS - TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
BEAUMONT	RIV32134	SCAB	0	IN RIVERSIDE CITY OF BEAUMONT, PURCHASE 7 BUSES W/ LIFTS & TIEDOWNS & 2-WAY RADIOS (5 REP, 2 EXP, 3 IN 0/1, 2 IN 2/3, 2 IN 5/6)	00/01	Completed. Expansion buses have been purchased. (Remaining to be purchased are replacement vehicles).
HEMET	RIV990708	SCAB	0	CONSTRUCT TRANSPORTATION/ TRANSIT CENTER/PARK-N-RIDE LOT ON CORNER OF HARVARD AND LATHAM AVE, APP 100 SPACES	00/01 01/02	Design/Engineering

RIVERSIDE COUNTY - TCMs - TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
NORCO	990910	SCAB	0	In City of Norco Development of Crestview Non-motorized Trail Project	00/01	Completed
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	0006S	SCAB	0	METROLINK - SAN BERNARDINO SUBDIVISION TIER II NEW STATIONS AT MAIN ST AND BNSF RR CROSSING IN CORONA AND VAN BUREN BLVD AND BNSF RR CROSSING IN RIVERSIDE (see RIV 011243 in 2002 RTIP Project Listing)	00/01 01/02	Design/Engineering
RIVERSIDE COUNTY TRANS COMMISSION (RCTC)	RIV520111	SCAB	0	REGIONAL RIDESHARE	00/01 01/02	In progress. Various Ridesharing project elements being implemented as part of the multi-year project.
RIVERSIDE TRANSIT AGENCY	RIV000605	SCAB	0	DEBT FINANCING FOR 57 TRANSIT COACHES, 25 REPLACEMENT, 32 EXPANSION	00/01 01/02	In progress - on going financing as buses are procured.

2002 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP) (FY2002/2003-2007/2008) – TCM PROJECTS

Update of TCM projects in 2001 RTIP TCM Implementation Status report:
 (Same basic report format as 2001 RTIP)

SAN BERNARDINO COUNTY - TCMs

PROJECT ID:	SBD31088	
PROJECT DESCRIPTION:	BUS FLEET EXPANSION; PURCHASE 40' EXPANSION COACHES & AUXILIARY EQUIPMENT, CNG - 9 COACHES IN 2001; 1 COACH IN 2003	
FUNDING YEAR:	1998/99	
IMPLEMENTATION STATUS:	FY01 MONIES OBLIGATED; FY03 ON SCHEDULE	
PROJECT ID:	44370	ROUTE: 30
PROJECT DESCRIPTION:	NEAR FONTANA FROM 0.2 MI E OF SIERRA AVE TO LINDEN AVE CONSTRUCT 6-LANE FWY & 2 HOV LANES	
FUNDING YEAR:	1997/98	
IMPLEMENTATION STATUS:	SR 30/210 PROJECT UNDER CONSTRUCTION-SEGMENTS 8-11 WERE ROLLED UP INTO 20620 EA	
PROJECT ID:	44380	ROUTE: 30
PROJECT DESCRIPTION:	IN RIALTO, 0.16 KM E/O LINDEN TO 0.16 KM W/O WILLOW AVE. CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES (SEGMENT 9)	
FUNDING YEAR:	1997/98	
IMPLEMENTATION STATUS:	SR 30/210 PROJECT UNDER CONSTRUCTION-SEGMENTS 8-11 WERE ROLLED UP INTO 20620 EA	
PROJECT ID:	59101	ROUTE: 30
PROJECT DESCRIPTION:	IN RIALTO & SBD, 0.16KM W/O WILLOW AVE. TO 0.16KM W/O MACY ST. CONSTRUCT 6-LANE FREEWAY & 2 HOV LANES (SEGMENT 10)	
FUNDING YEAR:	1997/98	
IMPLEMENTATION STATUS:	SR 30/210 PROJECT UNDER CONSTRUCTION-SEGMENTS 8-11 WERE ROLLED UP INTO 20620 EA	
PROJECT ID:	SBD990305	
PROJECT DESCRIPTION:	METROLINK/SAN BERNARDINO LINE CONSTRUCT A SECOND PLATFORM, PASSENGER SHELTERS AND INFORMATION KIOSKS.	
FUNDING YEAR:	1999/00	
IMPLEMENTATION STATUS:	PROJECT UNDERWAY-CITY PLANS ON OBTAINING CTC VOTE FOR CONSTRUCTION IN EARLY 2002	
PROJECT ID:	SBD59209	
PROJECT DESCRIPTION:	METROLINK STA., PHASE 2 SW CORNER OF MILLIKEN & AT & SF RAILROAD; EXPAND PARKING LOT FROM 330-1,000 SPACES, EXTEND SOUTH PLATFORM, ADD SHADE STRUCTURES	
FUNDING YEAR:	1999/00	
IMPLEMENTATION STATUS:	COMPLETED 10/01/01	
PROJECT ID:	981118	
PROJECT DESCRIPTION:	BUS SYSTEM - PASSENGER FACILITIES: DESIGN AND BUILDING OF ONTARIO TRANSCENTER	
FUNDING YEAR:	2001/02	
IMPLEMENTATION STATUS:	ON SCHEDULE. FUNDS ALLOCATED FOR PSE AND ROW.	

SAN BERNARDINO COUNTY - TCMs

PROJECT ID: 990801
PROJECT DESCRIPTION: RUNNING SPRINGS VILLAGE TRAIL - IMPROVE RECREATIONAL TRAIL BETWEEN TWO MAJOR TRANSPORTATION FACILITIES
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: UNDERWAY-DEPARTMENT OF FORESTRY IS LEAD

PROJECT ID: 44400 **ROUTE:** 30
PROJECT DESCRIPTION: RTE 30 - 0.1 MILE W/O MACY ST TO 'H' ST. RTE 215 - 0.1 MILE S/O MUSCUIPABE DR. TO UNIVERSITY PKWY (SEGMENT 11/PHASE 1)
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: 30/210 PROJECT UNDER CONSTRUCTION WITH PARTIAL COMPLETION - SEGMENTS 8-11 ROLLED INTO 20620 CORRIDOR DESCRIPTION

PROJECT ID: 200056
PROJECT DESCRIPTION: GREEN VALLEY LAKE - AREA IMPROVEMENTS ROADWAY SHOULDER FOR PAVED WALKWAY, STRUCTURAL REHAB., DIRT TRAIL IMPROVEMENTS
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: COMPLETED 12/00

PROJECT ID: 200077
PROJECT DESCRIPTION: BUS SYSTEM - PURCHASE EXPANSION ALT FUEL BUSES (01-13), (02-14)
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: 01 FUNDS GRANTED; 02 ON SCHEDULE

TCMs project status using new reporting format for 2002 RTIP:

SAN BERNARDINO COUNTY - TCMs - LOCAL HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
GRAND TERRACE	SBD31860	SCAB	0	MAIN STREET MT. VERNON AVENUE TO W. CITY LIMITS PROVIDE BICYCLE LANES	00/01	COMPLETED WITH BLA FUNDS
REDLANDS	200065	SCAB	0	NEW ELECTRIC SHUTTLE FOR DOWNTOWN REDLANDS	00/01	COMPLETED
REDLANDS	200071	SCAB	0	PURCHASE (3) NEW CNG VANS FOR VANPOOL FOR CITY OF REDLANDS	00/01	COMPLETED
SANBAG	SBD031505	SCAB	0	VARIOUS LOCATIONS - LUMP SUMS LTF, ARTICLE 3 BICYCLE/PEDESTRIAN PROJECTS	00/01 01/02	PROJECTS ON-GOING
SANBAG	200074	VAR	0	LUMP SUM - TRANSPORTATION ENHANCEMENT ACTIVITIES PROJECTS FOR SAN BERNARDINO COUNTY-BIKE/PED PROJECTS	00/01 01/02	PROJECTS ON-GOING
SCAG	924165	SCAB	0	RIDESHARE ACTIVITIES	00/01	ALL FUNDS OBLIGATED-UNTIL NEXT TRANSPORTATION ACT-ON-GOING PROGRAM

SAN BERNARDINO COUNTY - TCMs - STATE HIGHWAYS (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
CALTRANS	711	SCAB	215	NEAR COLTON AND SAN BERNARDINO FROM ROUTE 10 TO ROUTE 66 AT VARIOUS LOCATIONS - NORTHBOUND AND SOUTHBOUND AUXILIARY LANES WITH RIGHT OF WAY FOR FUTURE HOV LANES	00/01	PROJECT DESIGN UNDERWAY-PROJECT EAS ARE ALL INCLUDED UNDER 713-AS CORRIDOR PROJECT
CALTRANS	713	SCAB	215	SAN BERNARDINO, RTE 10 TO RTE 30 ADD 2 HOV LANES AND OPERATIONAL IMPROVEMENTS, PE ONLY	00/01	UNDERWAY; PROJECT HAS NEW DESCRIPTION AND IS NOW DESCRIBED AS A CORRIDOR PROJECT; ALL OTHER EAS WERE COMBINED BECAUSE PROJECT INCLUDES WHOLE CORRIDOR DESCRIPTION
CALTRANS	716	SCAB	215	IN SAN BERNARDINO, NINTH ST. TO N/O 16TH ST. - ADD 2 HOV LANES ONE IN EACH DIRECTION AND OPERATIONAL IMPROVEMENTS (NON CAPACITY TYPE IMPROVEMENTS)	00/01	COMBINED INTO 713
CALTRANS	00719	SCAB	215	I-215 NORTH FROM MUSCUIABE TO RTE. 30 (SEG. 5) ADD 2 HOV LANES AND OPERATIONAL IMPROVEMENTS	01/02	COMBINED INTO 713
CALTRANS	20620	SCAB	30	UPLAND TO SAN BERNARDINO FROM LOS ANGELES COUNTY LINE TO ROUTE 215 - 8 LANE FREEWAY INCLUDING 2 HOV LANES (6+2) - 210 CORRIDOR PROJECT	00/01 01/02	CONSTRUCTION UNDERWAY-CORRIDOR COMPLETION EXPECTED IN 05/06
CALTRANS	44301	SCAB	30	IN UPLAND, LA/SBD CO LINE TO MOUNTAIN AVE. CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES (SEGMENT 1)	00/01	CONSTRUCTION UNDERWAY-FEDERAL FUNDS OBLIGATED
CALTRANS	44311	SCAB	30	IN UPLAND, MOUTAIN AVE. TO 0.1 MI. W/O CUCAMONGA CYN WASH CONSTRUCT 6 LANE FWY & 2 HOV LANES & CAMPUS AVE UC (SEG. 2)	00/01	CONSTRUCTION UNDERWAY-FEDERAL FUNDS OBLIGATED
CALTRANS	44321	SCAB	30	IN RANCHO CUCAMONGA, 0.1 MI. W/O CUCAMONGA CANYON WASH TO HERMOSA AV CONSTRUCT 6 LANE FWY & 2 HOV LANES (SEGMENT 3)	00/01	CONSTRUCTION UNDERWAY-FEDERAL FUNDS OBLIGATED
CALTRANS	44331	SCAB	30	IN RANCHO CUCAMONGA, HERMOSA AVE TO 0.6 KM E/O MILLIKEN AVE. CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES (SEGMENT4)	00/01 01/02	CONSTRUCTION UNDERWAY-FEDERAL FUNDS OBLIGATED
COLTON	SBD41245	SCAB	10	PARK AND RIDE ALT. FUEL FACILITY AT I-10 AND SPERRY	02/03	SCHEDULE DELAY; CALTRANS RESCOPED THE PROJECT AND ARE ADDING RAMPS AND INTERCHANGE IMPROVEMENTS ALONG WITH THIS PROJECT
SANBAG	SBD0194	SCAB	30	NEAR FONTANA FROM 0.5 MI E OF HEMLOCK TO 0.2 MI E OF SIERRA AVE CONSTRUCT 6-LANE FWY & 2 HOV LANES	00/01	CONSTRUCTION UNDERWAY-FEDERAL FUNDS OBLIGATED
SANBAG	44340	SCAB	30	IN SAN BERNARDINO COUNTY FROM MILLIKEN AVE TO 0.4 MI WEST OF EAST AVE CONSTRUCT 8-LN FWY WITH 2 HOV LANES **SEE STIP PPNO #193B, C & S	00/01	CONSTRUCTION UNDERWAY-FEDERAL FUNDS OBLIGATED

SAN BERNARDINO COUNTY - TCMs – TRANSIT (Reporting on TCM projects identified in first two years of 2001 RTIP, i.e., FY00/01 & FY01/02)

LEAD AGENCY	PROJECT ID	AIR BASIN	RTE	DESCRIPTION	YEAR	TCM PROJECT STATUS
CHINO	SBD41220	SCAB	0	CHINO AVENUE/CENTRAL TO 6TH STS. MULTI-MODAL TRANSPORTATION CENTER INCLUDES PARK-N-RIDE LOT WITH 125 SPACES	00/01 01/02	PROJECT UNDERWAY FEDERAL FUNDS ALLOCATED FOR PSE AND ROW
OMNITRANS	981119	SCAB	0	TRANSIT INTERMODAL FACILITIES - FONTANA TRANSCENTER - EXPAND BUS BAYS, IMPROVE LANDSCAPING, SIGNALS AND PEDESTRIAN AND PASSENGER FACILITIES	00/01	PROJECT UNDERWAY FEDERAL FUNDS ALLOCATED FOR PSE AND ROW
ONTARIO	200094	SCAB	0	EAST ONTARIO METROLINK PHASE II DEVELOPMENT	02/03	SCHEDULE DELAY DUE TO ENVIRONMENTAL ISSUES
SANBAG	200175	SCAB	0	PURCHASE TWO LOCOMOTIVES-PROJECT IS CO-OP WITH RCTC,LACMTA,OCTA, AND VCTC. NEEDED FOR GROWTH IN RIDERSHIP ON METROLINK.	01/02	COMPLETED
SCRAA/LACMTA/ SANBAG	991213	SCAB	0	SAN BERNARDINO LINE CAPACITY IMPROVEMENTS (TRACK IMPROVEMENTS)-FREMONT & MARENGO SIDINGS	00/01	PROJECT UNDERWAY AND INCLUDES ADDITIONAL METROLINK FACILITIES AND UPGRADES

2000 RTIP Committed Transportation Control Measures (TCMs)

Project Listing Report

ANALYSIS OF IMPLEMENTATION

The implementation status of applicable TCMs (organized by county):

Los Angeles County Metropolitan Transportation Authority

PROJECT ID: LA974170
PROJECT DESCRIPTION: AGOURA HILLS PARK&RIDE LOT INCREASE CAPACITY IN AGOURA HILLS AREA FROM 93 TO 193 SPACES LOCATED ON THE CONGESTED 101 FWY
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Ongoing.

PROJECT ID: LA974065
PROJECT DESCRIPTION: AVTA BIKE RACK ON BUS PROGRAM ANTELOPE VALLEY TRANSIT AUTH. PROCURE AND INSTALL 25 SPORTWORKS BICYCLE ON AVTA BUS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: 16113
PROJECT DESCRIPTION: ON CATALINA ISLAND FROM AVALON TO NORTH END OF ISLAND - 2 MILE BIKEWAY WITH SCENIC OVERLOOK
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA8STIP13
PROJECT DESCRIPTION: BURBANK LOCAL TRANSIT PURCHASE OF TWO ELETRIC BUSES
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA000548 **ROUTE: 10**
PROJECT DESCRIPTION: FROM PUENTE TO CITRUS- HOV LANES FROM 8 TO 10 LANES (C-ISTEA 77720) (98 RTP)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA01347 **ROUTE: 14**
PROJECT DESCRIPTION: RTE 14 FROM PEARBLOSSOM HWY TO AVE P-8 - HOV LANES
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA01348 **ROUTE: 14**
PROJECT DESCRIPTION: RTE 14 FROM ESCONDIDO CYN RD. TO PEARBLOSSOM HWY - HOV LANES
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA963724 **ROUTE: 30**
PROJECT DESCRIPTION: IN LA VERNE AND CLAREMONT FROM FOOTHILL BLVD. TO SAN BERNARDINO COUNTY LINE - NEW 8 LANE FWY INCLUDING 2 HOV LANES
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 126310 **ROUTE:** 30
PROJECT DESCRIPTION: IN CLAREMONT FROM PADUA AVENUE TO SAN BERNARDINO COUNTY LINE
 - NEW 8 LANE FREEWAY INCLUDING 2 HOV LANES AND INTERCHANGE
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 12640 **ROUTE:** 30
PROJECT DESCRIPTION: IN CLAREMONT FROM TOWNE AVE TO PADUA AVE - NEW 8 LANE FREEWAY
 INCLUDING 2 HOV LANES
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 17210 **ROUTE:** 30
PROJECT DESCRIPTION: IN CLAREMONT FROM FOOTHILL BLVD. TO SAN BERNARDINO COUNTY LINE
 - NEW 8 LANE FREEWAY INCLUDING 2 HOV LANES
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 12570 **ROUTE:** 60
PROJECT DESCRIPTION: IN AND NEAR INDUSTRY FROM 0.5 MILE WEST OF OLD BREA CANYON RD TO
 0.5 MI. E. OF GRAND AVE. - HOV DIRECT CONNECTORS & COLLECTOR ROAD
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 11985 **ROUTE:** 405
PROJECT DESCRIPTION: NEAR HAWTHORNE AND CULVER CITY FROM ROUTE 105 TO ROUTE 90 - 6
 LANE FREEWAY ADD 2 HOV LANES
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 1178A **ROUTE:** 405
PROJECT DESCRIPTION: IN LA & CULVER CITY FROM RTE 90 to RTE 10 - HOV LANES (SB 5+0 TO 5+1;
 NB5+0 TO 5+1 HOV) 98CTIP \$ FUND NB LN, ALSO PAYS FOR PART OS SB \$
 DELETED FROM 96STIP
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA000777 **ROUTE:** 405
PROJECT DESCRIPTION: FROM ROUTE 10 TO ROUTE 101 TO EXISTING 8-10 LANE FWY ADD TWO HOV
 LANES (SB:4+0; 5+0 TO 5+1 HOV)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974042
PROJECT DESCRIPTION: HARBOR TRANSITWAY SHUTTLE WEEKDAYS & SAT. SVC BTW HARBOR
 TRANSIT STAS @ CARSON & REGION. DESTINATIONS & EMPLOYMENT CTRS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974019
PROJECT DESCRIPTION: CLAREMONT VILLAGE WEST TRANSIT LINKAGES CREATE A TRANSIT
 ORIENTED DISTRICT LINK PEDESTRIAN AND BICYCLE NETWORK
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA71702
PROJECT DESCRIPTION: REPLACE TWO FIXED ROUTE BUSES
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA974406
PROJECT DESCRIPTION: MLK Jr. PARK AND RIDE EXPANSION PROJECT - PURCHASE LAND & CONSTRUCT 100 NEW PKG SPACES and PROVIDE SECURITY SURVEILLANCE
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA963754
PROJECT DESCRIPTION: METROLINK SAN BERNARDINO LINE AT COVINA STATION - PARKING ACCESS ENHANCEMENTS (PHASE II)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA973005
PROJECT DESCRIPTION: BUS EXPANSION: ALTERNATIVE FUEL (TROLLEY BUS)
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 4U006
PROJECT DESCRIPTION: METRO RAIL GREEN LINE AT DOUGLAS STREET STATION - SIDEWALKS AND HANDICAPPED ACCESS
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA62401
PROJECT DESCRIPTION: REPLACE 33 BUSES (40') PER YEAR -- \$360K/BUS
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA53903
PROJECT DESCRIPTION: REPLACEMENT BUSES: FY97=3; FY98=6; FY99=2; FY01=2; FY02=1; FY03=2.
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA960111
PROJECT DESCRIPTION: AVENUE I SIGNAL SYNCH FROM E.10TH St. EAST TO W.10th St. - 6 SIGNALS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA960112
PROJECT DESCRIPTION: W. 10th ST. SIGNAL SYNCHRONIZATION. PHASE 3 FROM AVE. O-8 TO AVE. M
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA960113
PROJECT DESCRIPTION: AVENUE M - 10th ST. EAST TO 10th ST. WEST SIGNAL SYNCH
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA960114
PROJECT DESCRIPTION: AVE. L SIGNAL SYNCH FROM 10th ST. EAST TO 10th ST. WEST - 4 SIGNALS.
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA962287
PROJECT DESCRIPTION: SIERRA HIGHWAY INTERCONNECT PHASE I FROM AVE K TO AVE M - FIBER OPTIC INTERCONNECT PROJECT (INTERCONNECT 4 SIGNALS)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA000345
PROJECT DESCRIPTION: LONG BEACH TRANSIT FACILITY CONSTRUCT LONG BEACH BUS FACILITY
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA64801
PROJECT DESCRIPTION: PURCHASE (9) 40' REPLACEMENT BUSES WITH LIFTS
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA974047
PROJECT DESCRIPTION: BRIDGE FINANCING FOR LONG BEACH BIKE STATION CONTINUATION OF OPERATION SHOWCASE BIKES AS AN ALTERNATIVE TO DRIVING
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA962316
PROJECT DESCRIPTION: SELAC-TRAFFIC SIGNAL SYNCH. CORRIDORS PROJECT SIGNAL SYNCH & BUS SPEED IMPROVEMENT PROJECT
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974243
PROJECT DESCRIPTION: WEST SAN GABRIEL VALLEY SIGNAL SOM & BUS SPEED IMPROVEMENTS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962315
PROJECT DESCRIPTION: POMONA VALLEY TRAFFIC SIGNAL FORUM IMPROVEMENT PROJECT REGIONALLY SIGNIFICANT IMPROVEMENT SIGNAL COORDIN./MONITOR.
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 4U004
PROJECT DESCRIPTION: IN LOS ANGELES FROM PICO STATION LOS ANGELES CONVENTION CENTER - SIDEWALKS AND PEDESTRIAN CONNECTIONS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA000487
PROJECT DESCRIPTION: PARK AND RIDE LOT (850 SPACES) LANKERSHIM & CHANDLER - RED LINE.
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA29202X
PROJECT DESCRIPTION: METRO RED LINE MOS-3: N. HOLLYWOOD 5.9 MILES WITH 3 STATIONS
 HIGHLAND STA. TO N. HOLLYWOOD STA
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA29212X
PROJECT DESCRIPTION: METRO RAIL BLUE LINE - PASADENA EXT UNION STA TO SIERRA MADRE
 VILLA STA - 13.5 MILES, 12 STATIONS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA79203
PROJECT DESCRIPTION: LA STANDARD LIGHT RAIL CAR PROCUREMENT FOR GREEN AND BLUE
 LINES (52) POSSIBLE DEFENSE CONVERSION FUNDS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962356
PROJECT DESCRIPTION: SOUTH BAY JPA SYNCHRONIZATION & BUS SPEED IMPROVEMENTS
 (TRANSIT PRIORITY SYSTEM)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA963544
PROJECT DESCRIPTION: PURCHASE 6 ADVANCED TECHNOLOGY TRANSIT BUSES (ATTB) TO
 REPLACE EXISTING VEHICLES
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA9703001
PROJECT DESCRIPTION: RIDESHARE EMPLOYER SERVICE INCLUDING RIDEGUIDE/SURVEY
 REGISTRATION, TDM ASSISTANCE, SPECIAL MARKETING & MONITORING
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974000
PROJECT DESCRIPTION: BICYCLE PARKING AT FACILITIES LOCKERS AND RACKS AT 20 LOCATIONS
 134 BIKE RACKS AND 54 BIKE LOCKERS
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974006
PROJECT DESCRIPTION: UNION STA. GATEWAY BIKE STA. (BIKE RACKS/LOCKERS, BICYCLE REPAIR/
 ACCESSORY SALES, SHOWERS/CHANGING FACILITIES, LIMITED FOOD SVC.)
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974007
PROJECT DESCRIPTION: REGIONAL BIKE RACKS ON BUSES INSTALL BICYCLE RACKS ON ALL 2,020
 BUSES IN MTA TRANSIT FLEET
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA974036
PROJECT DESCRIPTION: EL SEGUNDO GREEN LINE SHUTTLE OPERATES 3 PEAK HR SERVICES CONNECTING GREEN LINE W/ EMPLOYMENT DIST. (WEEKDAYS ONLY)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: R626TA
PROJECT DESCRIPTION: METROLINK RAIL BLUE LINE - PASADENA EXT AT CHINATOWN METROLINK STATION - ACCESS IMPROVEMENTS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974165
PROJECT DESCRIPTION: MacARTHUR PARK STA. IMPROVEMENTS for DESIGN/CONSTRUCTION OF a plaza for PUBLIC ACCESS (PED. ENTRANCES, WALKWAYS, BIKE FACILITIES)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974193
PROJECT DESCRIPTION: TRANSIT CENTERS – DEVELOP OR EXPAND 3 TRANSIT CENTERS (IMPROVE EXISTING BUS STOP/CENTER)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 4U005
PROJECT DESCRIPTION: METROLINK VAN NUYS STATION BETWEEN WILLIS AVENUE AND RAYNER STREET – PEDESTRIAN OVERCROSSING
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA000623
PROJECT DESCRIPTION: TAYLOR YARD - DWP BIKEWAY EASEMENT PEDESTRIAN BRIDGE CLASS 1
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA962076
PROJECT DESCRIPTION: SAN FERNANDO RD METROLINK BIKE PATH PHASE I (1.9 MILES OF CLASS I) (1.75 MILES OF CLASS II ON SAN FERNANDO ROAD)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962098
PROJECT DESCRIPTION: BOYLE HEIGHTS ATSAC PROJECT COMPUTER BASED REAL TIME TRAFFIC SIGNAL MONITORING SYSTEM
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962102
PROJECT DESCRIPTION: MID-CITIES BUS SPEED IMPROVEMENTS (PEAK-HOUR ONLY)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962104
PROJECT DESCRIPTION: WESTSIDE BUS SPEED IMPROVEMENT PROJECT
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962106
PROJECT DESCRIPTION: ADARIVE TRAFFIC CONTROL SYSTEM COMPUTER BASED REAL TIME TRAFFIC SIGNAL MONITORING SYSTEM
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA962107
PROJECT DESCRIPTION: SMART CORRIDOR OPERATION ENHANCEMENT
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962113
PROJECT DESCRIPTION: CENTRAL/EAST LOS ANGELES BUS SPEED IMPROVEMENT PROJECT (INCREASES SPEED FOR FIXED-ROUTE TRANSIT BY SIGNAL PRIORITY)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962121
PROJECT DESCRIPTION: VICTORY/VANOWEN BUS PRIORITY TREATMENTS (SIGNAL COORDIN.)
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962127
PROJECT DESCRIPTION: SYLMAR/SAN FERNANDO BUS TERMINAL AND TIMED TRANSFER CONNECTION CENTER
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962148
PROJECT DESCRIPTION: WESTLAKE COMMUNITY BASED INTERCEPT INTERMODAL FACILITY (96 CALL, CAT 2)
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA962158
PROJECT DESCRIPTION: W. VALLEY SMART SHUTTLE DEMONSTRATION PROJECT (NO SHUTTLE #)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA962167
PROJECT DESCRIPTION: BIKE RACK AND PARKING PROGRAM
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA962173
PROJECT DESCRIPTION: WESTLAKE/MACARTHUR PARK - SMART SHUTTLE DEMONSTRATION PROJECT (NO SHUTTLE NUMBER)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA970901
PROJECT DESCRIPTION: ATSAAC & BUS PRIORITY INFRASTRUCTURE 138 SIGNALIZED INTERSECTIONS INSTALLATION
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA970902
PROJECT DESCRIPTION: ATSAAC & BUS PRIORITY INFRASTRUCTURE 42 SIGNALIZED INTERSECTIONS INSTALLATION
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA970903
PROJECT DESCRIPTION: ATSAAC & BUS PRIORITY INFRASTRUCTURE 109 SIGNALIZED INTERSECTIONS INSTALLATION
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974040
PROJECT DESCRIPTION: METRO GREEN LINE SHUTTLE, AVIATION STATION TO CITY BUS CENTER OPERATE TWO WEEKDAY, PEAK HOUR SHUTTLE SERVICE
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974044
PROJECT DESCRIPTION: BICYCLE RACK ON BUSES-HARBOR AREA ADD BIKE RACKS ON THE LADOT LINES WHICH EXCLUSIVELY SERVE THE HARBOR AREA
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974054
PROJECT DESCRIPTION: KOREATOWN - METRO DASH LINK CONNECT RESID. & BUSINESS AREAS W/ 3 RED LINE STAS ALONG WILSHIRE (ALLOWS FOR SOME RTE. DEVIATION)
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974058
PROJECT DESCRIPTION: EXPOSITION PARK COMPLEX -- INSTALL APPROX. 80 BICYCLE SPACES AT 10 HIGHLY VISIBLE ENTRY LOCATIONS AT MAJOR INSTITUTIONS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974072
PROJECT DESCRIPTION: CHATSWORTH TRANSIT STATIONS BIKE STATION INCLUDE CHANGING ROOMS, BIKE REPAIR, SALES, RENTAL SHOP, AND BIKE LOCKERS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962148
PROJECT DESCRIPTION: METRO RAIL RED LINE AT WESTLAKE COMMUNITY INTERMODAL INTERCEPT FACILITY - PARKING STRUCTURE (PHASE I AND II)
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA962314
PROJECT DESCRIPTION: EAST SAN GABRIEL VALLEY SOM PILOT PROJECT - TRAFFIC SIGNALS INTERCONNECT PROJECT
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA55012
PROJECT DESCRIPTION: REPLACE BUSES - 1997 40' BUSES, 1998 5 40' BUSES, 2000 5 40' BUSES
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA55201
PROJECT DESCRIPTION: CONTINUING PROJECT - BUS STOP IMPROVEMENTS (AMENITIES, SHELTERS)
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA55206
PROJECT DESCRIPTION: DAR REPLACEMENT VANS; ONE NEW VAN AND ONE REPLACEMENT VAN
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974020
PROJECT DESCRIPTION: MONTEREY PK DOWNTOWN PKG COMPLEMENT to CURRENT EFFORTS FOR IMPLEMENTATION OF A PEDEST. PLAZA W/IN THE PROJECT AREA.
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA022191
PROJECT DESCRIPTION: PASADENA - REGIONAL SIGNAL SYNCH & SMART CORRIDOR
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA974409
PROJECT DESCRIPTION: POMONA TELEBUSINESS WORKCENTER: BRIDGING THE GAP ADD TELECONFERENCING CAPABILITIES AND INCREASE MARKETING OF CTR
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA973506
PROJECT DESCRIPTION: ROLLING STOCK ACQUISITION UP TO 5 LOCOMOTIVES & 30 CARS
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974096
PROJECT DESCRIPTION: SANTA CLARITA COMMUTE CONNECT OPERATION - PROPANE-FUELED EXP. BUSES TO LINK EMPLOYMENT CTRS W/ SANTA CLARITA METROLINK STA.
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA003255
PROJECT DESCRIPTION: SANTA CLARA RIVER REGIONAL COMMUTER BIKEWAY (93/94 CFP, CAT. 8, 255) CLASS 1 14.5 MILES PH.II
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA974062
PROJECT DESCRIPTION: SANTA CLARITA BICYCLE STA. METROLINK STA. INCLUDE SECURE SPACES FOR 50 BIKES, CHANGING & REST ROOMS, BIKE REPAIR, SALES, & RENTALS
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974204
PROJECT DESCRIPTION: NORWALK/SANTA FE SPRINGS TRANSPORTATION CTR EXPANSION, PARK-&-RIDE FOR 67 VEHICLES, KISS-AND-RIDE PASSENGER DROP OFF AREA
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA974405
PROJECT DESCRIPTION: ARTESIA STA PED. WAY TO PROVIDE SAFE DIRECT ACCESS TO EASTBOUND PEDESTRIANS AT BLUE LINE STA. (INCLUDE SIGNALIZED PED CROSSING)
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA974032
PROJECT DESCRIPTION: SANTA FE SPRINGS METROEXPRESS EXPAND ON THE CITY'S FIXED ROUTE CIRCULATOR TO PROVIDE FEEDER SERVICE TO THE NORWALK/SANTA FE SPRINGS METROLINK STATION
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA002047
PROJECT DESCRIPTION: SANTA MONICA SMART CORRIDOR EXTENSION
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: LA57110
PROJECT DESCRIPTION: BUS REPLACEMENT: FY 1997: 25 BUSES; FY1998: 31 BUSES; FY2000: 15 BUSES; FY2001: 12 BUSES; FY2002: 10 BUSES
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 927331
PROJECT DESCRIPTION: RIDESHARE ACTIVITIES
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: Completed.

PROJECT ID: LA974419
PROJECT DESCRIPTION: BLUE LINE MISSION STREET STATION PARK-AND-RIDE LOT WILL CONSIST OF 130 SPACES AND 300 SQUARE FEET FOR BICYCLES
FUNDING YEARS: 1997/98
IMPLEMENTATION STATUS: Replaced by Project ID LA996090

PROJECT ID: LA974059
PROJECT DESCRIPTION: WEST HOLLYWOOD COMMUTER CENTER TO BE LOCATED IN A HIGHLY VISIBLE STOREFRONT ALONG SANTA MONICA BLVD.
FUNDING YEARS: 1998/99
IMPLEMENTATION STATUS: On-going.

Orange County Transportation Authority

PROJECT ID: ORA1870
PROJECT DESCRIPTION: PURCHASE STANDARD REPLACEMENT BUSES
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Project Initiated/Ongoing.

PROJECT ID: ORA35
PROJECT DESCRIPTION: TRAFFIC OPERATIONS CONTROL CENTER
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Project Completed.

PROJECT ID: ORA55001
PROJECT DESCRIPTION: SANTA ANA: PURCHASE AND INSTALLATION OF BICYCLE LOCKERS CITYWIDE.
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Project Initiated/Ongoing (Awarded).

PROJECT ID: ORA55229
PROJECT DESCRIPTION: BUS STOP ACCESSIBILITY IMPROVEMENTS
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Project Initiated/Ongoing (Awarded).

PROJECT ID: ORA55263
PROJECT DESCRIPTION: ITS – ORANGE COUNTY MODEL DEVELOPMENT PROJECT TRAVEL TIP EXPANSION
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Project Initiated/Ongoing (Awarded).

PROJECT ID: ORA55286
PROJECT DESCRIPTION: BUENA PARK COMMUTER RAIL STATION
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Project on Schedule for FY2000/01.

PROJECT ID: ORA9505
PROJECT DESCRIPTION: CITY OF SANTA ANA REGIONAL TRANSPORTATION CENTER ENGINEERING, DESIGN, CONSTRUCTION OF 423 SPACE PARKING STRUCTURE & WALKWAY
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Project Completed.

PROJECT ID: ORA9530
PROJECT DESCRIPTION: LA/SAN DIEGO CORRIDOR MISSION VIEJO/LAGUNA NIGUEL STATION
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Project scheduled for completion on 03/03/03. Delayed schedule due to cost adjustments and ROW issues. Additional funding has been obtained to accommodate higher construction costs and the ROW is currently being negotiated.

PROJECT ID: R474TB
PROJECT DESCRIPTION: METROLINK – RIV/LA VIA FULLERTON AT FULLERTON TRANSPORTATION CENTER – PARKING EXPANSION
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Project Completed.

PROJECT ID: R612TA
PROJECT DESCRIPTION: METROLINK – SBD/RIVERSIDE/IRVINE TUSTIN STATION - NEW STATION AND PARKING FACILITY
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Project Initiated/Ongoing.

PROJECT ID: 10167 **ROUTE:** 5
PROJECT DESCRIPTION: BUENA PK FROM SR-91 TO LA COUNTY LINE ADD 1 HOV LANE IN EACH DIR.
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Project Initiated/Ongoing.

PROJECT ID: 01260FF **ROUTE:** 5
PROJECT DESCRIPTION: SANTA ANA FROM RTE 22 TO RTE 91 – 6 LANE FWY ADD 2 MIXED FLOW LANES, 2 HOV LANES, AND RECONSTRUCT INTERCHANGES INCLUDE GENE AUTRY & ORANGEWOOD
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Project Initiated/Ongoing.

PROJECT ID: ORA008 **ROUTE:** 22
PROJECT DESCRIPTION: IN CITY OF GARDEN GROVE EUCLID, BROOKHURST, MAGNOLIA, HARBOR, AND FAIRVIEW SIGNAL COORDINATION AT FREEWAY RAMPS
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Project Initiated/Ongoing (Awarded).

PROJECT ID: 550 **ROUTE:** 55
PROJECT DESCRIPTION: SANTA ANA @ ALTON AVE CONSTRUCT OVERPASS & HOV ACCESS RAMPS
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Project Initiated/Ongoing.

PROJECT ID: ORA55073 **ROUTE:** 73
PROJECT DESCRIPTION: ROUTE 73 WIDENING FROM BIRCH STREET TO I-405 ADD ONE HOV LANE AND MIXED FLOW LN NEAR ROUTE 55 INTERCHANGE
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Project Initiated/Ongoing.

PROJECT ID: 1240 **ROUTE:** 91
PROJECT DESCRIPTION: IN BUENA PARK & BREA FROM LA COUNTY LINE TO RTE 57 - SEGMENT 2 EXIST 8-LN FWY ADD 2 HOV LANES AND AUXILLIARY LANES
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Project Initiated/Ongoing.

PROJECT ID: ORA55226 **ROUTE:** 91
PROJECT DESCRIPTION: SR91/KRAEMER BLVD IC, MOTORIST INFORMATION SYSTEM, IM=TSM
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Project Completed.

Riverside County Transportation Commission

PROJECT ID: 41049
PROJECT DESCRIPTION: BELARDO RD. CORRIDOR - 1.4 Mi. BIKEWAY WITH LIGHTING & BIKE RACKS
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Obligated.

PROJECT ID: 41053
PROJECT DESCRIPTION: VARIOUS LOCATIONS - CLASS I BIKEWAY AND PEDESTRIAN SIDEWALKS WITH HANDICAP RAMPS
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Obligated.

PROJECT ID: 41054
PROJECT DESCRIPTION: RIVER ROAD, PEDLEY ROAD, AND SANTA ANA RIVER TRAIL – TRAFFIC SIGNAL AND TRAIL ACCESS FOR PEDESTRIAN AND EQUESTRIANS
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Obligated.

PROJECT ID: RIV32134
PROJECT DESCRIPTION: IN RIVERSIDE CITY OF BEAUMONT PURCHASE TWO BUSES W/ LIFTS & TIEDOWNS (1 Replacement, 1 Expansion)
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Obligated.

PROJECT ID: RIV32166
PROJECT DESCRIPTION: IN CITY OF RIVERSIDE SPECIAL SERVICES PURCHASE SIX REPLACEMENT VANS W/LIFTS AND TIEDOWNS
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Pending FTA approval.

PROJECT ID: RIV32228
PROJECT DESCRIPTION: IN WESTERN RIVERSIDE COUNTY PURCHASE 3 REPLACEMENT CNG TRANSIT COACHES, RADIOS & FAREBOXES
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Obligated.

PROJECT ID: RIV520111
PROJECT DESCRIPTION: RIDESHARING
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Obligated.

PROJECT ID: RIV520115
PROJECT DESCRIPTION: IN COACHELLA VALLEY AREA 2 EXPANSION 30 FOOT ELECTRIC VEHICLE (2 ELECTRIC BUS FOR SHUTTLE SERVICE)
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Obligated.

PROJECT ID: RIV520116
PROJECT DESCRIPTION: IN COACHELLA VALLEY AREA 5 CNG EXPANSION VANS (2 IN 97/98 & 3 IN 98/99)
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Purchased 97/98 coaches, 98/99 pending FTA grants approval.

PROJECT ID: RIV520117
PROJECT DESCRIPTION: IN RIVERSIDE CITY OF BANNING PURCHASE 3 REPLACEMENT 35-PASSENGER COACHES W/LIFT & TIEDOWNS (2 IN 97/98, 1 IN 00/01)
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Obligated 97/98 coaches.

PROJECT ID: RIV520134
PROJECT DESCRIPTION: IN WESTERN RIVERSIDE COUNTY PURCHASE 6 REPLACEMENT COACHES W/LIFTS & RADIOS (2 IN 98/99, 4 IN 99/00)
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Purchased 98/99 coaches, 99/00 coaches pending FTA grant approval.

PROJECT ID: RIV520154
PROJECT DESCRIPTION: LUMP SUM SIGNAL SYNCHRONIZATION PROJECTS AT VARIOUS LOCATIONS
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Obligated.

PROJECT ID: RIV520159
PROJECT DESCRIPTION: PURCHASE ROLLING STOCK FOR EXISTING COMMUTER RAIL LINES (JOINT PROJECT WITH LACMTA – TOTAL ACQUISITION OF 14 CARS)
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Obligated.

PROJECT ID: RIV62042
PROJECT DESCRIPTION: VALLEY-WIDE SIGNAL SYNCHRONIZATION INTERCONNECT OF 400 SIGNALS
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Engineering has been obligated. A STIP amendment moved the rest of the funds to 99/00. This is ongoing and the rest of the funds will be allocated this fiscal year.

PROJECT ID: RIV62043
PROJECT DESCRIPTION: SUNLINE METROLINK BUS PURCHASE
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Pending FTA grant approval.

PROJECT ID: 4632VFF **ROUTE:** 60
PROJECT DESCRIPTION: IN AND NEAR RIVERSIDE FROM VALLEY WAY UNDERCROSSING TO RTE 215 & ON RTE 215 FROM RTE 60 TO UNIV. AVE. UNDERCROSSING - 6 LANE FWY ADD 2 HOV LANES
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Awarded.

San Bernardino Associated Governments

PROJECT ID: SBD31088
PROJECT DESCRIPTION: BUS FLEET EXPANSION - PURCHASE 40' EXPANSION COACHES & AUXILLARY EQUIPMENT, CNG - 01-8, 03-1
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Rollover project, on-going.

PROJECT ID: SBD32236
PROJECT DESCRIPTION: ONTARIO REG. TRAFFIC INFO. SYSTEM -- VARIOUS STREETS NEAR AIRPORT – FIX SIGNAGE, CHANGEABLE MESSAGE SIGNS & BOARDS
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: On-going.

PROJECT ID: SBD41020
PROJECT DESCRIPTION: PARATRANSIT VEHICLES - PURCHASE 17 PASSENGER LIFT EQUIPPED CNG REPLACEMENT VANS, 98-27
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Complete.

PROJECT ID: SBD41022
PROJECT DESCRIPTION: PARATRANSIT - VEHICLES REPLACEMENT ALT. FUEL, 03-45, 04-36
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Rollover project, on-going.

PROJECT ID: SBD41179
PROJECT DESCRIPTION: TRANSFER POINT FACILITY WITH BUS BAYS LAND ACQUISITION AND CONSTRUCTION IN DOWNTOWN SAN BERNARDINO
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Complete.

PROJECT ID: SBD59203
PROJECT DESCRIPTION: PEDESTRIAN FACILITY IMPROVEMENTS AT RIALTO METROLINK STA. BTW ORANGE & RIVERSIDE Ave. (IN ALLEY BTW METROLINK & DOWNTOWN)
FUNDING YEAR: 2002/03
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: SBD59254
PROJECT DESCRIPTION: METROLINK - LOCOMOTIVE RETROFIT FOR NATURAL GAS
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Complete.

PROJECT ID: SBD88357
PROJECT DESCRIPTION: LA CADENA VALLEY BOULEVARD TO MOUNT VERNON SIGNAL INTERCONNECT
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Complete.

PROJECT ID: SBD94163
PROJECT DESCRIPTION: FUNDING FOR COMMUTER COMPUTER
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Rollover project, on-going.

PROJECT ID: SBD41245 **ROUTE: 10**
PROJECT DESCRIPTION: PARK AND RIDE FACILITY N/O I-10 AT SPERRY AND FAIRWAY DEVELOPMENT OF 70 PARKING SPACES FOR COMMUTER VEHICLE PARKING
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 44370 **ROUTE: 30**
PROJECT DESCRIPTION: NEAR FONTANA FROM 0.2 MI E OF SIERRA AVE TO LINDEN AVE CONSTRUCT 6-LANE FWY & 2 HOV LANES
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 44380 **ROUTE: 30**
PROJECT DESCRIPTION: IN RIALTO, 0.16 KM E/O LINDEN TO 0.16 KM W/O WILLOW AVE. CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES (SEGMENT 9)
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 59101 **ROUTE:** 30
PROJECT DESCRIPTION: IN RIALTO & SBD, 0.16KM W/O WILLOW AVE. TO 0.16KM W/O MACY ST.
 CONSTRUCT 6-LANE FREEWAY & 2 HOV LANES (SEGMENT 10)
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 711 **ROUTE:** 215
PROJECT DESCRIPTION: NEAR COLTON AND SAN BERNARDINO FROM ROUTE 10 TO ROUTE 66 AT
 VARIOUS LOCATIONS – NORTHBOUND AND SOUTHBOUND AUXILIARY LANES
 WITH RIGHT OF WAY FOR FUTURE HOV LANES.
FUNDING YEAR: 1997/98
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 713 **ROUTE:** 215
PROJECT DESCRIPTION: SAN BERNARDINO, RTE 10 TO RTE 30 ADD 2 HOV LANES, MODIFY
 OVERCROSSING PE ONLY (INITIATED)
FUNDING YEAR: 1998/1999
IMPLEMENTATION STATUS: Initiated.

ADDED PROJECTS:

PROJECT ID: SBD990305
PROJECT DESCRIPTION: METROLINK/SAN BERNARDINO LINE CONSTRUCT A SECOND PLATFORM,
 PASSENGER SHELTERS AND INFORMATION KIOSKS.
FUNDING YEAR: 1999/00
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: SBD59209
PROJECT DESCRIPTION: METROLINK STA., PHASE 2 SW CORNER OF MILLIKEN & AT & SF RAILROAD –
 EXPAND PARKING LOT FROM 330-1,000 SPACES, EXTEND SOUTH PLATFORM,
 ADD SHADE STRUCTURES
FUNDING YEAR: 1999/00
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: SBD981118
PROJECT DESCRIPTION: BUS SYSTEM - PASSENGER FACILITIES: DESIGN AND BUILDING OF ONTARIO
 TRANSCENTER
FUNDING YEAR: 2001/02
IMPLEMENTATION STATUS: To be implemented.

PROJECT ID: 9908001
PROJECT DESCRIPTION: Running Springs – Village Trail
FUNDING YEAR: 1998/99
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 990602
PROJECT DESCRIPTION: METROLINK CAPITAL MAINTENANCE
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: ON-GOING.

PROJECT ID: 200037
PROJECT DESCRIPTION: 4 MILE ROUTE WITHIN THE CITY OF REDLANDS – LOCAL TRANSPORTATION
 SERVICE UTILIZING CNG POWERED, RUBBER WHEEL TROLLEYS
FUNDING YEAR: 1999/00
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: SBD90105
PROJECT DESCRIPTION: Bus system - Bus Replacements ALT. FUEL, 01-21, 02-16, 03-19, 04-13
FUNDING YEAR: 1999/00
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 716 **ROUTE:** 215
PROJECT DESCRIPTION: SAN BERNARDINO, 0.2 MI S/O 9TH ST TO 0.4 MI N/O 16TH ST WIDEN FWY, MODIFY INTERCHANGES CONSTRUCT COLLECTOR-DISTRIBUTOR ROAD
FUNDING YEAR: 1999/00
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 20620 **ROUTE:** 30
PROJECT DESCRIPTION: UPLAND TO SAN BERNARDINO FROM LOS ANGELES COUNTY LINE TO ROUTE 215 - 8 LANE FREEWAY INCLUDING 2 HOV LANES (R.O.W. ONLY)
FUNDING YEAR: 1996/97
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 44301 **ROUTE:** 30
PROJECT DESCRIPTION: IN UPLAND, LA/SBD CO LINE TO MOUNTAIN AVE. CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES (SEGMENT 1)
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: Under construction.

PROJECT ID: 44311 **ROUTE:** 30
PROJECT DESCRIPTION: IN UPLAND, MOUTAIN AVE. TO 0.1 MILE W/O CUCAMONGA CANYON WASH CONSTRUCT 6 LANE FWY & 2 HOV LANES & CAMPUS AVE. UC (SEGMENT 2)
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: Under construction.

PROJECT ID: 44321 **ROUTE:** 30
PROJECT DESCRIPTION: IN RANCHO CUCAMONGA, 0.1 MILE W/O CUCAMONGA CANYON WASH TO HERMOSA AV CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES (SEGMENT 3)
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: Under construction.

PROJECT ID: 44331 **ROUTE:** 30
PROJECT DESCRIPTION: IN RANCHO CUCAMONGA, HERMOSA AVE TO 0.6 KM E/O MILLIKEN AVE. CONSTRUCT 6 LANE FREEWAY & 2 HOV LANES (SEGMENT4)
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: Under construction.

PROJECT ID: 44400 **ROUTE:** 30
PROJECT DESCRIPTION: RTE 30 - 0.1 MILE W/O MACY ST TO 'H' ST. RTE 215 - 0.1 MILE S/O MUSCUIABE DR. TO UNIVERSITY PKWY (SEGMENT 11/PHASE 1)
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 200056
PROJECT DESCRIPTION: GREEN VALLEY LAKE - AREA IMPROVEMENTS ROADWAY SHOULDER FOR PAVED WALKWAY, STRUCTURAL REHAB., DIRT TRAIL IMPROVEMENTS
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: To be implemented.

PROJECT ID: 980901 **ROUTE:** 30
PROJECT DESCRIPTION: ON SR 30 FROM LA CO. LINE TO .5 MILES EAST OF ETTWANDA AVE.
 CONSTRUCT 12 OVERCROSSINGS & UNDERCROSSINGS FOR SEGS. 1-5
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 200068
PROJECT DESCRIPTION: UPGRADE AND SYNCHRONIZE TRAFFIC SIGNALS ON PARALLEL/
 INTERSECTING ARTERIALS ALONG I-10 AND SR-60 FREEWAY CORRIDORS
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: Initiated.

PROJECT ID: 200062
PROJECT DESCRIPTION: 40TH ST FROM KENDALL DR TO SEPULVEDA AV – SIGNAL INTERCONNECT A
 TOTAL OF 6 TRAFFIC SIGNALS
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: To be implemented.

PROJECT ID: 200077
PROJECT DESCRIPTION: BUS SYSTEM – PURCHASE EXPANSION ALT FUEL BUSES (01-13), (02-14)
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: On-going.

PROJECT ID: 200072
PROJECT DESCRIPTION: GRAND AVE., PEYTON DRIVE, CHINO AVENUE AND CHINO HILLS PARKWAY –
 TRAFFIC SIGNAL SYNCHRONIZATION AND TRAFFIC OPERATION CENTER
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: To be implemented.

PROJECT ID: 200073
PROJECT DESCRIPTION: ANDERSON ST./TIPPECANOE FROM UNIVERSITY COURT TO HOSPITALITY
 LANE – PROVIDE TRAFFIC SIGNAL COORDINATION AND TIMING
 INTERCONNECT 7 TRAFFIC SIGNALS, INSTALL EMERG. PRE-EMPTION
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: To be implemented.

PROJECT ID: 200074
PROJECT DESCRIPTION: LUMP SUM – TRANSPORTATION ENHANCEMENT ACTIVITIES PROJECTS FOR
 SAN BERNARDINO COUNTY-BIKE/PED PROJECTS
FUNDING YEAR: 2000/01
IMPLEMENTATION STATUS: To be implemented.

PROJECT ID: SBD41065
PROJECT DESCRIPTION: PARATRANSIT-VEHICLES: REPLACEMENT ALT. FUEL, 99-1, 00-4, 02-1
FUNDING YEAR: 2001/02
IMPLEMENTATION STATUS: On-going.

1998 RTIP Committed Transportation Control Measures (TCMs)

Project Listing Report

ANALYSIS OF IMPLEMENTATION

Implementation status of applicable TCMs are organized by county.

Los Angeles County Metropolitan Transportation Authority

Project ID: 7051
 Project Description: METROLINK - VENTURA LINE
 NORTHRIDGE STATION - CONSTRUCTION
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT COMPLETED**

Project ID: 10501 Route: 30
 Project Description: IN LA VERNE AND CLAREMONT, FROM FOOTHILL BOULEVARD
 TO SAN BERNARDINO COUNTY LINE - CONSTRUCT EIGHT
 LANE FREEWAY INCLUDING TWO HIGH OCCUPANCY VEHICLE
 LANES
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: 11267 Route: 110
 Project Description: CONSTRUCT TWO TRANSIT STATIONS
 HARBOR TRANSITWAY STATIONS
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT COMPLETED**

Project ID: 11768
 Project Description: AT VARIOUS LOCATIONS
 SIGNAL SYNCHRONIZATION
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT IMPLEMENTED**

Project ID: 12560 Route: 14
 Project Description: NEAR SANTA CLARITA, FROM SAND CANYON ROAD TO
 ESCONDIDO CANYON ROAD - FOUR LANE FREEWAY ADD TWO
 HIGH OCCUPANCY VEHICLE LANES WITH TRUCK CLIMBING
 LANES (6+0 TO 6+2)
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: 12640 Route: 30
 Project Description: IN CLAREMONT, FROM TOWNE AVENEUE TO PADUA AVENUE -
 CONSTRUCT EIGHT LANE FREEWAY INCLUDING TWO HIGH
 OCCUPANCY VEHICLE (HOV) LANES

Funding Years: FY 1997/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA000274 Route: 2
 Project Description: FROM SEPULVEDA TO MORENO EXISTING 3 LANES; PROPOSED
 4 + HOV (4+2)

Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA000357 Route: 5
 Project Description: FROM ROUTE 170 TO ROUTE 118 HOV LANES (10 TO 12 LANES)

Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA000358 Route: 5
 Project Description: FROM ROUTE 134 TO ROUTE 170 HOV LANES (8 TO 10 LANES)

Funding Years: FY 1996/97
 Implementation Status: **PROJECT IMPLEMENTED.**

Project ID: LA000362 Route: 60
 Project Description: FROM ROUTE 605 TO BREA CYN ROAD HOV LANE (FROM 8-10
 TO 10-12 LANES)

Funding Years: FY 1996/97
 Implementation Status: **PROJECT IMPLEMENTED.**

Project ID: LA000544 Route: 60
 Project Description: IN AND NEAR POMONA FROM ROUTE 57 TO SAN BERNARDINO
 COUNTY LINE -- HOV LANES (8 LANES PLUS 2 HOV)

Funding Years: FY 1997/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA000546 Route: 57
 Project Description: HOV CONNECTORS RTE. 57/60 FROM 8 TO 10 LANES HOV

Funding Years: FY 1997/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA000777 Route: 405
 Project Description: FROM ROUTE 10 TO ROUTE 101 TO EXISTING 8-10 LANE
 FREEWAY ADD TWO HOV LANES
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA002047
 Project Description: SANTA MONICA SMART CORRIDOR EXTENSION
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA002506
 Project Description: DASH SHERMAN OAKS SHUTTLE PROGRAM (93/99 TDM)
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT COMPLETED.**

Project ID: LA002556
 Project Description: BLUE LINE WILLOW STATION PARKING STRUCTURE
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA002633
 Project Description: THOMPSON CREEK BICYCLE TRAIL (93/97 CFP; BIKE
 PROGRAM) CLASS I (2 MILES)
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT COMPLETED.**

Project ID: LA003626
 Project Description: DOMINGUEZ CHANNEL BICYCLE TRAIL PHASE. I (93/94 CFP,
 CAT. 8, 626) CLASS I
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA01344 Route: 5
 Project Description: RT 5 FROM RT 118 TO RT 14 FROM 10 TO 12 LANES HOV LANES
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA01347 Route: 14
 Project Description: RT 14 FROM PEARBLOSSOM HWY TO AVE P-8
 HOV LANES (4 TO 6 LANES)
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA01348 Route: 14
 Project Description: RT 14 FROM ESCONDIDO CYN RD. TO PEARBLOSSOM HWY -
 HOV LANES (4 TO 6 LANES)
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA022140
 Project Description: EXPOSITION RIGHT-OF-WAY REGIONAL BIKEWAY
 CLASS I (8.8 MILES)
 CLASS II (2.6 MILES)
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA022191
 Project Description: PASADENA REG SIGNAL SYNCH & SMART CORRIDOR
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA02556A
 Project Description: TRAFFIC OPERATION SYSTEM #4
 RT.2 RT.5/RT.210
 RT.14 RT.5/RT.48
 RT.30 RT.210/RT.66
 RT.42 RT.210/RT.WILLOW
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT COMPLETED.**

Project ID: LA29202
 Project Description: METRO RED LINE MOS-3: HOLLYWOOD/VINE TO
 LANKERSHIM/CHANDLER (1) & WILSHIRE/WESTERN TO
 PICO/SAN VICENTE (2) EASTSIDE (3)
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA29211
Project Description: PASADENA TRANSPORTATION CENTER
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA29212
Project Description: METRO RAIL BLUE LINE - PASADENA EXT (SIERRA MADRE VILLA) TO LA
Funding Years: FY 1996/97, 97/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA29225
Project Description: LA-RIVERSIDE (VIA UP) COMMUTER RAIL (LAUPT - RIVERSIDE STATION) COMPLETION OF TRACK UPGRADE
Funding Years: FY 1996/97
Implementation Status: **PROJECT COMPLETED.**

Project ID: LA51602
Project Description: BUS REPLACEMENT OF 5 BUSES
Funding Years: FY 1997/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA52605
Project Description: PURCHASE 10 ENGINES AND 10 TRANSMISSION PACKAGES
Funding Years: FY 1996/97
Implementation Status: **PROJECT COMPLETED.**

Project ID: LA52606
Project Description: REPLACE 19 TRANSIT BUSES
Funding Years: FY 1996/97, 97/98
Implementation Status: **PROJECT COMPLETED.**

Project ID: LA53903
Project Description: PURCHASE 3 REPLACEMENT VANS, 2 WITH LIFTS
Funding Years: FY 1996/97, 97/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA55012
Project Description: REPLACE 7 BUSES
Funding Years: FY 1996/97
Implementation Status: **PROJECT COMPLETED.**

Project ID: LA55201
Project Description: ON GOING BUS STOP MAINTENANCE; REPLACEMENT OF ITEMS
DUE TO DAMAGE AND NORMAL WEAR AND TEAR
Funding Years: FY 1996/97
Implementation Status: **PROJECT COMPLETED.**

Project ID: LA57110
Project Description: BUS REPLACEMENT
FY 1997: 25
FY 1998: 16 BUSES
FY 1999: 15 BUSES
Funding Years: FY 1996/97, 97/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA5B214
Project Description: CITY OF INGLEWOOD/METRO RIDE, INC. SHUTTLE BUS
OPERATION
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA5B218
Project Description: TRANSPORTATION CONCEPTS DOWNEY - SHUTTLE BUS
OPERATION ALSO KNOWN AS THE LAKEWOOD SHUTTLE #631
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA65406
Project Description: REPLACE BUSES FY'97 18 BUSES
Funding Years: FY 1996/97
Implementation Status: **PROJECT COMPLETED.**

Project ID: LA65408
Project Description: MAJOR BUS COMPONENTS (2 ENGINES & 2 TRANSMISSIONS)
Funding Years: FY 1996/97, 97/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA66100
Project Description: REPLACEMENT OF 40' TRANSIT COACHES WITH ALTERNATIVE
FUELED COACHES 30 BUSES
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA66101
Project Description: REPLACEMENT OF FOUR 30' COACHES WITH ALTERNATIVE
FUEL (ELECTRIC, CNG)
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA66102
Project Description: REPLACE TRANSIT COACHES WITH ALTERNATIVELY FUELED
40' COACHES 4 BUSES
Funding Years: FY 1996/97, 97/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA7031
Project Description: IN LA COUNTY AT VARIOUS LOCATIONS SYNCHRONIZE
SIGNALS PILOT AREA PROJECT
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA71702
Project Description: REPLACE THREE FIXED ROUTE BUSES
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA75054
Project Description: REPLACE 4 FIX RTE. BUSES
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA79203
Project Description: LA STANDARD LIGHT RAIL CAR PROCUREMENT FOR GREEN
AND BLUE LINES __ (74) P'SBLE FED DEFENSE CONVERSION
FUNDS AND ADD'L OUTYEAR PC40
Funding Years: FY 1996/97, 97/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA85010
 Project Description: GLOBAL POSITIONING SYSTEM (GPS) TRACKING SYSTEM
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT COMPLETED.**

Project ID: LA85055
 Project Description: REPLACE 4 FIX RTE. BUSES
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA96001
 Project Description: BUS-ROLLING STOCK - 67 BUSES
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT COMPLETED.**

Project ID: LA960139
 Project Description: OCEAN AVE, BROADWAY, OCEAN PARK BLVD, MAIN STREET
 UPDATE EXISTING OUTDATED SIGNALS, CONTROLLERS,
 SYNCHRONIZED SIGNALS
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA960181
 Project Description: RAIL MODE AND RENOVATION PROGRAM
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA962206
 Project Description: FROM RT 90 TO RT 10_HOV LANES PROJECT
 (FROM 8+0 TO 8+2 HOV) Route: 405
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: LA9703Z
 Project Description: LOCOMOTIVE EMISSIONS REDUCTION PROGRAM STUDY
 STATE FUNDS ARE PVEA
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Orange County Transportation Authority

Project ID: 1240 Route: 91
 Project Description: IN BUENA PARK & BREA FROM L.A. COUNTY LINE TO RTE 57
 SEGMENT 2 EXIST 8-LN FWY ADD 2 HOV LANES AND
 AUXILIARY LANES
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: 1250 Route: 91
 Project Description: IN ANAHEIM AT RTE 57/91 CONSTRUCT 57/91 INTERCHANGE
 WITH HOV DIRECT CONNECTORS - TRANSITWAY
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: 1260 Route: 5
 Project Description: IN ANAHEIM RECONSTR GENE AUTRY WAY INTERCHNG FROM
 I-5 HOV FACILITY TO BETMOR LN INCLUDED AS PART OF I-5
 WIDENING SEE #2850 & #2850A (93 RME)
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: 9530
 Project Description: LOS ANGELES/SAN DIEGO CORRIDOR MISSION VIEJO/LAGUNA
 NIGUEL STATION - RIGHT OF WAY ACQUISTION, PLATFORMS,
 AND PARKING FACILITY
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: 01260EE Route: 5
 Project ID:
 Project Description: IN SANTA ANA AND ANAHEIM FROM RTE 22 TO RTE 91 ON
 EXISTING 6-LANE FWY ADD 2 MIXED FLOW LANES, TWO HIGH
 OCCUPANCY VEHICLE LANES, & RECONSTRUCT
 INTERCHANGES
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: ORA157
 Project Description: PURCHASE 170 REPLACEMENT VANS
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: ORA175
 Project Description: RTE 405/55 TRANSITWAY MIT ND (11/93)
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: ORA187
 Project Description: DEBT SERVICE FOR 1993 COP FUNDING MISCELLANEOUS
 CAPITAL PROJECTS
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: ORA1870
 Project Description: PURCHASE 259 REPLACEMENT BUSES STANDARD 40FT BUSES
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: ORA37136
 Project Description: ORANGE COMMUTER RAIL STATION IMPROVEMENTS
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT COMPLETED.**

Riverside County Transportation Commission

Project ID: 41062
 Project Description: UNIVERSITY AVENUE FROM CHICAGO AVENUE TO ROUTE 60 -
 PEDESTRIAN LIGHTING, LANDSCAPING, BENCHES, AND
 HANDICAPPED ACCESSIBILITY
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT COMPLETED.**

Project ID: 46322 Route: 60
 Project Description: NEAR RIVERSIDE, FROM VALLEY WAY TO UNIVERSITY - FOUR
 AND SIX LANE FRWY ADD 2 HOV LANES (STAGE 2)
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: 46360 Route: 60
Project Description: IN RIVERSIDE AND MORRENO VALLEY, FROM ROUTE 215 TO REDLANDS BOULEVARD - FOUR LANE FREEWAY ADD TWO HIGH OCCUPANCY VEHICLE (HOV) LANES
Funding Years: FY 1996/97
Implementation Status: **SEE APPENDIX - LETTER DATED MAY 19, 1998.**

Project ID: 46720 Route: 215
Project Description: IN CITY OF RIVERSIDE FROM WEST JCT RTE 60 TO SAN BERNARDINO COUNTY LINE EXISTING 6-LN FWY ADD 2 HOV LANES
Funding Years: FY 1996/97
Implementation Status: **SEE APPENDIX - LETTER DATED MAY 19, 1998.**

Project ID: RIV32086
Project Description: COMMUTER TRANSPORTATION SERVICES RIDESHARE SERVICES
Funding Years: FY 1996/97
Implementation Status: **PROJECT COMPLETED.**

Project ID: RIV32120
Project Description: IN RIVERSIDE COUNTY CITY OF BANNING PURCHASE ONE REPLACEMENT 12-PASSENGER VAN W/LIFT & TIEDOWNS
Funding Years: FY 1996/97
Implementation Status: **PROJECT COMPLETED.**

Project ID: RIV32145
Project Description: IN RIVERSIDE CITY OF CORONA - PURCHASE FIVE REPLACEMENT VANS W/LIFTS & TIEDOWNS, RADIOS
Funding Years: FY 1997/98
Implementation Status: **PROJECT ON SCHEDULE FOR FY97/98.**

Project ID: RIV32162
 Project Description: IN RIVERSIDE CITY OF RIVERSIDE SPECIAL SERVICES
 PURCHASE OF FOUR REPLACEMENT VANS W/LIFTS AND
 TIEDOWNS
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT COMPLETED.**

Project ID: RIV32164
 Project Description: IN RIVERSIDE CITY OF RIVERSIDE SPECIAL SERVICES
 PURCHASE ONE REPLACEMENT VAN W/LIFTS AND TIEDOWNS
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT ON SCHEDULE FOR FY97/98.**

Project ID: RIV32172
 Project Description: IN RIVERSIDE COUNTY PALO VERDE VALLEY TRANSIT
 AGENCY PURCHASE ONE REPLACEMENT MID-SIZE BUS W/
 LIFT RADIO, FAREBOX & TIEDOWNS
 Funding Years: FY 1996/97
 Implementation Status: **PURCHASED MINI-BUS INSTEAD OF MID-SIZE BUS.**

Project ID: RIV32174
 Project Description: IN RIVERSIDE COUNTY PALO VERDE VALLEY TRANSIT
 AGENCY PURCHASE ONE REPLACEMENT VAN W/ LIFT &
 TIEDOWNS
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT ON SCHEDULE FOR FY97/98.**

Project ID: RIV32228
 Project Description: IN WESTERN RIVERSIDE COUNTY PURCHASE 3 REPLACEMENT
 TRANSIT COACHES, RADIOS & FAREBOXES
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT ON SCHEDULE FOR FY97/98.**

Project ID: RIV32359
 Project Description: IN MORENO VALLEY ON SR60/MORENO BEACH CONSTRUCT
 200 SPACE PARK N RIDE LOT.
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV32392
Project Description: IN WESTERN RIVERSIDE COUNTY DEBT SERVICE PAYMENT FOR TEN EXPANSION COACHES (COPS)
Funding Years: FY 1996/97, 97/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV32397
Project Description: IN WESTERN RIVERSIDE COUNTY PURCHASE 11 REPLACEMENT DIAL-A-RIDE VANS
Funding Years: FY 1997/98
Implementation Status: **PROJECT DELETED, DUPLICATE OF PROJECT RIV32400.**

Project ID: RIV32412
Project Description: IN COACHELLA VALLEY AREA LEASE/PURCHASE MOTOR COACHES FY 1996/97 - 98/99
Funding Years: FY 1996/97, 97/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV32420
Project Description: IN COACHELLA VALLEY AREA 2 REPLACE. PARATRANSIT VEH.
Funding Years: FY 1996/97, 97/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52015
Project Description: IN CATHEDRAL CITY ON DATE PALM FROM 30TH AVE TO PEREZ RD - INTERCONNECT OF 12 TRAFFIC SIGNALS, IN-HOUSE CONTROL PC SYSTEM
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52018
Project Description: IN CATHEDRAL CITY ON RAMON ROAD FROM LANDAU BL TO DATE PALM DR - INTERCONNECT OF 5 TRAFFIC SIGNALS
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52019
Project Description: IN CATHEDRAL CITY ON PALM CANYON FROM GOLF CLUB DR TO CATHEDRAL CANYON DR - INTERCONNECT OF 4 TRAFFIC SIGNALS
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52020
 Project Description: IN MURRIETA INSTALL INTELLIGENT TRAFFIC SURVEILLANCE SYSTEM
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52021 Route: 91
 Project Description: IN CORONA HOV ON RAMP AT 3 LOCATIONS ON SR91 (SERFAS CLUB WB, LINCOLN WB, AND MCKINLEY WB, ADD ONE HOV BYPASS LANE ON EXISTING RAMP AT SERFAS)
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52022
 Project Description: IN PALM SPRINGS CITYWIDE SIGNAL INTERCONNECT ON INDIAN CANYON DRIVE AND ON TAHQUITZ CANYON WAY
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52024
 Project Description: IN MORENO VALLEY CITYWIDE SIGNAL INTERCONNECT ON PERRIS BLVD AND ON ALESSANDRO BLVD
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52025
 Project Description: IN RIVERSIDE COUNTY ON SR 79 NORTH FROM MARGARITA ROAD TO MURRIETA HOT SPRINGS ROAD - INTERCONNECT OF 3 TRAFFIC SIGNALS
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52026
 Project Description: IN RIVERSIDE COUNTY ON SR 79 SOUTH FROM I15 TO BUTTERFIELD STAGE RD - INTERCONNECT OF 6 TRAFFIC SIGNALS
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT DELAYED PENDING COMPLETION OF SR79 WIDENING (SEE LETTER IN APPENDIX)**

Project ID: RIV52027
 Project Description: IN RIVERSIDE COUNTY SIGNAL INTERCONNECT ON MISSION BLVD FROM SR60 TO PYRITE AND VAN BUREN FROM BELLEGRAVE TO RUTILE
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52028
 Project Description: IN MURRIETA AT LOS ALAMOS - SIGNAL INTERCONNECT (PHASE 2 - HEACOCK & GATEWAY PLAZA ENTRANCE) WEST OF WHITEWOOD RD.
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: RIV52106
 Project Description: VALLEY RESOURCE CENTER ONE EXPANSION VAN WITH MOBILE RADIO
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT COMPLETED.**

Project ID: RIV52107
 Project Description: MEDITRANS SERVICES INC. ONE REPLACEMENT VEHICLE
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT COMPLETED.**

San Bernardino Associated Governments

Project ID: 711 Route: 215
 Project Description: NEAR COLTON AND SAN BERNARDINO, FROM ROUTE 10 TO ROUTE 66 AT VARIOUS LOCATIONS - NORTHBOUND AND SOUTHBOUND AUXILIARY LANES WITH RIGHT OF WAY FOR FUTURE HOV LANES
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: 20621 Route: 30
 Project Description: IN SAN BERNARDINO COUNTY FROM LOS ANGELES COUNTY LINE TO MOUNTAIN AVE CONSTRUCT 8-LN FWY WITH 2 HOV LANES
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: SBD0129 Route: 10
 Project Description: IN MONTCLAIR & UPLAND FROM LOS ANGELES COUNTY LINE
 TO GROVE AVE. ADD 2 HOV LNS. AUX LNS./SOUNDWALLS
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: SBD031171
 Project Description: CITRUS AVENUE AT BASELINE AVENUE TRAFFIC SIGNAL
 MODIFICATION AND INTERSECTION IMPROVEMTS (TURN LNS)
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT COMPLETED.**

Project ID: SBD031506
 Project Description: RIDESHARING CONTRIBUTIONS FOR RIDESHARE ACTIVITIES
 IN COOP WITH CTS
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING**

Project ID: SBD31088
 Project Description: BUS FLEET EXPANSION PURCHASE 16 40' EXPANSION
 COACHES & AUXILLARY EQUIPMENT, CNG
 Funding Years: FY 1996/97, 97/98
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: SBD31093
 Project Description: BUS FLEET EXPANSION PURCHASE 8 40' EXPANSION COACHES
 & AUXILLARY EQUIPMENT, CNG
 Funding Years: FY 1997/98
 Implementation Status: **PROJECT DELETED, ADDED TO PROJECT SBD31088.**

Project ID: SBD31828
 Project Description: CAMINO DEL CIELO/PINION AT STATE ROUTE 62 - CONSTRUCT
 PARK AND RIDE FACILITY
 Funding Years: FY 1996/97
 Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: SBD31853
Project Description: BARTON ROAD - 22430 BARTON ROAD (WEST OF I-215) CONST.
48 VEHICLE PARK & RIDE LOT
Funding Years: FY 1996/97
Implementation Status: **PROJECT DELETED, DUPLICATE OF PROJECT SBD31854.**

Project ID: SBD31854
Project Description: BARTON ROAD AT LA CROSSE AVENUE CONST. 60 VEHICLE
PARK & RIDE LOT
Funding Years: FY 1996/97
Implementation Status: **PROJECT DELAYED UNTIL FY98/99.**

Project ID: SBD31860
Project Description: MAIN STREET MT. VERNON AVENUE TO W. CITY LIMITS
PROVIDE BICYCLE LANES
Funding Years: FY 1997/98
Implementation Status: **PROJECT ON SCHEDULE FOR FY97/98.**

Project ID: SBD41202
Project Description: ARROW RTE. MILLIKEN AVE TO EAST ST. WIDEN PORTIONS
FROM 2-4 LANES (APPROX. 12,000 FT.)_ SPOT WIDEN PLUS
MARKED BIKE LANES (CLASS 3)
Funding Years: FY 1997/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: SBD41287
Project Description: GRAND TERRACE MULTIMODAL TRANSFER PT FACILITY
REHAB. OF A VACANT 12,000 FT. COMMERCIAL BUILDING AND
PARK-N-RIDE WITH 57 SPACES
Funding Years: FY 1997/98
Implementation Status: **PROJECT DELAYED UNTIL FY98/99.**

Project ID: SBD41322
Project Description: 9TH ST./H TO SIERRA WAY - MODIFY EXISTING TRAFFIC SIGNAL
TO ADD PEDESTRIAN SIGNALS AND LOOPS ON THE SIDE
STREETS
Funding Years: FY 1997/98
Implementation Status: **PROJECT INITIATED/ONGOING.**

Project ID: SBD41436 Route: 83
Project Description: EUCLID AVE., SPRR R/W A" ST ,MEMORIAL PARK CAMPUS AVE.
16TH ST" AND FOOTHILL BLVD. - CONSTRUCTION OF
SELECTED BICYCLE ROUTES
Funding Years: FY 1997/98
Implementation Status: **PROJECT ON SCHEDULE FOR FY97/98.**

Project ID: SBD41437
Project Description: CITY OF UPLAND - UPLAND TOWN CENTER ACCESS
IMPROVEMENTS TO TOWN CENTER INCLUDING PEDESTRIAN
AND BICYCLE AMENDMENTS. UPGRADE PEDESTRIAN ALLEY
WAYS.
Funding Years: FY 1996/97
Implementation Status: **PROJECT INITIATED/ONGOING.**

1996 RTIP Committed Transportation Control Measures (TCMs)

Project Listing Report

TCM1 PROJECTS IN LOS ANGELES COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
7051	LA	TR8S	METROLINK - VENTURA LINE NORTHRIDGE STATION - CONSTRUCTION	STA	1997	0	0	700	700
10501	LA	HE14A	IN LA VERNE AND CLAREMONT, FROM FOOTHILL BOULEVARD TO SAN BERNAR- DINO COUNTY LINE - CONSTRUCT EIGHT LANE FREEWAY INCLUDING INCLUDING TWO HIGH OCCUPANCY VEHICLE LANES	CM PC25 PC25 STP STP STSM STSM	1998 1997 1998 1997 1998 1997 1998	1528 599 0 0 0 198 808	5100 0 0 1989 13193 0 0	0 0 17600 0 0 0 0	6628 599 17600 1989 13193 198 808
11267	LA	HB6B	CONSTRUCT TWO TRANSIT STATIONS HARBOR TRANSITWAY STATIONS	STP	1997	0	0	8000	8000
11768	LA	HB4NL	AT VARIOUS LOCATION SIGNAL SYNCHRONIZATION	STP	1997	0	0	2622	2622
12560	LA	HB5	NEAR SANTA CLARITA, FROM SAND CANYON ROAD TO ESCONDIDO CANYON ROAD - FOUR LANE FREEWAY ADD TWO HIGH OCCUPANCY VEHICLE LANES WITH TRUCK CLIMBING LANES(6+0 TO 6+2)	NH	1998	0	0	11111	11111
12640	LA	HE14A	IN CLAREMONT, FROM TOWNE AVENEUE TO PADUA AVENUE - CONSTRUCT EIGHT LANE FREEWAY INCLUDING TWO HIGH OCCUPANCY VEHICLE (HOV) LANES	STP	1998	0	810	0	810
0219N	LA	HE14A	NEAR SOUTH PASADENA, FROM ROUTE 10 TO ROUTE 210 REPAIR/PRESERVATION OF HISTORIC BLD	IM	1997	0	3200	0	3200
LA000274	LA	HB5	FROM SEPULVEDA TO MORENO EXISTING 3 LANES; PROPOSED 4 + HOV (4+2) (93/94 CFP; CAT. 2, 210)	CITY CITY DEMO DEMO FTA3 FTA3 PC25	1997 1998 1997 1998 1997 1998 1998	0 0 617 617 1041 1041 0	0 0 0 0 0 0 0	912 911 1020 1021 1719 1719 2208	912 911 1637 1638 2760 2760 2208
LA000357	LA	HB5	FROM ROUTE 170 TO ROUTE 118 HOV LANES (10 TO 12 LANES) (CFP 345)	CM CM STSM STSM	1997 1998 1997 1998	317 0 41 0	0 0 0 0	0 1254 0 162	317 1254 41 162

TCM1 PROJECTS IN LOS ANGELES COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
LA000358	LA	HB5	FROM ROUTE 134 TO ROUTE 170	CM	1997	1342	0	0	1342
	LA	HB5	HOV LANES (8 TO 10 LANES)	STPL-R	1997	136	0	0	136
	LA	HB5	(CFP 346)	STSM	1997	192	0	0	192
LA000362	LA	HB5	FROM ROUTE 605 TO BREA CYN ROAD	STPL-R	1997	2112	0	0	2112
	LA	HB5	HOV LANE (FROM 8&10 TO10&12 LANES)	STSM	1997	274	0	0	274
LA000544	LA	HB5	IN AND NEAR POMONA	CM	1998	0	0	8310	8310
	LA	HB5	FROM ROUTE 57 TO SAN BERNARDINO COUNTY LINE_HOV LANES (8 LANES PLUS 2 HOV) (C-ISTEA 77716; CFP 356)	STSM	1998	0	0	1077	1077
LA000546	LA	HB5	HOV CONNECTORS RTE. 57/60	CM	1998	0	0	1457	1457
			FROM 8 TO 10 LANES HOV (C-ISTEA 77718; CFP 359)	STSM	1998	0	0	189	189
LA000777	LA	HB5	FROM ROUTE 10 TO ROUTE 101	CM	1998	1417	0	0	1417
			TO EXISTING 8-10 LANE FREEWAY ADD	PC25	1998	5588	0	5000	10588
			TWO HOV LANES	STSM	1998	183	0	0	183
LA002047	LA	HB4NA	SANTA MONICA SMART CORRIDOR EXTENSION	PC25	1997	0	0	11	11
					1998	0	0	254	254
LA002506	LA	TR1	DASH SHERMAN OAKS SHUTTLE PROGRAM	CM	1997	270	0	0	270
	LA	TR1	(93/99 TDM)	CM	1998	280	0	0	280
	LA	TR1	PUSHOUT ONE YEAR	PROPALR	1997	172	0	0	172
	LA	TR1		PROPALR	1998	219	0	0	219
LA002556	LA	HB6	BLUE LINE WILLOW STATION PARKING STRUCTURE	PC25	1997	0	0	3117	3117
				STA	1997	0	0	6005	6005
LA002633	LA	HB8	THOMPSON CREEK BICYCLE TRAIL (93/97 CFP; BIKE PROGRAM) CLASS I (2 MILES)	PC25	1997	0	0	19	19
LA003626	LA	HB8	DOMINGUEZ CHANNEL BICYCLE_TRAIL PH. I	PC25	1997	0	0	340	340
			(93/94 CFP, CAT. 8, 626) CLASS I	PC25	1998	0	0	425	425

TCM1 PROJECTS IN LOS ANGELES COUNTY										
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT	
LA01344	LA	HB5	RT 5 FROM RT 118 TO RT 14 FROM 10 TO 12 LANES HOV LANES	STPL-R	1997	422	0	0	422	
				STSM	1997	55	0	0	55	
LA01347	LA	HB5	RT 14 FROM PEARBLOSSOM HWY TO AVE P-8 HOV LANES (4 TO 6 LANES)	CM	1998	0	0	1947	1947	
				STSM	1998	0	0	252	252	
LA01348	LA	HB5	RT 14 FROM ESCONDIDO CYN RD. TO PEARBLOSSOM HWY HOV LANES (4 TO 6 LANES)	PC25	1997	0	0	5683	5683	
				STPL-R	1997	2923	0	0	2923	
				STSM	1997	377	0	0	377	
LA022140	LA	HB8	EXPOSITION RIGHT-OF-WAY REGIONAL BIKEWAY CLASS I (8.8 MILES) CLASS II (2.6 MILES)	PC25	1997	376	0	543	919	
				PC25	1998	0	0	291	291	
				STPE	1997	0	0	4647	4647	
LA022191	LA	HB4NL	PASADENA REG SIGNAL SYNCH & SMART CORRIDOR	STPL-R	1997	0	0	1129	1129	
				STSM	1997	0	0	146	146	
LA02556A	LA	HB4NN	TOS #4 RT.2 RT.5/RT.210 RT.14 RT.5/RT.48 RT.30 RT.210/RT.66 RT.42 RT.210/WILLOW, ETC.	CM	1998	0	0	2124	2124	
				STSM	1998	0	0	212	212	
LA29202	LA	TR8	METRO RED LINE MOS-3: HOLLYWOOD/VINE TO LANKERSHIM/ CHANDLER (1) & WILSHIRE/WESTERN TO PICO/SAN VICENTE (2) EASTSIDE (3) (FY 2001 STO 50,000 - 96STIP 75%)	CM	1997	0	0	20000	20000	
				CM	1998	0	0	20000	20000	
				FTA3	1997	0	0	158800	158800	
				FTA3	1998	0	0	179000	179000	
				LTF	1997	0	0	340749	340749	
				LTF	1998	0	0	257352	257352	
				P116	1997	0	0	15000	15000	
				STP	1997	0	0	10000	10000	
				STP	1998	0	0	10000	10000	
STSM	1997	0	0	2591	2591					
LA29211	LA	TR9S	PASADENA TRANSPORTATION CENTER	BOND	1997	0	0	6600	6600	
				-9114 CO	1997	0	0	4800	4800	
				LTF	1997	0	0	2200	2200	

TCM1 PROJECTS IN LOS ANGELES COUNTY										
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT	
LA29212	LA	TR9	METRO RAIL BLUE LINE - PASADENA EXT (SIERRA MADRE VILLA) TO LA (9109, A, C, D)	BOND	1997	0	0	41900	41900	
				BOND	1998	0	0	41600	41600	
				PC25	1997	0	0	22434	22434	
				PC25	1998	0	0	23879	23879	
				PC40	1997	0	0	2356	2356	
				PC40	1998	0	0	3400	3400	
LA29225	LA	TR8	LA-RIVERSIDE (VIA UP) COMMUTER RAIL (LAUPT - RIVERSIDE STATION) (BONDS = PROP 108 FUNDS) COMPLETION OF TRACK UPGRADE	BOND	1997	0	0	860	860	
				PC10	1997	0	0	860	860	
LA51602	LA	TR6A3	BUS REPLACEMENT_OF 5 BUSES	FTA9	1998	0	0	200	200	
				PROPALR	1998	0	0	50	50	
LA52101	LA	TR6	FY 1997 COP DEBT SERVICE LOCAL MATCH IS IN-KIND THROUGH REAL ESTATE	FTA9	1997	0	0	1400	1400	
				FTA9	1998	0	0	1400	1400	
				LTF	1997	0	0	350	350	
				LTF	1998	0	0	350	350	
LA52402	LA	TR6A3	FY 1997 - 99 EXISTING BUS FLEET COP SUTRO A	FTA9	1997	0	0	3304	3304	
				FTA9	1998	0	0	3470	3470	
				PROPA	1997	0	0	2556	2556	
				PROPA	1998	0	0	2414	2414	
LA52603	LA	TR6A3	ANNUAL TIRE PURCHASE	FTA9	1997	0	0	129	129	
				FTA9	1998	0	0	129	129	
				TDA4	1997	0	0	32	32	
				TDA4	1998	0	0	32	32	
LA52605	LA	TR6A2	PURCHASE 10 ENGINES AND 10 TRANSMISSION PACKAGES	STPL-R	1997	0	0	219	219	
				TDA4	1997	0	0	43	43	
LA52606	LA	TR6A3	REPLACE 19 TRANSIT BUSES	FTA9	1997	0	0	708	708	
				FTA9	1998	0	0	1772	1772	
				TDA4	1997	0	0	171	171	
				TDA4	1998	0	0	443	443	
LA53903	LA	TR6A3	PURCHASE 3 REPLACEMENT VANS, 2 WITH LIFTS	FTA9	1997	0	0	231	231	
				FTA9	1998	0	0	108	108	
				PROPALR	1997	0	0	57	57	
				PROPALR	1998	0	0	27	27	

TCM1 PROJECTS IN LOS ANGELES COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
LA55012	LA	TR6A3	REPLACE 7 BUSES	FTA9	1997	0	0	1680	1680
				TDA4	1997	0	0	420	420
LA55201	LA	TR6H1	ON GOING BUS STOP MAINTENANCE; REPLACEMENT OF ITEMS DUE TO DAMAGE AND NORMAL WEAR AND TEAR	FTA9	1997	0	0	160	160
				TDA4	1997	0	0	40	40
LA56702	LA	TR6A3	BUS VEHICLE LEASE	FTA9	1997	0	0	611	611
				FTA9	1998	0	0	611	611
				PROPALR	1997	0	0	200	200
				PROPALR	1998	0	0	200	200
LA57110	LA	TR6A3	BUS REPLACEMENT FY 1997: 25 FY 1998: 16 BUSES FY 1999: 15 BUSES	FTA9	1997	0	0	6600	6600
				FTA9	1998	0	0	4224	4224
				TDA4	1997	0	0	1650	1650
				TDA4	1998	0	0	1056	1056
LA57808	LA	TR6A3	DEBT SERVICE ON COPS	FTA9	1997	0	0	325	325
				FTA9	1998	0	0	313	313
				TDA4	1997	0	0	67	67
				TDA4	1998	0	0	63	63
LA5B214	LA	TR6A	CITY OF INGLEWOOD/METRO RIDE, INC. SHUTTLE BUS OPERATION	CM	1997	0	0	636	636
				LTF	1997	0	0	92	92
LA5B218	LA	TR6A	TRANSPORTATION CONCEPTS DOWNEY - SHUTTLE BUS OPERATION ALSO KNOWN AS THE LAKEWOOD SHUTTLE #631	CM	1997	0	0	275	275
				LTF	1997	0	0	32	32
LA65004	LA	TR9A2	RAIL PARTS - MBL \$1.2 MILLION, MRL \$.5 MILLION	FTA3	1997	0	0	1600	1600
				FTA3	1998	0	0	1600	1600
				TDA4	1997	0	0	400	400
				TDA4	1998	0	0	400	400
LA65009	LA	TR6A2	BUS REHABILITATION;INTERIOR AND EXTERIOR COSMETIC REHABILITATION	FTA9	1998	0	0	201	201
				TDA4	1998	0	0	50	50
LA65406	LA	TR6A3	REPLACE BUSES FY'97 18 BUSES	FTA9	1997	0	0	800	800
				PROPALR	1997	0	0	200	200

TCM1 PROJECTS IN LOS ANGELES COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
LA65408	LA	TR6A2	MAJOR BUS COMPONENTS (2 ENGINES & 2 TRANSMISSIONS)	FTA9	1997	0	0	116	116
				FTA9	1998	0	0	40	40
				PROPALR	1997	0	0	29	29
				PROPALR	1998	0	0	10	10
LA66100	LA	TR6A3	REPLACEMENT OF 40' TRANSIT COACHES WITH ALTERNATIVELY FUELED COACHES 30 BUSES	FTA9	1997	0	0	4715	4715
				PROPA	1997	0	0	1795	1795
LA66101	LA	TR6A3	REPLACEMENT OF FOUR 30' COACHES	FTA9	1997	0	0	985	985
	LA	TR6A3	WITH ALTERNATIVE FUEL (ELECTRIC, CNG)	PROPA	1997	0	0	375	375
LA66102	LA	TR6A3	REPLACE TRANSIT COACHES WITH	FTA9	1998	0	0	650	650
	LA	TR6A3	ALTERNATIVELY FUELED 40' COACHES 4 BUSES	PROPA	1997	0	0	246	246
LA7031	LA	HB4NL	IN LA COUNTY AT VARIOUS LOCATIONS SYNCHRONIZE SIGNALS PILOT AREA PROJECT	STP	1997	0	0	2541	2541
LA71702	LA	TR6A3	REPLACE THREE FIXED ROUTE BUSES	FTA9	1997	0	0	220	220
				PROPALR	1997	0	0	220	220
LA75054	LA	TR6A3	REPLACE 4 FIX RTE. BUSES	FTA9	1997	0	0	960	960
				TDA4	1997	0	0	240	240
LA79203	LA	TR9A	LA STANDARD LIGHT RAIL CAR PROCUREMENT FOR GREEN AND BLUE LINES__(74) P'SBLE FED DEFENSE CONVERSION FUNDS AND ADD'L OUTYEAR PC40	PC40	1997	0	0	29561	29561
				PC40	1998	0	0	20900	20900
				STP	1997	0	0	28900	28900
LA85010	LA	TR6	GLOBAL POSITIONING SYSTEM (GPS) TRACKING SYSTEM	FTA9	1998	0	0	240	240
				TDA4	1998	0	0	60	60
LA85055	LA	TR6A3	REPLACE 4 FIX RTE. BUSES REPLACE 4 FIX RTE. BUSES	FTA9	1998	0	0	960	960
				TDA4	1998	0	0	240	240

TCM1 PROJECTS IN LOS ANGELES COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
LA96001	LA	TR6A3	BUS-ROLLING STOCK	FTA9	1997	0	0	44764	44764
				FTA9	1998	0	0	44764	44764
				TDA4	1997	0	0	11191	11191
				TDA4	1998	0	0	11191	11191
LA960139	LA	HB4NL	OCEAN AVE, BROADWAY, OCEAN PARK BLVD, MAIN STREET UPDATE EXISTING OUTDATED SIGNALS, CONTROLLERS, SYNCHRONIZED SIGNALS	LTF	1997	0	0	375	375
				LTF	1998	0	0	100	100
				STPL	1997	150	0	0	150
				STPL	1998	0	0	400	400
LA960181	LA	TR8	RAIL MODE AND RENOVATION PROGRAM	FTA3	1997	0	0	2903	2903
				LTF	1997	0	0	726	726
LA962206	LA	HB5	FROM RT 90 TO RT 10__HOV LANES	CM	1998	3995	0	0	3995
	LA	HB5	PROJECT (FROM 8+0 TO 8+2 HOVE) SOUTHBOUND HOV ONLY	STSM	1998	515	0	0	515
LA9703Z	LA	TR8A	LOCOMOTIVE EMISSIONS	PC10	1997	0	0	355	355
	LA	TR8A	REDUCTION PROGRAM STUDY	PC10	1998	0	0	250	250
	LA	TR8A	STATE FUNDS ARE PVEA	TSTA	1997	0	0	80	80
SCAG0703D	VAR	HB6	SCAG REGIONAL RIDESHARE PROGRAM	STP	1997	0	0	3580	3580

TCM1 PROJECTS IN ORANGE COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
1240	ORA	HE13A	IN BUENA PARK & BREA	CITY	1997	1593	464	2955	5012
			FROM L.A. COUNTY LINE TO RTE 57	CM	1997	0	0	20000	20000
			SEGMENT 2	CM	1998	0	0	4500	4500
			EXIST 8-LN FWY ADD 2 HOV LANES	ORA-FWY	1997	13666	3852	34841	52359
			AND AUXILIARY_LANES	ORA-TRN	1997	0	0	212	212
				STA	1997	4332	0	3337	7669
				STPL-R	1997	0	176	944	1120
				STSM	1997	0	0	3174	3174
1250	ORA	HB5	IN ANAHEIM	CITY	1997	6107	7839	20219	34165
			AT RTE 57/91	ORA-FWY	1997	9877	1000	37910	48787
			CONSTRUCT 57/91 INTERCHANGE WITH HOV DIRECT CONNECTORS - TRANSITWAY	STA	1997	202	0	826	1028
1260	ORA	HE13A	IN ANAHEIM	CITY	1997	0	0	1017	1017
			RECONSTR GENE AUTRY WAY INTERCHNG	ORA-RIP	1997	0	0	173	173
			FROM I-5 HOV FACILITY TO BETMOR LN	STPL-R	1997	0	0	7698	7698
			INCLUDED AS PART OF I-5 WIDENING SEE #2850 & #2850A (93 RME)						
9530	ORA	TR8S	LOS ANGELES/SAN DIEGO CORRIDOR	CITY	1997	0	2100	1500	3600
			MISSION VIEJO/LAGUNA NIGUEL STATION - RIGHT OF WAY ACQUISTION, PLATFORMS, AND PARKING FACILITY	TPD	1997	0	0	2100	2100
01260EE	ORA	HE13A	IN SANTA ANA AND ANAHEIM	CITY	1997	0	0	4783	4783
			FROM RTE 22 TO RTE 91 ON EXISTING	CITY	1998	0	0	9382	9382
			6-LANE FWY ADD 2 MIXED FLOW	IM	1997	0	2000	125605	127605
			LANES, TWO HIGH OCCUPANCY VEHICLE	IM	1998	0	0	110246	110246
			LANES, & RECONSTRUCT INTERCHANGES	ORA-FWY	1997	0	302897	117248	420145
				ORA-FWY	1998	0	67551	115931	183482
				STPL-R	1997	0	0	6976	6976
				STPL-R	1998	0	0	7698	7698
ORA157	ORA	TR6A3	PURCHASE 170 REPLACEMENT VANS	FTA9	1997	0	0	2333	2333
			VANS	FTA9	1998	0	0	2426	2426
				TDA4	1997	0	0	583	583
				TDA4	1998	0	0	607	607
ORA175	ORA	TR2I	RTE 405/55 TRANSITWAY	FTA3	1997	0	0	7500	7500
			MIT ND (11/93) FONSI (7/27/94)	FTA3	1998	0	0	35000	35000
				GEN	1997	0	0	3500	3500
				GEN	1998	0	0	17500	17500

TCM1 PROJECTS IN ORANGE COUNTY										
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT	
ORA187	ORA	TR6A3	DEBT SERVICE FOR 1993 COP FUNDING	FTA9	1997	0	0	2353	2353	
			MISCELLANEOUS CAPITAL PROJECTS	FTA9	1998	0	0	2273	2273	
				TSTA	1997	0	0	588	588	
				TSTA	1998	0	0	568	568	
ORA1870	ORA	TR6A3	PURCHASE 259 REPLACEMENT BUSES	FTA9	1997	0	0	7221	7221	
			STANDARD 40FT BUSES	FTA9	1998	0	0	9691	9691	
				TDA4	1997	0	0	1805	1805	
				TDA4	1998	0	0	2422	2422	
ORA37136	ORA	TR8S	ORANGE	CITY	1997	0	110	130	240	
			COMMUTER RAIL STATION IMPROVEMENTS	FTA26	1997	0	440	520	960	

TCM1 PROJECTS IN RIVERSIDE COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
41062	RIV	TEA1A	UNIVERSITY AVENUE FROM CHICAGO	CITY	1997	0	0	225	225
			AVENUE TO ROUTE 60 - PEDESTRIAN LIGHTING, LANDSCAPING, BENCHES, AND HANDICAPPED ACCESSIBILITY	STPE	1997	0	0	900	900
46322	RIV	HE13A	NEAR RIVERSIDE, FROM VALLEY WAY TO UNIVERSITY - FOUR AND SIX LANE FRWY ADD 2 HOV LANES (STAGE 2)	NH	1997	0	0	30878	30878
46360	RIV	HE13A	IN RIVERSIDE AND MORRENO VALLEY, FROM ROUTE 215 TO REDLANDS BOULEVARD - FOUR LANE FREEWAY ADD TWO HIGH OCCUPANCY VEHICLE (HOV) LANES	NH	1997	0	395	25755	26150
46720	RIV	HB5	IN CITY OF RIVERSIDE FROM WEST JCT RTE 60 TO SAN BERNARDINO COUNTY LINE EXISTING 6-LN FWY ADD 2 HOV LANES	XRIV	1997	0	0	16073	16073
0005R	RIV	TR8	METROLINK - SBD/RIVERSIDE/IRVINE	BOND	1997	0	0	13300	13300
			SAN JACINTO BRANCH LINE RIGHT OF WAY RELATED IMPROVEMENTS	BOND	1998	0	0	11800	11800
RIV0030C	RIV	HE11A	IN RIVERSIDE COUNTY	CITY	1997	800	0	0	800
			AT GALENA ST	STPL	1997	2100	0	0	2100
			CONSTRUCT INTERCHANGE	XRIV	1997	800	1250	5358	7408
RIV32086	RIV	HB6	COMMUTER TRANSPORTATION SERVICES	STPL	1997	0	0	295	295
			RIDESHARE SERVICES	XRIV	1997	0	0	800	800
RIV32120	RIV	TR6A3	IN RIVERSIDE COUNTY CITY OF BANNING PURCHASE ONE REPLACE. 12-PASSENGER VAN W/LIFT & TIEDOWNS	FTA18	1997	0	0	36	36
RIV32145	RIV	TR6A3	IN RIVERSIDE	FTA9	1998	0	0	280	280
			CITY OF CORONA PURCHASE FIVE REPLACEMENT VANS W/LIFTS & TIEDOWNS, RADIOS	TDA4	1998	0	0	70	70

TCM1 PROJECTS IN RIVERSIDE COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
RIV32162	RIV	TR6A3	IN RIVERSIDE	FTA9	1997	0	0	150	150
			CITY OF RIVERSIDE SPECIAL SERVICES	TDA4	1997	0	0	38	38
			PURCHASE OF FOUR REPLACEMENT VANS W/LIFTS AND TIEDOWNS						
RIV32164	RIV	TR6A3	IN RIVERSIDE	FTA9	1998	0	0	40	40
			CITY OF RIVERSIDE SPECIAL SERVICES PURCHASE ONE REPLACEMENT VANS W/LIFTS AND TIEDOWNS	TDA4	1998	0	0	10	10
RIV32172	RIV	TR6A3	IN RIVERSIDE COUNTY PALO VERDE VALLEY TRANSIT AGENCY PURCHASE ONE REPLACE. MID-SIZE BUS W/ LIFT RADIO, FAREBOX & TIEDOWNS	TDA4	1997	0	0	55	55
RIV32174	RIV	TR6A3	IN RIVERSIDE COUNTY PALO VERDE VALLEY TRANSIT AGENCY PURCHASE ONE REPLACEMENT VAN W/LIFT & TIEDOWNS	TDA4	1998	0	0	55	55
RIV32228	RIV	TR6A3	IN WESTERN RIVERSIDE COUNTY	FTA9	1998	0	0	360	360
			PURCHASE 3 REPLACEMENT TRANSIT COACHES, RADIOS & FAREBOXES	TDA4	1998	0	0	90	90
RIV32231	RIV	TR6H1	IN WESTERN RIVERSIDE COUNTY	FTA9	1998	0	0	80	80
			PURCHASE BUS STOP AMENITIES	TDA4	1998	0	0	20	20
RIV32359	RIV	HB6A	IN MORENO VALLEY	CM	1997	0	0	300	300
			ON SR60/MORENO BEACH CONSTRUCT 200 SPACE PARK N RIDE LOT	STSM	1997	0	0	41	41
RIV32392	RIV	TR6	IN WESTERN RIVERSIDE COUNTY	FTA9	1997	0	0	346	346
			DEBT SERVICE PAYMENT FOR TEN	FTA9	1998	0	0	336	336
			EXPANSION COACHES (COP'S)	TDA4	1997	0	0	87	87
				TDA4	1998	0	0	84	84
RIV32397	RIV	TR6A3	IN WESTERN RIVERSIDE COUNTY	FTA9	1998	0	0	456	456
			PURCHASE 11 REPLAC. DIAL-A-RIDE VANS	TDA4	1998	0	0	114	114
RIV32398	RIV	TR6A1	IN WESTERN RIVERSIDE COUNTY	FTA9	1998	0	0	120	120
			PURCHASE ONE EXPANSION MINI-BUS	TDA4	1998	0	0	30	30

TCM1 PROJECTS IN RIVERSIDE COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
RIV32412	RIV	TR6A	IN COACHELLA VALLEY AREA	FTA9	1997	0	0	550	550
			LEASE/PURCHASE MOTOR COACHES	FTA9	1998	0	0	550	550
			FY 1996/97 - 98/99	TDA4	1997	0	0	150	150
				TDA4	1998	0	0	150	150
RIV32420	RIV	TR6A3	IN COACHELLA VALLEY AREA	FTA9	1997	0	0	80	80
			2 REPLACE. PARATRANSIT VEH.	FTA9	1998	0	0	80	80
				XRIV	1997	0	0	20	20
				XRIV	1998	0	0	20	20
RIV32531	RIV	HE11A	IN PERRIS AT EVANS ROAD/ELLIS AVENUE CONSTRUCT INTERCHANGE;WIDEN ELLIS AVE. TO 6 LANES.	CITY	1997	0	0	12000	12000
RIV52000	RIV	HB4NK	IN RIVERSIDE COUNTY	CITY	1997	35	0	59	94
			LUMP SUM HWY OPERATION IMPROVEMENT	STPL	1997	0	0	708	708
			PROJECTS-INTERSECTION SIGNALIZATION AT INDIVIDUAL LOCATIONS	STPL	1998	0	0	1025	1025
RIV52015	RIV	HB4NL	IN CATHEDRAL CITY	CITY	1997	0	0	16	16
			ON DATE PALM FROM 30TH AVE TO PEREZ RD - INTERCONNECT OF 12 TRAFFIC SIGNALS,IN-HOUSE CONTROL PC SYSTEM	STPL	1997	0	0	120	120
RIV52018	RIV	HB4NL	IN CATHEDRAL CITY	CITY	1997	0	0	25	25
			ON RAMON ROAD FROM LANDAU BL TO DATE PALM DR - INTERCONNECT OF 5 TRAFFIC SIGNALS	STPL	1997	0	0	196	196
RIV52019	RIV	HB4NL	IN CATHEDRAL CITY	CITY	1997	0	0	42	42
			ON PALM CANYON FROM GOLF CLUB DR TO CATHEDRAL CANYON DR - INTERCONNECT OF 4 TRAFFIC SIGNALS	STPL	1997	0	0	324	324
RIV52020	RIV	HB4NL	IN MURRIETA INSTALL INTELLIGENT TRAFFIC SURVEILLANCE SYSTEM	CM	1997	0	0	236	236
RIV52021	RIV	HB6	IN CORONA	CITY	1997	0	0	133	133
			HOV ON RAMPS AT 3 LOCATIONS ON SR91 (SERFAS CLUB WB, LINCOLN WB, AND MCKINLEY WB,_ADD ONE HOV BYPASS LANE ON EXISTING RAMPS AT SERFAS)	CM	1997	0	0	1024	1024

TCM1 PROJECTS IN RIVERSIDE COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
RIV52022	RIV	HB4NL	IN PALM SPRINGS	CITY	1997	0	0	152	152
			CITYWIDE SIGNAL INTERCONNECT ON INDIAN CANYON DRIVE AND ON TAHQUITZ CANYON WAY	STPL	1997	0	0	1176	1176
RIV52024	RIV	HB4NL	IN MORENO VALLEY CITYWIDE SIGNAL INTERCONNECT ON PERRIS BLVD AND ON ALESSANDRO BLVD	CM	1997	0	0	55	55
RIV52025	RIV	HB4NL	IN RIVERSIDE COUNTY ON SR 79 NORTH FROM MARGARITA ROAD TO MURRIETA HOT SPRINGS ROAD - INTERCONNECT OF 3 TRAFFIC SIGNALS	CM	1997	0	0	97	97
RIV52026	RIV	HB4NL	IN RIVERSIDE COUNTY ON SR 79 SOUTH FROM I15 TO BUTTER- FIELD STAGE RD - INTERCONNECT OF 6 TRAFFIC SIGNALS	CM	1997	0	0	226	226
RIV52027	RIV	HB4NL	IN RIVERSIDE COUNTY SIGNAL INTERCONNECT ON MISSION BLVD FROM SR60 TO PYRITE AND VAN BUREN FROM BELLEGRAVE TO RUTILE	CM	1997	0	0	310	310
RIV52028	RIV	HB4NL	IN MURRIETA AT LOS ALAMOS - SIGNAL INTERCONNECT (PHASE 2 - HEACOCK & GATEWAY PLAZA ENTRANCE) WEST OF WHITEWOOD RD.	CM	1997	0	0	16	16
RIV52106	RIV	TR6A1	VALLEY RESOURCE CENTER ONE EXPNASION VAN WITH MOBILE RADIO	FTA16	1997	0	0	58	58
RIV52107	RIV	TR6A2	MEDITRANS SERVICES INC. ONE REPLACEMENT VEHICLE	FTA16	1997	0	0	56	56

TCM1 PROJECTS IN SAN BERNARDINO COUNTY										
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT	
711	SBD	HB5	NEAR COLTON AND SAN BERNARDINO,	IM	1997	0	304	0	304	
			FROM ROUTE 10 TO ROUTE 66 AT	IM	1998	0	1934	6851	8785	
			VARIOUS LOCATIONS - NORTHBOUND AND SOUTHBOUND AUXILIARY LANES WITH RIGHT OF WAY FOR FUTURE HOV LANES	XSPD	1998	0	0	100	100	
5128	SBD	TR8	METROLINK - SAN BERNARDINO LINE	TPD	1997	0	0	749	749	
			REDLANDS RAIL EXTENSION - DESIGN AND CONSTRUCTION PER REVISED 94TCI LIST	XSPD	1997	0	0	749	749	
20621	SBD	HE14A	IN SAN BERNARDINO COUNTY FROM LOS ANGELES COUNTY LINE TO MOUNTAIN AVE CONSTRUCT 8-LN FWY WITH 2 HOV LANES **SEE STIP PPNO #193B, C & S FOR	NH	1997	0	0	61303	61303	
SBD0129	SBD	HB5	IN MONTCLAIR & UPLAND	CM	1997	0	0	8140	8140	
			FROM LOS ANGELES COUNTY LINE	CM	1998	0	0	23741	23741	
			TO GROVE AVE.	STSM	1998	0	0	4025	4025	
			ADD 2 HOV LNS. AUX LNS./SOUNDWALLS/ (LIMITS CHANGED-COMBINE PROJ.W/129D	XSPD	1997	596	0	0	596	
SBD031171	SBD	HB4NK	CITRUS AVENUE AT BASELINE AVENUE TRAFFIC SIGNAL MODIFICATION AND INTERSECTION IMPROVEMTS (TURN LNS)	STPL	1997	10	0	240	250	
SBD031466	SBD	HB4NK	BEAR VALLEY CUTOFF	CITY	1997	5	5	65	75	
			AT STATE HIGHWAY 18 INSTALL TRAFFIC SIGNAL	SLP	1997	5	5	65	75	
SBD031467	SBD	HB4NK	OASIS ROAD	CITY	1998	5	5	65	75	
			AT STATE HIGHWAY 18 INSTALL TRAFFIC SIGNAL	SLP	1998	5	5	65	75	
SBD031468	SBD	HB4NK	PHELAN ROAD	CO	1998	5	5	65	75	
			AT STATE HIGHWAY 138 INSTALL TRAFFIC SIGNAL	SLP	1998	5	5	65	75	
SBD031481	SBD	HB4NK	CREST FOREST DRIVE	CO	1998	5	5	65	75	
			AT STATE ROUTE 38 INSTALL TRAFFIC SIGNAL	SLP	1998	5	5	65	75	

TCM1 PROJECTS IN SAN BERNARDINO COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
SBD031506	SBD	HB6	RIDESHARING	STP	1997	0	0	300	300
			CONTRIBUTIONS FOR RIDESHARE	STP	1998	0	0	325	325
			ACTIVITIES IN COOP WITH CTS						
SBD31046	SBD	TR6A3	PARATRANSIT VEHICLES	CM	1998	0	0	177	177
			PURCHASE 3 REPLACEMENT LIFT-	LTF	1998	0	0	108	108
			EQUIPPED ALT. FUEL PARATRANS VEH.	TSTA	1998	0	0	80	80
SBD31088	SBD	TR6A1	BUS FLEET EXPANSION	FTA9	1997	0	0	2278	2278
			PURCHASE 8 40' EXPANSION COACHES & AUXILLARY EQUIPMENT, CNG	TSTA	1997	0	0	570	570
SBD31093	SBD	TR6A1	BUS FLEET EXPANSION	FTA9	1998	0	0	2370	2370
			PURCHASE 8 40' LIFT-EQUIPPED CNG EXPANSION COACHES FY 98	TSTA	1998	0	0	592	592
SBD31094	SBD	TR6A3	REPLACEMENT OF COMMUNITY SHUTTLE VANS	FTA9	1998	0	0	262	262
			PURCHASE 4 17-PASSENGER LIFT- EQUIPPED CNG REPLACEMENT VANS	TSTA	1998	0	0	66	66
SBD31556	SBD	TR6A3	REPLACEMENT VEHICLE	CM	1997	0	0	97	97
			PURCHASE 1 25 PASSENGER ACCESS. ALT. FUEL BUS	TSTA	1997	0	0	13	13
SBD31557	SBD	TR6A3	REPLACEMENT VEHICLES PURCHASE 1 ACCESSIBLE MINIVAN	LTF	1998	0	0	50	50
SBD31558	SBD	TR6A3	REPLACEMENT VEHICLES	CM	1998	0	0	259	259
			PURCHASE 4 REPLACEMENT 15 PASSENGER ACCESS. ALT.FUEL PARATRANS VANS	TSTA	1998	0	0	34	34
SBD31595	SBD	TR6A3	CAPITAL	LTF	1997	0	0	100	100
			PURCHASE 4 REPLACEMENT ACCESSIBLE ALT. FUEL PARATRANSIT VEHICLES	TSTA	1997	0	0	50	50
				TSTA	1998	0	0	100	100
SBD31765	SBD	HB4NK	SHAY ROAD	SLP	1997	6	0	54	60
			AT STATE ROUTE 38 INSTALL TRAFFIC SIGNAL	XSBD	1997	6	0	54	60
SBD31828	SBD	HB6A	CAMINO DEL CIELO/PINION	CITY	1997	63	0	45	108
			AT STATE ROUTE 62	CM	1997	0	0	345	345
			CONSTRUCT PARK AND RIDE FACILITY	STSM	1997	0	0	40	40

TCM1 PROJECTS IN SAN BERNARDINO COUNTY										
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT	
SBD31832	SBD	HB4NK	BRYANT STREET	CITY	1997	10	0	0	10	
			AT FIR AVENUE	CITY	1998	0	0	115	115	
			INSTALL TRAFFIC SIGNAL							
SBD31853	SBD	HB6A	BARTON ROAD	CITY	1997	0	0	38	38	
			22430 BARTON ROAD (WEST OF I-215)	CM	1997	0	0	75	75	
			CONST. 48 VEHICLE PARK & RIDE LOT	STSM	1997	20	0	55	75	
SBD31854	SBD	HB6A	BARTON ROAD	CM	1997	0	0	16	16	
			AT LA CROSSE AVENUE	LTF	1997	25	0	0	25	
			CONST. 60 VEHICLE PARK & RIDE LOT	STSM	1997	0	0	188	188	
SBD31860	SBD	HB8	MAIN STREET	STPL	1998	8	13	66	87	
			MT. VERNON AVENUE TO W. CITY LIMITS	TDA3	1998	8	13	66	87	
			PROVIDE BICYCLE LANES							
SBD32225	SBD	HE11A	IN ONTARIO	CITY	1997	11	0	126	137	
			2600 FT. EASTERLY AND WESTERLY OF	DEMO	1997	44	0	502	546	
			HAVEN AVENUE LANDSCAPING & IRRIGATION OF THE HAV EN AVE. FED GROUND ACCESS							
SBD41019	SBD	TR6A3	EXPANSION OF COMMUNITY SHUTTLE VANS	FTA9	1997	0	0	240	240	
			FY 1997	STAL-L	1997	0	0	60	60	
			PURCHASE 1 25' ELECTRIC EXPANSION SHUTTLE BUS							
SBD41045	SBD	TR6A3	REPLACEMENT VEHICLE	CM	1997	0	0	118	118	
			PURCHASE 2 REPLACEMENT 15 PASSENGER TSTA ACCESS. ALT FUEL PARATRANS VEHICLES		1997	0	0	15	15	
SBD41112	SBD	TR6A3	COMMUNITY SHUTTLE VANS (FY 1977)	FTA9	1997	0	0	480	480	
			=- PURCHASE TWO TWENTY FIVE FOOT ELECTRIC REPLACEMENT SHUTTLE BUSES	STAL-L	1997	0	0	120	120	
SBD41116	SBD	TR6A3	CAPITAL	LTF	1997	0	0	48	48	
			PURCHASE 1 REPLACEMENT ACCESSIBLE ALT FUEL BUS	TSTA	1997	0	0	102	102	
SBD41117	SBD	TR6A3	CAPITAL	LTF	1998	0	0	11	11	
			PURCHASE 1 REPLACEMENT VEHICLE FOR THE VVTA ADMINISTRATOR	TSTA	1998	0	0	9	9	

TCM1 PROJECTS IN SAN BERNARDINO COUNTY									
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT
SBD41131	SBD	TR6H2	RECONSTRUCTION OF MAINTENANCE FACILITY - ARCHITECTURAL/ENGINEERING SERVICES	FTA9	1997	420	0	0	420
				FTA9	1998	0	0	6670	6670
				TSTA	1997	105	0	0	105
				TSTA	1998	0	0	1669	1669
SBD41135	SBD	HB4NK	SR 18 AND STANFIELD CUTOFF TRAFFIC SIGNAL AND INTERSECTION IMPROVEMENTS - 2 MERGE LANES ON EAST SIDE OF INTERSECTION 275 FT. (PER CALTRANS REQUIREMENTS)	CITY	1997	0	0	35	35
				STP	1997	0	0	307	307
SBD41202	SBD	HE13A	ARROW RTE. MILLIKEN AVE TO EAST ST. WIDEN PORTIONS FROM 2-4 LANES (APPROX. 12,000 FT.)_SPOT WIDEN PLUS MARKED BIKE LANES (CLASS 3)	XSBD	1998	100	0	0	100
SBD41203	SBD	HB4NK	BASELINE ROAD & I-15 INTERSECTION INSTALL TRAFFIC SIGNAL	AB2766	1997	0	0	138	138
				CITY	1997	0	0	138	138
SBD41234	SBD	HB4NK	PEYTON DRIVE @ GLEN RIDGE DRIVE NEW TRAFFIC SIGNAL INSTALLATION	CITY	1997	0	0	14	14
				STPL	1997	0	0	120	120
SBD41235	SBD	HB4NK	PEYTON DRIVE @ VALLEY VISTA NEW TRAFFIC SIGNAL INSTALLATION	CITY	1997	0	0	14	14
				STPL	1997	0	0	120	120
SBD41287	SBD	TR2I	GRAND TERRACE MULTIMODAL TRANSFER PT FACILITY REHAB. OF A VACANT 12,000 FT. COMMERCIAL BUILDING AND PARK-N-RIDE WITH 57 SPACES	CITY	1997	110	0	390	500
				STP	1997	0	400	100	500
SBD41322	SBD	HB8	9TH ST./H TO SIERRA WAY MODIFY EXISTING TRAFFIC SIGNAL TO ADD PEDESTRIAN SIGNALS AND LOOPS ON THE SIDE STREETS	STPL	1998	10	0	110	120
SBD41418	SBD	HB4NK	FRANCIS AVE. - LA COUNTY LINE - CHINO CITY LIMIT RECONSTRUCT LEFT TURN LANE & ADD TRAFFIC SIGNAL (NO LANES ADDED)	SLP	1997	4	0	0	4
				SLP	1998	0	0	36	36
				XSBD	1997	36	0	0	36
				XSBD	1998	0	0	324	324

TCM1 PROJECTS IN SAN BERNARDINO COUNTY										
PROJ_ID	CO	CODE	DESCRIPTION	FUND	YEAR	ENG	RW	CON	TOT	
SBD41436	SBD	TEA1	EUCLID AVE., SPRR R/W A" ST ,MEMORIAL PARK CAMPUS AVE. 16TH ST" AND FOOTHILL BLVD. - CONSTRUCTION	STPE	1998	23	0	128	151	
SBD41437	SBD	TEA1	CITY OF UPLAND - UPLAND TOWN CENTER ACCESS IMPROVEMENTS TO TOWN CENTER BOND INCLUDING PEDESTRIAN AND BICYCLE AMENDMENTS. UPGRADE PEDESTRIAN ALLEYWAYS.	AB2766	1997	8	0	43	51	
				BOND	1997	5	0	28	33	
				CITY	1997	159	0	893	1052	
				STPE	1997	150	0	850	1000	

**DRAFT FINAL
2012 AQMP**

**RESPONSES TO COMMENTS
TO THE 2012 AQMP**

NOVEMBER 2012

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT GOVERNING BOARD

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EXECUTIVE OFFICER:
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Southern California Association of Governments (SCAG)

Rongsheng Luo – Regional Planner

Jonathan Nadler – SCAG Manager

Production

Arlene Martinez – Administrative Secretary

COMMENT LETTER LOCATOR

AGENCY/ COMPANY	DATE	Comment Letter Locator
AEROPRES Corporation	11/12/2012	SS-27
Air Conditioning Heating, and Refrigeration Institute (AHRI)	8/31/2012	V
Air-Scent International	10/1/2012	SS-4
Alpha Aromatics	10/1/2012	SS-5
American Chemistry Council	10/5/2012	SS-17
American Cleaning Institute	8/31/2012	SS-1
American Coatings Association	6/13/2012	D
American Coatings Association	8/31/2012	P
American Coatings Association	10/5/2012	SS-16
American Coatings Association - David Darling	2/4/2011	E
American Jetway Corp.	11/6/2012	SS-23
Armored AutoGroup	10/10/2012	SS-18
Association of CA Cities Orange County (ACCOC)	7/25/2012	A
Automotive Specialty Products Alliance (ASPA)	10/12/2012	SS-20
Bear Valley Electric Service	8/31/2012	X
Bear Valley Electric Service	10/9/2012	TT
BETCO Innovative Cleaning Technologies	9/12/2012	SS-3
Blaster Chemical Company	11/8/2012	SS-25
CA Council for Environmental and Economic Balance (CCEEB)	10/31/2012	CCC
California Council for Environment and Economic Balance (CCEEB)	8/31/2012	BB
California Small Business Alliance	11/12/2012	EEE
California Trucking Association	8/30/2012	J
Chicago Aerosol	11/12/2012	SS-28
CIAQC	11/8/2012	GGG
City of Santa Clarita	8/31/2012	K

AGENCY/ COMPANY	DATE	Comment Letter Locator
Clean Energy	8/31/2012	FF
COBRA	11/6/2012	SS-24
County Sanitation Districts of Los Angeles County	8/30/2012	M
CRC Industries, Inc.	11/12/2012	SS-29
Dairy Cares	8/31/2012	EE
Darnall Army Medical Center	9/28/2012	OO
Diversified CPC International, Inc.	11/12/2012	SS-30
Dow Chemical Company	10/5/2012	SS-14
Eastern Aerosol Association (EAA)	10/4/2012	SS-9
Einstein, Dr. Geoffrey Kabat	10/30/2012	WW
Enstrom, James E.	8/30/2012	U
Enstrom, James E.	9/20/2012	NN
Four Star Chemical	11/12/2012	SS-37
Gatzke Dillon & Balance (GDB) LLP	11/8/2012	HHH
Gatzke Dillon & Ballance LLP	10/30/2012	XX
Harvey Eder	11/8/2012	JJJ
Ian Gecker & Associates, LLC.	10/5/2012	SS-12
IFRA North America	9/28/2012	QQ
IKI Manufacturing Co.	11/12/2012	SS-31
International Fragrance Association North America (IFRANA)	8/31/2012	II
ISSA	8/31/2012	L
John R. Froines	10/26/2012	VV
John Wayne Airport	8/31/2012	AA
John Wayne Airport	9/28/2012	RR
Joint Orange County Coalition	9/12/2012	LL
LA Department of Public Works - Cynthia Holguin	8/14/2012	O
LA Department of Water & Power	8/31/2012	S

AGENCY/ COMPANY	DATE	Comment Letter Locator
Latham & Watkins LLP	8/31/2012	DD
Leroy Mills	11/8/2012	III
Losorea	10/5/2012	SS-10
Mar Vista Community Council	5/20/2012	G
Mesa Consolidated Water District	9/12/2012	KK
Mitchell M. Tsai, Esq	3/28/2012	F
Mitchell M. Tsai, Esq	8/28/2012	N
MONTSENBOCKER'S Lift Off	11/12/2012	SS-32
Mothers Incorporated	10/15/2012	SS-21
National Aerosol Association (NAA)	11/12/2012	SS-33
Natural Resources Defense Council (NRDC)	9/5/2012	JJ
Neighbors of Santa Monica Airport	7/28/2012	I
Nexreg Compliance Inc.	10/5/2012	SS-15
Orange County COG (OCCOG)	8/31/2012	Z
Orange County Transportation Authority (OCTA)	8/31/2012	R
Pacific Merchant Shipping Association (PMSA)	10/31/2012	ZZ
Paramount Petroleum	8/30/2102	CC
Personal Care Products Council	9/28/2012	PP
Pestco Inc.	10/1/2012	SS-7
PLZ Aeroscience Corp.	10/30/2012	SS-26
Public Solar Power Coalition - Harvey Eder	7/17/2012	H
Public Solar Power Coalition, Harvey Eder	10/31/2012	YY
Quality Car Care, Inc.	10/25/2012	SS-22
Radiator Specialty Company (RSC)	10/10/2012	SS-19
RadTech	10/31/2012	BBB
Roof Coatings Manufacturers Association (RCMA)	10/5/2012	SS-13
SASOL	11/12/2012	FFF

AGENCY/ COMPANY	DATE	Comment Letter Locator
SC Johnson	8/31/2012	Q
Shield Packaging of California	9/28/2012	SS-2
Sierra Club Angeles Chapter	10/31/2012	AAA
Simple Green	10/1/2012	SS-8
Southern California Business Coalition	5/15/2012	C
Southern California Business Coalition (SCBC)	8/31/2012	T
Southern California Edison	8/31/2012	Y
Southern California Gas Company, Sempra Energy Utility	8/31/2012	GG
Spray Products	11/12/2012	SS-35
Stoner	11/12/2012	SS-34
SurcoTech	10/1/2012	SS-6
The Adhesive and Sealant Council (ASC)	9/17/2012	MM
The Consumer Specialty Products Association (CSPA)	10/9/2012	SS
The Port of Los Angeles & Port of Long Beach	8/30/2012	HH
The Port of Los Angeles, Port of Long Beach	10/31/2012	DDD
Turtle Wax	11/9/2012	SS-36
U.S. EPA	8/31/2012	B
WD-40 Company	10/12/2012	UU
Western Aerosol Information Bureau (WAiB)	10/5/2012	SS-11
Western States Petroleum Association (WSPA)	8/31/2012	W

PREFACE

The 2012 Air Quality Management Plan (AQMP) response to comments is prepared as part of the 2012 AQMP proceedings to ensure all questions raised and comments received during the development process of the 2012 AQMP are adequately considered and addressed. Based on the comments received and additional analysis, changes have been made to the Plan which is reflected in the Draft Final 2012 AQMP and the Draft Socioeconomic Report for the 2012 AQMP. Numerous recurring comment letters were received, and for ease of identification requested by several commentors, each individual letter is responded to separately, although repetitive. There is one exception. Staff received about 38 letters, all addressing VOC reduction strategies, almost identical in content. These letters are grouped together with one letter as the boiler plate, and the remaining letters referencing the answers in the boiler plate letter. The Letter SS from the Consumer Specialty Products Association (CSPA) is the boiler plate for this group and the 37 letters following after are the similar cases.

AQMP Response to Comments

A. Association of CA Cities Orange County (ACCOC), July 25, 2012



600 South Main Street, #940, Orange, CA 92868 | P: 714.953.1300 | F: 714.953.1302 | www.ACCOC.org
 July 25, 2012

Dr. Barry Wallerstein
 Executive Officer
 South Coast Air Quality Management District
 21865 Copley Dr.
 Diamond Bar CA 91765

RE: ACC-OC Comments to the Draft Air Quality Management Plan

Dear Dr. Wallerstein,

Thank you for the opportunity to comment on the South Coast Air Quality Management District's (AQMD) 2012 Draft Air Quality Management Plan (AQMP). As the largest municipal education and advocacy organization in Orange County, the Association of California Cities – Orange County (ACC-OC) is proud of its efforts to protect and restore local control on behalf of all 34 cities. Thus, we are grateful for the opportunity to review this important regional policy document to ensure local governments are able to continue to represent their taxpayers to most effective way possible.

The ACC-OC appreciates the mission of AQMD to protect the health and well-being of Southern California residents. Clean air is a vital part of Orange County's quality of life and we respect the importance as well as the complexities of your efforts.

However, the ACC-OC has several questions and concerns regarding the draft AQMP and its control measures as it concerns to potential impacts to local governments. Therefore, I have included the following chart outlining the specific Control Measures and the ACC-OC's suggested revisions or actions AQMD should take in order to balance the overall objectives of the AQMP and fiscal health of local governments.

As AQMD continues its AQMP process, we would appreciate responses to these issues and requests included below.

Measure #	Description	ACC-OC Concern & Recommendation
BCM-01	Emission reduction from under-fired charbroilers ; seeks to require that restaurants install new devices to reduce emissions from their charbroilers.	Restaurants are an important part of the Orange County economy and provide significant sales tax revenue to local cities. This mandate would discourage the development of new restaurants in the region, thereby reducing potential revenue sources for cities. Moreover, this measure is

A-1

		<p>untested and AQMD's own report states that "Emissions reductions specific to this control measure are unknown at this time."</p> <p><i>AQMD should have an economic impact analysis and a clearer picture of what this measure would improve air quality prior to its adoption.</i></p>	
CMB-03	This control measure seeks emission reductions from unregulated commercial fan-type central furnaces used for space heating.	<p>Local governments operate large facilities across Orange County, many of which are heated by the commercial units targeted by this measure. These units are not currently regulated by AQMD and this measure threatens to require cities replace costly units in order to meet this expansion of regulation.</p> <p><i>AQMD should conduct an economic impact analysis on how this measure would affect cities and other stakeholders prior to its expansion of regulatory authority.</i></p>	A-2
FUG-01	This control measure seeks reductions from vacuum trucks through the use of control devices and technologies, including carbon adsorption systems, positive displacement pumps, internal combustion engines, thermal oxidizers, refrigerated condensers and liquid scrubbers.	<p>Cities, especially those with their own utilities, own, operate and maintain between one and three vacuum trucks. Annual maintenance costs average approximately \$15,000 per truck. These trucks are essential elements to secure and sanitary public works. Expanded regulation of these trucks would be financially damaging to both cities and special districts. FUG-01 would significantly increase this burden, yet yield minimal (if any) benefits towards AQMD's overall goals.</p> <p><i>In its proposed regulations, AQMD does not identify municipalities as impacted parties to FUG-01. The ACC-OC requests that AQMD exempt local governments, including cities, special districts, county governments, and others from this measure due to their limited contributions to fugitive emissions and the disproportionate financial impact that would result from FUG-01.</i></p>	A-3
ICE 01-02 and EDU-01	These measures outline incentive programs and education and outreach efforts to facilitate the implementation of all control measures.	<p>Too often, the implementation of incentive and education programs falls to cities. These cost valuable time and monetary resources that are not currently available at the city level. It appears as if cities will have a level of responsibility for implementation based on the Measure EDU-01, which states that "The implementing agency will</p>	A-4

		<p>be the District, in cooperation with other local governments, agencies, technology manufacturers and distributors, and utility service providers.”</p>
		<p><i>AQMD, in its final AQMP, should state how it expects local governments to assist in the implementation of these programs as well as the resources provided and costs expected to be borne by cities.</i></p>

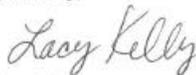
Cities and local governments are a leading source of innovation with regards to emissions reductions. Broadly, numerous municipalities have gone to fleet management services, drastically reducing the amount of vehicles miles traveled. In addition, many have are transitioning from gas-thirsty trucks to hybrid or natural gas vehicles and implementing forward-thinking air quality measures, like anti-idling policies and diesel particulate filters. These proactive, voluntary measures should be rewarded rather than discouraged through the expansion of regulations that would unintentionally harm local governments.

A-5

Again, we appreciate the opportunity to review and comment on this early draft. We look forward to your response on these requests, **especially Control Measure FUG-01**, as it will have the most immediate impact on local governments.

Please do not hesitate to reach me at (714) 953-1300 or lkelly@accoc.org should you need further clarification.

Sincerely,



Lacy Kelly
 Chief Executive Officer
 Association of California Cities – Orange County

cc:
 Supervisor Shawn Nelson, 4th District
 Mayor Miguel Pulido, City of Santa Ana
 ACC-OC Board of Directors

Responses to Comment Letter A
ACCOC

Response to Comment A-1:

AQMD staff will consider any concerns regarding the economic impact associated with implementing emission controls at restaurants, particularly existing small businesses. However, under-fired charbroiling is still one of a few, large unregulated sources of air pollution. Prior rule development efforts have been put on hold due to affordability issues (capital, installation, and annual operating), which is why the AQMD is conducting testing at UCR-CCERT. The goal of the testing is to identify technologically feasible, cost-effective, and affordable emission controls. It is worth noting that the Bay Area AQMD already has a rule in place that establishes requirements for under-fired charbroilers and the AQMD is one of many air pollution control agencies currently looking at control programs for this source category. If technologically feasible and affordable emission controls have been identified, and additional emissions reductions are needed for attainment of ambient standards, then rule development process will begin, which will include a full environmental and socioeconomic analyses.

Response to Comment A-2:

A socioeconomic analysis has been conducted as part of this AQMP. Broad in scope, the analysis encompasses the economic impact of all proposed control measures. As required by state law, AQMD staff will also prepare a socioeconomic assessment and a cost-effectiveness analysis as part of this measure's rulemaking process. This proposed measure will not require local governments to replace their forced air-heating units. Instead, the proposed measure will require manufacturers to produce a lower emission product at some date in the future and will require sales outlets to sell only compliant units to customers after that date. After that date, at the time of replacement, local governments can purchase low emission compliant furnaces. In addition, this proposed measure is not an expansion of AQMD authority. The AQMD currently has the authority to regulate these units just as it currently regulates smaller residential units and larger units with heat input of 2 million Btu/hour or greater.

Response to Comment A-3:

Although FUG-01 does not exempt local governments, including cities, special districts, county governments, and others from this measure, the District does not expect the control measure to have a significant financial impact on them. This control measure is based on Bay Area AQMD Regulation 8, Rule 53: Vacuum Trucks Operations, which is limited to emissions of organic compounds from the use of vacuum trucks to move materials that are typically handled at petroleum refineries, bulk plants, bulk terminals, marine terminals, and organic liquid pipeline facilities. Because

local governments, cities, special districts, county governments primarily use vacuum trucks to remove trash from parking lots, clean out sewers and water mains for maintenance work, and remove waste from septic tanks and portable toilets, the AQMD will carefully consider whether to include them in the rule's scope. The Bay Area AQMD regulation does provide an exemption for emergencies that would be applicable to both private and public agencies under defined circumstances (e.g., a petroleum product spill) where the delay in acquiring and using equipment to comply with the rule would result in a risk of significant harm to facility equipment, personnel, the public, or the environment. District staff expects to include similar provisions in any rulemaking efforts. Any other use of vacuum trucks that would otherwise be subject to the proposed control measure would be assessed during the rulemaking process with appropriate stakeholder input, along with an evaluation of cost impacts and effectiveness to determine the form of the control requirements. Finally, the rule would be subject to socioeconomic impact analysis if it results in a significant impact on air quality or emissions limitations.

Response to Comment A-4:

The ICE-01, ICE-02 and EDU-01 measures do not propose to require cities to participate in incentive program funding. Incentive programs are generally voluntary and implemented by the District. However, AQMD hopes to partner with local governments where appropriate to enhance and outreach and education efforts.

Response to Comment A-5:

AQMD staff agrees that cities and local governments can be a leading source of transportation innovation that has reduced vehicle miles travelled through ridesharing and other fleet management services. Local governments have implemented fleets with alternative technology vehicles and clean fuels that help with air pollution and fuel costs. There are no proposed measures that would discourage such activities or add additional regulatory requirements on local governments. The AQMD will continue to be a significant supporter of these transportation changes in local government fleets and operations through incentive programs, grant funding, and providing technical assistance.

B. U.S. EPA, August 30, 2012



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

AUG 30 2012

Elaine Chang, Dr.PH
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Dear Dr. Chang,

The U.S. Environmental Protection Agency (EPA) appreciates the opportunity to review the draft 2012 South Coast Air Quality Management District's (District's) Air Quality Management Plan (draft 2012 AQMP), which addresses the planning requirements for the 2006 fine particulate (PM_{2.5}) National Ambient Air Quality Standards (NAAQS). Thank you for continuing to work with EPA, the California Air Resources Board (ARB), the Southern California Association of Governments (SCAG) and all stakeholders to ensure that the Plan provides for expeditious attainment of the 35 µg/m³ 24-hour PM_{2.5} standard in the South Coast. The draft 2012 AQMP reflects an extensive effort from you and your staff, and we understand that additional work at the District and ARB is underway. Here are our preliminary comments on the plan.

Emission Inventories

Documentation of the Baseline Emissions Inventory

Baseline emissions inventories are the projected future inventories that incorporate reductions from baseline control measures; that is, measures adopted prior to a plan's development that continue to provide additional reductions between the base year and the attainment year.

Preliminary results of the air quality modeling as presented in Chapter 5 and Appendix V of the draft 2012 AQMP show that baseline measures are expected to provide for attainment of the 35 µg/m³ standard by 2014 in most of the South Coast air basin. Given the importance of an accurate understanding of these baseline measures for attainment planning purposes, we recommend that the plan identify the specific measures that are providing the baseline reductions and the emissions reductions associated with each measure. The AQMP should highlight the baseline measures with compliance dates during the period that the Plan covers. We note that while the draft AQMP already describes the measures that have been adopted to regulate sources in the South Coast, the final AQMP should also identify the measures for which emissions reductions are included in the baseline inventories.

B-1

Rule Effectiveness

EPA recommends that states consider “rule effectiveness” as part of the calculation of emissions estimates for stationary point and non-point (or “area”) sources when developing base year and projection year emissions inventories.¹ Adjustments for rule effectiveness (RE) are appropriate for emissions estimates that involve the use of a control device or control technique (*i.e.*, where the estimates are contingent on the effectiveness of controls), but not where emissions can be calculated by means of a direct determination (*e.g.*, direct emission measurements or explicit records of types and amounts of solvents used) or for uncontrolled emission sources.² Accordingly, we recommend that the District develop its base year and projection year emission inventories using appropriate RE adjustments for the stationary and area source emissions estimates that are contingent on the effectiveness of controls. We also recommend that the District include, in its SIP emission inventory submissions, specific documentation of any RE adjustments applied to the emissions calculations, and the basis for the identified adjustments, consistent with EPA guidance. Use of the highest RE range (86 to 100%) in developing emissions estimates may be appropriate where the SIP contains adequate documentation of high compliance rates in the regulated industry and rigorous enforcement/compliance programs, such as source-specific monitoring, submittal of monitoring records, inspections, and compliance assistance programs.³

B-2

Requirements for Reasonably Available Control Measures Demonstration

The Draft 2012 AQMP should provide for implementation of all reasonably available control measures (RACM) for existing sources as required by Clean Air Act (CAA) section 172(c)(1). RACM are those economically and technologically feasible measures that are necessary to provide for attainment as expeditiously as practicable or to demonstrate reasonable further progress. See 40 CFR section 51.1010; see also 70 FR 71612 at 71661 (November 29, 2005). As part of the RACM demonstration, the AQMP should include a list of the potential measures considered by the State, District, and SCAG and analysis sufficient to show that all RACM, including reasonably available control technologies (RACT), have been adopted and are being implemented expeditiously. See 40 CFR section 51.1010(a). Potential measures that are reasonably available considering economic and technological feasibility must be adopted as RACM if, considered individually or collectively, they would advance attainment in the area by one year or more. See 40 CFR section 51.1010(b). Please work with ARB and SCAG to identify any potential RACM that are not adopted and to quantify potential emission reductions from

B-3

¹ “Rule effectiveness” is a term that describes a method to account for the reality that not all facilities covered by a rule are in compliance with the rule 100% of the time. See “Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations,” EPA-454/R-05-001, August 2005 (Appendix B), at B-3.

² “Rule Effectiveness Guidance: Integration of Inventory, Compliance, and Assessment Applications,” EPA 452/R-94-001, January 1994.

³ See “Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations,” EPA-454/R-05-001, August 2005 (Appendix B).

these measures. As part of this analysis, the plan should estimate the additional emission reductions needed to advance attainment by one year.

B-3

Documentation of Interpollutant Trading Ratios

If the final AQMP will include provisions that rely on trading between PM_{2.5} and its precursors to meet CAA requirements (e.g., a trading mechanism for transportation conformity), the AQMP should document the methods used to derive equivalency ratios. This documentation should include rationales explaining why the methods are reasonable for the specific requirement. The methods should be based on the photochemical modeling used in the attainment demonstration and should account for the variability of pollutant and precursor relationships across the air basin. Note that under the transportation conformity rule, interpollutant trading for PM_{2.5} and its precursors is allowed only upon EPA approval of a specific trading hierarchy and ratio(s) as part of the PM_{2.5} attainment plan for the area.⁴

B-4

Contingency Measures

Section 172(c)(9) of the CAA requires that SIPs for PM_{2.5} nonattainment areas provide for the implementation of specific contingency measures to be implemented if the area fails to make reasonable further progress or to attain the NAAQS by the applicable attainment date. Under long-standing EPA policy, these contingency measures should, at minimum, ensure that an appropriate level of *emissions reduction progress* continues to be made if attainment or RFP are not achieved and additional planning by the State is needed.⁵ Accordingly, the PM_{2.5} plan should identify the specific amounts of emission reductions (generally expressed in tonnages) associated with each adopted contingency measure, together with the District's rationale for how these adopted measures ensure an appropriate level of emissions reduction progress if attainment or RFP are not achieved.

B-5

Update on Implementation of the 2007 AQMP for 8-Hour Ozone

We fully support the District's inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NOx and VOC emission reduction commitments contained in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.

B-6

⁴ See 40 CFR 93.124(b).

⁵ See "State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990," 57 FR 13498, 13511; see also "Clean Air Fine Particle Implementation Rule," 72 FR 20586, 20643 (April 25, 2007) (contingency measures should represent a portion of the actual *emissions reductions* necessary to bring about attainment in the area) and Memorandum dated March 2, 2012 from Stephen D. Page, Director, Office of Air Quality Planning and Standards, to EPA Regional Air Directors, "Implementation Guidance for the 2006 24-Hour Fine Particle (PM_{2.5}) National Ambient Air Quality Standards (NAAQS)" (plan may show that the cumulative effect of the *emission reductions* to be achieved by adopted contingency measures would result in specified reductions in ambient pollutant levels).

Comments on Specific Measures and Rules

BCM-01 Further Reductions from Residential Wood Burning Devices

Page 4-10 of the draft 2012 AQMP describes a new basin-wide curtailment provision that would apply "...whenever a PM_{2.5} level of greater than 30 µg/m³ is forecasted at any monitoring station at which the design value has exceeded the current PM_{2.5} 24-hour standard of 35 µg/m³ for either of the two previous periods."

We support the District's efforts to address upwind/basin-wide PM_{2.5} emissions. In the draft AQMP, it is unclear how the criteria will be applied. The PM_{2.5} design value is the 3-year average of annual 98th percentile of 24-hour average values. Please clarify how the new curtailment criteria will be calculated, for example:

- "...whenever a PM_{2.5} level of greater than 30 µg/m³ is forecast at any monitoring station that exceeded the current PM_{2.5} 24-hour standard of 35 µg/m³ at least once during the previous 2 years."
- "...whenever a PM_{2.5} level of greater than 30 µg/m³ is forecast at any monitoring station that recorded violations of the current PM_{2.5} 24-hour standard of 35 µg/m³ at least once during the previous 2 design value periods."

Also, please clarify whether the curtailment criteria will apply for the entire curtailment season.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) is considering lowering the residential wood burning curtailment threshold to below 30 µg/m³ (SJV PM_{2.5} Plan, Appendix D, June 27, 2012 draft). We recommend the District consider whether a lower threshold is appropriate in the South Coast air basin given model forecast ability and/or PM_{2.5} reduction needs.

Additionally, the District should consider adding a provision to require removal of non-certified wood stoves upon property resale. This is a common provision in nonattainment areas around the country (e.g., Washoe County Rule 040-151, Section D-3, Placer County APCD Rule 225, Section 303, San Joaquin Valley APCD Rule 4901, Section 5.2, Great Basin Unified APCD Rule 431, Section E, and Oregon Department of Environmental Quality Division 262 (340-262-0700).

BCM-02 Further Reductions from Open Burning

Page 4-10 proposes to ban agricultural burning on days when residential wood burning is banned basin-wide. We recommend the District also consider banning agricultural burning by sub-region on sub-regional curtailment days to more fully align the two programs. Additionally, we recommend the District consider whether a ban on burning specific agricultural crops, which have economically and technologically feasible alternatives to burning, is reasonable, as is done in SJVAPCD Rule 4103.

B-7

B-8

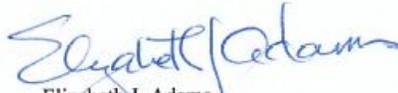
BCM-03 Emission Reductions from Under-Fired Charbroilers

We support the District's work to establish cost-effective controls in this area and recommend continued collaboration with EPA and the Bay Area and San Joaquin Valley air districts during this process. If there are areas where EPA can be of help, please contact Rynda Kay at (415) 947-4118 or kay.rynda@epa.gov.

Thank you for the opportunity to review and comment on the South Coast Draft 2012 AQMP. We look forward to working with you as the plan is finalized. If you have any questions or concerns, please call me at 415-972-3183.

B-9

Sincerely,



Elizabeth J. Adams
Deputy Director, Air Division

Responses to Comment Letter B
U.S. EPA

Response to Comment B-1:

Appendix III to the 2012 AQMP provides the base year and future years emission inventory that considers the effects of growth and of adopted regulations that have later implementation years. Thus, the reductions from past rules with later compliance dates are included in the baseline emissions inventory. However, in order to be more specific as per the comment, a new Table III 2-2B has been added to list the emissions reductions (for both 2014 and 2023) by District rules with Post-2008 compliance dates.

Response to Comment B-2:

As discussed in Chapter 3, the emission inventories are based on activity information, and emission factors from either EPA or facilities' annual emissions report, and rule requirements or source test. As noted in Appendix IV-A, the District followed the EPA's guidance on rule effectiveness. As such, the quantification of emission reductions in the baseline inventory reflects future reductions considering rule compliance rates and control effectiveness. For example, reductions in VOC emissions from the required reformulation of architectural coatings are a direct determination, and thus the District used 100 percent effectiveness. Other rules require control devices or compliance rates (e.g, Rules 461) that can achieve a certain percent reduction. This percent reduction achieved was considered in generating the emission inventory. Documentation in establishing the emission inventory can be found in Appendix III.

Response to Comment B-3:

The Draft 2012 AQMP provides for the implementation of all RACMs as expeditiously as practicable. The comprehensive six-step approach for RACM (including RACT for stationary sources) demonstration in this AQMP is essentially identical to that in the 2007 AQMP, and the current list of control measures is built upon those stated in the 2007 AQMP. It should be noted that the RACM demonstrations and the PM_{2.5} control measures in the 2007 AQMP were approved by EPA on November 9, 2011 (76 FR 69928). The robust demonstrations conducted by the District, CARB and SCAG for RACMs (Appendix VI and its attachment and Appendix IV-C) show that the three agencies have diligently analyzed all possible control measures available at this time, specifically considered the most stringent rules and regulations nationwide for opportunities for further emissions control. With many of the most stringent regulations in the nation already implemented in the District, opportunities for implementing further control are limited. The modeling analysis in Chapter 5 suggests that the region can meet the 24-hour PM_{2.5} standard by 2014 (within 5 years of the designation date) by implementing the short-term episodic PM_{2.5} measures listed in Table 4-2. As such, the District will not request an extension beyond 2014. The District has not identified any additional measures that could individually or

collectively be implemented to achieve the PM_{2.5} standards earlier than 2014. The District is always open to suggestions and recommends that the commenter as well as the public provide detailed information on any potential measures that may individually or collectively advance the attainment date.

Response to Comment B-4:

The Draft Final 2012 AQMP provides a detailed description of the methodology used to determine the proposed Basin trading ratios (Appendix V, Attachment 8). The use of the trading ratios represents the impacts of regional precursor emissions reductions on the attainment of the NAAQS. Briefly, the ratios have been developed from the 24-hr PM_{2.5} attainment demonstration. Projected reductions in the four basic components of particulates and their relative contributions to ambient 24-hour PM_{2.5} levels were determined from CMAQ regional modeling. The procedure related SO_x and NO_x emissions reductions to corresponding reductions in ammonium sulfate and ammonium nitrate including the contribution of bonded water. Reductions of VOC emissions and directly emitted PM_{2.5} were used to determine the ratios for organic carbon and the primary particulate component categories including EC. This methodology has been presented in the 2007 AQMP where trading ratios were specifically developed for the annual PM_{2.5} attainment demonstration. The methodology was incorporated in the 2007 AQMP and was approved by U.S. EPA as part of that plan. The District requests EPA to approve the interpollutant trading ratios for use in transportation conformity and SIP emission reduction commitments. Staff has previously worked with U.S. EPA to help refine potential policy on emissions trading and the establishment of regionally determined trading ratios.

Response to Comment B-5:

The contingency measure discussion in Chapter 6 was expanded to include specific emissions reductions for each control measure relied on for contingency purposes. Table 6-2 in the Revised Draft shows the emissions reductions from each measure and the corresponding NO_x equivalent reductions.

Response to Comment B-6:

The District appreciates the support from US EPA for the inclusion of control measures and emission reduction commitments relied upon in the 2007 AQMP to demonstrate expeditious progress towards attainment of the 1997 8-hour ozone NAAQS.

Response to Comment B-7:

The design value is the 3-year average of the annual 98th percentile of the 24-hour average values of monitored data ambient PM_{2.5} data. The suggested alternative language implies a curtailment would be called if a violation of the standard occurs “at least once during the previous two years”; however, that one violation may be excluded

under the 98th percentile. Staff has clarified in the control measure that a curtailment would apply Basin-wide whenever a PM_{2.5} level of greater than 30 µg/m³ is forecast at any monitoring station at which the design value for either of the two previous 3-year periods exceed the current PM_{2.5} 24-hour standard of 35 µg/m³.

The referenced San Joaquin Valley APCD proposed control measure includes consideration of lowering the curtailment threshold to 20 µg/m³ in the event the area fails to attain the current PM_{2.5} 24-hour standard of 35 µg/m³. The AQMD's control measure already proposes lowering the curtailment to 30 µg/m³ to address forecast uncertainties. Note that lowering the threshold does not lead to additional daily emissions reductions, other than potential carryover from previous days. The San Joaquin Valley has significantly more carryover of PM_{2.5} from day to day than the South Coast Basin. However, staff is considering longer term forecasts and curtailment periods that last multiple days to address any potential carryover influences. The expansion of the wintertime curtailment period to include October and/or March is also being considered.

As to the removal or replacement of a non-certified wood stove during property sale or transfer, this was considered during the development of Rule 445. Staff will revisit the issue as part of current incentive programs, but as the 2014 attainment date is fast approaching and given the rate of property transfers, adding the requirement to the rule would not have an appreciable effect by 2014.

Response to Comment B-8:

AQMD staff concurs that additional emissions reductions can be achieved with the alignment of the Rule 444 – Open Burning and Rule 445 – Wood-Burning Devices control programs. With respect to sub regional forecasts, Rule 444 currently includes a definition for source/receptor areas, which correspond to the same forecast areas under Rule 445. Under the provisions of existing Rule 444, the Executive Officer is authorized to restrict all burning activities by source/receptor areas if the air quality is forecasted to be unhealthy for sensitive persons (AQI 100). This corresponds with the existing Rule 445 curtailment threshold of 35 µg/m³. AQMD staff concurs and proposes to match the Basin-wide and regional curtailment criteria in Rules 444 and 445 to the extent possible while still being consistent with State law.

Regarding the suggestion to prohibit the burning of specific agricultural crops where there are alternatives that are technically and economically feasible, staff intends to require economically and technologically feasible alternatives to burning where possible.

Response to Comment B-9:

Staff appreciates the support and has been in contact with all the noted agencies as the District continues its efforts to seek affordable and technologically feasible controls for under-fired charbroilers. Control device testing at University of California Riverside, College of Engineering-Center for Environmental Research and Technology (CE-CERT) is ongoing with the participation of the agencies listed and U.S. EPA.

C. Southern California Business Coalition, May 15, 2012



May 15, 2012

Dr. William A. Burke, Chairman
Members of the SCAQMD Governing Board
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar, CA 91765

Dear Chairman Burke and Governing Board Members:

As AQMD staff continues development of the 2012 Air Quality Management Plan, our coalition made up of the leaders of some of California's largest regional business entities and associations, wants to convey to you our recognition of the challenges and difficulties inherent in this process, and express our continued support for a well-balanced strategy that addresses federal requirements as well as economically feasible compliance approaches.

Through the AQMP Advisory Group, many of us have seen SCAQMD staff presentations on issues related to emissions inventories and modeling, but little discussion or information has been presented to date related to specific control measures or socioeconomic impacts under consideration for this AQMP. Since this last issue is one that the Board has weighed in on

C-1

numerous times on other rules and policies, we feel compelled to offer our assistance to help direct the drafting of the AQMP so that it complies with the Board's stated preferences regarding independent economic analyses of proposed policies, regulations and rules.

Through direction from the SCAQMD Governing Board, state legislation and recommendations of the Little Hoover Commission, common practice now calls for the development of an economic impact analysis prior to implementation of new regulations and the review of the economic impacts of certain current regulations.

While we would not presume to dictate one solution that would work for every political opinion, we do have recommendations based on our combined business sense and practical experience. In particular, there are two key areas in which we have broad agreement.

First, given the persistent economic recession in which we all find ourselves, we urge the SCAQMD Governing Board to exercise reasonable moderation when fashioning the AQMP. Specifically, now – more than ever – is the time to rely only on economical and proven technologies and strategies in this current AQMP and allow subsequent plans to focus on future, as-yet-developed technologies to provide substantial air quality improvements once our economy recovers.

Second, we support the principles of the Little Hoover Commission that call for using a standard set of economic analytic tools, "calibrated to the scope of the proposed regulation – to determine which alternative both meets the stated goal of the regulation and produces the desired social benefits, while avoiding unnecessary costs to regulated parties and society."¹

As part of the socioeconomic impacts, we strongly urge SCAQMD to contract with a truly independent party to analyze certain factors related to the proposed AQMP. Please consider drawing upon the considerable expertise from within the entities represented in this letter to help develop the statement of work for that independent party. Following are the factors that should be analyzed:

1. Cost Effectiveness Analysis (CEA)

This process offers a framework for identifying the most cost-effective and financially efficient policy choice. CEA examines various policy options for obtaining a desired result, and creates a ratio of cost to an effectiveness measure (e.g., tons of emissions eliminated). The CEA should also be done for each control measure, as well as the overall AQMP.

We recognize that the District always estimates cost-effectiveness for new or amended rules, and attempts - whenever possible - to do so for proposed AQMP control measures. Our concerns, however, are with the facts that ever increasing, higher values for cost-effectiveness are routinely deemed acceptable, and that the actual values for cost-effectiveness continue to be calculated in a manner that underestimates the true costs.

We note that, in extreme contrast to the \$10,000 per ton cost-effectiveness upper bound set by President Clinton in 1994, or to historical benchmarks established by the District at \$13,000 per ton, values as high as \$65,000 per ton of emissions reduced have been referenced by SCAQMD senior staff as "acceptable" when discussing recent rules.

C-1

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C-3

C-4

¹ Cover letter to the Governor and Legislature, Little Hoover Commission, "Better Regulation: Improving California's Rulemaking Process", 10-25-11

There has been no discussion in the AQMP stakeholder meetings to suggest that these spiraling values will be contained. Thus, there is the perception within the business community, which we represent, that the District lacks sufficient concern about the very real, and very significant, cost impacts of its regulatory programs.

Compounding the problem of ever-increasing levels of cost-effectiveness that are considered acceptable by the Board is that fact that the District's method of calculating cost-effectiveness produces "low-ball" values that do not reflect the true cost-effectiveness. Specifically, the District uses a Discounted Cash Flow (DCF) method, whereas virtually all other regulatory agencies (e.g., US EPA, all of the Cal/EPA agencies, the BAAQMD, etc.) use the Levelized Cash Flow (LCF) method. Although the District is required, per the Health and Safety Code, to estimate the true cost-effectiveness of its proposed rules for both decision makers and stakeholders, the DCF method underestimates the values for cost-effectiveness. This has the effect of making proposed rules seem more "attractive" than they really are. Further, the District's use of the DCF methodology means that the cost-effectiveness of its rules cannot be compared to those of other agencies' rules, and vice versa.

The District has, in the past, been made aware of the inadequacies of the DCF method. Although the problem - and the concerns of the regulated community - had apparently been given some consideration, as a practical matter the problem continues. In addition to establishing a clear and definitive policy regarding an upper bound on cost-effectiveness, the actual values for cost-effectiveness need to be calculated in a manner (i.e., LCF) that accurately reflects the true costs.

2. Cost Benefit PLUS Opportunity Costs Analysis

This tool attempts to examine the costs and benefits of policies and identifies the alternative that yields the largest net benefits for society.

3. Comprehensive Analysis of Higher Cost Regulation

The economic impact of the AQMP and its associated control measures is also relevant to the residents of this region in terms of their overall quality of life and jobs. The region's continued economic recovery must be a key component of policy makers' decision-making in the AQMP, as should the affordability of proposed regulations.

The AQMP should not be so focused on any one result without taking into consideration the broader context, or unintended consequences, of the solution it seeks. Undervaluing the fragile nature of our economy will place the region at a competitive disadvantage and potentially impact the affordable production and delivery of goods and services.

Finally, in order to produce a document that can be supported by both the regulated and non-regulated communities, the process must be fair, transparent and accountable. With that in mind, SCAQMD staff should also provide clarity and transparency with regard to benchmarking for future considerations.

We can't stress enough the need for credible independent evaluation of the data. In fact, this is the same direction given by the Board in relation to Rule 1110.2, Rule 1147, and the Energy Policy adopted by the Board last year.

We are not requesting *less* regulation when it comes to the AQMP, but rather *better* regulation. On a larger scale, even the state's economy will benefit from better, more effective regulation and reduced uncertainty.

C-4

C-5

C-6

C-7

The regulated community appreciates the public process thus far, and believes that as the development of the AQMP moves forward, increased collaboration is needed between the SCAQMD and relevant stakeholders to create a better consensus on how to reduce the region's emissions as required under existing law, while simultaneously improving the region's economy. To this end, and in keeping with your February 3, 2012 comments on the importance of outreach to stakeholders, we respectfully request a meeting with you, and the Executive Officer, to discuss how our recommendations might be incorporated into the current development and outreach schedule for the 2012 AQMP.

C-8

To follow up on this request, Tracy Rafter, CEO of BizFed (tracy.rafter@bizfed.org) or Kate Klimow, Vice President of Government Affairs for Orange County Business Council (kklimow@ocbc.org) will contact your office to schedule a meeting.

Sincerely,

Southern California Business Coalition - AQMP Stakeholders Working Group

Comprised of members of the following associations:



Tracy Rafter
BizFed, Los Angeles County Business Federation



Kate Klimow
Orange County Business Council



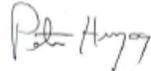
Bill LaMarr
California Small Business Alliance



Clayton Miller
Construction Industry Air Quality Coalition



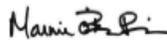
Gary Toebben
Los Angeles Chamber of Commerce



Peter Herzog
NAIOP SoCal Chapter



Rob Evans
NAIOP Inland Empire Chapter



Marine Primmer
Mobility 21



Jim Clarke
Apartment Association of Greater Los Angeles



Cynthia Kurtz
San Gabriel Valley Economic Partnership



Rich Lambros
Southern California Leadership Council



Steven Schuyler
BIA of Southern California, Inc.



Joeann Valle
Harbor City/Harbor Gateway Chamber of Commerce



Patty Senecal
Western States Petroleum Association



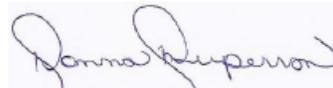
Michael D. Shaw
California Trucking Association



Stuart Waldman
Valley Industry & Commerce Association



David W. Fleming
Los Angeles County Business Federation



Donna Duperron
Torrance Area Chamber of Commerce



Fred Johring
Harbor Trucking Association



Paul C. Granillo
Inland Empire Economic Partnership

CC: Dr. Barry Wallerstein, Executive Officer

Responses to Comment Letter C
SCBC

Response to Comment C-1:

Staff has released cost and cost-effectiveness data for the AQMP control measures (http://www.aqmd.gov/gb_comit/aqmpadvgrp/2012AQMP/meetings/2012/july26/CostSummary.pdf)

http://www.aqmd.gov/gb_comit/aqmpadvgrp/2012AQMP/meetings/2012/july26/DetailCost.xls). The full socioeconomic analysis was released in late September which can be found at: <http://www.aqmd.gov/aqmp/2012aqmp/DraftSocioeconomicReport.pdf>.

The analysis includes discussions on the distribution of costs and benefits to 21 sub-regions within the AQMD and presents the resulting regional employment and competitiveness impacts.

Response to Comment C-2:

The standard set of tools called for in the Little Hoover Commission report (October 2011) has not been developed to date. The District's socioeconomic analysis of the Draft 2012 AQMP includes detailed costs of individual control measures and benefits of meeting the federal PM2.5 standard (health, visibility, material, and congestion relief). The benefits analysis is based on peer-reviewed research. Additionally, Regional Economic Models, Inc. (REMI), that has been used by consultants, public agencies and academicians, is used to assess the ripple effects of costs and benefits of clean air on the local economy. The District's analysis, in many instances, has exceeded the scope and depth of similar analyses performed by other entities.

Response to Comment C-3:

Experts hired and invited to assist in the AQMP socioeconomic analysis are well established professionally in their respective fields. The list of experts include: Dr. Leland Deck, Ph.D. of Stratus Consulting Inc., Professor J. R. DeShazo of UCLA, Professor Gloria Gonzalez-Rivera of UC Riverside, Professor Lisa Grobar of California State University, Long Beach, Professor Emeritus Jane Hall of California State University, Fullerton, Stephen Levy of CCSCE, Professor Paul Ong of UCLA, Professor Karen Polenske of MIT, Dr. Gang Shao, Ph.D. of MarcoSys, LLC, and Dr. Fred Treyz, CEO of REMI. Additionally, the AQMD's Scientific, Technical and Modeling Peer Review Advisory Group (STMPRAG) is composed of leading experts in the socioeconomic and air quality modeling fields, representatives from the regulated community, and participants from public interest groups. The list of STMPRAG members can be found at:

http://www.aqmd.gov/gb_comit/stmpradvgrp/2012stmpradvgrpmembership.html.

The District carefully considers the comments of the advisory groups and incorporates them when appropriate.

Response to Comment C-4:

Cost-effectiveness analysis, whether LCF and DCF, provides a relative ranking of regulatory alternatives. The DCF method, because it relies on the present value of all costs associated with a given proposal, allows for the analysis of complex cash flow patterns that cannot be analyzed with the LCF method. As such, under the same assumptions (e.g., interest rate and project life), LCF and DCF are mathematically equivalent. They merely show two different approaches to presenting a stream of costs occurring over a period of time.

Response to Comment C-5:

The clean air benefit analysis is based on the opportunity cost concept where the price of a non-market commodity is deduced from goods and services sold in a market system. The socioeconomic analysis of the 2012 AQMP uses these deduced non-market values (i.e., opportunity costs) to estimate the regional economic impacts of health, visibility, material, and congestion. This is a standard approach in the economics profession. Please see response to Comment C-1 regarding cost analysis performed under this concept.

Response to Comment C-6:

The socioeconomic analysis of the all measures proposed in the Draft AQMP was released in late September. Costs associated with individual measures have been released (see response to Comment C-1). A more detailed and comprehensive analysis of the socioeconomic impacts of each measure occurs during the rule making process.

Response to Comment C-7:

Please refer to Comment C-1.

Response to Comment C-8:

Please contact Dr. Phil Fine at 909-396-2239 to arrange a meeting with staff.

D. American Coatings Association (ACA), June 13, 2012



June 13, 2012

Dr. Philip Fine and Joe Cassmassi
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: SCAQMD 2012 Air Quality Management Plan (AQMP) Advisory Group Meeting #9 – Control Measure Concepts; ACA Comments

Dear Dr. Fine and Mr. Cassmassi:

The American Coatings Association (ACA) submits the following initial comments on CTS-01 *Further Emission Reduction from Architectural Coatings (Rule 1113)* that were presented at the May 17, 2012 Air Quality Management Plan (AQMP) Advisory Group Meeting.

Architectural and Industrial Maintenance (AIM) Coatings Inventory

ACA wants to assure that appropriate inventory credit is given for the significant reductions already achieved in mass and reactivity of VOC emissions from architectural coatings, and additional reductions to come from requirements for colorants, VOC limit reductions and thinning/cleaning solvents.

SCAQMD should fully explain any discrepancies or changes to the architectural and industrial maintenance (AIM) coatings inventory. At the May AQMP meeting, staff released a preliminary draft AIM inventory of 26.16 tpd for 2008, 22.87 tpd for 2014, and 24.72 tpd for 2023. Recent revised information suggests the inventory for 2008 is now 21.9 tpd (16.1 tpd for AIM coatings; 2.8 tpd for thinning/ cleaning/additives; and 3.1 tpd for colorants). ACA requests additional information on what the 2.8 tpd for thinning, cleaning and additives includes. ACA has also requested additional information on the 2014 inventory. ACA suggests the estimated 2014 inventory is too high, considering the 2011 Rule 1113 Staff Report where the District estimated the 2009 inventory to be as low as 11.6 tpd. Assuming the 2009 and 2014 inventories are similar (11.6 tpd), the original 2014 estimate of 22.87 tpd may be as much as two times too large. Instead of accounting for 22% of the AIM inventory, the proposed CTS-01 would instead account for nearly 43% of the AIM inventory.

ACA suggests the District develop an AQMP strategy that relates development/implementation of CTS-01 to future AIM emissions. If for example the District is able to document (via Rule 314) that the AIM emissions in 2012 are less than say 12 tpd (hypothetical number), then the District would not need to develop/implement CTS-01, since the District could take credit for the reductions in Rule 314. If on the other hand, the AIM emissions in 2012 are more than 12 tpd, then the District would develop and implement CTS-01 to reduce the industry emissions to

D-1

below 12 tpd. Another benefit of this option is that it resolves District concern that the recent inventory reductions are economy related (i.e. the emissions will increase once the economy improves).

D-1

AIM VOC Reduction Estimate

ACA assumes that the 4-5 tons per day in CTS-01 will come from reductions from the recent Rule 1143 (9.75 tpd) and Rule 1113 amendments (4.4 tpd) since the estimated a 4-5 tpd reduction from CTS-01 is too large based on the associated CTS-01 synopsis. In comparison, the 2011 Rule 1113 amendments resulted in estimated reductions of 4.4 tpd, which included VOC limit reductions for 11 categories (0.4 tpd), changes/phase-out of the averaging provision (1.2 tpd) and limits on colorants (2.8 tpd). ACA requests further details on the estimated CTS-01 reductions, since ACA is concerned that the reductions detailed in the synopsis with not result in 4-5 tpd of reductions, therefore the District will be forced to lower VOC limits for other coatings categories.

D-2

Further, similar to our comments on the 2007 AQMP (letter dated December 7, 2006), ACA is concerned that if these extreme and unproven reductions are approved, the industry will be forced to achieve the VOC targets regardless of whether the CTS-01 control measures are technologically feasible. As ACA commented in the past, we are concerned that once these reduction estimates are approved in the AQMP and the State Implementation Plan, the District may sidestep the technical concerns claiming that it has no choice since the reductions are "locked" into the Plan/SIP. Given this significant concern, the Plan should clearly state that any specific numeric goals or targets are subject to the District's statutory authority to regulate non-mobile sources and may be adjusted in the future based on technological feasibility analyses.

CTS-01 Control Measure Technological Concerns

ACA is currently reviewing the potential control measure concepts in CTS-01, however ACA offers the following initial comments:

D-3

1. Reduce VOC Emissions from Flat, Nonflat and Primer, Sealer, Undercoaters (PSU)

ACA is concerned that limits lower than 50 g/l (flat and nonflat) and 100 g/l (PSU's) may be difficult given the current problems associated with VOC test methods. In addition, ACA suggests the District complete a technology assessment to be sure that it is technologically feasible to lower the VOC limits, especially since certain products need to be kept at the current limits. See attached ACA comments dated 2/4/2011.

2. Small Container Exemption

ACA is concerned that eliminating the small container exemption, or eliminating the exemption for certain categories is problematic since the small container exemption is critical given the fact that the SCAQMD Rule 1113 limits are the most stringent in the US. This exemption provides a "safety valve" or a last resort option that allows for traditional products in problem situations when the limits in categories become more stringent or a category is eliminated. There are also a

D-4

host of niche coatings that manufacturers can now sell in small containers that would need to be categorized if the small container exemption is modified or removed. See attached ACA comments dated 2/4/2011.

3. Application Techniques with Greater Transfer Efficiency

ACA is concerned the District is imposing transfer efficiency requirements on equipment used to apply AIM coatings. With regards to the laser paint targeting system, ACA is concerned that the system is sold exclusively by Iowa University and has not been widely distributed throughout the US. While this technology may be useful for training contractors to properly apply coatings in an automotive refinish shop under controlled conditions, this technology may not be applicable to field applied coatings. As such, ACA is concerned that it may be difficult for the District to document and receive SIP credit for increased efficiency from the use of this technology. Further, this equipment is expensive – approximately \$100 per unit (not including replacement of the lithium battery that has a tested average life of only 20 hours). Also, ACA is concerned that this technology was designed for auto refinish coatings shops, and it may not work on AIM spray equipment that is used in the field (large areas, use of wands, rough texture substrates, sunny locations). Finally, it's unclear whether these units can be properly cleaned.

D-5

ACA is also concerned that if the laser paint targeting system control measure is abandoned for some reason the District will be forced to impose the 65% efficiency requirements for all AIM spray equipment, which is problematic.

Lack of Technological or Economic Assessment

ACA is also generally concerned with the absence of the following in the AQMP:

- (1) No assessment of technological or economic feasibility of the proposals, which may amount to pointless bans on useful products.
- (2) No assessment of potentially significant unintended adverse environmental impacts from either (a) substitution of inadequate alternatives, or (b) lack of adequate protective maintenance painting.
- (3) No demonstration that further reductions in VOC emissions from architectural coatings would be necessary or helpful in achieving ozone attainment under the increasingly NOx-limited conditions of the South Coast Air Basin.

D-6

Thank you for the opportunity to comment. If you have any questions or need any further information on the issues discussed here, please feel free to contact me at (202) 462-6272.

Sincerely,

/s/

David Darling, P.E.
Director, Environmental Affairs

** Sent via email **

Responses to Comment Letter D
ACA

Response to Comment D-1:

District staff recognizes the significant, cost-effective, and technologically-feasible VOC emission reductions that have been achieved from architectural coatings over the past 15 years, primarily with the success in reformulation and commercialization of low-VOC products by coating manufacturers. For CTS-01, District staff has revised the total baseline 2008 VOC inventory from architectural coatings to 21.9 tons per day (tpd), which includes: a) 16.1 tpd of VOC emissions as reported under Rule 314 reporting requirements for CY 2008. b) 2.8 tpd from thinning / cleaning / additives based on the California Air Resources Board (CARB) 2005 Architectural Coating Survey Final Report Appendix B - New Thinning and Cleanup Methodology and Rule 1143 rule development. c) 3.0 tpd from Colorants as detailed in the July 2011 amendments to Rule 1113. Further, emission reductions of 2.66 tpd from thinning / cleaning / additives, 2.8 tpd from colorants, and 1.6 tpd from Rule 1113 are also reflected in future year emissions summarized in revised CTS-01. The Draft 2012 AQMP utilizes the baseline emissions from CY 2008, and subsequent growth projections are estimated from the 2008 baseline for all measures. An analysis of data submitted pursuant to Rule 314 shows a decrease in sales volume and emissions, 15% and 30%, respectively, for CY 2009. However, the data does show a positive trend in terms of volume and a flattening of emissions for CY 2010 and 2011. This is consistent with the economic recovery and market-driven trends. There are no emission reduction commitments associated with Rule 314, which is strictly designed for the District to recover its program costs, and therefore this rule is not part of the State Implementation Plan (SIP). Hence, the District is unable to take credit for future emission reductions that may be associated with this fee rule. Nonetheless, total emissions from architectural coatings continues to reflect daily VOC emissions of more than 12 tpd, which is one of the largest sources of VOC emissions under the District's regulatory program. The District has not yet attained compliance with national air quality standards, and has a continued need to evaluate all technically-feasible and cost-effective reductions for criteria pollutants, including VOCs. Therefore, staff believes it would not be appropriate to implement CTS-01 only if emissions in 2012 are more than 12 tpd.

Response to Comment D-2:

Staff originally estimated that draft CTS-01 may potentially achieve VOC reductions of 4.4 tpd. The estimated emission reductions that were already achieved from past rule amendments are not part of the reduction estimates, but are reflected in the future year baseline emissions from architectural coatings. Nonetheless, based on the concern and subsequent discussions with the industry, CTS-01 has been revised to reflect potential emission reductions ranging from 2-4 tpd, with 2 tpd to be included in the SIP. As

clearly demonstrated in previous rule amendments to Rule 1113, District staff will evaluate technical feasibility during the rule development process, working closely with the manufacturers on any specific rule proposals.

Response to Comment D-3:

Staff agrees that an improved VOC test method is needed in order to fully document the achievement of further VOC reductions. Draft CTS-01 includes a proposal to lower VOC limits in conjunction with the adoption of a gas chromatographic test method for more accurately measuring of VOC content, and a change of the metric from VOC of coating to VOC of material. In addition, staff plans to perform a technology assessment, in conjunction with the industry, as part of the rule amendment process.

Response to Comment D-4:

Draft CTS-01 has been revised to reflect an evaluation of the potential for complete phase out of the Small Container Exemption. Staff does not agree that the small container exemption is a necessary safety valve for the VOC limits in Rule 1113. However, as part of any rule development activities, staff will evaluate the need for any niche categories with higher VOC limits that may be necessary for certain small volume uses. Based on a review of data submitted by manufacturers, there are ample products available in the market place that meet the VOC limits in Rule 1113. The District has not yet attained compliance with national air quality standards, and has a continued need to evaluate all technically-feasible and cost-effective reductions for criteria pollutants, including VOCs. With consideration of more stringent ozone standards in the near future including the required 2015 AQMP, it is vital to fully evaluate the need for any and all exemptions from VOC rules, including Rule 1113.

Response to Comment D-5:

Draft CTS-01 inclusion of transfer efficiency requirements does not focus solely on the laser paint targeting tool, but relies on any retrofit technology that increases the transfer efficiency or reduces the amount of overspray that occurs as a result of current spray application. The laser paint targeting system is one such useful device that assists painters to utilize the proper distance relative to the pressure to maximize transfer efficiency, with data supporting an increase in transfer efficiency by more than 30%. The use of the laser provides immediate feedback to the applicator with two dots which merge to one when the applicator maintains the optimal distance to the object being sprayed. The dot also provides a visual reference for conducting subsequent passes over previously painted areas so the applicator can maintain a 50% overlap. The use of the laser paint technology has been demonstrated to increase transfer efficiency by more than 30% (please see the following link <http://www.iwrc.org/index.cfm/products/laserpaint/product-info/>). Staff used a conservative estimate of an increase in transfer efficiency of 5% for this control measure. To date, this technology has been mainly implemented in the automotive

refinishing and aerospace uses, but it can easily be used to enhance the transfer efficiency from other spray applications, including architectural coatings.

The draft measure also includes the use of HVLP or other spray technology capable of achieving a minimum of 65% transfer efficiency, which is included in all other coatings rules. HVLP and other spray technology that meet the 65% transfer efficiency are readily available for most architectural coatings. While the retrofit and new spray gun technology does have an upfront cost, the transfer efficiency gains, ranging from a conservative estimate of 2% to 10%, can potentially result in significant reductions in volume of coating usage, estimated to be between 150,000 to 685,000 gallons annually. The savings from the reduced paint usage will more than offset the cost of retrofit or new spray units. Staff plans to conduct a thorough technical analysis, including evaluating cleaning and maintenance, during the rule development period.

Response to Comment D-6:

(1) The District has released socioeconomic and environmental analysis of the Draft 2012 AQMP. Further technology assessments and socioeconomic impact analysis will be conducted as part of the rule development process. (2) A comprehensive environmental assessment will be conducted as part of the rule development process. (3) The District has not yet attained compliance with national air quality standards, and has a continued need to evaluate all technically-feasible and cost-effective reductions for criteria pollutants, including VOCs.

E. David Darling, February 4, 2011

February 4, 2011

Ms. Heather Farr
Office of Planning, Rule Development, and Area Sources
South Coast Air Quality Management District (SCAQMD)
21865 Copley Drive
Diamond Bar, CA 91765

RE: January 20, 2011, SCAQMD Public Workshop on Proposed Amended Rule 1113: Architectural Coatings; ACA January 28, 2011 Comment Amendments

Dear Ms. Farr:

The American Coatings Association (ACA)¹ appreciates the recent changes that staff has made to the proposed rule amendments, and submits the following comments on the Draft January 12, 2011, Proposed Amended Rule 1113.

1. Given the unexpected massive reduction in VOC emissions from architectural coatings, drastic amendments to Rule 1113 are not needed at this time

ACA believes that given the reported Rule 314 emissions data for 2008 and 2009, SCAQMD has already met – and exceeded by half – its AQMP goal, so there is no reason or it is not necessary to enact stringent amendments to Rule 1113 at this time. If the District wants to amend Rule 1113, ACA suggests partnering with industry to amend the rule for the purposes of general cleanup, improving clarity and consistency, and harmonizing Rule 1113 with the ARB 2007 SCM in the manner we proposed at the working group meeting, and even possibly set reasonable limits for colorants. We see no necessity, however, for amending the rule at this time to impose lower limits on VOC content or restrict flexibility provisions, especially since the latest Rule 314 data indicate that emissions from this category are less than half the amount projected in the District's emissions inventory for this timeframe.

This trend is partly due to recessionary impacts on sales, but also due to market-driven low VOC technology transfer beyond what is required. Further, the trend in average material VOC content indicates that even if sales volumes increase, emissions will not return to former levels (2004

¹ The American Coatings Association (ACA) is a voluntary, nonprofit trade association working to advance the needs of the paint and coatings industry and the professionals who work in it. The organization represents paint and coatings manufacturers, raw materials suppliers, distributors, and technical professionals. ACA serves as an advocate and ally for members on legislative, regulatory and judicial issues, and provides forums for the advancement and promotion of the industry through educational and professional development services.

E-1

average MVOC: 97 g/L; 2008: 34 g/L; 2009: 30 g/L). Bottom line, the District has met its planning goals and industry should be given credit via less aggressive amendments to Rule 1113.

If, over ACA's objection, the District proceeds forward with the severe proposed amendments to Rule 1113, we respectfully submit the following comments for your consideration.

E-1

2. Small Container Exemption

The small container exemption is critical given the fact that the SCAQMD Rule 1113 limits are the most stringent in the US. This exemption provides a "safety valve" or a last resort option that allows for traditional product in problem situations when the limits in categories become more stringent or a category goes away. It is important to note that district staff consistently mentioned that if companies cannot meet lower limits they can always use the small container exemption – this is not the case anymore – as limits get lower and lower end users need a "relief valve".

There are also a host of niche coatings that manufacturers can now sell in small containers that would need to be categorized if the small container exemption is modified or removed. These include:

- Tile touchup
- Porcelain tub/sink touchup
- Magnetic coatings (turns wall into magnet)
- Chalkboard coatings (turns wall into chalkboard)
- White board coatings (turns wall into a white board)]
- Camouflage coatings
- Projection TV. coatings (turns wall into projection TV. screen)
- Wood stains and wood stain markers
- Appliance touch-up
- Samples
- Touch-up for wood products (allow proper repairs following installation of kitchen cabinets, bathroom vanities, doors and millwork).
- Coatings that are not manufactured as architectural coatings but may become subject to Rule 1113 by virtue of being applied to stationary structures or their appurtenances; e.g., hobby paints, artist colors, marine varnish, and various kinds of touch-up paints.

E-2

An example is that many Original Equipment Manufacturing (OEM) product manufacturers will send small container "touch-up" product so that products can be touched-up in the field – this is very common since the shop applied product may be oil based and Rule 1113-compliant product is water based, so the coatings are not equivalent from a performance, application, and appearance perspective. This will result in a patchy appearance and increased corrosion of the

touched up areas. This could also result in a negative impact on the overall emissions due to an earlier repainting to address these performance and appearance problems.

Given the excess emission reductions, and the need for this “safety valve” ACA recommends the District not amend the small container exemption beyond adding “anti-bundling” language. ACA partnered with the District by providing suggested language, and we request the District partner with Industry and retain the small container exemption. If over ACA’s objection the District does amend the small container exemption, ACA requests the following needed changes to the proposed rule:

- Given the niche products above it is likely that additional categories will be needed, ACA suggests flat coatings and stains be added exempted as well.
- Bundling language is problematic: “or” should be “and” in (f)(1)(B).
- ACA suggests the following edit:

“The provisions of the Table of Standards and paragraph (c)(1) of this rule shall not apply to any architectural coatings in containers having capacities of one quart liter or less, excluding clear wood finishes and pigmented lacquers, until December 31, 2012, provided that the following conditions in Sections A and B below are met.” and Waterproofing Concrete/Masonry Sealers, provided that the following conditions in Sections A and B below are met.”

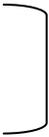
- ACA requests the anti-bundling language allow small containers be sold in shipping boxes.
- For categories that may be excluded from small container exemption, a three-year sell through is needed so that products in the pipeline and on shelves can be sold and not disposed of as hazardous waste.
- If the amended rule were to require labeling of small containers, a minimum three-year transition period is needed.
- ACA suggests the rule be consistent with 2007 SCM – “one liter (1.057 quart) or less”.
- If the District does not add Conversion Varnish and Conjugated Oil Varnish categories to Rule 1113, ACA requests that these be included in the small container exemption.

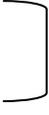
3. Markets for Sale - this terminology is confusing. The definition of “market” is covered by current rule (to supply, sell, offer for sale). Since this could pull in Ebay, Craigslist, Amazon, where they notified of the change and implications? ACA is also concerned about national, state and regional TV, print and radio ad campaigns that could be problematic from a “markets for sale” perspective.

E-2

E-3

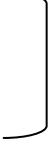
- 4. District deleted “for use” – the assumption that products sold in District are used in the District is problematic as a basis for enforcement – ACA believes that the District is overreaching and does not have authority to do so. We are especially concerned about warehouse materials/products being shipping through the District, these must be exempted. This deletion also pulls in homeowners into the rule – ACA does not believe that homeowners understand this implication. A full CEQA analysis should be performed to determine the fiscal impact and compliance cost for homeowners.

 E-4
- 5. Worksite Definition and “stores at worksite” - ACA suggests deleting “vehicle” from definition so this does not apply to contractor vehicles. Further, “regular maintenance” occurs at almost every building, and it does not seem logical that the District intended to pull in every building. Further, the definition should not apply to manufacturing sites and job shops (for example OEM surface coating operations).

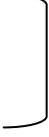
 E-5
- 6. “Manufacturer” definition should exclude repackaging and relabeling at stores.

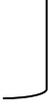
 E-6
- 7. Quick-Dry Enamel and Quick Dry Primer – needs to be transitioned like other CA Air Districts have done – ACA suggests the following:

“Effective January 1, 2013, the Quick-Dry Primer, Sealer, and Undercoater category and Quick Dry Enamel category are eliminated and coatings meeting either definition will be subject to the VOC limit for the applicable category in the Table of Standards, except in [most restrictive and sell through provisions].”

 E-7
- 8. Nonflat High Gloss Coatings – similar to the Quick-Dry Enamel and Quick-Dry Primer categories – ACA suggests the following transition language:

“Effective July 1, 2011, the Nonflat High Gloss Coatings category is eliminated and coatings meeting this definition will be subject to the VOC limit for the Nonflat coatings category, except in [most restrictive and sell through provisions].”

 E-8
- 9. Default Limit – this should be set at 50 g/L to eliminate the potential for arbitrary and capricious categorization of “default” products. Also ACA suggests dropping the language “and less any colorant added to tint bases until January 1, 2014, at which time the limit drops to 100 grams of VOC per liter of coating (0.83 pounds per gallon).”

 E-9
- 10. Section (c)(2) – ACA suggests deleting the language “except anti-graffiti coatings”

 E-10
- 11. Colorants – ACA suggests listing the limit for Solvent Borne Industrial Maintenance Coatings (600 g/L) first, then the limit for All Other Architectural Coatings (50 g/L) next. In

 E-11

addition, ACA suggests that the rule needs to be clarified that colorant limits apply only to colorants added at the point of sale.

ACA once again requests a higher colorant limits for IR Heat Reflective Pigment Colorant Dispersions, since heat reflective wall coating technology is based upon the use of Complex Inorganic Color Pigment Technology (CICP). The colorants that contain these unique pigments are only available from a few specialized colorant suppliers. The CICP pigments are very high in density and formulation of commercially viable machine dispensable colorants is very challenging. The CICP colorants have been found to be more prone to settling, caking, clogging, and canister collaring than conventional colorants when used in automated colorant dispensing equipment. This is the case even at conventional VOC levels of 450-550 grams per liter. Lowering the VOC level of these special colorants to below 50 grams per liter VOC will be very problematic. Because of the added environmental benefits of heat reflective coating (described below) and the fact that this a specialized niche, it is proposed that a limit of 400 grams per liter VOC be considered for this important class of colorants.

It is important to note that the performance of CICP pigment containing heat reflective wall coatings have been validated by the U.S. Department of Energy. The many benefits of this technology are becoming more widely known and accepted. By reducing the heat uptake of buildings, the cooling energy demands are reduced. This means less electricity needs to be generated by power plants for this purpose resulting in reduced power plant emissions. Also important is that this reduction occurs during the peak demand daylight hours. Because the CICP IR pigments are incredibly durable, these coatings do not need to be repainted due to color fading for many years longer than ordinary paint. This translates into eliminating the VOC emissions that would have occurred due to the skipped painting cycle requirements.

12. **Faux-Finishing/Japan** - ACA suggests setting the limit for the clear topcoat at 200 g/l then lowering this to 150 g/l since these clear coats are not "typical" they are required to provide long term color and gloss stability and protection for the color coats, also adequate open time is needed to create the faux finish appearances. In addition, there is a typo in Definition (17) Clear Topcoats - needs to be finished.

13. **Stone Consolidants (450 g/l)** - consistent with the 2007 SCM, this category and limits should be added to Rule 1113 since they are needed for preservation of historic buildings in the SCAQMD. The landmark Wilshire Boulevard Temple in downtown Los Angeles is a prime example of a historic structure in need of this technology. The exterior is literally falling apart one grain at a time. The California Office of Historic preservation has stated its opinion that they must be consulted as part of the Rule 1113 CEQA review due to the potential for substantial adverse change to historical resources under their jurisdiction. ACA will be submitting CEQA comments in this regard.

E-11

E-12

E-13

14. Reactive Penetrating Sealers (350 g/l) – The Reactive Penetrating Sealer niche category was created in the CARB 2007 SCM and needs to be added to Rule 1113 for infrastructure protection. ACA is aware that Caltrans has completed a report in April 2010 entitled “Report on Non-Film Concrete/Masonry Waterproofing Products”. This report indicates that Caltrans recently determined that Rule 1113 compliant alternatives lack the performance necessary for infrastructure protection and are requesting this category be adopted. ACA will be submitting CEQA comments in this regard since effective salt screening products are needed near the ocean in SCAQMD especially considering the use of pretensioned concrete structural components, in which it is vital to protect the reinforcement cables from corrosion. Since the Rule 1113 revision is a project with regional significance and has the potential to impact transportation infrastructure, we believe that the District is obligated to formally consult with Caltrans as well as the California Office of Historic preservation as part of its CEQA analysis.

E-14

15. Conversion Varnish(725 g/l)/Conjugated Oil Varnish (450 g/l) – These are very specialized small “niche” high-end coatings with unique properties that are needed in specific applications, and are generally applied only by professional contractors. ACA requests SCAQMD include these in Rule 1113. If can’t include in Rule 1113, ACA requests the District add these to small container exemption.

E-15

16. Tub and Tile Refinishing (420 g/l) – ACA suggests adding this category and limit consistent with the 2007 SCM, however please note that a manufacturer of these products is working on 150 g/l product. Staff has stated that these products fall under IM, however IM are prohibited from interior use.

E-16

17. Primers, Sealers & Undercoaters (PSU)

ACA is concerned that SCAQMD is considering whether to lower the VOC limit for the Primer, Sealer & Undercoater category, since products in this category are extremely important functional coatings that must perform well in adhering to substrates, and are often a last resort in solving difficult application issues. Also, these products are designed for a wide range of substrates and exposure conditions. While coatings manufacturers may be able to meet the 50 g/L limit for Flats and Non-Flats, they must have good PSU coatings to do so. Of course, when a primer fails, not only the primer must be replaced – new topcoats are necessary, too. This causes increased emissions and excess consumption of energy and material resources. ACA will be submitting CEQA comments with regards to this issue.

E-17

The District mentioned that when they lowered to PSU category limits to 100 g/l that they acknowledged the fact that lower VOC PSUs needed greater surface preparation, have less tolerance, and painters need to follow instructions that’s why they included a long

implementation timeframe. With 50 g/L topcoats, lowering the PSU limit further is very problematic.

While primers at lower VOC contents may be available for all substrates, their performance limitations make them inadequate as substitutes for higher VOC, better performing products. Consequently, such substitutions lead to higher rates of coating system failure or reduced longevity, or necessitate multiple primer coats that would otherwise be unnecessary. To the extent that better performing, lower VOC primers might be formulated with new technologies just becoming available, the lab work and field tests would require a period of time much longer than a year and a half.

Also, this category represents the 3rd largest category, and a limit of 50 g/l would eliminate 60% of available products on the market – nearly 550 products – in roughly a year and a half. This amount of time is insufficient to reformulate and test this number of products. District data also suggests that with every step lower in VOC content, performance attributes suffer accordingly. There is a tradeoff and we must expect a performance drop with lower VOC contents, but this is not acceptable with PSU coatings. It is clear from the bimodal data (or inverse bell curve) results indicate the need for higher VOC PSUs for specific applications including wood, metal, masonry and concrete tilt-up. Most PSUs at or below 50 g/L are applied to interior drywall. Critical substrates that need the 100 g/l limit include: non-bituminous roof primers, exterior wood (especially wood with high tannin extractives e.g., redwood and cedar); stucco; exterior concrete and masonry (especially with high alkalinity, efflorescence, or heavy surface chalking); and interior substrates that are smoke-, fire-, or water-damaged. Also, certain types of primers perform significantly better at higher VOC levels, including thin-film elastomeric primers, and the higher performing multi-purpose primers that can be used on various substrates including metal.

In addition, a review of the District selected products that meet the proposed 50 g/L limit (see Attachment A) there are several problematic issues with the 50 g/L products:

- several products are meant for interior use only
- several products require two coats are recommended for metals and wood with tannins;
- several products do not mention use on metal or wood
- several mention use on primed and previously painted metal
- several are two component epoxies which are problematic for consumer use (ease of use, pot life issues)
- several are elastomeric coatings
- several mention use of higher VOC block fillers for masonry, metal primers, and sealers for wood
- none are intended for use in a roofing or waterproofing environment

E-17

18. **Non-bituminous Roof Primer (100 g/l)** – If over ACA’s objection the District lowers the limit for the PSU category to 50 g/l, ACA supports the 3M comments and recommends the District include a new category for Non-bituminous Roof Primers since the 50 g/l PSU identified do not include any non-bituminous roof primers.

As noted above, several of the identified primers are intended for interior applications. As such, they are subjected to conditions that are significantly less harsh than those experienced outdoors. Of the products that are listed for exterior use, none are intended for use in a roofing or waterproofing environment. There are non-bituminous roof primers on the market for use on low-slope (*i.e.*, approximately horizontal, or “flat”) roofs, such as those on commercial and industrial buildings. These coatings are used to maintain and restore existing roof membranes. They extend the life of the existing roof for 10-20 years, thus delaying the cost and disposal issues associated with replacing a roof.

On low-slope roofs, ponding water occurs. Ponding water, combined with the thermal cycling that roofs undergo, can lead to coating and/or primer adhesion failure if the primer is not durable. The coating blisters and delaminates, and water can leak into the building at these failure points. In order for the primer/coating system to be effective, the primer must adequately adhere to the overcoat as well as to the existing roof membranes, the conditions of which are highly variable due to weathering effects. Because of the highly variable substrate conditions, achieving and maintaining the desired adhesion is very challenging and requires sufficient VOCs.

ACA requests the District create a product category of (non-bituminous) roof coating primers, with a VOC limit of 100 g/L. Overall, the volume of primers I question is relatively small but is important in order to ensure the successful performance of the low-VOC roof coating (and the delivering of the attendant cost and environmental benefits).

19. **Specialty Primers** – CARB is the process of completing a technology assessment to analyze any technical issues between new waterbased and traditional oil based products. This work is to be completed later this summer, ACA suggests adding a statement in the Board Resolution that staff address any CARB findings and recommendations.

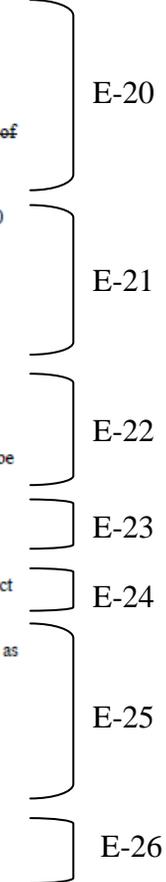
As with the Primer Sealer category, specialty primers are critical to blocking stains. In addition, a review of the District selected products that meet the proposed 50 g/L limit (see Attachment A) there are several problematic issues with the 50 g/L products:

- several products do not mention use on metal or wood
- several products are meant for interior use only
- several mention use of higher VOC block fillers for masonry, metal primers, stain killer, and sealers for wood
- not for masonry, galvanized or zinc coated surfaces or use only on painted metal

E-18

E-19

20. **Sell Through Provision** – this provision should apply not only to changes in VOC limits, but also changes to definitions and labeling requirements. ACA suggest the following edit:
- “Any coating that is manufactured prior to the effective date of **a new rule provision** the applicable limit specified in the Table of Standards, and that was compliant at the date of **manufacture** has a VOC content above that limit (but not above the limit in effect on the date of **manufacture**), may be sold, supplied, offered for sale, or applied for up to three years after the specified effective date.....”
21. **Metallic Pigmented** - a review of the District selected products that meet the proposed 150 g/l limit (see Attachment A) there are several problematic issues with the 150 g/l products:
- One product is a high-solids mastic – 90% solids
 - One product is not a metal pigmented coating but a primer and the product says it’s less than 180 g/l.
 - Another is not a metallic pigmented coating it is a 2 part polyurethane
22. **Sanding Sealers** – ACA suggests the following transitional language:
- “SANDING SEALERS are clear wood coatings formulated for or applied to bare wood for sanding and to seal the wood for subsequent application of coatings. Until January 1, 2013, to be considered a sanding sealer a coating must be clearly labeled as such.”
23. **Retail Outlet Definition** – it is unclear what this term “supplied” means – we need additional clarification.
24. **Sale or Use of Stains and Lacquers in Areas above 4,000 feet** – ACA requests the District provide a list of zip codes where these products may be sold and used.
25. **Waterproofing Concrete/Masonry Sealers** – ACA suggests including “excluding stains” as follows:
- “WATERPROOFING CONCRETE/MASONRY SEALERS are clear or pigmented sealers, including concrete lacquers that are formulated for sealing concrete and masonry to provide resistance against water, alkalis, acids, ultraviolet light, and staining, or enhancing appearance **excluding stains.**”
26. **VOC Definition** - clarify that reporting is not for coatings manufacturers but for TBAC manufacturers.



- 27. **Economic burden** – district needs to consider cost per ton for categories in which less than 1 lb/day emission reductions would be achieved. Denominator very small – costs very high. Manufacturers have same reformulation costs for minor incremental changes as they do for major reformulations. E-27
- 28. **Addition of “fields and lawns”** is problematic – raises more issues than resolves and impact other AIM rules. E-28
- 29. **Enforcement** – what is the impact of adding the words “each gallon of” to the fine matrix E-29
- 30. **Concrete Lacquers** – this term should be defined E-30
- 31. **Swimming Pool Coatings** – the current limit is missing from Table 1 E-31
- 32. **Averaging** – the timing of when the various coatings can be averaged does not make sense, also the District should add Zinc Rich Primers since these are sold by the job. E-32
- 33. **Gonioapparent Characteristics for Coatings** – Method E284 only defines this term, it does not state how to determine it. E-33
- 34. **Exemption of TBAC and DMC**

ACA once again requests exemption of TBAC and DMC for AIM coatings. With regards to TBAC, the survey indicated that 50% of manufacturers that are using TBAC in IM formulations; Those currently not using TBAC – 25% are conducting research; 54% are conducting research on using TBAC for other categories of coatings.

If TBAC and DMC cannot be exempted for all AIM coatings at this time, ACA requests an initial limited exemption in those product categories such as exterior applications (Concrete Curing Compounds, Concrete Surface Retarders, Driveway Sealers, Form Release, Fire Proofing Exterior, Roof coatings and primers, swimming pool coatings, traffic coatings, waterproofing concrete/masonry) and in indoor application where vapors are vented outside the house and coatings are applied by licensed contractors wearing respiratory protection (such as the tub & tile refinishing category as well as others).

DMC should be exempted for Industrial Maintenance coatings since these coatings are applied outside by professional contractors. TBAC/DMC should be exempted for Anti-Graffiti coatings since this category was pulled from the Industrial Maintenance category were TBAC was already exempted. E-34

It is important to note that many other CA Air Districts have exempted TBAC and DMC and others have exempted these compounds with requirements for permits and necessary information to perform a health risk assessment.

If SCAQMD has done any recent risk assessment analysis for Tbac or DMC for use in AIM coatings – ACA requests information on assumptions used in these assessments.

E-34

35. Reactivity

ACA suggests SCAQMD work with the coatings industry to develop a Reactivity-based Alternative Compliance Option (RACO) that would allow a company to achieve compliance with Rule 1113 VOC limits by means of a District-approved RACO program. A manufacturer's RACO program would apply reactivity criteria to the VOC content of covered products and ensure equivalent or lower ozone formation potential compared to products complying on a mass VOC basis. ACA suggests this discussion topic be added to a future working group meeting.

E-35

36. Atmospheric Availability Credit

ACA again requests that the District account for the fact that certain coatings components remain in the substrate or coating structure and therefore are not "available" for ozone formation. While the ACA PACES work continues and a draft report is expected soon, ACA would like to discuss how the atmospheric availability issues can be addressed in Rule 1113. Hopefully, either the VOC calculation or the VOC inventory can be adjusted accordingly.

E-36

Thank you for the opportunity to comment. If you have any questions or need any further information on the issues discussed here, please feel free to contact me at (202) 462-6272.

Sincerely,

David Darling, P.E.
Senior Director, Environmental Affairs

*** Sent via email ***

Attachment A

Review of Product Data Sheets

A. Specialty Primer and Undercoat

1. Benjamin Moore – Fresh Start – exterior use on previously coated ferrous metal surfaces, not recommended for sealing knots or over pine sap. In cases of severe bleeding, a solvent based primer should be used to prevent stains from reappearing. If surfaces to be painted exhibit severe tannin or smoke staining, an alkyd based Benjamin Moore primer may be your best choice for conquering these severe conditions. Recommends for masonry – Moorcraft Latex Block Filler, Unpainted metal - Ironclad metal and wood enamels.
2. Richards Product Number 7-44
 - a. VOC content – “not to exceed 50 g/l”
3. Richards Product Number 705
 - a. VOC content – “not to exceed 50 g/l”
 - b. Limitations – “not for masonry, galvanized or zinc coated surfaces”
4. Kilz – maybe used on “painted metal”
5. ICI Dulux Trade
 - a. Suitable for use on interior walls and ceilings
 - b. Has EU VOC content and has a range of between 0.3% and 7.99%
6. Smart Hide – Concrete block filler is recommended, and unpainted metal must be primed with metal primer. This product may be used on previously painted metal only.
7. Zinsser Bulls Eye – Spot primer knots and sap streaks with Zinsser BIN Primer-Sealer.
8. Valspar – does not mention recommended use on metal
9. UGL – Ecolock – does not mention use on exterior metal
10. Rust Oleum Smart Prime - Spot primer knots and sap streaks with Zinsser BIN Primer-Sealer.
11. Duron Terminator Stain Killer – Use Terminator oil based stain killer over water sensitive stains.
12. Insl-X Aqua Lock Plus – galvanized metal and aluminum – ferrous metal not mentioned.

B. Metal Pigmented

1. Carboline Carbomastic 15 – high-solids mastic – 90% solids
2. Modern Masters Acid Blocking Primer – not metal pigmented but a primer. Metallic paints are considered under faux finish and are less than 180 g/l.
3. Deft 36 Series Acrylic Polyurethane – not a metallic paint – 2 part polyurethane.

C. Primer, Sealer, Undercoat

1. Frazee Paint 172 Grip-N-Seal – two coats are recommended for metals and wood with tannins
2. Frazee Paint 168 Prime+Plus – 2 coats for metal and wood with tannins
3. Frazee Paint 066 Envirokote – Interior only - Not for wood prone to tannin bleeding. Metal not mentioned.
4. Frazee Aqua Seal – Interior only – metal not mentioned.
5. Benjamin Moore Latex Block Filler 160 – Block Filler not primer, sealer, undercoater
6. Benjamin Moore Latex Block Filler 285 – Block Filler not primer, sealer, undercoater
7. Frazee 262 Acrylic Block Filler - Block Filler not primer, sealer, undercoater
8. Sherwin Williams PrepRite Block Filler - Block Filler not primer, sealer, undercoater
9. Vista Paint 018 Acrylic Block Filler - Block Filler not primer, sealer, undercoater
10. Davlin – Butylseal 572 – elastomeric coating
11. Frazee 063 PVA Wall Sealer – Interior only, no metal or wood.
12. Westcoat EC-11 Water-based epoxy – two component epoxy – IM
13. Westcoat EC-12 Epoxy primer - two component epoxy – IM
14. Benjamin Moore Auro Color Foundation – primed and previously painted metal, for bleeding use FreshStart, rough or pitted masonry use Moorcraft Block Filler, Unpainted metal use metal and wood enamel
15. Benjamin Moore Moorcraft Super Hide 284 - rough or pitted masonry use Moorcraft Block Filler
16. Frazee Paint - 266 Exterior Epoxy - two component epoxy
17. Frazee Paint - 061 Aqua Seal – Interior Wall Sealer
18. Glidden – Stain Blocker – does not mention ferrous metal
19. ICI Prep and Prime Stain Jammer – mentions use of block filler and metal primer

Responses to Comment Letter E
David Darling

NOTE: The following were prepared in 2011 in response to the original letter dated February 4, 2011.

Response to Comment E-1:

Staff concurs that the coatings industry has made great strides in lowering the VOC emissions from architectural coatings. Staff agrees that this can in part be attributed to market demands as well as the financial incentives in Rule 314. Table 1 of the Staff Report summarizes sales and emissions data for 2008 and 2009, and clearly shows that in addition to the reduction in the VOC content, the coatings industry has experienced several years of depressed sales due to the economic recession. Even with these reduced emissions, the coatings industry is one of the largest sources of VOC emissions under the AQMD's purview. The colorants alone, which are currently not included in the emission inventory for architectural coatings, account for 3 tons per day of VOC emissions. Due to the extreme non-attainment status for the AQMD, staff is under a directive to achieve all feasible emission reductions, as included in the 2007 Air Quality Management Plan (AQMP), specifically Control Measure CM# 2007 MCS-07 – Application of All Feasible Measures. This control measure explicitly lists coatings and solvents rules to achieve additional VOC reductions. During the rule development process, staff has conducted considerable outreach and research to determine reductions that are feasible and achievable. Through this process, staff received extensive and well supported comments that resulted in extended implementation dates and the elimination of several coating categories from the proposed VOC limit reductions. The current proposal is reasonable, achievable, and cost-effective and it reflects full implementation of currently available technology.

Response to Comment E-2:

Staff spent considerable time and effort in studying and evaluating the small container exemption (SCE), and recognizes the benefits of the SCE for manufacturers and end users for niche products, as well as repair, touch-up and maintenance. Based on comments received, staff has revised the rule language and is not proposing to further limit the categories that can use this exemption or to phase out the exemption at this time. This change addresses the concerns pertaining to additional categories, as well as the touch-up and issues represented by original equipment manufacturers. Staff does not agree that this exemption is a necessary safety valve for the VOC limits in Rule 1113. Aside from a few niche categories or new categories that may be developed, there are ample products available in the market place that meet the VOC limits in Rule 1113. Staff will continue monitoring the sales of products in small containers, and plans to revisit either limiting or phasing out the exemption in the future. Over the years, enforcement staff has encountered considerable rule circumvention due to this exemption, resulting in removal of the clear wood finish category from the SCE in

2006. Based on comments received, staff has revised the initial proposal which would have limited the eligible categories, and is proposing to clarify that while coatings in small containers do not need to comply with the VOC limit requirements, they do need to comply with other rule requirements, such as the labeling requirements. Further the proposal prohibits bundling of containers practiced by some manufacturers to sell multiple small containers in one package. The current proposal further incorporates additional clarifications to address comments from industry.

Response to Comment E-3:

Staff has included a definition for the term ‘market’ that limits the term to third-party vendors who solely bring together buyers and sellers, including but not limited to catalogs, and e-commerce businesses (e.g., EBay, Amazon). The definition also explicitly indicates that for the purpose of Rule 1113, ‘market’ does not include promoting or advertising coatings. Staff has contacted potential affected parties (Grainger, EBay, Craigslist, McMaster-Carr, & Amazon) and forwarded PAR 1113 for their information.

Response to Comment E-4:

Staff feels that it is indeed reasonable to assume that a coating sold in retail outlets within the District will be used in the District. However, that assumption is rebuttable for situations where a local manufacturer or distribution warehouse makes or stores a coating, staff has further clarified that when evidence shows coatings supplied, sold, offered for sale, marketed for sale, manufactured, blended, repackaged or stored in the District are for shipment outside of the District, they would be exempt. This exemption fully covers the coatings industry’s concern regarding coatings stored in the AQMD. In regard to the comment on the implication of the rule change on homeowners, Rule 1113 has always applied to any person who specifies or uses architectural coatings, including homeowners. Based on limited enforcement resources, which are more efficiently utilized where a large amount of coatings are sold, stored or may be used, inspectors generally do not make compliance stops at private residences; however, enforcement staff would investigate if there were public nuisance complaints regarding odors from the use of architectural coatings at a private residence, and based on the findings from the investigation, may issue notices to homeowners. As a result, staff does not anticipate any environmental impacts resulting from this rule change due to any fiscal impacts on homeowners.

Response to Comment E-5:

An exemption for non-compliant coatings stored in work trucks would create a loophole in the proposed rule language. Worksites frequently store their coatings in trailers which could be interpreted as a work truck. Worksites could simply store all coatings in a truck or trailer to circumvent the rule language. Staff is not proposing to exempt work trucks but did include clarification in the staff report regarding who would

be responsible for non-compliant coatings stored in work trucks. Further, the definition of worksite has been revised to indicate any location where architectural coatings are stored and applied, based on comments from the public. Staff is not proposing to exempt manufacturing sites or job shops considering that coatings operations for maintenance purposes are performed at those facilities. The building that houses a manufacturing operation where non-Rule 1113 coating operations occur would still need to be painted and maintained. The provision would apply to the architectural coatings that are used to paint the building e.g. floors, wall, doors, etc. Non-compliant products that are not for use at the facility but are stored for sale or shipment outside the AQMD, would be exempt under paragraph (f)(2)(A):

Response to Comment E-6:

Staff addressed industry's concern with the definition of manufacturer by exempting retail outlets where labels or stickers may be affixed to containers or where colorant is added at the point of sale. Staff does not feel that a further exemption for repackaging or re-labeling is necessary. It is a common practice for manufacturers to repackage or re-label (add their own label) coatings that were produced by another manufacturer (e.g., toll manufactured coatings). In those instances, whomever's name is on the label is considered the manufacturer. When a non-compliant coating is found in the field, it is the manufacturer whose name is on the label that is ultimately responsible for that coating. For this reason, staff does not intend to exempt repackaging or relabeling in the definition of a manufacturer.

Response to Comment E-7:

Staff addressed the concern regarding Quick Dry Enamels and Quick Dry PSUs by including an effective date of July 1, 2011. While the change is proposed to take place shortly after rule adoption, it will not result in a change in the VOC limit or the labeling of the products. Coatings can still be labeled as quick dry enamels, but for the purpose of Rule 1113, those coatings will be considered non-flat coatings effective July 1, 2011. Since there are no impacts of this change, a longer implementation period is not included.

Response to Comment E-8:

The comment includes a request for a phase-in period of July 1, 2011 for the elimination of the non-flat high gloss category. Since there is no VOC or labeling implication for the removal of the non-flat high gloss category, staff is not proposing any phase out period. Coatings can still be labeled as non-flat high gloss coatings, but for the purposes of Rule 1113, those coatings will be considered non-flat coatings. The proposed change is for rule simplification since there are currently no differences in the VOC limits or labeling requirements between non-flat coatings and non-flat high gloss coatings.

Response to Comment E-9:

Staff agrees with industry's proposal to lower the VOC limit for the default category to 50 g/L and has revised the proposed rule language accordingly.

Response to Comment E-10:

For rule clean up purposes, the requirement which was included in paragraph (c)(2) has been moved to paragraph (c)(7). This requirement states that industrial maintenance coatings, except non-sacrificial anti-graffiti coatings, shall not be applied or solicited for residential use unless they would be exposed to the extreme environmental conditions described in the definition of an industrial maintenance coating. The comment is to remove the clause "except non-sacrificial anti-graffiti coatings" since a separate category has been established for those coatings. Since the Non-Sacrificial Anti-Graffiti Coating category is included as a subcategory for Industrial Maintenance Coatings, staff feels this language is still necessary to be included.

Response to Comment E-11:

Based on the comment regarding the Table of Standards 2, revised PAR 1113 includes proposed VOC limits for architectural coatings, excluding IM, Waterborne IM Coatings and Solvent-Based IM coatings. In addition, staff has added language to clearly state that the VOC limits for colorants only apply to colorant added at the point of sale. Staff contacted several manufacturers of heat reflective or complex inorganic color pigment (CICP) technology who stated that these colorants can be formulated and are available with a VOC content of less than 50 g/L. Furthermore, based on a discussion and subsequent emails with the manufacturer that expressed concern about the VOC content of colorants with CICPs, they do not add these colorants at a point of sale, so PAR 1113 would not apply to their specific use. Lastly, staff agrees with the energy savings benefits of heat reflective coatings.

Response to Comment E-12:

Based on feedback from industry, staff has proposed to increase the proposed VOC limit for clear topcoats used in Faux Coatings System from 50 g/L to 100 g/L. Staff has received feedback that this limit is feasible. In addition, the omission in the definition has been addressed. The missing language was for the labeling requirements for clear topcoats.

Response to Comment E-13:

PAR 1113 includes a definition for Stone Consolidants that limits the use of these products only when used for restoration and/or preservation projects on registered historical buildings that are under the purview of a restoration architect. This category also includes a proposed VOC limit of 450 g/L, as requested. Staff intends to monitor this category through the Rule 314 Annual Quantity and Emissions Reports to ensure

that sales do not exceed the estimated usage, and may consider sales caps for this category if actual sales are well above the estimated usage.

Response to Comment E-14:

PAR 1113 includes a definition for Reactive Penetrating Sealers that limit the use of these products only when used for restoration and/or preservation projects on registered historical buildings that are under the purview of a restoration architect or for use on reinforced concrete bridge structures for transportation projects located within 5 miles of the coast or above 4,000 feet elevation. Staff shared the proposed definition with the interested parties and did not receive any negative feedback. This category also includes a proposed VOC limit of 350 g/L. Staff intends to monitor this category through the Rule 314 Annual Quantity and Emissions Reports to ensure that sales do not exceed the estimated usage, and may consider sales caps for this category if actual sales are well above the estimated usage.

Response to Comment E-15:

Staff has conducted research on the need for an additional coating category with a higher VOC limit for specific types of Clear Wood Finishes referred to as Conversion Varnishes. There has been extensive research on this coating category, including a technology assessment conducted in 2004 and 2005. The results of that assessment supported the 275g/L VOC limit, which was implemented on July 1, 2006. Details of that study can be found on the AQMD website at:

<http://www.aqmd.gov/hb/2006/February/060236a.html>. In addition, staff has received feedback from manufacturers that there are compliant waterborne clear wood finishes that perform as well if not better than the high-VOC counterparts. One reason for this request is that Clear Wood Finishes are not allowed under the Small Container Exemption. They were excluded from this exemption due to rule circumvention that resulted in significant excess emissions. Since conversion varnishes were one of the major coating types utilized for coating hardwood floors in the past, allowing this type of clear wood finish to again be sold in the AQMD would, eliminate the emission reductions achieved by removing these coatings from the small container exemption. In addition, the application of conversion varnishes releases formaldehyde, and therefore has some health and safety issues that would be created compared to the waterborne products in use today. For these reasons, staff is not proposing to add a high-VOC category for conversion varnishes. Staff also considered the need for an additional category for conjugated oil varnishes. These are solvent-based, high-VOC Clear Wood Finishes that cannot be reformulated to a lower-VOC limit due to the nature of the oils of which they are composed. Based on research conducted, including reviewing variance requests seeking relief, staff did not find sufficient evidence that a high-VOC Clear Wood Finish is needed at this time since there are sufficient compliant waterborne technologies available. This is demonstrated by the fact that there have not

been any variance requests for Clear Wood Finishes with a VOC content higher than the Rule 1113 limit.

Response to Comment E-16:

Staff has researched the tub and tile category and has not found sufficient evidence of the need for a separate category. These coatings currently fall under the IM category with a VOC limit of 100 g/L. Previous staff analysis clearly shows a preponderance of acrylic, epoxy, and urethane-based coatings that can be used for tub and tile refinishing. In addition, these coatings are typically sold in small containers, since most tub and tile coverage area is limited to no more than 100 square feet. Coatings sold in small containers are exempt from the VOC limits in Rule 1113, thus providing additional flexibility for manufacturers of these coatings. The rule language that prohibits the application of IM coatings for residential use only applies to coatings that do not meet the extreme environmental conditions described in the definition of IM coatings. Since tub and tile coatings do meet the definition of IM coatings, especially under the abrasion resistance requirements, they are permitted for use in residential settings. If the small container exemption is eliminated in future rule development, staff will consider whether there is a need for additional niche categories with higher VOC limits.

Response to Comment E-17:

Based on comments received pertaining to the originally-proposed VOC limit of 50 g/L for PSUs, staff has reconsidered the proposal and is not proposing any additional VOC reductions limit for PSUs at this time.

Response to Comment E-18:

See response to E-1 through E-17.

Response to Comment E-19:

Based on comments received pertaining to the originally-proposed VOC limit of 50 g/L for specialty primers (SP), staff has reconsidered the proposal and is not proposing any additional VOC reductions limit for SPs at this time.

Response to Comment E-20:

Based on feedback received during working group meetings, staff extended effective dates for rule changes sufficiently such that an additional sell through period is not necessary. In regard to the labeling requirements, manufacturers requested a three year period to implement the change so they could use their current labels. If the rule included an additional three years to sell through of old labels, the rule change would not be effective for six years. Staff feels that the proposed three years to implement the change is sufficient without an additional sell through period. A similar change is the

labeling change for sanding sealers. This change will re-categorize coatings from the PSU category to the Clear Wood Finish category. Since 2006, Clear Wood Finishes are no longer included in the small container exemption. Staff proposed an effective date of July 1, 2013 for this change to allow a two year transition, which should be sufficient to sell through products that are currently on retail shelves.

Response to Comment E-21:

The list of coatings provided for review only encompass a selection of the coatings currently available at the proposed VOC limit and should not be considered all-inclusive. As presented in the numerous working group meetings, there are 18 manufacturers that have reported the sales of 63 products that are categorized as metallic pigmented coatings. Staff can provide the comprehensive list of these products upon request. As for the 3 products mentioned, the coating that is referred to as a mastic in the product data sheet does not meet the Rule 1113 definition of a mastic. The coating is applied at a maximum of 7 – 10 mils in one or two coats. The Rule 1113 definition specifies that the coating is applied at least 10 mils dry in a single coat. That coating would fall under the metallic pigmented coating (MPC) category. The primer is not a metallic pigmented coating, but an acid blocking primer specified for certain metallic pigmented coatings, that page was inadvertently included with the other coatings. The last product mentioned is a high performance, zero VOC acrylic polyurethane which can include metallic pigments resulting in a coating that meets the definition of a metallic pigmented coating. Those coatings have been in use at local theme park to create metallic effects. Staff has reevaluated the last coating included in the list and interprets that coating to be an IM coating. Even though this coating could meet the definition of a MPC based on the metallic content, the coating is a polyurethane which could be tinted to several colors, including a clear or a metallic, the specified usage is for IM applications. The product data sheet states that the intended application is for theme parks, industrial maintenance and heavy equipment applications. Many of the products used at theme parks are IM coatings due to the extreme conditions created by the number of daily visitors, typically requiring coatings that withstand “repeated heavy abrasion, including mechanical wear and repeated scrubbing with industrial solvents, cleaners, or scouring agents” as well as “exterior exposure of metal structures”.

Response to Comment E-22:

PAR 1113 includes language to address the necessary transition time for the proposed change to the definition of sanding sealers. This change will re-categorize some PSUs to sanding sealers; therefore, they will no longer fall under the small container exemption. The extended transition time will allow ample time for those select coatings to be phased out.

Response to Comment E-23:

Staff agrees with the comment and has removed the word ‘supplied.’

Response to Comment E-24:

The following list includes the cities and communities within the AQMD that may qualify for the exemption in paragraph (f)(2)(D):

Lancaster, 93536
Castaic, 91384
Angelus Oaks, 92305
Valyermo, 93563
Mentone, 92359
Idyllwild, 92549
Cabazon, 92230
Banning, 92220
Lebec, 93243
Big Bear City, 92314
San Bernardino, 92407
Lytle Creek, 92358
Cedarpines Park, 92322
Sylmar, 91342
Yucaipa, 92399
Crestline, 92325
Palmdale, 93550
Mt Baldy, 91759
Lake Hughes, 93532
Forest Falls, 92339
Acton, 93510
Running Springs, 92382
Wrightwood, 92397
San Bernardino, 92404
Santa Clarita, 91390
Newhall, 91321
Tujunga, 91042
La Canada Flintridge, 91011
Morongo Valley, 92256
White Water, 92282
Mountain Center, 92561
Palm Springs, 92264
Palm Springs, 92262

Note: Most of the zip codes listed are not completely above 4,000 feet, therefore, a more precise indication of the areas above 4,000 feet can be found by referencing the

map included as Appendix B. An interactive map will also be included on the website www.aqmd.gov

Response to Comment E-25:

Staff concurs with the comments and has revised the definition for waterproofing concrete/masonry sealer.

Response to Comment E-26:

Staff has provided clarification in the staff report (Definitions section, page 9) regarding the implications of the change in the VOC definition pertaining to reporting of TBAC.

Response to Comment E-27:

Based on comments pertaining to possible costs of lower-VOC limits, as well as the associated environmental benefits, staff has revised PAR 1113 to include only those categories that are cost-effective. The 2007 AQMP, Control Measure MCS-07, indicates that cost-effectiveness cannot be determined because “all feasible” measure are not known. Nonetheless, MCS-07 commits that the District will continue to analyze the potential cost impact associated with implementing the control measure, conduct research on the newest control technologies, and provide cost effectiveness information. A thorough cost-effectiveness of the proposed amendments was conducted and a summary of overall cost-effectiveness is included in the Staff Report. More detailed data is included in the Socioeconomic Impact Analysis Report.

Response to Comment E-28:

Staff included the phrase ‘including but not limited to’ in regard to the inclusion of fields and lawns. This addition is for rule clarification, as this is a frequently asked question of staff, and is not expected to have any implications on other architectural coatings rules.

Response to Comment E-29:

The change in Appendix A subdivision (J) is to clarify that the penalties for violating the provisions of the averaging compliance option (ACO) apply to every gallon of each product line sold above the VOC limit and not just for each product line sold above the limit. This proposed revision is for clarification, since based on discussions during the development of the ACO Guidance document, staff always intended the violation to apply to each and every gallon of coating sold above the VOC limit if a manufacturer violates any provisions of the ACO.

Response to Comment E-30:

Based on the comment, staff has removed the phrase ‘concrete lacquer’ from the proposed amended definition of waterproofing concrete/masonry sealers.

Response to Comment E-31:

Staff has addressed the omission in the proposed amended rule language.

Response to Comment E-32:

Staff has addressed the inconsistency in the proposed phase out dates in the ACO. Staff is not proposing to include zinc rich primers to the list of categories that can be averaged since no manufacturer has, or is currently listing zinc rich primers in their averaging plan. Manufacturers must submit the coatings they are proposing to average at the beginning of an ACO period. New coatings must be submitted for review and approval prior to averaging them, and would be considered a modification to the previously approved plan. The ACO provision does not work well when a manufacturer adds coatings on a job-by-job basis and the ACO needs to be well planned to ensure that the actual emissions at the end of the compliance period are below the allowable emissions.

Response to Comment E-33:

Staff is still proposing to keep the method which defines the term gonioapparent; the ASTM method provides a technical definition of gonioapparent which can be measured in a laboratory. The definition states that gonioapparent material change in appearance with change in illumination angle or viewing angle. This can be demonstrated in a laboratory by using multi-angle color measurements.

Response to Comment E-34:

Current Rule 1113 – Architectural Coatings considers tertiary butyl acetate (tBAC) as an exempt VOC when used to formulate industrial maintenance coatings only, considering that these coatings are typically applied by professional painting contractors that use personal protective equipment (PPE), including appropriate respirators. At this time, staff does not believe that it is necessary to expand the categories that can use tBAC as an exempt VOC. Staff is not confident that contractors applying the suggested broad range of coatings are trained in the use of PPE, and would use the appropriate respirators. Further, in regards to Dimethyl Carbonate (DMC), staff is not proposing any exemptions since, in September 2009, the AQMD’s Governing Board rejected delisting DMC due to potential health concerns expressed by the public. Additionally, AQMD staff is working with the California Air Resources Board staff on a consumer/worker exposure health assessment for DMC, which is still in the draft stage. If and when this final health assessment recommends the exemption of DMC as a VOC, the AQMD will consider a proposal to exempt DMC. In regard to the comment

that permits could be required prior to allowing the use of DMC for architectural coatings operations, currently, the use and application of architectural coatings does not require any AQMD permits, thus this approach would not be feasible.

Response to Comment E-35:

Over the past 15 years, AQMD staff has been, and continues to participate in discussions at the federal and state level, to discuss alternative ozone control strategies, including the use of a reactivity-based approach. However, as discussed over the past two years, uncertainty in some Maximum Incremental Reactivity (MIR) values, enforcement, toxics, and formation of fine particulate less than 2.5 micrometers in diameter (PM_{2.5}) continue to be areas that need additional assessment. Staff is studying the viability of a reactivity-based ozone control strategy by actively participating in research projects pertaining to establishing maximum incremental reactivity (MIR) values for different VOCs. For example, staff is actively participating in the North American Research Strategy for Tropospheric Ozone (NARSTO) work related to reactivity. Staff also continues to participate in the following committees: Applications Benefits, Near Term Science, Toxics, Atmospheric Chemistry and PM. Further, staff recognizes the low MIR values associated with the compounds that are considered exempt under the traditional VOC mass-based regulatory scheme as well as the potential flexibility of an alternate ozone control strategy. In concept, staff is not opposed to a reactivity-based approach to control ozone, but based on the state of the science and other comments received, there are several concerns. For example, one of the main concerns is that there may be toxicity associated with some VOC-containing compounds that have a relatively low MIR value. Other issues that need to be considered include the potential for secondary organic aerosol formation, specific consensus methodology, and enforceability. Further, CARB staff has indicated that, effective and efficient enforcement of the aerosol coatings rule, which is a reactivity-based control approach, has been an issue over the past few years, especially with regard to formulation data and analytical limitations. The EPA is also in the process of developing a “toolkit” that will address SIP equivalency and will include additional enforceability guidelines for a reactivity-based approach. Thus, staff plans to continue working closely with CARB, U.S. EPA, the American Chemistry Council, other industry members and the public to address and resolve these issues prior to proposing a reactivity-based ozone control strategy.

Response to Comment E-36:

The AQMD appreciates the opportunity to continue working with industry on the Paint and Coatings Exposure Study (PACES), and closely monitors the progress. As these studies fully evaluate the fate and availability of solvents used in architectural coatings, and are finalized, the AQMD staff is open to discussions as to how the results may be incorporated into future planning activities and/or regulations.

F. Mitchell M. Tsai, March 28, 2012

Mitchell M. Tsai, Esq. 801 South Garfield Avenue, Ste. 338, Alhambra, CA 91801
tsai.mitchell@gmail.com 714-881-4876

BY HAND DELIVERY AND ELECTRONIC DELIVERY

March 28, 2012

Dr. Phillip Fine
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
pfine@aqmd.gov

Mr. Joe Cassmassi
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
jcassmassi@aqmd.gov

RE: 2012 Air Quality Management Plan – Santa Monica Airport

Dear Dr. Fine and Mr. Cassmassi,

I am writing on behalf of Concerned Residents Against Airport Pollution (“Concerned Residents”) regarding Santa Monica Municipal Airport (“SMO”) located at 3223 Donald Douglas Loop South, Santa Monica, California 90405. Concerned Residents is composed primarily of residents who live and/or work near SMO. We request that South Coast Air Quality Management District (“SCAQMD”) review, propose, approve, and submit to California Air Resources Board (“CARB”) an Indirect Source Review Rule regulating air pollution emissions originating from activities at SMO.

F-1

SMO has a disproportionate environmental health impact on local residents. SMO is unique in having dense residential development less than 300 feet from the east and west ends of the runway. Unlike other Southern California airports, SMO has almost no buffer zone between the runway ends and the surrounding community. Adrian Castro, et al, Santa Monica Airport Health Impact Assessment (2010). A UCLA study noted that “[s]mall airports in heavily populated areas do not necessarily have ... buffers ... so residents may be more directly exposed to aircraft emissions.” Shishan Hu, et al *Aircraft Emissions Impacts in a Neighborhood Adjacent to a General Aviation Airport in*

F-2

Concerned Residents Against Airport Pollution
2012 Air Quality Management Plan – Santa Monica Airport
March 28, 2012

Southern California, 43 Environ. Sci. Technol. 8039, 8039 (2009). The UCLA study went on to conclude that the residential neighborhoods surrounding SMO have “markedly high concentrations of air pollutants ... suggesting ... [that the] buffer areas around ... [SMO] may be insufficient.” The proximity between the airport and the surrounding community creates a dangerous health risk for local residents.

Local residents living in proximity with the airport face an elevated risk of cancer. According to a study sponsored by the Los Angeles Unified School District, cancer risk arising from maximum exposure to air pollution generated by activities at SMO for local residents ran thirteen to twenty-six in one million. Bill Piazza, Santa Monica Municipal Airport: A Report on the Generation and Downwind Extent of Emissions Generated From Aircraft and Ground Support Operations 2 (1999). Cancer risks to local residents from SMO significantly exceed the guideline lifetime cancer risk of one in a million individuals for cancer risk from maximum exposure to a source of air pollutants under the Federal Clean Air Act. 42 U.S.C. § 7412.

I. South Coast Air Quality Management District is Legally Obligated to Implement an Indirect Source Review Rule Regulating Emissions from Santa Monica Airport.

SCAQMD is legally required to implement an Indirect Source Review rule controlling emissions from Santa Monica Airport. The California Clean Air Act requires that SCAQMD “provide for indirect source controls in those areas of the south coast district in which there are high-level, localized concentrations of pollutants” Cal. Health & Safety Code § 40440(b)(3).

Multiple studies have demonstrated that there are elevated levels of air pollutants such as lead, black carbon, and ultrafine particulate matter on Santa Monica Airport property as well as in neighboring residential areas. *Infra*.

Modeling studies have shown that concentration of ambient lead levels near, at and exceeding the National Ambient Air Quality Standard (“NAAQS”) at Santa Monica Airport as well

F-2

F-3

Concerned Residents Against Airport Pollution
2012 Air Quality Management Plan – Santa Monica Airport
March 28, 2012

as at nearby residential neighborhoods. Studies conducted by the U.S. Environmental Protection Agency (“USEPA”) and SCAQMD found areas on Santa Monica Airport’s runway with lead levels violating the current lead NAAQS. U.S. Environmental Protection Agency, Development and Evaluation of an Air Quality Modeling Approach for Lead Emissions from Piston-Engine Aircraft Operating on Leaded Aviation Gasoline 72 (2010); South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study 20–21 (2010). In addition, both studies found elevated ambient lead levels that often exceeded, but averaged near the NAAQS in surrounding residential neighborhoods. *Id.*

F-3

Lead can have irreversible brain and nerve damage, severe developmental impacts on children as well as adverse impacts on adults. Lead has been found to have neurological impacts on children, leading to behavioral problems, learning problems, and lowered IQ. Adults, when exposed to lead, can suffer cardiovascular problems such as high blood pressure, and heart disease. Finally, lead exposure has also been found to have negative impacts on the nervous system, kidney function, immune systems, and reproductive ability. U.S. Environmental Protection Agency, Lead in Air: Health (2011), <http://www.epa.gov/airquality/lead/health.html> (last visited Nov. 11, 2011).

Elevated levels of Black Carbon have also been found to have been generated by activities at SMO. Jet takeoffs at SMO have been found to result in large spikes in concentrations of Black Carbon in and around the airport. Hu, 43 Environ. Sci. Technol. at 8039 (2009); South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study: Follow-up Monitoring Campaign at the Santa Monica Airport 3 (2011).

F-4

Black carbon, as a component of particulate matter, has been linked to increased risk of cardiovascular disease, respiratory disease, cancer, and premature death. United Nations

Concerned Residents Against Airport Pollution
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Environmental Program, World Meteorological Organization Integrated Assessment of Black Carbon and Tropospheric Ozone (2011) 113–15.

F-4

Very high levels of ultrafine particulate matter have also been found at SMO. Studies conducted by the University of California, University of Southern California, CARB, and SCAQMD found elevated ultrafine particle concentrations in the downwind residential areas directly attributable to SMO aircraft operations. South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study (2010); South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study: Follow-up Monitoring Campaign at the Santa Monica Airport (2011); Shishan Hu et al, Aircraft Emissions Impacts in a Neighborhood Adjacent to a General Aviation Airport in Southern California, 43 Environ. Sci. Technol. 8039 (2009).

F-5

Ultrafine particles have been linked to premature death from respiratory and cardiovascular disease. University of California Los Angeles Community Health and Advocacy Training PGY-2 Pediatric Residents, Santa Monica Airport Health Impact Assessment 10 (2010). Ultrafine particulate matter may pose a greater health risk than other, larger forms of particulate matter due to their tendency to penetrate deeper into the body. Ning Li et al, Ultrafine Particulate Pollutants Induce Oxidative Stress and Mitochondrial Damage 111 *Envt'l Health Perspectives* 455, 455 (2003).

Airports are a significant source of emissions of Volatile Organic Compounds (VOCs) as well as Nitrogen Oxides (NOx), both of which are ozone-forming pollutants. Colleen Callahan, The Plane Truth: Air Quality Impacts of Airport Operations and Strategies for Sustainability: A Case Study of the Los Angeles World Airports 7–10 (2010); U.S. EPA, Documentation for Aircraft Component of the National Emissions Inventory Methodology (2011).

F-6

Ozone has been shown to cause decreased lung function, chest pain, as well as aggravate existing respiratory illnesses such as asthma, pneumonia, and bronchitis. U.S. EPA, Ground Level

Concerned Residents Against Airport Pollution
2012 Air Quality Management Plan – Santa Monica Airport
March 28, 2012

Ozone: Health, <http://www.epa.gov/air/ozonepollution/health.html> (accessed on March 25, 2012).

SMO is located in Northwest Coastal LA County, which exceeded both the State and Federal Ozone standards in 2010 and 2009. South Coast Air Quality Management District, 2010 Air Quality (2011); South Coast Air Quality Management District, 2009 Air Quality (2010).

F-6

The California Clean Air Act requires SCAQMD to promulgate Indirect Source controls to regulate pollution from SMO. SCAQMD is required to impose Indirect Source controls in areas where there are “high level, localized concentrations of pollutants.” A study concluded that there are “high concentrations of air pollutants in the residential neighborhoods downwind of SM[O] due to aircraft activities” Hu at 8039. SCAQMD should act to regulate emissions from Santa Monica Airport.

F-7

II. South Coast Air Quality Management District has the Authority under the Federal Clean Air Act to Impose Indirect Source Controls on Santa Monica Airport.

Arguably, SCAQMD is federally preempted from imposing Indirect Source controls on SMO. Both the Federal Aviation Agency and the USEPA have exclusive federal authority over aircraft operations, design, and manufacture. However, SCAQMD has the authority to regulate pollution from SMO with the approval of CARB with its delegated authority under the Federal Clean Air Act. Federal courts have found that states may regulate *emissions* from aircraft engines under the Federal Clean Air Act as long as it does not directly regulate aircraft operations, design, or manufacturing. *California v. Navy*, 431 F.Supp. 1271 (1977). SCAQMD and CARB have federally delegated authority to impose Indirect Source controls on facilities such as airports. 42 U.S.C. § 7410(a)(5).

F-8

Concerned Residents Against Airport Pollution
2012 Air Quality Management Plan – Santa Monica Airport
March 28, 2012

III. Santa Monica Airport Could Implement Reasonably Available Control Measures to Reduce its Environmental Health Impact on Local Residents.

SMO could implement control measures to abate its impact on the surrounding community and comply with an Indirect Source Rule. Possible control measures could include reduced idling and holding times for jet aircraft as well as re-directing the exhaust from pre-flight run up tests.

F-8

IV. South Coast Air Quality Management District Should Impose Indirect Source Controls on Air Pollutant Emissions from Santa Monica Airport.

SCAQMD should impose an Indirect Source Review Rule on SMO. In light of SCAQMD's legal obligations, the significant public health risks and the feasibility of control measures that could be adopted, SCAQMD should act to abate SMO's impact on its surrounding communities.

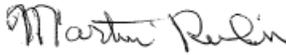
F-9

Thank you for considering these comments. Please put the undersigned on the mailing list for the 2012 AQMP. Should you have any questions or need more information, please contact Mitchell Tsai at (714) 881-4876 or tsai.mitchell@gmail.com.

Sincerely,



Mitchell M. Tsai, Esq.



Martin Rubin
Concerned Residents Against Airport Pollution

Responses to Comment Letter F
Mitchell M. Tsai

Response to Comment F-1:

AQMD staff and counsel met with the commenter and the Concerned Residents representative to discuss potential Indirect Source rules regulating activities at Santa Monica Airport. AQMD has not observed elevated levels of PM_{2.5} in neighborhoods near the airport so this plan does not include a measure specific to the airport. AQMD will continue to explore possible ways of reducing emissions at the airport.

Response to Comment F-2:

Thank you for the references. The health effects of air pollutants are addressed in Appendix I. Regarding cancer risk, the AQMD's MATES III study estimates lifetime risk for air toxics near the Santa Monica Airport at about 930 per million which is less than the regional average of 1194 in a million.

Response to Comment F-3:

The commenter asserts that AQMD must implement an indirect source rule regulating Santa Monica Airport based on H&S §40440(b)(3) calling for indirect source controls “in those areas of the south coast district in which there are high-level, localized concentrations of pollutants. The comment cites levels of lead, black carbon, and ultrafine particulate matter. AQMD monitoring studies have not detected exceedances of lead standards either on the runway area or in neighboring residential areas. US EPA modeling studies did not project exceedances in neighboring residential areas but did project exceedances at the blast fence. This was not confirmed by AQMD studies. The statement that both studies found levels often exceeding the NAAQS but averaging at the NAAQS is misleading because the NAAQS itself is in the form of a three month average. The NAAQS itself was not exceeded. AQMD has not observed elevated levels of PM_{2.5} near the airport. There is currently no NAAQS or SAAQS for ultrafines. So, it is not feasible to determine a level to which emissions should be reduced. Therefore, the cited statute does not require regulation.

Response to Comment F-4:

Thank you for the references. We note that one of the citations is a AQMD report. Additional discussion of health effects of particulate matter are in Appendix I.

Response to Comment F-5:

Thank you for the references. We note that two of the citations are AQMD reports. Additional discussion of health effects of particulate matter are in Appendix I, and additional discussion of ultrafine particulate matter health effects and sources is contained in Chapter 9.

Response to Comment F-6:

Thank you for the references. Additional discussion of the health effects of ozone and nitrogen dioxide are in Appendix I.

Response to Comment F-7:

The commenter states that AQMD must adopt an indirect source rule for the airport because state law calls for indirect source rules in areas where there are “high-level, localized concentrations of pollutants” and a study by Hu concluded that there were “high concentrations of air pollutants in the residential neighborhoods “ downwind of the airport. However, this study referred to levels of black carbon and ultrafine particles, which are not criteria pollutants for which a NAAQS has been established. Neither EPA nor CARB has yet developed any ambient standards for these particular pollutants. Therefore, it is uncertain what levels of such pollutants would be considered unacceptably “high.” The 2012 AQMP contains a chapter discussing the emerging science relating to ultrafine particles and AQMD staff will continue to monitor the situation.

Response to Comment F-8:

The AQMD staff agrees that it has the authority under state and federal law to adopt indirect source controls. Such authority is not preempted by the Clean Air Act, as held in *National Association of Home Builders vs. San Joaquin Valley APCD*, 627 F. 3d 730 (9th Cir. 2010). Whether any other federal statute would have preemptive effect would likely depend on the particulars of any proposed indirect source rule.

Response to Comment F-9:

For the reasons stated earlier, AQMD staff does not believe that this request for an indirect source rule for SMO should be addressed as part of the 2012 AQMP, but will continue to consider whether such an approach would be necessary or viable to reduce emissions in the future.

G. Mar Vista Community Council, May 20, 2012



May 20, 2012

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar CA 91765

**Mar Vista
Community Council**
P.O. Box 56871
Mar Vista, CA 90066

**Board of Directors
2011-2012**

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Sharon Commins
scommins@marvista.org

1st Vice Chair
Bill Koentz
btk@marvista.org

2nd Vice Chair
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mmillman@marvista.org

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- Chuck Ray
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Community Director

Alex Thompson



Certified Neighborhood Council
August 13, 2002

At the regular monthly meeting held May 8, 2012, The Mar Vista Community Council approved the following policy motion unanimously:

POLICY MOTION: The Mar Vista Community Council requests that the South Coast Air Quality Management District Implement an Indirect Source Review Rule regulating emissions from the Santa Monica Airport as per the California Clean Air Act (Cal. Health and Safety Code 40440(b)(3) Please see the attached letter

} G-1

Sincerely,
Sharon Commins
Sharon Commins, Chair
Mar Vista Community Council,

Responses to Comment Letter G
Mar Vista Community Council

Response to Comment G-1:

AQMD staff does not believe that this request should be addressed as part of the 2012 AQMP, but will continue to consider whether such an approach would be viable to reduce emissions in the future.

H. Harvey Eder, July 17, 2012

COMMENT LETTER #1

Harvey Eder
July 17, 2012

From: Harvey Eder [<mailto:harveyederpspc@yahoo.com>]
Sent: Tuesday, July 17, 2012 3:26 PM
To: CEQA_Admin
Cc: harveyederpspc@yahoo.com

Subject: Part 1 of Comments 2012 AQMD Plan & Public Review Draft Vision for Clean Air 6/27/2012
From Harvey Eder PSPC Solar Conversion Plan 7/17/12

Howdy SCAQMD/Steve Smith,

July 17,2012

This is the first /Part 1 of several submittals commenting on the Notice Of Preparation Of A Draft Program Environmental Impact Report Project Title 2012 Air Quality Management Plan (AQMP) as well as comments on the June 27,2012 Public Review Draft Vision for Clean Air: A Framework for Air Quality and Climate Planning & Appendix Actions for Development, Demonstration, and Deployment of Needed Advanced Technologies from Harvey Eder, & from PSPC, the Public Solar Power Coalition as part of a Draft Immediate Total Solar Conversion Plan for the South Coast District and California. This is in addition to comments made in Santa Monica last Friday July 13, 2012 at the City of Santa Monica Main Library from 2-5 PM etc.

This part 1 of several contains information and linke from a fracking call heald Thursday July 12, 2012 and incorporates all of the information and links into the record herein, including the recording of the call and papers by Howarth et al on ghg of methane natural gas fracking from 2010, 2011, and February 25, 2012 which have been shared with SCDistrict Staff in the pastas well as the information submitted to staff and the board with the December 2009 cover article of Scientific American and the follow up articles in Energy Policy on a 20 year solar conversion plan / proposal by Drs. Jacobson and Delucci of Stanford and UC Davis etc. The time for action is now.

H-1

Thanks ,take care

Harvey Eder & PSPC Public Solar Power Coalition (310) 393-2589

Fracking Call: Recording and Resources
Monday, July 16, 2012 4:48 PM
From:
"Allison Fisher" <afisher@citizen.org>
[Add sender to Contacts](#)
To:
"Energy Public Citizen" <energy@citizen.org>
Thank you for joining us! Please send along any suggestions you have for future call topics/presenters. -Allison

July 12, 2012: The Fracking Movement and Climate Change: Current Strategies
Recording: <https://www.freeconferencerecallhd.com/playback.html?u=64-17-65-6712-17-65-6766-17-65-6710141-17-65-6755-52-75-17-65-67-17-65-67587:00TMzNDY4MDI=1>

Presenters:
Robert Howarth has been the David R. Atkinson Professor of Ecology & Environmental Biology at Cornell University since 1993
<http://www.eeb.cornell.edu/howarth/Marcellus.html>
Jennifer Krill, Executive Director of EARTHWORKS
krill@earthworksaction.org
office: 202-887-1872 x. 103
<http://earthworksaction.org>

Fracking Climate Change Impacts:
Methane and the greenhouse-gas footprint of natural gas from shale formations:
<http://www.sustainablefuture.cornell.edu/news/attachments/Howarth-EtAl-2011.pdf>

"The take-home message of our study is that if you do an integration of 20 years following the development of the gas, shale gas is worse than conventional gas and is, in fact, worse than coal and worse than oil," Howarth said. "We are not advocating for more coal or oil, but rather to move to a truly green, renewable future as quickly as possible. We need to look at the true environmental consequences of shale gas."

The study is the first peer-reviewed paper exploring the greenhouse gas footprints of conventional gas drilling. Most studies have used EPA emission estimates from 1996, which were updated in November 2010 when it was determined that greenhouse gas emissions of various fuels are higher than previously believed.

Feb. 2012 background paper on methane and the natural gas industry for the National Climate Assessment:
<http://www.eeb.cornell.edu/howarth/Howarth%20et%20al%20-%20National%20Climate%20Assessment.pdf>

Scope:

- 830,000 operating oil and gas wells in U.S.
- 34 oil and gas producing states
- In 2012, 2,000 wells drilled every month, 90% of well are fracked
- Already fracking: AK, CO, WY, NM, CA (does not track production from fracking), MT, TX (news regs coming next year), OK, LA, AR, AL, MI, OH and PA (among worst regs)
- Prevention states: NY, MD, NC

Successful Strategies:

- Community Rights/ Home Rule
- Zoning Laws
- Property Rights – has provided an opportunity to work with a new constituency
- Documentary on this issue: Split Estate (this film is streaming and available on Netflix)
- People's Assembly and People's Resolution - OH

Protective Regulations and Harm Reduction Strategies:

- Production set-back from homes/structures
- Liners and covers for waste pits
- End Goal: Federal Regulations – fracking is exempted from 7 environmental laws, creating an inadequate patchwork of state-based regulations

Other resources:

1) Enforcement of existing laws is woefully lax. Earthworks is releasing a series of reports on enforcement in 6 states: the first two on Colorado and New Mexico, are here: http://www.earthworksaction.org/library/detail/enforcement_report_cogcc and http://www.earthworksaction.org/library/detail/nm_enforcement_report. Upcoming reports will focus on Texas, Ohio, Pennsylvania and New York.

2) Earthworks' report *Flowback, the Dark Side of the Boom* outlines some of the health impacts in the Barnett Shale in Texas. http://www.earthworksaction.org/library/detail/natural_gas_flowback

3) The federal loopholes in 7 environmental laws enjoyed by the oil and gas industry are outlined here: http://www.earthworksaction.org/library/detail/loopholes_for_polluters. This fact sheet is incredibly handy if you find yourself explaining to folks why fracking is such a boom right now.

4) NY: <http://www.grassrootsinfo.org/fracking.html>
<http://amillionfrackingletters.com/>

Upcoming Events:

Stop the Frack Attack – Washington, D.C. July 25- 28
Learn more: <http://www.stopthefrackattack.org/>
Get the word out and join the discussion: Follow on Twitter (twitter.com/stopfrackattack) and like us on Facebook (www.facebook.com/stopthefrackattack) for even more information about the rally!

Stop Fracking with California – Join us in Sacramento July 25

Your voice is urgently needed at an upcoming demonstration and fracking workshop run by the Department of Conservation to solicit input on potential regulations. Please join us in demanding a ban that will protect our environment from this industry, which is associated with more than 1,000 documented cases of water contamination across the country.

What: Demonstration & Workshop on fracking regulations held by the California Department of Conservation
When: Wednesday, July 25 Demonstration at 5:30 p.m., Workshop at 7 p.m.
Where: California Environmental Protection Agency Headquarters, Byron Sher Auditorium
1001 I Street, Sacramento, CA 95814

And, you can also submit your written comments to the state through our action alert:
http://action.biologicaldiversity.org/o/2167/t/5243/p/dia/action/public/?action_KEY=10572

RSVP to Rose Braz, Center for Biological Diversity, Climate Campaign Director
rbraz@biologicaldiversity.org

Allison Fisher
Outreach Director
Public Citizen's Energy Program

Blog: www.energyvox.org
Contact: 202-454-5176

More to follow before the 5pm submittal deadline tomorrow 7/18/12

Subject: FW: Part 2 Comments Draft 2012 AQMP Plan & Draft Vision for Clean Air/Harvey Eder & PSPC
7/17/12 ITSCP Immediate Total Solar Conversion Plan SCD & CALIFORNIA

Howdy Steve Smith etc,

July 17, 2012

This is Part 2 of Comments for the Draft 2012 Air Quality Management Plan and Public Review Draft June 27, 2012 Vision for Clean Air: A Framework for Air Quality and Climate Planning and Appendix: Actions for Development, Demonstration and Development of Needed Advanced Technologies / Immediate Total Solar Conversion Plan for the South Coast Air Quality Management District and the State of California etc, by Harvey Eder & PSPC the Public Solar Power Coalition July 17, 2012 before the 5pm deadline July 18, 2012. Stream of consciousness style sorry, hope to mark comments on the Final more organized." The Quantum Inigma: Physics

H-2

8) The SCD committee on BACT and BARCT plus more stringent federal standards should meet and declare various solar technologies as such and include them in various rule makings and in the 2012 AQMP Plan as part of the 5 year ITSCP, Immediate Total Solar Conversion Plan. This committee needs to meet and do this now and incorporate reports and records from Technology Advancement on Solar etc into the record as well as NREL the National Renewable Energy Lab (which was the SERI the Solar Energy Research Institute under Carter all reports and studies on the technology solar etc herein the record as well as that of other countries and companies incorporated herein by reference. We're headed for hell in a handbasket and there's no time to wait.

9) This is a proposal for a 5 year total solar conversion plan ITSC Now The Solar Future is now. This includes solar cogeneration with solar process heating space heating and cooling (absorption) and solar district CHIP. We may have to tear up the streets to lay the pipes and it won't be easy but it can be done and seasonal solar storage using the earth as has been proven in the past can be done and fast putting people to work doing this. Unemployment is over 10% in the SCD Southern Cal and will soon hit 15% if the economy continues to falter with underemployed at 20-25% and youth unemployment at 25-50%. Action is needed now. Climate change with GHG/ and criteria and toxics worst than previously thought with an exponential increase in methane CH4 with 90% of the wells new wells fracked and the tundra melting with arctic warming faster and faster and the oil companies wanting with the Russians planting their flag at the bottom of the north pole getting ready with our oil and gas companies to drill in the arctic for fossil fuels on last gasp, grasp for the final demon. It's insane. Like Einstein said doing the same thing over and over again and getting no different result is crazy. He also said that the most powerful thing is the power of compound interest. We need to invest in a solar future. it is now...

The economy is slowing in China and the developing world with mounting problems in Europe, Greece, Spain, Italy etc and the Germans to bail them out remember the German inflation of the 20s after WW1 there worried about inflation like the fight and the Teaparties are here the gold bugs and the anti feds. with the LIBOR scandal with Bernanke testifying today before congress the world economy and the world is slowing down

Subject: Part 3 Comments on 2012 Draft AQMP Plan & Public Review Draft June 27, 2012 Vision for Clean Air & Addendum.. This is Part 3A part 3 B will follow. From Harvey Eder and Public Solar Power Coalition 7/18/12 8:06 am

Howdy Steve Smith et al.,

7/18/12 8:15 am

This is part 3 of comments on the Public Review Draft June 27, 2012 Vision for Clean Air: a Framework for Air Quality and Climate Change Planning and its' Appendix Actions for

H-2

Development, Demonstration, and Deployment of Needed Advanced Technologies and Notice Of Preparation Of A Draft Program Environmental Impact Report, 2012 Air Quality Management Plan (AQMP) from, by Harvey Eder and Public Solar Power Coalition.

This supplemental is in addition to Parts 1 and 2 submitted yesterday 7/17/12.

10. The documents here emphasize biofuels which emit criteria and toxic pollutants which is not the case with direct solar or wind and hydro. It is true that in manufacturing the solar systems if not done on a solar breeder there are some emissions and this will have to be studied further some work has been done on this already as well as net energy work and the solar systems perform well in comparison to fossil fuels and biomethane and biofuels solar hydrogen is also proposed as well as solar electric (a Santa Cruz man Paul Scott has an electric car that he has driven over 100,000 miles on with solar energy/electricity as one example as have many other people that have testified on the record in the past to SCAQMD etc members of Plug In American has many members that do this in the District and are featured in the documentary Who Killed The Electric Car, which is also hereby herein placed in the record in these proceedings by reference !%@

this shows the past record of SCD and CARB about electric cars etc..

Subject: Part 4 Comments Testimony for on the 2012 Air Quality Management Plan (Notice of Preparations of a Draft Program) under ceqa as well as for Public Review Draft June 27, 2012 Vision for Clean Air: A Framework for Air Quality and Climate Pla...

Howdy Steve Smith et al.,

This is Part 4 of Comments/testimony for on the 2012 Air Quality Management Plan (AQMP subject: Notice of Preparation of a Draft Program Environmental Impact Report and for the Public Review Draft June 27, 2012 Vision for Clean Air: A Framework for Air Quality and Climate Planning and its' Appendix: Actions for Development, Demonstration, and Deployment of Needed Advanced Technologies for by Harvey Eder and the Public Solar Power Coalition at 9:13 am July 18, 2012 continuing etc timely submitted.

12 I/we hereby, herein incorporate by reference all submittals in writing and orally to the SCAQMD since 1985 made by Harvey Eder and PSPC Public Solar Power Coalition in reference to solar energy as well as all written and oral statements and or comments made to the CPUC, CEC, NRC, CASIO, including all state and federal government incorporate into the record in this proceeding CEQA Drafts etc July 18, 2012, EPA etc..

13 This is a 5 year immediate total solar conversion plan by 2017 which allows the federal government to pay for 1/2 (through Federal 30% tax credits and an additional 20-30% present value for accelerated depreciation ACRS or with AQCRS 10% etc.) of the cost of the conversion

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This is Part 5 Comments on Draft 2012 Air Quality Management Plan (AQMP) due today by 5pm 7/18/12 as well as comments for Public Review Draft June 27, 2012 Vision for Clean Air: A Framework for Air Quality and Climate Planning from /by Harvey Eder & PSPC Public Solar Power Coalition.

15 The Natural Gas and all methane programs /subsidies for using ch4 ie Moyer Program and school bus funding etc power plants etc by SCAQMD and other Districts and CARB must be stoped at once and Immediate Total Solar Conversion Plan must be implemented at once. Over a 20 year time frame see documents in Part 1 of Comments etc. Howarth et al. incorporated into the record herein by reference natural gas and or methane ch4 has 100 times the GWP Global Warming Potential /Impact of co2 equalivent and the numbers used by SCD and CARB are wrong for trading cap and trade CPUC, CEC etc EPA, LCFS Low Carbon Fuel Standfard and are enjoined by writ of mandamus to stop subsidizing by all government entities now for solar electric, hydrogen etc solar xyz...This was illegally with held by SCAQMD and CARB as well as the CPUC GHG proceedings and is entered bby reference in those proceedings in pastt and present and future proceedings etc.

16 Subsidies for solar (tax incentivesd etc. must be made through progressive taxes on the weathy (like Obamas tax increase and more). Federal Income Taxes have been over 70-90% for vast majority of the past centruy and should be increases to fund the solar conversion plan and help the poor and low, and low middle income which is Environmental Justice. Even with the low rate of apx 40% under Clinton which was reduced by Bush to apx. 35% 10 years ago the economy was better and unemployment was less under the higher rate in the 1990 than over the past 10 years (and job creation) This is also true since the end of WW2 in the late 40s and in the 50s and 60 etc which was a boom period which negates the reactionary right wing arguments that higher taxes on the wealthy will hurt the economy. This if false the US Economy performed just fine with double the Fed Income Tax on the Rich like Romney. As cited in the July 13 SCD meeting in Santa Monicalast week the Republicans support coal while the Democrates support natural gas while 4 years ago Obama supported Solar/renewables which is needed now . tens and 100s or biooions of dollars are spent supporting climate changing dirty oil coal and gas fossil fuels while polling proves that 80-90% plus of voters and the US Public supports Solar Energy., and are solar "energy voters".

17 The CCA law was passed when Enron was gaming the state for outrageous profit and they caused blackouts in CA and they went bankrupt like PG&E and So Cal Edison was withing days or rather hours from not also going bankrupt as well, Theirs is a wrong and bankkrupt policy cupporting fossil fuels and nuclear energy (Diablo and SONGS etc)
Global warming Climate Change melting the Artic sea ice etc...

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Subject: Part 6 Comments draft CEQA 2012 Air Quality Management Plan & Public Review Draft June 27,2012 vision for Clean Air: A Framework for Air Quality and Climate Planning & Appendix..from/by Harvey Ederand PSPC Public Solar Power Coalition 7/18/12

Howdy Steve Smith et al.,

July 18,2012 4:40PM

Part 6 Comments on Notice Of Preparation Of A Draft Program Environmental Impact Report, 2012 Air Quality Management Plan (AQMP) and Public Review Draft June 27,2012 Vision for Clean Air: A Framework for Air Quality and Climate Planning of,by from Harvey Eder and PSPC the Public Solar Power Coalition and the Appendix....Vision for Clean Air.

18 Solar Cal was presented to the joint meeting on the Integrated Energy Policy Report Last month at the Cal Trans Building in LA where in the afternoon Dr. Walerstein presented for the District information. There was comissioners from the CPUC , the CEC , Cal ISO and the Director goldstene from CARB and others present. The state would own the transmission and distribution system now controlled by the IOUs and they would operate and manage the system as they do now on a cost plus 10% basis. 10 years the whole system could has been bought for apx \$10 billion now it will sell with eminate domaine for \$12-15 Billion for the T&D and the CPUC will regulate the operation of the systemlike they are doingtoday at cost plus 10% . The IOUs were also at the IEPR meeting as well along with other groups and citizens.

At the meeting on July 13 in Santa Monica MTBE pollution was brought up which increased the efficiency of engineswhich mentless emissions in the air but gas tanks leaked into the ground water contaminating the City of Santa Monicas' warter. This resulted in \$100s million in litigation paid by the oil companies to clean the water. Now fracing for oil and gas 1/3 to 1/2 plus of which comes from fracked wellsss in California from Texas, Lousiana NM and wyoming and Colorado threaten the ground water. the Resources Agency and its Department of Conservation and its DOGGR Division Of Oil Gas and Geothermal Resources is holding meetings around the state that will lead to regulations. As Marshal of DOC stated Fracking in CA is "Regulated but not reported.

Existing law covers this now but nothing is being done about, so the Sierra Club and Center for Biological Diversity have gone to court over an estimated 10-15 billion barrels of oil in the Monterey Shale (the biggest field in the USA / Prudo Bay in Alaska was about the same size as this and there is a gold/oil rush going on to develope this. At todays prices its worth a trillion dollars or two plus which if developed and produced should be used for the ITSCP the Immediate Total Solar Conversion Plan just 86 ground water or ? This could be done through a 90% severence tax (Alaska has a 25% tax - the state did own all of the oil but took 1/8 in royalties / tax which went to Alaska Permanant Fund) in California to help finance ITSCP which should help fund low and low middle income ITSCPPlan cited herein. There is a meeting

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which it was mentioned that the District should be at of the Water Agencies on July 24th in Long Beach on Fracking, the day before DOGGRs last meeting in Sacramento on July 25th 2012. Regulations for the state wouldn't be implemented until mid 2013 for CA just as federal EPA regulations and studies won't be released until after the Fall November elections. The District is planning a meeting on fracking in September with Doggr and EPA etc.

The District should not wait until 2015 to submit a SIP on PM 2.5 to the feds but do it now as well as cover ultra fines which the District has had a meeting on a few years ago. This must be part of the AQMP this year 2012 as part of the ITSC Plan cited herein etc for 5 year conversion Plan etc..

GHG Howarth et al must be googled (natural gas fracking 2011 and 2012 both papers are in onlinks submitted with Comment Part 1 shows as submitted to the District in the past that 105 times the ghg impact of co2e using a 20 yr time frame for methane/natural gas rather than 21 used by SCAQMD or 25 used by CARB or 33 used by James Hanson NASA Gottard Institute several years ago over a 100 year time frame. With all of the rush to frack (Howarth states on the attached recording of last Thursday June 12, 2012 fracking phone call that oil fracking is as bad (value _ yeilds as much methane as fracking for gas incorporated herein hereby in the record by reference as well) Warming as happening much faster in the Artic than science predicted and if the tundra melts methane ch4 will be released in a great amount (a negative positive feedback loop).

Gov Brown wants 12 GW of distributed generation solar to be on line in Ca by 2020. At the IERP meeting in LA last month Commissioner (CPUC) Florio stated that there is already more that 33% of the load/ solar signed for use by 2020 . There has been for several years now. This is too modest a program. That's why ITSCPlan presented here needs to be implemented now.

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Responses to Comment Letter H
Harvey Eder

Response to Comment H-1:

We appreciate the references and information sent over on the environmental impacts from hydraulic fracturing. These concerns are something we have been monitoring and tracking carefully and are informing the public along with addressing these issues with industry. Recently at AQMD we held a forum focused on the environmental impacts of hydraulic fracturing and provided policy level discussions. In addition, we are working with both the state and federal government in developing regulations and enforcement policies. Finally, staff will be working on development of fracking regulations, if feasible and appropriate.

Response to Comment H-2:

The AQMD recognizes the clean air benefits renewable energy provides to both the electric power grid and other services such as hot water heating. Chapter 10 of the AQMP addresses the implementation of the states 33% renewable portfolio standard along with the benefits increased efficiency provides on reducing fuel and energy demands. This chapter shows the total energy consumption in Sothern California was near 2.1 quads in 2008 and is expected to show a slight 0.1 quad increase by 2023. However, the slight increase in projected energy use in Southern California will be met with an increase in energy prices; in 2008 close to \$54 billion was spent on energy and the projected cost of energy consumption in 2023 is \$74 billion. Overall the projected 5% increase in energy consumption is going to be met with a 27% increase in energy prices. As mentioned within this chapter, significant implementation of renewable energy coupled with the transportation system will help lower emissions, reduce impacts from volatile energy prices, help localize dollars spent on energy, and provide some isolation from increasing energy costs.

The AQMD endorses solar power as a clean air solution to help provide emission free electricity to residences and businesses whenever feasible. We have been an early supporter of implementing new solar technologies. At the AQMD headquarters, we currently have over 180kW of solar panels installed that are demonstrating three different solar technologies. Additionally, we are funding and undertaking several technology demonstration projects that help address the limitations of solar, such as, coupling solar power production with energy storage to help with intermittency. We also promote the benefits electrification technologies provide to clean the air such as electric vehicles, and as mentioned earlier, advocate for the electrical supply to be from clean air sources such as renewables.

The prices of solar panels have come down nearly a third in the past couple of years due to less expensive ways to manufacture polysilicon, an increase in solar

manufacturers, and expiring solar incentives in other countries. Resulting price declines have made PV solar very competitive with conventional generating technologies. This decline in prices has helped implement this technology in Southern California as there are now many solar installation companies that employ thousands in this sector. The recent increase of roof-top solar PV installations does not show any indication of slowing down in the near future since financing mechanisms have become available along with local incentives and federal tax credits. Additional incentives for solar installations are also likely in the near future as a portion of the revenues utilities start to receive from the CARB GHG Cap and Trade program under AB 32.

Unfortunately, solar power does not currently provide a standalone solution to providing all the electrical generation needs for Southern California. Until the intermittency problem is addressed, large storage technologies, and increased panel efficiencies become more cost effective, existing natural-gas fired power generating technologies are required to provide base loads, ramp rates, and other ancillary services such as frequency regulation. Additionally, the clean air benefits renewable energy sources such as solar power provides in Southern California will be best realized as transportation technologies such as electrification are implemented at a faster rate.

In a Vision for Clean Air: A Framework for Air Quality and Climate Planning biofuels was presented as a one component among several to meet the GHG goals of the State. The use of biofuels does not typically provide an advantage in reducing criteria pollutants if they are combusted in standard IC engines such as diesels. Therefore in the document it was stated “In the longer-term, to meet the greenhouse gas targets, any combustion-based heavy-duty trucks would rely predominantly on efficiency and renewable and biofuel solutions. However, to achieve the air quality standards in the South Coast, a technology transition to zero- and near-zero emission trucks (e.g., electric, fuel cell, or hybrid with all electric range) to reduce NOx emissions is also needed.” In summary, staff supports the development and implementation of solar energy technologies to the maximum extent feasible and cost-effective. These technologies are not needed to attain the PM2.5 standards, but staff will continue to support solar technologies for attaining the ozone standards in the future.

I. Neighbors of Santa Monica Airport, July 28, 2012

Neighbors of Santa Monica Airport
P.O. Box 643033 Los Angeles, California 90064

BY ELECTRONIC DELIVERY

July 28, 2012

Dr. Phillip Fine
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
pfine@aqmd.gov

Mr. Joe Cassmassi
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
jcassmassi@aqmd.gov

RE: 2012 Air Quality Management Plan – Santa Monica Airport

Dear Dr. Fine and Mr. Cassmassi,

We are writing on behalf of Neighbors of Santa Monica Airport (“NoSMO”) regarding Santa Monica Municipal Airport (“SMO”) located at 3223 Donald Douglas Loop South, Santa Monica, California 90405. NoSMO is a coalition composed of residents and community leaders from Santa Monica and Los Angeles neighborhoods impacted by SMO. We request that South Coast Air Quality Management District (“SCAQMD”) review, propose, approve, and submit to California Air Resources Board (“CARB”) an Indirect Source Review Rule regulating air pollution emissions originating from activities at SMO.

SMO has a disproportionate environmental health impact on local residents. SMO is unique in having dense residential development less than 300 feet from the east and west ends of the runway. Unlike other Southern California airports, SMO has almost no buffer zone between the runway ends and the surrounding community. Adrian Castro, et al, *Santa Monica Airport Health Impact Assessment* (2010). A UCLA study noted that “[s]mall airports in heavily populated areas do not necessarily have ... buffers ... so residents may be more directly exposed to aircraft emissions.” Shishan Hu, et al *Aircraft Emissions Impacts in a Neighborhood Adjacent to a General Aviation Airport in Southern California*, 43 Environ. Sci. Technol. 8039, 8039 (2009). The UCLA study went on to conclude that the residential neighborhoods surrounding

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SMO have "markedly high concentrations of air pollutants ... suggesting ... [that the] buffer areas around ... [SMO] may be insufficient." The proximity between the airport and the surrounding community creates a dangerous health risk for local residents.

Local residents living in proximity with the airport face an elevated risk of cancer. According to a study sponsored by the Los Angeles Unified School District, cancer risk arising from maximum exposure to air pollution generated by activities at SMO for local residents ran thirteen to twenty-six in one million. Bill Piazza, Santa Monica Municipal Airport: A Report on the Generation and Downwind Extent of Emissions Generated From Aircraft and Ground Support Operations 2 (1999). Cancer risks to local residents from SMO significantly exceed the guideline lifetime cancer risk of one in a million individuals for cancer risk from maximum exposure to a source of air pollutants under the Federal Clean Air Act. 42 U.S.C. § 7412.

I. **South Coast Air Quality Management District is Legally Obligated to Implement an Indirect Source Review Rule Regulating Emissions from Santa Monica Airport.**

SCAQMD is legally required to implement an Indirect Source Review rule controlling emissions from Santa Monica Airport. The California Clean Air Act requires that SCAQMD "provide for indirect source controls in those areas of the south coast district in which there are high-level, localized concentrations of pollutants" Cal. Health & Safety Code § 40440(b)(3).

Multiple studies have demonstrated that there are elevated levels of air pollutants such as lead, black carbon, and ultrafine particulate matter on Santa Monica Airport property as well as in neighboring residential areas. *Infra*.

Modeling studies have shown that concentration of ambient lead levels near, at and exceeding the National Ambient Air Quality Standard ("NAAQS") at Santa Monica Airport as well as at nearby residential neighborhoods. Studies conducted by the U.S. Environmental Protection Agency ("USEPA") and SCAQMD found areas on Santa Monica Airport's runway with lead levels violating the current lead NAAQS. U.S. Environmental Protection Agency, Development and Evaluation of an Air Quality Modeling

I-1

I-2

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Approach for Lead Emissions from Piston-Engine Aircraft Operating on Leaded Aviation Gasoline 72 (2010); South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study 20-21 (2010). In addition, both studies found elevated ambient lead levels that often exceeded, but averaged near the NAAQS in surrounding residential neighborhoods. *Id.*

Lead can have irreversible brain and nerve damage, severe developmental impacts on children as well as adverse impacts on adults. Lead has been found to have neurological impacts on children, leading to behavioral problems, learning problems, and lowered IQ. Adults, when exposed to lead, can suffer cardiovascular problems such as high blood pressure, and heart disease. Finally, lead exposure has also been found to have negative impacts on the nervous system, kidney function, immune systems, and reproductive ability. U.S. Environmental Protection Agency, Lead in Air: Health (2011), <http://www.epa.gov/airquality/lead/health.html> (last visited Nov. 11, 2011).

Elevated levels of Black Carbon have also been found to have been generated by activities at SMO. Jet takeoffs at SMO have been found to result in large spikes in concentrations of Black Carbon in and around the airport. Hu, 43 Environ. Sci. Technol. at 8039 (2009); South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study: Follow-up Monitoring Campaign at the Santa Monica Airport 3 (2011).

Black carbon, as a component of particulate matter, has been linked to increased risk of cardiovascular disease, respiratory disease, cancer, and premature death. United Nations Environmental Program, World Meteorological Organization Integrated Assessment of Black Carbon and Tropospheric Ozone (2011) 113-15.

Very high levels of ultrafine particulate matter have also been found at SMO. Studies conducted by the University of California, University of Southern California, CARB, and SCAQMD found elevated ultrafine particle concentrations in the downwind residential areas directly attributable to SMO aircraft operations. South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study

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(2010); South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study: Follow-up Monitoring Campaign at the Santa Monica Airport (2011); Shishan Hu et al, *Aircraft Emissions Impacts in a Neighborhood Adjacent to a General Aviation Airport in Southern California*, 43 Environ. Sci. Technol. 8039 (2009).

Ultrafine particles have been linked to premature death from respiratory and cardiovascular disease. University of California Los Angeles Community Health and Advocacy Training PGY-2 Pediatric Residents, Santa Monica Airport Health Impact Assessment 10 (2010). Ultrafine particulate matter may pose a greater health risk than other, larger forms of particulate matter due to their tendency to penetrate deeper into the body. Ning Li et al, *Ultrafine Particulate Pollutants Induce Oxidative Stress and Mitochondrial Damage* 111 *Env'tl Health Perspectives* 455, 455 (2003).

Airports are a significant source of emissions of Volatile Organic Compounds (VOCs) as well as Nitrogen Oxides (NOx), both of which are ozone-forming pollutants. Colleen Callahan, The Plane Truth: Air Quality Impacts of Airport Operations and Strategies for Sustainability: A Case Study of the Los Angeles World Airports 7-10 (2010); U.S. EPA, Documentation for Aircraft Component of the National Emissions Inventory Methodology (2011).

Ozone has been shown to cause decreased lung function, chest pain, as well as aggravate existing respiratory illnesses such as asthma, pneumonia, and bronchitis. U.S. EPA, Ground Level Ozone: Health, <http://www.epa.gov/air/ozonepollution/health.html> (accessed on March 25, 2012). SMO is located in Northwest Coastal LA County, which exceeded both the State and Federal Ozone standards in 2010 and 2009. South Coast Air Quality Management District, 2010 Air Quality (2011); South Coast Air Quality Management District, 2009 Air Quality (2010).

The California Clean Air Act requires SCAQMD to promulgate Indirect Source controls to regulate pollution from SMO. SCAQMD is required to impose Indirect Source controls in areas where there are "high level, localized concentrations of pollutants." Cal. Health & Safety Code § 40440(b)(3). A study

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concluded that there are "high concentrations of air pollutants in the residential neighborhoods downwind of SM[O] due to aircraft activities" Hu at 8039. SCAQMD should act to regulate emissions from Santa Monica Airport.

I-2

II. South Coast Air Quality Management District has the Authority under the Federal Clean Air Act to Impose Indirect Source Controls on Santa Monica Airport.

Arguably, SCAQMD is federally preempted from imposing Indirect Source controls on SMO. Both the Federal Aviation Agency and the USEPA have exclusive federal authority over aircraft operations, design, and manufacture. However, SCAQMD has the authority to regulate pollution from SMO with the approval of CARB with its delegated authority under the Federal Clean Air Act. Federal courts have found that states may regulate *emissions* from aircraft engines under the Federal Clean Air Act as long as it does not directly regulate aircraft operations, design, or manufacturing. *California v. Navy*, 431 F.Supp. 1271 (1977). SCAQMD and CARB have federally delegated authority to impose Indirect Source controls on facilities such as airports. 42 U.S.C. § 7410(a)(5).

I-3

III. Santa Monica Airport Could Implement Reasonably Available Control Measures to Reduce its Environmental Health Impact on Local Residents.

SMO could implement control measures to abate its impact on the surrounding community and comply with emissions limits imposed under an Indirect Source Rule. SMO could adopt a number of measures under its proprietary authority to reduce the amount of air pollutant emissions from its facility, including increased landing fees, reducing available parking spaces for large aircraft, etc.

I-4

IV. South Coast Air Quality Management District Should Impose Indirect Source Controls on Air Pollutant Emissions from Santa Monica Airport.

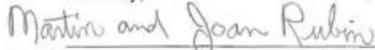
SCAQMD should impose an Indirect Source Review Rule on SMO. In light of SCAQMD's legal obligations, the significant public health risks and the feasibility of control measures that could be adopted, SCAQMD should act to abate SMO's impact on its surrounding communities.

I-5

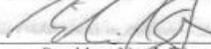
Neighbors of Santa Monica Airport
P.O. Box 643033 Los Angeles, California 90064

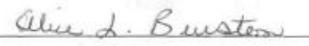
Thank you for considering these comments. Please put the undersigned on the mailing list for the 2012 AQMP. Should you have any questions or need more information, please contact Mitchell Tsai at (714) 881-4876 or tsai.mitchell@gmail.com.

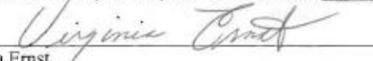
Sincerely,

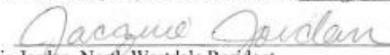


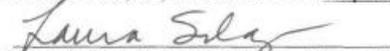
Martin and Joan Rubin, Co-founders and Director, Concerned Residents Against Airport Pollution
P.O. Box 643033 Los Angeles, California 90064;
E-mail: jetairpollution@earthlink.net Phone: (310) 479-2529

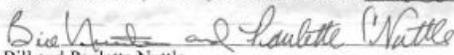

Bill Koontz, President North Westdale Neighborhood Association
2647 S. Barrington Ave. #4, LA, CA 90064 chillywilly00@msn.com

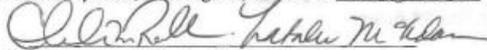

Alice Burston,
703 Machado Drive, Venice, CA 90291 E-mail: alburston@hotmail.com

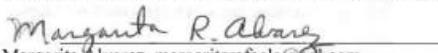

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Margarita Alvarez margaritarafaela@aol.com

Responses to Comment Letter I
Neighbors of Santa Monica Airport

Response to Comment I-1:

AQMD has not observed elevated levels of PM_{2.5} in neighborhoods near the airport so this plan will not include a measure specific to the airport. AQMD will continue to explore possible ways of reducing emissions at the airport. The health effects of air pollutants are addressed in Appendix I. Regarding cancer risk, The AQMD's MATES III study estimates life time risk for air toxics near the Santa Monica Airport at about 930 per million which is less than the regional average of 1194 in a million.

Response to Comment I-2:

See Response F-3. Also, although some airports are significant sources of VOC and/or NO_x, which are precursors to ozone, ozone is not a “localized” pollutant and is not the target of H&S Code §40440(b)(3).

Response to Comment I-3:

The AQMD staff agrees that it has the authority under state and federal law to adopt indirect source controls. Such authority is not preempted by the Clean Air Act, as held in *National Association of Home Builders v San Joaquin Valley APCD*, 627 F. 3d 730 (9th Cir. 2010). Whether any other federal statute would have preemptive effect would likely depend on the particulars of any proposed indirect source rule.

Response to Comment I-4:

In the absence of high-level localized emissions of criteria air pollutants, an indirect source control measure for Santa Monica Airport is not required. While airports in general produce VOC and NO_x emissions, which contribute to ozone, there is no technical basis to single out Santa Monica Airport in an effort to reduce ozone pollution. As efforts to implement ozone measures and reduce the size of the “black box” for ozone, staff will continue to explore methods of reducing emissions of NO_x at a variety of sources including airports.

Response to Comment I-5:

AQMD staff does not believe that this request should be addressed as part of the 2012 AQMP, but will continue to consider whether such an approach would be viable to reduce emissions in the future.

J. CA Trucking Association, August 30, 2012

August 30, 2012



Dr. William A. Burke, Chairman
Members of the SCAQMD Governing Board
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar, CA 91765

RE: 2012 Draft Air Quality Management Plan

The California Trucking Association (CTA) is a nonprofit trade association representing thousands of trucking companies operating in and out of California, including the many residing in the vital goods movement, manufacturing and trade hub contained in the South Coast Air Basin (SCAB). We thank you for the opportunity to offer comments on the South Coast Air Quality Management District's ("the District") 2012 Draft Air Quality Management Plan (AQMP).

Demonstrating attainment of future ozone standards in the South Coast is a challenge that will require an open and ongoing dialogue between local business owners and the District.

CTA Recommends Additional Evaluation of On-Road Control Measures for NOx

We request that ONRD-03, ONRD-04, and ONRD-05 be subject to additional evaluation to review the following:

- i. Cost-effectiveness
- ii. Commercial availability and scope of Best Available Control Technology (BACT) to achieve goals of ONRD-05
- iii. Unprecedented nature of mobile source "black box" control measures, possible jurisdictional issue with ARB

Cost Effectiveness

We would like to specifically address ONRD-05 to express frustration, no doubt similar to other stakeholders, with regards to lack of time and available data to assess cost-effectiveness of proposed control measures as required by California Health and Safety Code 40922.

Given the entirely reasonable expectation that technology used to achieve the reductions targeted in ONRD-05 will be the first commercially available of their kind, the CTA recommends a robust economic analysis be conducted to ensure that the near-dock rail drayage market will support adoption of high incremental cost advanced technologies.

J-1

As previously expressed to staff at both the District and ARB, CTA has offered to help facilitate meetings with motor carriers who currently service the ICTF rail facility to open a dialogue over achieving emission reductions in this sector and realistic pathways and timelines forward to zero and near-zero emission technologies.

J-1

BACT Not Commercially Available; ONRD-05 Language Vague

The District specifically names “battery-electric trucks, fuel cell trucks, hybrid-electric trucks with all electric range (AER) and zero-emission hybrid or battery-electric trucks with —wayside power (such as electricity from overhead wires)...zero-emission fixed guideway systems such as electric, maglev or linear synchronous motor propulsion or any other technologies that result in zero-emission track miles” as possible technology pathways towards satisfying ONRD-05.

The District further states “such systems are not currently in use for full-scale port to railyard operations and, depending on the technology, may require different levels of additional development and optimization” and that measures such as ONRD-05 should “create a positive signal to technology developers by requiring the use of zero-emission technologies”.

CTA would like to ask that the District elaborate further on the expected performance standard called for by ONRD-05. For instance, it is unclear whether a traditional diesel engine retrofit with a hybrid electric system compatible with overhead catenary would meet the performance standard if that configuration resulted in “zero-emission track miles” only while receiving wayside power. In order to create a clear signal to technology developers, it is incumbent on the District to specify what parameters it expects these technologies to achieve.

J-2

Also, because none of the named technologies are commercially available, we question the utility of including this measure in the 2012 AQMP given that the District is committing the ARB to enforceable implementation deadlines. Forced advancement, for what the District acknowledges is about 1000 trucks, is unlikely to result in vendors producing reliable, stable technology for this important segment of port drayage operations, setting economics completely aside. Near-dock rail facilities are currently responsible for 10% of all throughput¹, a figure surely to increase once construction of the Southern California Intermodal Gateway is completed. Reliable near-dock drayage service is vital to the economy of the SCAB.

Unprecedented Nature of Mobile Source Control Measures

We would like to note that the nature of ONRD-05 (and, by extension, ADV-01) is unique in the recent history of the District’s AQMP adoption in that the District is calling for a control measure that would require ARB to adopt a mobile sources control measure prior to ARB initiating a rulemaking in conformance with California’s Administrative Procedures Act.

J-3

While we do not enter into the question of what authority is granted the District by 182(e)(5) of the Clean Air Act (CAA), we simply note the ARB's traditional role as the State's primary regulator of mobile source emissions.

Further discussion should be held regarding the role of local air districts in setting or suggesting mobile source emission reduction strategies as extreme non-attainment areas attempt to shrink the "black box". Mobile sources are, by their nature, more exposed to interstate and inter-district commerce and, thereby, must be able to maintain the operational flexibility to serve a vast and diverse set of economic interests and geographies. While the pursuit of local mobile source reduction goals are understandable in the scope of the AQMP, the State and Federal role in establishing mobile source emission reduction goals, including their unique ability to achieve economies of scale, cannot be overlooked.

J-3

CTA Supports the Southern California Business Coalition's Comments

CTA was a co-signatory to a letter representing the concerns of a diverse base of local business interests. Specifically, we support the call to focus the current AQMP on PM2.5 attainment, which would allow the District and impacted stakeholders additional time to assess proposed 182(e)(5) control measures. As noted in this letter, the vast majority of cost associated with the AQMP is derived from additional, early measures to address ozone to the extent that cost estimates have been provided by the District.

J-4

CTA Encourages the District to Engage in More Industry Outreach and Partnership

California's trucking industry has repeatedly shown a willingness to demonstrate heavy duty natural gas, hybrid, all-electric and fuel cell pilot vehicle projects. In 2012, CTA staff reviewed its current "technology and fuel neutral" policy to assess the developmental states of multiple advanced heavy duty alternative technology trucks and came to a similar conclusion as the District has in the AQMP with regards to zero and near-zero emission technologies; while multiple promising technologies are in developmental stages, the pathway to zero or near-zero emissions is still uncertain.

Little to no outreach was done to the trucking industry prior to the District's proposal of ONRD-05. We cannot envision how the District's goals of technology advancement can be achieved without a full and committed engagement with the actual end users of this technology. Through our initial conversations with District staff, we believe we have begun a dialogue on the technological, operational and economic challenges that ONRD-05 will encounter, but those discussions, to date, have barely scratched the surface of what is needed to make such a program successful.

J-5

We would encourage the District, if it chooses to act on the Southern California Business Coalition's recommendation to solely focus the 2012 AQMP on PM2.5 attainment, to use this

additional time to seek additional trucking industry input on ONRD-05 prior to adopting a new proposed control measure.

Thank you for the opportunity to comment on the 2012 Draft AQMP and we would like to reaffirm our commitment to continue work with the District on this project, and others, in the future.

J-5

Thank You,



Eric Sauer, Vice President of Policy and Regulatory Development
2012 AQMP Advisory Group Member
California Trucking Association
(916)373-3562

Responses to Comment Letter J
California Trucking Association

Response to Comment J-1:

Many of the control measures proposed in the AQMP recognize the potential for the development of advanced vehicle technologies to be commercially available in the near-term. As such, ONRD-05 recognizes that the current state of development of trucks operating in a "zero-emission" mode may be realized in the next few years and the "commercial" cost is not available at this time. As part of the implementation of the measure, whether through a regulatory process or other enforceable mechanism), a technology assessment will be made to determine commercial availability and a cost-effective analysis will be conducted.

Response to Comment J-2:

See Response to Comment J-1. In addition, ADV-01 is provided to complement ONRD-05, in that the measure calls for actions that will lead to development of zero- and near-zero emission trucks.

Response to Comment J-3:

The control measure/regulatory development process is not unprecedented. Prior AQMPs and SIPs included control measures which led to regulatory development by CARB. ONRD-05 recognizes CARB's authority to develop regulations for on-road mobile sources. As part of CARB's assessment on the need for a regulation, other actions that lead to deployment of zero-emission vehicles will be assessed. Such actions could be similar to the San Pedro Bay Ports Clean Truck Program or funding incentives to deploy such trucks. As such, the Ports of Los Angeles and Long Beach as well as the AQMD are listed as implementing agencies.

Response to Comment J-4:

Since the 182(e)(5) measures are part of the 2007 Ozone SIP for the South Coast Air Basin, the AQMD staff believes that it is appropriate to identify actions that practically fulfill the emission reduction commitments of the 182(e)(5) measures. Waiting until the next plan revision will severely limit the time frame to attain the ozone air quality standard by 2023 and would place a greater burden on all sources to reduce emissions within a shorter timeframe.

Response to Comment J-5:

Staff appreciates CTA's effort to outreach on the development of zero- and near-zero emission trucks. Staff believes as the region moves forward with implementation of the 2012 AQMP that there will be opportunities to continue such dialogue with all affected stakeholders.

K. City of Santa Clarita, August 31, 2012



City of
SANTA CLARITA

23920 Valencia Boulevard • Suite 300 • Santa Clarita, California 91355-2196
Phone: (661) 259-2489 • FAX: (661) 259-8125
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August 31, 2012

Mr. Michael Krause
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, CA 91765

Dear Mr. Krause:

Subject: 2012 Draft Air Quality Management Plan Comments

Thank you for the opportunity to comment on the Draft Air Quality Management Plan (AQMP). While ozone air pollution is improving in the Santa Clarita Valley, this valley continues to have air quality that rests amongst the worst in the country. The area's air quality may be further threatened by the Soledad Canyon mine proposed by CEMEX. If permitted and constructed, as proposed, the sand and gravel mine would likely result in significant amounts of fugitive dust and emissions being released into the air. The City of Santa Clarita respectfully requests fugitive dust rules included in the new AQMP be appropriately reflective of potential emissions from the proposed mining operation.

I am grateful for the South Coast Air Quality Management District's efforts to help reduce air pollution affecting the Santa Clarita Valley and the South Coast region. By working together, we can help protect the health of this community and others by assisting to provide clean air for current and future generations.

Sincerely,

Handwritten signature of Travis Lange in black ink.
Travis Lange
Environmental Services Manager

TL:HM:kms
S:\ENV\SVCS\AIR\AQMP\2012 AQMP\AQMP Comment lr.doc

cc: Ken Pulskamp, City Manager
Michael Murphy, Intergovernmental Relations Officer
Robert Newman, Director of Public Works and Community Development

K-1

Responses to Comment Letter K
City of Santa Clarita

Response to Comment K-1:

The AQMD currently has several rules on the books that are applicable to the Soledad Canyon sand and gravel mining project. In fact, since the December 2000 comments provided by this agency on the draft Environmental Impact Report for the project, the AQMD Governing Board adopted a rule directly aimed at such operations. Specifically, Rule 1157 – PM10 Emission Reductions from Aggregate and Related Operations was adopted in January 2005 and establishes requirements regarding control of fugitive dust emissions from sources that include, but are not limited to: internal paved and unpaved roads; material storage piles; loading/unloading/transfer of material; conveyors; screening and crushing equipment; and track-out onto public roadways. The rule also established opacity limits from any activity, equipment, storage pile, or disturbed surface area, and limits any visible fugitive dust plume from traveling 100 feet in any direction from these sources.

Other applicable rules include Rule 403 – Fugitive Dust, which among other applicable requirements, includes a requirement that no fugitive dust shall cross the facility property line and the rule requires facility operators to take an AQMD taught Fugitive Dust Class to ensure applicable requirements are adhered to. In addition, Rule 1155 – PM Control Devices, adopted in December 2009, establishes a no-visible emissions threshold from any particulate matter control device or dust collector, such as a baghouse, cyclone, wet scrubber, and electrostatic precipitator (ESP), and requires demonstration of proper operation and maintenance and that the largest filtration devices be equipped with detection systems to ensure repair/replacement of filters before visible emissions are seen from the device.

Therefore, staff feels that the necessary requirements are in place to minimize fugitive dust from the mine and is willing to work with the city to ensure the mine is held in compliance with all applicable rules and regulations, including those that go beyond fugitive dust (e.g., off-road equipment).

L. ISSA, August 31, 2012

August 31, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

ISSA appreciates the opportunity to offer initial comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-01, CTS-02, CTS-03 and CTS-04. ISSA strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, ISSA supports the comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Statement of Interest

ISSA is the Worldwide Cleaning Industry Association that represents the institutional and industrial cleaning industry. ISSA members manufacture, formulate, distribute, and market cleaning products, in addition to providing cleaning services. Our association represents over 6,000 manufacturer, distributor, building service contractor, and in-house cleaning service provider members worldwide. In the aggregate, ISSA member companies employ hundreds of thousands of workers. As such, ISSA is concerned with the implications raised by the draft 2012 Air Quality Management Plan and the ultimate impact it would have on its members.

There are close to 400 ISSA members located in California employing tens of thousands of employees across the state. Over the years, ISSA formulator members have worked diligently to reduce the VOC content in their cleaning products by making substantial investments in reformulating the dozens of products that are covered by CARB Consumer Product Regulations as well as the AQMD VOC regulations.

Comments

ISSA is concerned with the proposal to include further reductions in VOCs from consumer products as well as the elimination of the LVP exception in this AQMP because those actions are neither necessary nor cost effective. In addition, these proposed approaches are technologically and commercially infeasible. In effect, the proposed AQMP would not significantly reduce ozone levels, but would impose substantial costs and other burdens upon the institutional and industrial cleaning industry.

ISSA and its membership are particularly concerned with the four control measures that will have a potential impact on consumer products: CTS-01, Further VOC Reductions from Architectural Coatings; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents, and Lubricants; CTS-03 Further VOC Reductions from Mold Release Products; and CTS-04 Further VOC Reductions from Consumer Products.

L-1

These CTS measures are neither effective nor necessary for ozone attainment. Air modeling demonstrates that further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less effective in reducing ozone. Any VOC reductions needed in the short term should be focused on where they often can be attained with the NOx reductions and not the VOCs in consumer products. Moreover, the elimination of the LVP exception will do nothing to further the goal of ozone attainment. LVPs have minimal impacts on VOC emissions and ozone formation, and have become part of the solution and not part of the problem as treated in the AQMD proposal.

ISSA formulator members have collectively spent millions of dollars over the years in research and development in order to produce cleaning products with an overall superior environmental profile. A significant part of this effort was dedicated to reformulating cleaning products to reduce the VOC content in order to comply with CARB and AQMD VOC limitations. Additional VOC limits and the elimination of the LVP exception will necessitate additional research and development and ultimately the reformulation of hundreds of products that will impose substantial costs upon industry at a time when it is economically most vulnerable. Moreover, we are concerned that the AQMD proposals may result in the substitution of materials that may degrade the overall environmental profile of numerous cleaning products at the same time the AQMD proposals would do little to reach the goal of ozone attainment.

The AQMD proposals are also likely to result in numerous products being dropped from the marketplace. Many institutional and industrial cleaners are produced and sold in low volumes to meet the specialty needs of their commercial customers. It is common for many of these products to generate sales within California that are well below \$10,000 per year. While these products serve a valuable function in maintaining a healthy indoor environment, they do not generate sufficient revenues to justify the potential investment needed to reformulate such products to meet the unique requirements proposed by AQMD. Consequently, we believe many products will simply be dropped from the market because of sheer economic reaction to the AQMD proposals.

Furthermore, in many cases, institutional and industrial cleaning products have been reformulated to the point where any further reduction in VOC content or elimination of the LVP exception will significantly impact the efficacy of the product. In fact, ISSA members who provide cleaning services have noticed deterioration in the performance of certain product formulations. Consequently cleaning service providers are concerned with further degradation of product efficacy due to additional VOC reductions and the adverse impact it will have on their ability to deliver effective cleaning services to their customers such as hospitals, schools, hotels, food processing plants, and other institutional and industrial facilities whose thousands of occupants and operations depend on effective cleaning products and services to render their facility in a clean and sanitary condition.

Summary and Conclusions

ISSA appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective. In addition, the AQMD proposals will impose substantial and unnecessary costs on industry that will artificially lead to the elimination of many products critical to the quality of the indoor environment and the health and well being of those who occupy institutional and industrial facilities. Lastly, these proposals could have the unanticipated consequence of degrading

L-1

the overall environmental profile of those products subject to the AQMD proposals. Therefore, ISSA urges AQMD to exclude the aforementioned proposals from its final 2012 AQMP.

Sincerely,

Bill Balek
ISSA
Director of Legislative Affairs
(800) 225-4772
bill@issa.com

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Caria Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

Responses to Comment Letter L
ISSA

Response to Comment L-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS). Staff appreciates the efforts made by ISSA formulator members to comply with CARB and AQMD VOC limitations. While there will be some need for reformulation of products, the District, through the implementation of the Certified Clean Air Cleaners Program and Rule 1143 – Consumer Paint Thinners and Multi-Purpose Solvents, has identified alternative low-VOC, cost-effective technologies that are currently commercially available and used that do not rely upon the LVP-VOC exemption. Contrary to the assertion that these products may degrade the environmental profile, many of the products that do not rely on the LVP-VOC exemption are specifically designed to meet stringent environmental profiles. Many are certified as environmentally preferred products through programs like Certified Clean Air Choices Cleaners and U.S. EPA’s Design for the Environment or third party certification organizations like Green Seal and EcoLogo. When already environmentally preferable certified products were tested, less than ten percent relied on the LVP-VOC exemption to meet the VOC limits. See table below.

Environmentally Preferable Products VOC Content (No LVP-VOC Exemption)

Product Type	Dilution Rate	VOC (g/l)
Air Freshener	RTU	24
Bathroom Cleaner	RTU	19
Bathroom Cleaner	1:18	5
Bathroom Cleaner	1:20	2
Carpet Cleaner	1:20	1
Carpet Cleaner	1:64	1
Dishwashing Soap	1:1536	1
Disinfectant	1:64	1
Floor Polish	1:24	2
General Purpose Cleaner	1:10	1
General Purpose Cleaner	1:08	1
General Purpose Cleaner	1:64	1
General Purpose Cleaner	1:12	1
General Purpose Cleaner	1:15	1
General Purpose Cleaner	1:512	1
Glass and General Purpose Cleaner	RTU	1
Glass and General Purpose Cleaner	1:128	1
Glass and General Purpose Cleaner	1:128	1
Glass Cleaner	1:20	1
Glass Cleaner	1:64	1
Glass Cleaner	1:15	5

RTU = Ready to Use

M. LA County Sanitation District, August 30, 2012



COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

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GRACE ROBINSON CHAN
Chief Engineer and General Manager

August 30, 2012

Elaine Chang, Dr. P.H.
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Dear Dr. Chang:

2012 Draft Air Quality Management Plan Comments

Thank you for this opportunity to review and comment on the 2012 Draft Air Quality Management Plan (Draft Plan). The document is generally very well written, understandable and very ambitious. We think the episodic strategies for control of directly-emitted PM2.5 are a viable means of efficiently meeting most of the PM2.5 target. We are not completely clear how the anticipated 1-hour ozone SIP call will impact the Section 182 (e)(5) measures specified within the draft plan and are concerned about any potential changes that might occur to the draft plan when that action does occur. We have divided our comments below into a) general thoughts and remarks and b) specific comments on individual control measures.

General Remarks

- 1. The discussion of threshold costs and procedures to be followed in the event they are exceeded described on Page 4-42 of the Draft Plan appear to be reasonable, however, there is no ultimate ceiling or maximum cost at which point Congress should be petitioned in accordance with the spirit of the Legislative Committee agenda for 2012. We believe this is a critical policy issue that needs to be addressed. The final plan should not simply assume that the attainment endpoint is a given irrespective of the cost and impacts to the regulated community.
2. Table 4-1: Criteria for Evaluating Control Measures. This table ranks "technical feasibility" of a control measure dead last. Even the more nebulous "public acceptability" is ranked higher. It seems to us that even before cost effectiveness can be determined, there needs to be a basic determination that the proposed control measure has a chance of accomplishing what it will be

M-1
M-2



- designed to do. We suggest moving the technical feasibility criteria to the second position. } M-2
3. The "All Feasible Measures" control measures seek to apply BARCT, potentially across all source categories, a one size fits all approach, without any specifics as to technology availability, affordability etc., potentially leading to a situation similar to the current implementation of existing Rule 1147. The lack of any control measure description or explanation (beyond the generic application of BARCT) does not allow for any intelligent feedback during this comment period by any potentially regulated sources. This control measure might be best suited to a two-phase rulemaking procedure to first confirm the existence, feasibility and affordability of the rule-dependent technology, followed by the command and control rule, after the technology assessment has been completed. } M-3
4. We believe the focus net of the EDU measures should be more broadly cast. This measure should be expanded to include aggressive general household education on the nexus between human activity and air pollution. While consumer education about energy efficiency and the other ideas are generally good, the average citizen still is very much unaware of their personal connection and contributions to poor air quality. While some members of the community might be aware of rideshare programs and HOV lanes and lawnmower/blower exchange programs, etc., most probably do not think in terms of their personal connection to air quality. Former Board member Jane Carney made this point during a 2011 Legislative Committee meeting. Perhaps one form of such education could be a video or movie where a family might be followed throughout the course of a normal day and the air quality consequences of their activities, individually and collectively, pointed out by a commentator with suggestions to lowering the impacts. Such an approach spreads the burden of attaining the goals of the Draft Plan to the broader population base where it better belongs. } M-4
5. We are unclear as to the impacts of the imminent 1-Hour ozone SIP call on the proposed Section 182 (e)(5) measures are and would like to see more explanation of what could happen in that event. } M-5
6. CEQA: Enhanced Environmental Analysis: Impact of the Environment on a Project (Pages 9-26, 27): We hope that the decision to require these additional analyses and mitigations, if necessary, in your reviews as a responsible agency will not further increase the likelihood of litigation. } M-6

7. Renewable energy sources such as biogas seem to be at odds many times with criteria pollutant control measures. While the Sanitation Districts appreciated the SCAQMD's support on renewable energy legislation in the 2012 legislative season, our attempts to influence CARB, the CEC and the CPUC with respect to favorable treatment of renewable biogas have largely failed, in essence making the economic viability of many future energy development projects questionable. We remain of the opinion that the productive use of biogas renewable fuels is a judicious way to go in terms of air quality planning and hope to continue our partnership with the District in this area.

M-7

Short Term PM 2.5 Measure Comments

1. BCM-04 Further Ammonia Reductions from Livestock Waste (Page IV-A-31). While the Chino area may have an operative desalter project, other areas of the air basin may not. Accordingly, soil and groundwater salt content for the water and wastewater agencies could be an issue.
2. EDU-01: Please see our general comment above.
3. MCS-01(formerly Facility Modernization, now All Feasible Measures aka Application of All Feasible Measures aka All Feasible Measures for All Pollutants aka All Feasible Measure Application)(Page IV-A-44): The name of this control measure should be consistent throughout the document. The balance of our comments on this control measure are in the general comments above.

M-8

M-9

Section 182 (e)(5) Ozone Measures

1. CMB-02 NOx Reductions from Biogas Flares (IV-A-61): The \$20,000 per ton estimate for this control measure is probably low given that very little biogas is actually flared. This could change however as other biogas combustion-related control measures require higher and higher control efficiencies making it difficult to sustain cost-effective onsite distributed generation. Biogas producers should not be penalized for flaring if that is their only recourse. We also look forward to seeing the emissions estimates for this control measure in the final plan.
2. MCS-01 (Page IV-A-76): We have the same comment as on MCS-01 above.

M-10

- 3. MCS-02 Further Emissions Reductions from Greenwaste Processing-Chipping and Grinding Operations Not Associated with Composting (Page IV-A-77): Cal Recycle is currently raising the AB 939 landfill diversion goal through the implementation of AB 341 from 50% to 75% by 2020. Composting is seen as a logical outlet for biodegradable material no longer going to a landfill. We believe your disclaimer that AB 939 diversion goals will not be impacted requires more examination as part of the background to this measure.
- 4. MCS-03 Improved Start-up, Shutdown and Turnaround Procedures (Page IV-A-81): As a holder of many SCAQMD permits, we are very concerned about regulations limiting start-up and shutdown procedures and flexibility. We believe that most equipment operators strive to bring equipment up and down slowly to avoid stresses, to confirm it is operating properly before bringing it to the next level of operation, and to prolong its life as far as practicable. Many of the larger equipment items we operate have CEMS installed and these reflect startup and shutdown history. Combustion equipment on landfill or digester gas may also have many start cycles because of the variable nature of the renewable fuels i.e., the quantity and quality changes frequently.
- 5. INC-01 Economic Incentives to Adapt Zero and Near Zero Technologies (Page IV-A-84): We support the concept of funding renewable energy projects but we are unclear as to the source of funding for this control measure.
- 6. EDU-01 (Page IV-A-91): See our general comment above.

M-11

M-12

M-13

Appendix IV-B Proposed Section 182(e)(5) Implementation Measures

We wish you every success trying to accomplish the ambitious agenda included in this appendix.

- 1. Page IV-B-83: The Baltic Sea comment may not be appropriate.
- 2. Page IB-B-88: The Sanitation Districts would appreciate a position on the off-road equipment working group. The Sanitation Districts operates a large fleet of heavy duty off-road equipment and we have provided test sites and equipment platforms for many CARB control technology studies.

M-14

M-15

Elaine Chang, Dr. P.H.

- 5 -

August 30, 2012

Miscellaneous Comments

1. AQMP Pages 3-12 & 13: We appreciate the formation of a working group to explore the landfill emissions data. There was insufficient time to review the CARB input to these data prior to the finalization of the emissions inventory.
2. The relative importance of pre-cursor emissions reductions of ammonia could use some more explanation. Page 4-5 of the draft AQMP is one of the few places in the report where ammonia is mentioned. More explanation would help as to how the concentration of ammonia is embedded in the NOx and SOx factors. We also wonder if better episodic enforcement of permit conditions dealing with ammonia emissions in the Chino area might help to mitigate localized ammonium sulfate and nitrate emissions.



M-16



M-17

Again, we appreciate this opportunity to comment and think the Draft Plan represents a remarkable effort.

Very truly yours
Grace Robinson Chan

Gregory M. Adams
Assistant Departmental Engineer
Air Quality Engineering
Technical Services Department

GMA:bb

Responses to Comment Letter M
LA County Sanitation District

Response to Comment M-1:

The Socioeconomic Report on the 2012 AQMP was released on September 28, 2012, and includes the costs, benefits, and employment impact from implementing the Plan. Most of the proposed control measures (see Appendix IV-A and Appendix IV-B) include cost effectiveness values in dollars per ton of emission reduction, and the proposed control measures are ranked (see Chapter 6 of the Plan) based on these cost effectiveness values. As noted in Chapter 4 of the Plan, the District proposes to establish a cost effectiveness threshold of \$16,500 per ton of VOC reduction and \$22,500 per ton of NOx reduction. This threshold will trigger further evaluation and a pre-hearing at the District Board prior to the final rule being proposed. Only one control measure, CTS-01, has the potential to exceed the VOC threshold on the upper end of the cost effectiveness range. All the other proposed control measures have a cost effective value less than the threshold. Regardless, it should be noted that during rule development a public review and decision process is instituted to seek lower viable cost alternatives.

Response to Comment M-2:

Table 4-1 was not intended to imply any ranking or priority of the evaluation criteria. The text and table title have been modified to clarify that no ranking is intended.

Response to Comment M-3:

The control measure MCS-01 (Application of All Feasible Measures Assessment) is intended to focus on new technology developed in the future subsequent to the Plan approval, so the specific description of the future actions under the control measure is not possible at this time. However, the triggering of the control measure is likely to occur when new feasible cost-effective best available retrofit control technology is developed and made available. The implementation of MCS-01 could take place in two phases if a technology study is warranted. However, if an assessment of the feasibility, cost effectiveness, and availability of new technology has already been prepared and properly peer-reviewed, a two phase approach might not be necessary.

Response to Comment M-4:

Suggestion noted in EDU-01 measure.

Response to Comment M-5:

U.S. EPA recently proposed to require a new 1-hour ozone attainment demonstration for the South Coast Air Basin. In order to demonstrate attainment with this revoked

standard by 2022, all feasible measures must be included in the SIP revision. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. The attainment demonstration for the 1-hour ozone standard will be analyzed and the results provided in a separate attachment to the 2012 AQMP for consideration of the Governing Board at the same time. Future AQMPs will need to further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment M-6:

The "enhanced environmental analysis" noted by the commenter is not required under any AQMD rules or CEQA statute (with the exception of new school sites). However, lead agencies retain the authority to conduct an analysis of potential health effects on project occupants either within a CEQA document, or outside of it prior to making a decision on the project. The AQMD staff has previously reviewed residential development projects where the lead agency has analyzed and presented the potential health effects to their project, so decision makers were aware of potential impacts on future residences. Text has been added to Chapter 9 to clarify that AQMD staff recommendations for enhanced environmental analysis will continue to be consistent with existing guidance from both the CARB Air Quality and Land Use Handbook and the AQMD Clean Communities Plan.

Response to Comment M-7:

The AQMD will continue to support efforts to encourage the productive use of biogas without its air quality objective.

Response to Comment M-8:

AQMD staff agrees that it could be an issue and intends to assess the potential impact of salt loading on groundwater from the land spreading of manure treated with SBS. Although the incremental increase is expected to be low, the overall impact relative to Regional Water Quality Control Board threshold requirements will need to be examined. Staff intends to work with stakeholders at the water board relative to the potential ground water impacts.

Response to Comment M-9:

The title of the control measure MCS-01 (Application of the All Feasible Measures Assessment) has been made consistent throughout the 2012 AQMP to avoid any confusion.

Response to Comment M-10:

The cost-effectiveness of this control measure will be subject to further refinements during the rulemaking process. In addition, recent staff analysis of the Rule 1110.2 amendment indicated that the control options for biogas internal combustion engines were very cost-effective. Such cost-effective control equipment should help in maintaining the sustainability of onsite distributed generation. The funding for the deployment of the potentially cost-effective alternative of selective non-catalytic reduction emission control technologies as well as subsequent technology assessments should provide further means of maintaining the sustainability of onsite distributed generation.

Response to Comment M-11:

Implementation of the measure is intended to be in harmony with not only the AB 939 diversion goals in the future, but also the amendments to Title 14 currently under development. This measure is meant to focus on the disposition of green material by determining its volume and intended in use. This measure is intended to focus on emission reductions from chipping and grinding operations and should not impact composting and associated operations governed under Rule 1133.3 – Emission Reductions from Greenwaste Composting operations adopted in July 2011. The control measure has been expanded to include a greater discussion of AB 939 requirements.

Response to Comment M-12:

Control measure MCS-03 is carried over from the 2007 AQMP. Although the initial scope of review for startup, shutdown and turnaround activities is likely focus on the minimization of potential flaring emissions at refineries, staff believes that it is possible to develop procedures that can lead to optimization, operational efficiency and emission minimization opportunities applicable to other industries.

The District approach under MCS-03 would be to initially focus on better quantifying emission impacts from startup, shutdown and turnaround activities at refineries, as well as analyzing emission reduction potential. Should the results of these analyses and emission assessments warrant further investigation, a review of potential emission reduction efforts would follow, including a determination of the applicability to other industries. Any subsequent rulemaking efforts would include technical feasibility, socioeconomic impact, and environmental impact assessments, including safety considerations, and certainly involve outreach to affected stakeholders.

Response to Comment M-13:

Funding sources will be from multiple sources such as grants, state program funding, and sources of AQMD funds.

Response to Comment M-14:

The reference to the "Baltic Sea region" is to indicate that such technologies are currently in use. Staff will clarify that such technologies could be transferred to vessels operating at California ports.

Response to Comment M-15:

As provided in ADV-06, a working group will help provide input on technology development and demonstration. The details will be developed after the AQMP is adopted. Staff appreciates the Sanitation Districts efforts in demonstrating advanced control technologies and look forward to working with the Sanitation Districts and other off-road vehicle stakeholders to bring about cleaner off-road vehicles.

Response to Comment M-16:

AQMD staff consistently seeks ways to improve the emission estimation methodology. As it relates to this particular category, we have provided the LA County Sanitation District staff with our inventory methodology, calculation worksheet, and emission factors which were used to estimate the landfill's fugitive emissions. As we have previously discussed, these emissions are the emissions that are not collected by the landfill's collection system and are considered non-permitted emissions. These emissions should have been reported in the Annual Emission Report (AER) as non-permitted emissions, but they were not. We did incorporate the Sanitation District staff's review and recommendations on using the 2008 CARBs GHG emission inventory data for the landfills, however, we were unable to accommodate the request on updating the emission factors, as sufficient information is not available at this time. Additionally, as noted in the comment, we have a mutual agreement to initiate a Landfill Gas Emission Task Force to study all the available documents and develop emission factors that could give a better estimate of the ROG/TOG fugitive emissions. We look forward to a successful partnership.

Response to Comment M-17:

As to the last sentence in page 4-5: It is assumed that the ammonia sources referenced in the Chino area are dairies, which would be the single largest source of ammonia in that area. The primary permits for dairies in the region are only on those that meet the definition of Large Confined Animal facility. Fewer than 30 of the more than one hundred dairies in the Basin are permitted in that way, which excludes a large number of dairies in the region as not subject to the same requirements as in AQMD Rule 223 – Emission Reduction Permits for Large Confined Animal Facilities. Each farm subject to permit is required to meet a menu of requirements outlined in the Rule. Dairies under permit are required to submit rule 223 compliance plans when obtaining a permit and are subject to annual permit renewals. Compliance plans only need to be resubmitted if changes to the plans occur (i.e., change is menu options under the rule).

In that respect, this is the reason for proposed control measure BCM-04 – Further Ammonia Reductions from Livestock Waste which outlines how staff intends to conduct an assessment of using Sodium Bisulfate to treat manure and reduce ammonia emissions, which will include an evaluation of the potential for episodic-only application requirement to focus on poor air quality days.

It should be noted that all dairies are required to report under the Annual Emissions Reporting (AER) Program for PM, VOC, and ammonia. Reports summarize manure production and give emissions credit depending on the manure disposal practice. Use of sodium bisulfate can be reported in the AER Program. At this time, no significant issues with existing requirements exist.

N. Concerned Residents Against Air Pollution, et al, August 28, 2012

Mitchell M. Tsai, Esq. P.O. Box 4643, Diamond Bar, California
tsai.mitchell@gmail.com 714-881-4876

BY ELECTRONIC DELIVERY

August 28, 2012

Dr. William A. Burke
Members of the SCAQMD Governing Board
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: 2012 Air Quality Management Plan – Santa Monica Airport

Dear Chairman Burke and Governing Board Members,

I am writing on behalf of the Westside Neighborhood Council, the Mar Vista Community Council, the Venice Neighborhood Council, the West Los Angeles Neighborhood Council, the North Westdale Neighborhood Association, the Neighbors of Santa Monica Airport, and Concerned Residents Against Airport Pollution (“Supporting Organizations”) regarding Santa Monica Municipal Airport (“SMO”) located at 3223 Donald Douglas Loop South, Santa Monica, California 90405. The Supporting Organizations are primarily local neighborhood associations who represent more than 100,000 residents and others who live and/or work near SMO. Moreover, the Santa Monica Airport Commission, an advisory governmental body to the Santa Monica City Council, recently voted to recommend that this letter be adopted by Santa Monica City Council.

The Supporting Organizations request that South Coast Air Quality Management District (“SCAQMD”) review, propose, approve, and submit to California Air Resources Board (“CARB”) an Indirect Source Review Rule regulating air pollution emissions originating from activities at SMO. An Indirect Source Review Rule for SMO should be integrated as a potential control measure in the 2012 Air Quality Management Plan (“AQMP”).

} N-1

While a number of these groups have previously contacted South Coast Air Quality Management District (“SCAQMD”) requesting that SCAQMD impose regulations on SMO, the Supporting Organizations have voted to support this letter to show that there is widespread support

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among these communities for SCAQMD to take action in order to abate the air pollution health impacts that ravage the communities impacted by SMO. The communities have been particularly affected by an increase in jet traffic at the airport over the past 20-plus years that has markedly increased the amount of pollution that is affecting the surrounding community. Martin Rubin, SMO Jet Operations Growth From 1983 (2012) (Exhibit 12).

SMO has a disproportionate environmental health impact on local residents. SMO is unique in having dense residential development less than 300 feet from the east and west ends of the runway. Unlike other Southern California airports, SMO has almost no buffer zone between the runway ends and the surrounding community. Adrian Castro, et al, Santa Monica Airport Health Impact Assessment (2010). A UCLA study noted that “[s]mall airports in heavily populated areas do not necessarily hav . . . buffers . . . so residents may be more directly exposed to aircraft emissions.” Shishan Hu, et al Aircraft Emissions Impacts in a Neighborhood Adjacent to a General Aviation Airport in Southern California, 43 Environ. Sci. Technol. 8039, 8039 (2009) (Exhibit 1). The UCLA study went on to conclude that the residential neighborhoods surrounding SMO have “markedly high concentrations of air pollutants . . . suggesting . . . [that the] buffer areas around . . . [SMO] may be insufficient.” The proximity between the airport and the surrounding community creates a dangerous health risk for local residents.

Local residents living in proximity with the airport face an elevated risk of cancer. According to a study sponsored by the Los Angeles Unified School District, cancer risk arising from maximum exposure to air pollution generated by activities at SMO for local residents ran *thirteen to twenty-six in one million*. Bill Piazza, Santa Monica Municipal Airport: A Report on the Generation and Downwind Extent of Emissions Generated From Aircraft and Ground Support Operations 2, (1999) (Exhibit 2). Cancer risks to local residents from SMO significantly exceed the guideline lifetime

N-2

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cancer risk of one in a million individuals for cancer risk from maximum exposure to a source of air pollutants under the Federal Clean Air Act. 42 U.S.C. § 7412.

N-2

I. South Coast Air Quality Management District is Legally Obligated to Implement an Indirect Source Review Rule Regulating Emissions from Santa Monica Airport.

SCAQMD is legally required to implement an Indirect Source Review rule controlling emissions from Santa Monica Airport. The California Clean Air Act requires that SCAQMD “provide for indirect source controls in those areas of the south coast district in which there are high-level, localized concentrations of pollutants . . .” Cal. Health & Safety Code § 40440(b)(3).

Multiple studies have demonstrated that there are elevated levels of air pollutants such as lead, black carbon, and ultrafine particulate matter on Santa Monica Airport property as well as in neighboring residential areas. *Infra*.

Modeling studies have shown that concentration of ambient lead levels near, at and exceeding the National Ambient Air Quality Standard (“NAAQS”) at Santa Monica Airport as well as at nearby residential neighborhoods. Studies conducted by the U.S. Environmental Protection Agency (“USEPA”) and SCAQMD found areas on Santa Monica Airport’s runway with lead levels violating the current lead NAAQS. U.S. Environmental Protection Agency, Development and Evaluation of an Air Quality Modeling Approach for Lead Emissions from Piston-Engine Aircraft Operating on Leaded Aviation Gasoline 72 (2010) (Exhibit 3); South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study 20–21 (2010) (Exhibit 4). In addition, both studies found elevated ambient lead levels that often exceeded, but averaged near the NAAQS in surrounding residential neighborhoods. *Id*.

N-3

Lead can have irreversible brain and nerve damage, severe developmental impacts on children as well as adverse impacts on adults. Lead has been found to have neurological impacts on children, leading to behavioral problems, learning problems, and lowered IQ. Adults, when exposed

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to lead, can suffer cardiovascular problems such as high blood pressure, and heart disease. Finally, lead exposure has also been found to have negative impacts on the nervous system, kidney function, immune systems, and reproductive ability. U.S. Environmental Protection Agency, Lead in Air: Health (2011), <http://www.epa.gov/airquality/lead/health.html> (last visited Nov. 11, 2011).

Elevated levels of Black Carbon have also been found to have been generated by activities at SMO. Jet takeoffs at SMO have been found to result in large spikes in concentrations of Black Carbon in and around the airport. Hv at 8039; South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study: Follow-up Monitoring Campaign at the Santa Monica Airport 3 (2011) (Exhibit 5).

Black carbon, as a component of particulate matter, has been linked to increased risk of cardiovascular disease, respiratory disease, cancer, and premature death. United Nations Environmental Program, World Meteorological Organization Integrated Assessment of Black Carbon and Tropospheric Ozone (2011) 113–15 (Exhibit 6).

Very high levels of ultrafine particulate matter have also been found at SMO. Studies conducted by the University of California, University of Southern California, CARB, and SCAQMD found elevated ultrafine particle concentrations in the downwind residential areas directly attributable to SMO aircraft operations. South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study at 50–55; South Coast Air Quality Management District, General Aviation Airport Air Monitoring Study: Follow-up Monitoring Campaign at the Santa Monica Airport at 22; Hv at 8039.

Ultrafine particles have been linked to premature death from respiratory and cardiovascular disease. University of California Los Angeles Community Health and Advocacy Training PGY-2 Pediatric Residents, Santa Monica Airport Health Impact Assessment 10 (2010) (Exhibit 7).

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Ultrafine particulate matter may pose a greater health risk than other, larger forms of particulate matter due to their tendency to penetrate deeper into the body. Ning Li et al, *Ultrafine Particulate Pollutants Induce Oxidative Stress and Mitochondrial Damage* 111 *Env'tl Health Perspectives* 455, 455 (2003) (Exhibit 8).

Airports are a significant source of emissions of Volatile Organic Compounds (VOCs) as well as Nitrogen Oxides (NOx), both of which are ozone-forming pollutants. Colleen Callahan, The Plane Truth: Air Quality Impacts of Airport Operations and Strategies for Sustainability: A Case Study of the Los Angeles World Airports 7–10 (2010) (Exhibit 9); U.S. EPA, Documentation for Aircraft Component of the National Emissions Inventory Methodology (2011) (Exhibit 10).

Ozone has been shown to cause decreased lung function, chest pain, as well as aggravate existing respiratory illnesses such as asthma, pneumonia, and bronchitis. U.S. EPA, Ground Level Ozone: Health, <http://www.epa.gov/air/ozonepollution/health.html> (accessed on March 25, 2012). SMO is located in Northwest Coastal LA County, which exceeded both the State and Federal Ozone standards in 2009 and 2010. South Coast Air Quality Management District, 2010 Air Quality (2011); South Coast Air Quality Management District, 2009 Air Quality (2010).

The California Clean Air Act requires SCAQMD to promulgate Indirect Source controls to regulate pollution from SMO. SCAQMD is required to impose Indirect Source controls in areas where there are “high level, localized concentrations of pollutants.” Cal. Health & Safety Code § 40440(b)(3). A study concluded that there are “high concentrations of air pollutants in the residential neighborhoods downwind of SM[O] due to aircraft activities” Hu at 8039. SCAQMD should act to regulate emissions from Santa Monica Airport.

N-3

N-4

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II. **South Coast Air Quality Management District has the Authority under the Federal Clean Air Act to Impose Indirect Source Controls on Santa Monica Airport.**

Arguably, SCAQMD is federally preempted from imposing Indirect Source controls on SMO. Both the Federal Aviation Agency and the USEPA have exclusive federal authority over aircraft operations, design, and manufacture. However, SCAQMD has the authority to regulate pollution from SMO with the approval of CARB with its delegated authority under the Federal Clean Air Act. Federal courts have found that states may regulate *emissions* from aircraft engines under the Federal Clean Air Act as long as it does not directly regulate aircraft operations, design, or manufacturing. *California v. Navy*, 431 F.Supp. 1271 (1977) (Exhibit 11). SCAQMD and CARB have federally delegated authority to impose Indirect Source controls on facilities such as airports. 42 U.S.C. § 7410(a)(5).

N-5

III. **Santa Monica Airport Could Implement Reasonably Available Control Measures to Reduce its Environmental Health Impact on Local Residents.**

SMO could implement control measures to abate its impact on the surrounding community and comply with an Indirect Source Rule. Possible control measures could include reduced idling and holding times for jet aircraft as well as re-directing the exhaust from pre-flight run up tests.

N-6

IV. **South Coast Air Quality Management District Should Impose Indirect Source Controls on Air Pollutant Emissions from Santa Monica Airport.**

SCAQMD should impose an Indirect Source Review Rule on SMO. In light of SCAQMD's legal obligations, the significant public health risks and the feasibility of control measures that could be adopted, SCAQMD should act to abate SMO's impact on its surrounding communities.

N-7

Thank you for considering these comments. Please put the undersigned on the mailing list for the 2012 AQMP. Should you have any questions or need more information, please contact Mitchell Tsai at (714) 881-4876 or tsai.mitchell@gmail.com.

Concerned Residents Against Airport Pollution
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Sincerely,

A handwritten signature in black ink, appearing to read "Mitchell M. Tsai". The signature is written in a cursive, slightly slanted style.

Mitchell M. Tsai, Esq.

Responses to Comment Letter N
Concerned Residents Against Air Pollution, et al

Response to Comment N-1:

The AQMD has not observed elevated levels of PM_{2.5} in neighborhoods near the airport so this plan will not include a measure specific to the airport. AQMD will continue to explore possible ways of reducing emissions at the airport.

Response to Comment N-2:

The health effects of air pollutants are addressed in Appendix I. Regarding cancer risk, the AQMD's MATES III study estimates lifetime risk for air toxics near the Santa Monica Airport at about 930 per million, which is lower than the regional average of 1194 per million.

Response to Comment N-3:

The comment cites levels of lead, black carbon, and ultrafine particulate matter. AQMD monitoring studies have not detected exceedances of lead standards either on the runway area or in neighboring residential areas. US EPA modeling studies did not project exceedances in neighboring residential areas but did project exceedances at the blast fence. This was not confirmed by AQMD studies. The statement that both studies found levels often exceeding the NAAQS but averaging at the NAAQS is misleading because the NAAQS itself is in the form of a three month average. The NAAQS itself was not exceeded. Additional discussion of health effects of particulate matter, ozone and nitrogen dioxide are in Appendix I, and additional discussion of ultrafine particulate matter health effects and sources is contained in Chapter 9. AQMD has not observed elevated levels of PM_{2.5} near the airport. There is currently no NAAQS or SAAQS for ultrafines. So, it is not feasible to determine a level to which emissions should be reduced. Therefore, the cited statute does not require regulation.

Response to Comment N-4:

The commenter states that AQMD must adopt an indirect source rule for the airport because state law calls for indirect source rules in areas where there are “high-level, localized concentrations of pollutants” and a study by Hu concluded that there were “high concentrations of air pollutants in the residential neighborhoods “ downwind of the airport. However, this study referred to levels of black carbon and ultrafine particles, not criteria pollutants. Neither EPA nor CARB has yet developed any ambient standards for these particular pollutants. Therefore, it is uncertain what levels of such pollutants would be considered unacceptably “high.” Accordingly, the cited statute does not require regulation. The 2012 AQMP contains a chapter discussing the emerging science relating to ultrafine particles and AQMD staff will continue to monitor the situation.

Response to Comment N-5:

The AQMD staff agrees that it has the authority under state and federal law to adopt indirect source controls. Such authority is not preempted by the Clean Air Act, as held in *National Association of Home Builders vs. San Joaquin Valley APCD*, 627 F. 3d 730 (9th Cir. 2010). Whether any other federal statute would have preemptive effect would likely depend on the particulars of any proposed indirect source rule.

Response to Comment N-6:

See Response to Comment N-5.

Response to Comment N-7:

AQMD staff does not believe that this request should be addressed as part of the 2012 AQMP, but will continue to consider whether such an approach would be viable to reduce emissions in the future.

O. LA Department of Public Works, Cynthia Holguin, August 14, 2012

COMMENT LETTER

Claudia Holguin

August 14, 2012

From: Holguin, Claudia [<mailto:cholguin@dpw.lacounty.gov>]
Sent: Tuesday, August 14, 2012 1:30 PM
To: Joe Cassmassi
Subject: Questions about AQMD draft plan and landfill and composting questions

Hello again Joe,

I would like to ask about a few additional AQMD's **stationary source control measures**, and thank you again for your help.

Multiple Component Sources:

MCS-03 (formerly MCS-06 on 2007 AQMP) Improved Start-up, Shutdown, and Turnaround Procedures [All Pollutants].

- *Would this apply to equipment used at landfills and composting facilities? Does it apply to waste-to-energy processes or facilities?*

Incentive Programs:

INC-01 Economic Incentive Programs to Adopt Zero and Near Zero Technologies [NOx]

- *Would this apply to waste to energy facilities at landfills or other processes at landfills?*

INC-02 Expedited Permitting and CEQA Preparation Facilitating the manufacturing of Zero and Near-Zero Technologies

- *Would this apply to something like new conversion technology facilities?*

Thank you again, enormously, for your help!!

Claudia Holguin

[Claudia Holguin wrote]:

Hello Joe,

Your colleague Chris Hynes has recommended that I contact you regarding my question about the AQMD's Draft EIR Master Plan. I am an intern in L.A. County's DPW Environmental Programs Division.

May I ask about the AQMD's **stationary source control measures**? Specifically, I would like to ask about the 2012 Air Quality Management Plan Combustion Sources reductions **CMB-01 phases I and II**. Do the proposed **NOx reductions from RECLAIM apply to landfills as well as other sources**? (This information is found in Table 1-3).

Thank you very much for your time!

Claudia Holguin

} O-1
} O-2
} O-3

} O-4

Responses to Comment Letter O
LA County DPW, Cynthia Holguin

Response to Comment O-1:

Control measure MCS-03 is carried over from the 2007 AQMP. Although the initial scope of review for startup, shutdown and turnaround activities will likely focus on the minimization of potential flaring emissions at refineries, staff believes that it is possible to develop procedures that can lead to optimization, operational efficiency and emission minimization opportunities applicable to other industries.

The District approach under MCS-03 would be to initially focus on better quantifying emission impacts from startup, shutdown and turnaround activities at refineries, as well as analyzing emission reduction potential. Should the results of these analyses and emission assessments warrant further investigation, a review of potential emission reduction efforts would follow, including a determination of the applicability to other industries. Any subsequent rulemaking efforts would include technical feasibility, socioeconomic impact, and environmental impact assessments, including safety considerations, and certainly involve outreach to affected stakeholders.

Response to Comment O-2:

These incentives can apply to waste to energy processes or other landfill processes as long as they are not needed to comply with current regulation or other legally-enforceable requirement.

Response to Comment O-3:

The incentive program, INC-02, has yet to be developed so specific qualifications for the incentives have not yet been determined. However, the intent of the control measure is to encourage the manufacturing of zero and near-zero emission technologies, such as fuel cells and electric batteries, to be used by a variety of stationary and mobile source applications resulting in zero end-use emissions. This can be accomplished with the manufacturing of either advanced technology or control equipment. Conversion technology could be considered advanced technology converting post-recycled solid waste into useful products. The process has beneficial effects as compared to incineration or sending materials to the landfill. However, the inclusion into the program would depend on whether this process is generating products producing zero or near-zero end-use emissions. For example, the renewable energy produced would reduce greenhouse gases, and air emissions would be comparatively lower, but it would need to be determined if the resulting emissions are zero or approaching zero. A stakeholder working group will be established to discuss and propose program designs so the commentator is encouraged to participate.

P. American Coatings Association (ACA), David Darling, August 31, 2012



August 31, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: South Coast Air Quality Management District Draft 2012 Air Quality Management Plan; ACA Comments

Dear Dr. Chang:

The American Coatings Association (ACA)¹ submits the following comments on the South Coast Air Quality Management District's (SCAQMD or the District) Draft 2012 Air Quality Management Plan (Draft 2012 AQMP) released on July 18, as well as incorporates by reference its earlier comments on proposed elements of the AQMP. Please see the attached documents for reference to ACA's previous comments.

I. Introduction

ACA believes that the SCAQMD should remove the proposed VOC reduction control measures – CTS-01, CTS-02, CTS-03, and CTS-04 – from the Draft 2012 AQMP for the following reasons:

- The coatings industry has made significant strides in reducing its products' VOC emissions in the past, and the District should focus on other sources for further emissions reductions instead of unfairly targeting the coatings industry.
- The District should take credit for the emissions reductions outlined in the 2007 AQMP CTS-02 "Clean Coating Certification Program" emission credits resulting from the Rule 314 AIM fee rule, which amount to more than double the emission estimates from the current draft CTS-01. Given these credits, the 2012 AQMP CTS-01 is not needed.
- Reducing VOC emission will have no appreciable impact on ozone formation since the SCAQMD region is NOx limited. ACA urges the District to continue to focus on NOx reductions and remove the proposed VOC measures from the AQMP, especially since VOC measures are not cost effective for reducing ozone compared to NOx reductions.

P-1

¹ The American Coatings Association (ACA) is a voluntary, nonprofit trade association working to advance the needs of the paint and coatings industry and the professionals who work in it. The organization represents paint and coatings manufacturers, raw materials suppliers, distributors, and technical professionals. ACA serves as an advocate and ally for members on legislative, regulatory and judicial issues, and provides forums for the advancement and promotion of the industry through educational and professional development services.

- The District should remove CTS-01 to CTS-04 from the 2012 AQMP, or at the very least, remove the hard VOC targets from the Plan.
- ACA has a number of particular concerns with the individual control measures outlined in CTS-01, CTS-02, and CTS-03. These concerns are described in detail below in section IV.
- ACA respectfully requests additional time to comment on the Draft 2012 AQMP and additional time for the District to fully address and respond to stakeholder input concerning this crucial planning document.

P-1

III. The Coatings Industry and VOC Reductions

The coatings industry has made substantial progress in reducing the level of VOCs in its products in the South Coast Air Basin as a result of regulatory pressure, increased demand for green products, and individual corporate sustainability initiatives. ACA seeks to assure that appropriate inventory credit is given for the significant reductions already achieved in mass and reactivity of VOC emissions from architectural and associated coatings. Even given this significant progress, the coatings industry continues to be the target for further VOC reduction measures in the Draft 2012 AQMP. Continuing to target the paint and coatings industry and imposing further VOC reduction commitments is unreasonable, and ACA urges the District to focus on different options and sources, especially a NOx heavy approach, to reduce ozone in the South Coast Air Basin.

The coatings industry has been one of SCAQMD’s primary targets for VOC reductions over the course of the last three decades as the District continues to impose increasingly stringent rules on the coatings industry. Recently, the District estimated emissions from the coatings industry were lowered from 49 tons per day (tpd) in 2002 to 22 tpd in 2008, including colorants. The District estimates that this level will be further reduced to just 15 tpd by 2014, including colorants, reflecting a drop of approximately 37 to 40 tpd from architectural coatings alone in the past 12 years. This drop represents over 70% of the VOC emissions inventory from this source category – a severe cut by any standards.

P-2

ACA believes that the coatings industry has contributed a significant amount to reducing ozone in the South Coast Air Basin and should not be a constant “bull’s eye” for further reductions. Just since the 2007 AQMP, the District has obtained nearly 26 tpd of VOC emission reductions at a cost of \$73.8 million, as documented in the table below.

Rule	Adoption Date	Summary	VOC Reductions	Estimated Costs
Rule 314	June 6, 2008	AIM Fee Rule	10 tpd*	\$13.65 Million
Rule 1143	March 6, 2009	Consumer Paint Thinners and MPS	9.75 tpd	\$41.4 Million
Rule 1113	June 3, 2011	AIM Rule Amendments	4.4 tpd	\$10 Million
Rule 1107	November 2012	Coating of Metals Parts and Products Amendments	2.21 tpd	\$8.7 Million
Total			26.36 tpd	\$ 73.8 Million

* ACA Estimated

The District even acknowledges that “[w]ithout an adequate and fair-share level of reductions from all sources, the emissions reduction burden would unfairly be shifted to sources that have already been doing their part for clean air.” Draft 2012 AQMP, pg. 4-6. The coatings industry has been doing its part for clean air, and the District should explore other options to obtain further ozone reductions; for example, the District and its partner agencies at the local, state, and federal levels should focus on passenger cars, off-road equipment, light duty trucks, recreational boats, and petroleum marketing, among other sources.

Furthermore, it is critical that the AIM inventory is accurate and reflects the significant VOC reductions from the coatings industry since the AQMP and all future regulatory actions are based on these estimates. In our July 5, 2012 AQMP comments, ACA suggested that the District take credit for emission reductions from the Rule 314 AIM Fee Rule (see Attachment A). Initial reactions from the District suggest that the District would need to review this concept with EPA. ACA believes that since the 2007 CTS-02 control measure “Clean Coating Certification Program”, has already been approved in the State Implementation Plan (SIP), there should be no hurdles in the District taking credit for emission reductions as the result of the Rule 314 AIM Fee Rule. The following is a description of CTS-02 from the 2007 AQMP:

“PROPOSED METHOD OF CONTROL

First, a certification criteria would be established for distinguishing products that are considered super compliant (i.e. low-, ultra low-, or zero-VOC content levels), from other compliant products. Secondly, a certification process would be established for those products meeting the ‘Clean Air Coating’ criteria. Certified products would be allowed to use the District certification and promote the products as being ‘environmentally friendly.’ *Should the District produce fee related programs for VOC products, consideration will be given to promote super compliant products.*

EMISSIONS REDUCTION

This voluntary certification program's objective is to positively influence industrial, commercial, and consumer behavior in selecting ultra-low volatile organic compound (VOC) coatings and foster the marketing of ultra-low polluting technologies in an overall effort to reduce VOC emissions. *Any VOC reductions due to promoting the use of ultra-low VOC coatings will be quantified via future SIP revisions.”*

While the District did not develop a coating certification program under Rule 314 (please note that ACA does not support a certification system), the District did set a threshold in Rule 314 – 5 g/l material VOC – at which fees would not be assessed, and the District also maintains a Super-Compliant Architectural Coatings Manufacturers and Industrial Maintenance Coatings List on the District website. ACA also suggests that the fees imposed under Rule 314 likely resulted in more emission reductions than a certification program. Based on Rule 314 data (see below), ACA believes that the District should quantify and take credit for at least 10 tpd of emission reductions as a result of Rule 314.

P-2

	2008	2014	2019/2020	2023
2007 AQMP	22.65	24.19	26.55	25.81
2012 AQMP (table A-1 – A-5)	21.9	15.46	16.17	16.71
Additional colorant reduction	3.0	3.0	3.0	3.0
Excess emission reductions	3.75	11.73	13.38	12.1

P-2

The emissions credits from Rule 314 amount to more than double the emission estimates from the proposed 2012 AQMP CTS-01 control measure. For these reasons, the District can quantify and demonstrate further VOC reductions from coatings, and CTS-01 is, therefore, unnecessary.

III. VOC Reduction Measures in the Draft 2012 AQMP

ACA strongly objects to the inclusion of the VOC reduction measures contained in CTS-01, CTS-02, CTS-03 and CTS-04 in the 2012 AQMP since SCAQMD has failed to provide an adequate justification for incorporating these VOC reduction commitments in the SIP. The District readily admits that reducing VOCs will not reduce ozone. The District should focus solely on NOx reductions measures. Without a showing of necessity, the District should remove these specific VOC measures from the 2012 AQMP and refrain from locking in VOC emissions targets for these particular sources.

ACA questions SCAQMD’s decision to include ozone attainment provisions in the 2012 AQMP. Even if SCAQMD finds a continuing need to include ozone reduction measures in California’s SIP, the District has failed to demonstrate why further VOC reductions, in particular, are necessary to achieve its ozone attainment goals. According to the federal Clean Air Act (CAA), States are only required to submit SIPs that “include enforceable emissions limitations, and such other control measures, means or techniques...as may be necessary or appropriate to provide for attainment of such standards...” CAA § 172(a)(6); § 110(a)(2)(A). Nothing in the Draft 2012 AQMP or CTS-01 to CTS-04 explains why VOC reductions are necessary. SCAQMD provides one statement in the AQMP in defense of the VOC reductions, arguing that “VOC reductions are, however, still needed to provide additional benefits, especially in the western areas of the Basin.” Draft 2012 AQMP, pg. ES-4. This assertion is not substantiated by any further information or explanation as to why these VOC reductions are deemed necessary to reduce ozone. The District should explain in detail why the VOC reductions are necessary to achieve ozone attainment in the South Coast Air Basin or should remove these VOC reduction measures from the 2012 AQMP and California SIP submittal.

P-3

Reducing VOC emission in the South Coast Air Basin will not reduce ozone. And it appears that the District does not dispute this point. The District concluded in the 2007 AQMP that major reductions in emissions of oxides of sulfur (SOx), particulate matter less than 2.5 microns (PM2.5) and NOx are necessary to attain the air quality standards for ozone and particulate matter by the dates mandated by federal law. In the Draft 2012 AQMP, the District again determined “that a strategy focusing primarily on NOx reductions has been deemed the best way to achieve long-term ozone attainment objectives,” especially “given that a heavy VOC reduction strategy alone could not achieve the ozone standards....” Draft 2012 AQMP, pg. ES-4. Given this, the 2012 AQMP ozone measures should focus on NOx reductions since VOC control measures will have little or no impact on ozone attainment in the District.

As an aside, focusing on NOx reductions in the SIP will not handicap the District since it clearly has the authority to impose further VOC reductions in the future, through Rule 1113 for example, without locking any VOC commitments into the 2012 AQMP. ACA suggests the District go even further in the 2012 AQMP and provide more background discussions and modeling information on the benefits of NOx reductions as opposed to VOC reductions.

Next, ACA is extremely concerned that if the extreme and unproven reductions are approved, especially in CTS-01 and CTS-02, the coatings industry will be forced to achieve the VOC targets regardless of whether the control measures are necessary and technologically feasible. Setting a hard target and then later justifying that target with subsequent analyses is inappropriate and defeats the critical safeguards provided by the administrative rulemaking process.

ACA is encouraged that the District has at least included some language that allows for future flexibility, or clearly state that any specific numeric goals or targets are subject to the District's future analyses and the rulemaking process and may be adjusted based on technical and economic concerns such as the following statement: "The District is committed to adopt the control measures in Tables 4-2 and 4-4 unless these measures or a portion thereof are found infeasible. . . ." Draft 2012 AQMP, pg. 4-41. The Draft 2012 AQMP describes infeasibility where "the proposed control technology is not reasonably likely to be available by the implementation date in question, or achievement of the emission reductions by that date is not cost-effective." The District, however, should go further and remove the hard VOC targets from the individual source sections in CTS-01 to CTS-04.

Lastly, under California law, a SIP must "include an assessment of the cost effectiveness of available and proposed control measures and shall contain a list which ranks the control measures from the least cost-effective to the most cost-effective." Cal. Health & Safety Code Section 40922(a). The District must also consider other factors as well, including "technological feasibility, total emission reduction potential, the rate of reduction, public acceptability, and enforceability." Cal. Health & Safety Code Section 40922(b). When assessing cost effectiveness, ACA urges the District to not only consider the cost effectiveness of the tons per day of VOC reductions, but the cost effectiveness of the control measure in reducing ozone itself, since this is the ultimate goal of the regulations. Although VOC reductions may appear to be cost effective when viewed alone, VOC reductions are not cost effective if they do little or nothing to reduce ozone levels in the South Coast Air Basin. After conducting such analysis, the District will be able to determine whether the VOC reductions are truly cost effective.

IV. Concerns Regarding the Specific Implementation Measures for Ozone

Although ACA objects to the inclusion of any of the VOC control measures in the Draft 2012 AQMP, we provide the following specific comments on the District's proposed implementation measures for ozone that specifically target individual sources for VOC reductions in Appendix IV(A) in sections CTS-01, CTS-02, CTS-03, and CTS-04.

A. CTS-01: Further VOC Reductions from Architectural Coatings

ACA appreciates that the District lowered the VOC commitment for architectural coatings to 2-4 tpd, but the District has still not explained why a minimum of 2 tpd is necessary to meet its

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ozone attainment goals. Beyond this general complaint, ACA has the following concerns with CTS-01.

1. Emissions inventory for architectural coatings

ACA requests that the District make the following changes to the architectural coatings emissions inventory.

First, the District’s architectural coatings emissions estimates vary from the Draft 2012 AQMP Chapter 3 Base Year & Future Emissions, which reference Appendix III, to the estimates included in CTS-01 in Appendix IV(A). There is a discrepancy between the estimates for 2019 and 2023, varying as much as 1.33 tpd and 2.59 tpd respectively between the two sections. See the following comparison:

	2008	2014	2019	2023
CTS-01	21.9 tpd	15.8 tpd	17.5 tpd	19.3 tpd
Chap. 3/Appendix III	21.9 tpd	15.46 tpd	16.17 tpd	16.71 tpd

ACA suggests that the District update CTS-01 with the lower Chapter 3 Base Year & Future Emissions estimates.

Second, the District has traditionally assumed that AIM VOC emissions are directly correlated to the volume of coatings sold in the District; as the volume of AIM coatings increases, the VOC emissions from AIM coatings increase as well. The District also assumed that once the economy improved, AIM Coatings sales would increase and AIM VOC emissions would return to 2008 levels. Recent Rule 314 emission data (see below) suggest this is not be the case. While volumes increased by approximately 7%, emissions decreased by approximately 2%. ACA suggests that the VOC content of coatings has drastically decreased as the result of Rule 314 AIM Fee Rule, and the general industry market reformulation towards zero or low-VOC coatings. ACA requests that the District review its assumptions with regards to AIM coatings and revise these assumptions accordingly to match the known historical trends.

	2008	2009	2010	2011
Coatings Volume	39,986,966 gal	34,726,037 gal	35,001,778 gal	37,749,674 gal
VOC Emissions	16.10 tpd	12.05 tpd	12.05 tpd	11.86 tpd

2. VOC Limits for Flat, Nonflat and Primer, Sealer, Undercoaters

The 1.7 tpd reduction from the flat, nonflat, and primer, sealer, undercoater (PSU) categories assumes that the limits for these entire categories will be lowered to 25 g/l regulatory VOC content, even though the CTS-01 description mentions the potential creation of new draft subcategories (e.g., primers for metals). Note that the creation of these categories is not included in the 1.7 tpd reduction estimate. CTS-01 should include a range of emissions reductions based on the likely reductions from amending the flat, nonflat, and PSU categories, not just the best case scenario if the entire categories are reduced to 25 g/l.

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ACA is concerned that limits below 50 g/l for flat and nonflat and 100 g/l for PSUs may be difficult to achieve given the current problems associated with VOC test methods. Depending on a test method that is unreliable at lower VOC levels will create a significant enforcement problem. In addition, ACA suggests the District complete a technology assessment to be sure that it is technologically feasible to lower the VOC limits, especially since certain products require higher VOC content levels to adequately perform.

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3. Small Container Exemption

ACA is concerned that eliminating the small container exemption, or even eliminating the exemption for certain categories, is problematic since the small container exemption is a crucial compliance option. This exemption provides a safety valve or a last resort option that allows for traditional, high performing products for challenging application situations where the limits in certain categories are exceptionally low or a category is eliminated, especially since the SCAQMD Rule 1113 limits are the most stringent in the United States. There are also a host of niche coatings that manufacturers can now sell in small containers that would need to be recategorized if the small container exemption is modified or removed.

ACA is very concerned that the current language only mentions the complete phase out of the small container exemption embedded in SCAQMD Rule 1113, and not any of the other available options. Under the most recent version of CTS-01 in the Draft 2012 AQMP's Appendix IV(A), under the Proposed Method of Control section, the small container exemption section excludes any reference to other potential options for emissions reductions. Given the importance of this exemption for the industry, ACA urges the District to revise the language in the current 2012 Draft AQMP by reincorporating the following draft language from June 2012:

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"Staff will evaluate various options for the SCE, including a complete phase out of the exemption, creating certain new categories with higher VOC limits (e.g., primer for recycled rubber floor), creating a maximum allowable VOC limit, or phasing out the SCE for certain coating categories."

This language ensures that the District will evaluate several options beyond just a complete phase out of the exemption when the District amends Rule 1113 in the future.

Along a similar vein, CTS-01 should include a range of target emissions reductions based on the likely reductions from amending the small container exemption, not just the best case scenario of eliminating the entire exemption. The current 1.9 tpd estimate for reductions resulting from amendments to the small container exemption assumes the complete elimination of the entire exemption. The estimate should factor in the other available options, including the creation of certain new categories with higher VOC limits (e.g., primer for recycled rubber floor), a maximum allowable VOC limit, or a phase out of the small container exemption for only certain coatings categories.

B. CTS-02: Further Emission Reductions from Miscellaneous Coatings, Adhesives, Solvents and Lubricants

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The District should further elaborate on its proposed control measures in CTS-02. It is impossible to comment on CTS-02 given the lack of any particular details in the control measure

summary. While the District mentioned the possibility of lowering the VOC limits in eight different rules, the District did not list any specific categories that may be impacted or possible VOC limits or reduction measures. ACA requests that the District provide more details on potential VOC limit reductions so that stakeholders can submit substantive comments on CTS-02.

ACA objects to the District's proposal to reduce the VOC limits of some of the coating categories listed in rules 1106 and 1106.1 because, as the following paragraphs explain in greater detail, it is not technologically feasible to make further reductions.

Rule 1106.1 has had a negative effect on South Coast's pleasure craft business since it was introduced in 1992. In the 1970's and 80's, California was considered by many to be the pleasure craft building capital of the world. The following pleasure craft builders operated in California prior to rule 1106.1: Catalina Yachts, Columbia Yachts, Islander Yachts, Capital Marine, Corsair Marine, Ericson Yachts, Laguna Yachts, Westsail, Pacific Seacraft, Bill Lee Yachts, Pacific Boats, Moore Bros, Express, and Wilderness Boats. The introduction of Rule 1106.1 drove these builders out of South Coast and California into other parts of the United States, or to other countries. Even today, the coatings industry has yet developed coatings which meet customer expectations and requirements and which also meet VOC limits in the following categories: Extreme High Gloss; Finish Primer/Surfacer; Other Substrate Antifoulant; and Antifouling Sealer/Tie Coat.

The situation for rule 1106 is similar to that for rule 1106.1. Industry has struggled to meet the VOC limits listed in this rule and does not yet have technologically sound solutions to provide coatings of lower VOC content. Therefore, it is not possible to lower VOC limits in many of the coating categories in this rule. As a result of developments from the International Maritime Organization (IMO) Antifouling Systems Convention (2001), there is a requirement for at least one additional specialty category – Antifouling Sealer/Tie Coat – which industry recommends a level of 420g/L; this also applies to Rule 1106.1

ACA welcome the opportunity to discuss revisions to both rule 1106 and rule 1106.1 with the District in greater detail in due course.

C. CTS-04: Further VOC Reductions from Consumer Products

As mentioned earlier, the SCAQMD basin is NOx limited and therefore insensitive to additional VOC reductions, including the proposed measures in CTS-04. In addition, scientific studies and analysis clearly show that LVPs have minimal impacts on VOC emissions and ozone formation. Further, the LVP exemption is an important compliance mechanism that is necessary at this point to comply with the stringent VOC limits in the California consumer product regulations.

V. California State Implementation Plan Schedule

SCAQMD should abandon its accelerated schedule for adopting the Draft 2012 AQMP and submitting it to the California Air Resources Board (CARB). SCAQMD should establish a more realistic and reasonable schedule for the adoption of its five-year air quality management plan. The District released the 379-page Draft 2012 AQMP and its six appendices on July 18, 2012 – over 1,000 pages are contained in these documents. The District cannot reasonably expect

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P-9

ACA Comments – South Coast Draft 2012 AQMP

August 31, 2012

stakeholders to analyze these documents and provide substantive comment by August 31, 2012. This 44-day time frame is insufficient for stakeholders to adequately respond to the District's proposal.

Furthermore, South Coast staff has indicated the District's intention to raise the final version of the 2012 AQMP to the SCAQMD's Governing Board on November 2, 2012. We appreciate the District moving the date back by one month; however, we are still concerned that this schedule does not provide nearly enough time for the District to fully consider all stakeholder comments and incorporate changes into the Draft 2012 AQMP.

Given the importance of the 2012 AQMP – it effectively locks air quality targets into the California SIP and guides the agency's decision-making for planned future regulatory actions that impact a range of regulated entities – the District's should decelerate its schedule. ACA respectfully requests additional time to comment on the Draft 2012 AQMP and additional time for the District to fully address and respond to stakeholder input concerning this crucial planning document. For more information, please refer to our formal request letter dated August 29, 2012.

VI. Conclusion

The District should remove CTS-01, CTS-02, CTS-03, and CTS-04 from the 2012 AQMP, given the fact that additional VOC reductions will have no impact on ozone formation. The District should instead focus its efforts on other source categories for further reductions.

Thank you for the opportunity to comment. If you have any questions or need any further information on the issues discussed here, please feel free to contact me at (202) 462-6272.

Sincerely,

/s/

/s/

David Darling, P.E.
Director, Environmental Affairs

Tim Serie, Esq.
Counsel, Government Affairs

*** Sent via email ***

Attachment A (July 5, 2012 Comments)

July 5, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

P-9

RE: SCAQMD 2012 Air Quality Management Plan (AQMP) Advisory Group Meeting #10 – Control Measure Concepts; ACA Comments

Dear Dr. Chang:

The American Coatings Association² (ACA) submits the following comments on CTS-01 *Further Emission Reduction from Architectural Coatings (Rule 1113)*.

Introduction

The following is an overview of ACA’s concerns with the Air Quality Management Plan (AQMP) and CTS-01:

1. The District has made several recent reductions to the Architectural Coatings 2008, 2014, 2019 and 2023 inventories. ACA suggests that additional reductions are needed since the current estimates are likely too high and requests additional background on the development of the inventory estimates.
2. Given the fact that the District is actually showing an excess of 4.0 tons per day (tpd) of volatile organic compounds (VOC) reductions in the SIP commitment outlined in the 2007 AQMP, ACA suggests that 4.6 tpd from CTS-01 is not needed.
3. ACA is very concerned that the estimated 4.6 tpd reductions from CTS-01 amounts to nearly a 40% reduction in the architectural and industrial maintenance (AIM) coatings inventory which is excessive on its face and unreasonable.
4. The 4.6 tpd CTS-01 emission reduction estimate is based on a best case scenario and very “optimistic” assumptions that are not consistent with the CTS-01 descriptions and are therefore too large. If the District does not obtain these reductions, they will once again be forced to lower VOC limits for other AIM coatings categories to reach the 4.6 tpd goal.
5. The CTS-01 Control Measures are technically problematic and ACA requests additional background on the development of these measures.
6. SCAQMD is not giving adequate consideration to the science-based fact that ozone formation in the SCAQMD region is ultimately NOx-limited.

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Architectural and Industrial Maintenance (AIM) Coatings Inventory

ACA seeks to assure that appropriate inventory credit is given for the significant reductions already achieved in mass and reactivity of VOC emissions from architectural coatings. It is critical that the AIM inventory is accurate since the AQMP and all future regulatory actions are based on these estimates. The District must fully explain its emissions calculations, and all of its underlying assumptions, to provide a well-grounded basis for its decision making and future regulatory actions. Relying on faulty assumptions and inadequate or unrealistic emissions estimations is arbitrary and capricious, and will have an unjustified, negative impact on the paint

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² The American Coatings Association (ACA) is a voluntary, nonprofit trade association working to advance the needs of the paint and coatings industry and the professionals who work in it. The organization represents paint and coatings manufacturers, raw materials suppliers, distributors, and technical professionals. ACA serves as an advocate and ally for members on legislative, regulatory and judicial issues, and provides forums for the advancement and promotion of the industry through educational and professional development services.

and coatings industry. The lack of information concerning the District’s calculations also denies affected stakeholders the opportunity to fully analyze and comment on the District’s inventory estimates. To allow ACA to fully comment on CTS-01, ACA requests detailed information on Rule 314 data including sales volume; sales weighted average VOC content; emissions, etc. for each category for years 2008-2011, including the small container exemption.

The District should explain the considerable variability between its different AIM inventory estimates over the last few months, and account for this variability in the AQMP. The AIM inventory estimates have varied drastically over the last several months. For example, at the May AQMP meeting, staff released a preliminary draft AIM inventory of 26.16 tpd for 2008, 22.87 tpd for 2014, and 24.72 tpd for 2023. The revised inventories released at the June 14 meeting were 21.91 tpd for 2008, 15.46 tpd for 2014, 16.17 tpd for 2019 and 16.71 tpd for 2023. The CTS-01 Summary also includes an estimate of 19.1 tpd for 2008, and 17.3 tpd for 2019. As summarized in the table below, the CTS-01 AIM estimate for 2008 is 7 tpd less than the May 17 estimates, far exceeding the estimated 4.6 tpd expected from the control measure. It appears that the control emission reductions are needed since the revisions to inventory are larger than the expected control measure reductions.

**South Coast Air Quality Management District
Estimated Emissions from Architectural & Industrial Maintenance Coatings**

	2008	2014	2019	2023
May 17 AQMP Meeting	26.16 tpd	22.87 tpd		24.72 tpd
June 14 AQMP Meeting	21.91 tpd	15.46 tpd	16.17 tpd	16.71 tpd
Difference	4.25 tpd	7.41 tpd		8.01 tpd
% Change	16%	33%		33%
CTS-01	19.1 tpd		17.3 tpd	
Difference from May 17	7.06 tpd			
Difference from June 14			1.13 tpd	
% Change	27%		7%	

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Further, it is important to note that based on information from a meeting with District staff on June 14, the CTS-01 2008 estimate of 19.1 tpd actually includes 13.3 tpd for architectural coatings, 3.0 tpd for colorants and 2.8 tpd for solvent usage. The colorant and solvent usage tonnage will be reduced to nearly zero by 2014 based on recent rule amendments. So it is unclear how the District estimated 17.3 tpd in 2019. Assuming the inventory of 12 tpd from 2009, 2010, and 2011 continues into the future, ACA questions the CTS-01 estimate of 17.3 tpd for 2019; this estimate is likely 5.3 tpd, much higher than the estimated CTS-01 4.6 tpd control measure reduction. As such, ACA requests additional information regarding the CTS-01 2014, 2019, and 2023 inventory estimates. The District should account for the additional future reductions resulting from requirements for colorants, VOC limit reductions, thinning/cleaning solvents, reductions from Rule 314 AIM fees as well as reductions from “green marketing” formulation changes that will offset any increases.

The District should also explain its assumptions that recent reductions in the architectural coatings emissions inventory were the result of the economic recession. In the past the District assumed that once the economic growth increased, the emissions from architectural coatings would also increase. However, at the June 14 meeting, Staff confirmed that Rule 314 emissions data indicate that even though architectural coatings volumes have increased by 7% from 2010 to 2011, the emissions have decreased by 2%. ACA suggests any "rebound" assumptions in the inventory be revised. ACA also questions the District's assumption that increased population in the future will directly increase architectural emissions as well. ACA suggests the District review and release the inventory estimates and lower any assumed emission increases either due to improved economic growth or population increases in the district. The breakdown should include assumptions for population growth, economic impacts, predicted sales volumes, and AIM regulations.

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The District has significantly lowered the 2008 AIM inventory estimates since the May 17 meeting – a total of 7.06 tpd. ACA believes the 2019 estimate is still likely to be at least 5.3 tpd too high. Bottom line, the District's changes to the AIM inventory since the May 17 AQMP meeting and the potential over estimation of the 2019 AIM inventory will result in nearly 3 times the estimated reductions that would be achieved via CTS-01. Given the significant impact of these emissions inventory calculations, the District should explain each of the individual elements that comprise the emissions estimate and projected future inventory, so that the industry can adequately comment on the AQMP.

District Progress Implementing the 2007 AQMP

On table 1-1 of the CEQA, the District is actually showing an excess of 4.0 tpd of VOC reductions SIP commitment outlined in the 2007 AQMP. ACA suggests that if the District is running 4 tpd excess VOC emissions from the 2007 AQMP, the 4.6 tpd from CTS-01 is not needed.

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ACA Inventory Monitoring Concept

ACA is very concerned that the estimated reductions from CTS-01 of 4.6 tpd would result in a roughly 40% reduction in the 2019 AIM inventory, relying on ACA's 12 tpd estimate. Requiring a 40% reduction in emissions from a single source category is excessive and unreasonable.

ACA suggests the District develop an AQMP strategy that relates development and implementation of CTS-01 to future AIM emissions. If, for example, the District is able to document (through Rule 314) that the AIM emissions in 2012 are less than 12 tpd (hypothetical number), then the District would not need to develop and implement CTS-01, since the District could take credit for the reductions in Rule 314. If, on the other hand, the AIM emissions in 2012 are more than 12 tpd, then the District could develop and implement CTS-01 to reduce the source category's emissions to below 12 tpd. Another benefit of this option is that it resolves the District's concern that recent inventory reductions are solely related to the economic downturn (i.e. the emissions will increase once the economy improves).

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AIM VOC Reduction Estimates are Overly Optimistic

The District estimated reductions from CTS-01 to be 4.6 tons per day. Based on discussions with District Staff at the June 14, 2012 meeting, the 4.6 tpd reduction estimate is based on a best case scenario and very optimistic assumptions that are not consistent with the CTS-01 descriptions. As such, ACA believes that this emission reduction estimate of 4.6 tpd is too high. If, for example, the District does include a new subcategory for primers, or does not completely phase out the small container exemption, the District will once again be forced to lower VOC limits for other AIM coatings categories to reach the 4.6 tpd goal since the maximum tonnage reductions are included in the AQMP.

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Arbitrary Control Measures Will Result in Need for Additional AIM Reductions

Once again, similar to our comments on the 2007 AQMP (letter dated December 7, 2006), ACA is concerned that if these extreme and unproven reductions are approved, the industry will be forced to achieve the VOC targets regardless of whether the CTS-01 control measures are technologically feasible. Once these reduction estimates are approved in the AQMP and cemented into the State Implementation Plan (SIP), the District may sidestep technical or economic concerns with the regulations by claiming that it has no choice since the reductions are already "locked" into the AQMP and SIP. Setting a hard target and then later justifying that target with subsequent analyses is inappropriate and defeats the critical safeguards provided by the administrative rulemaking process. Given these significant concerns, the Plan should clearly state that any specific numeric goals or targets are subject to the District's future analyses and the rulemaking process and may be adjusted based on technical and economic concerns. Providing a range for the emissions reductions targets would give the District needed flexibility.

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CTS-01 Control Measures are Technologically Problematic

ACA offers the following comments regarding concerns with the specific proposed measures outlined in CTS-01:

1. Reduce VOC Emissions from Flat, Nonflat and Primer, Sealer, Undercoaters

The 1.7 tpd reduction from the flats/nonflats/PSU categories assumes that the limits for these entire categories will be lowered to 25 g/l regulatory VOC content, even though the CTS-01 description mentions the potential creation of new draft subcategories (e.g., primers for metals). Note the creation of these categories is not included in the 1.7 tpd reduction estimate. CTS-01 should include a range of emissions reductions based on the likely reductions from amending the flat, nonflats, and PSU categories, not just the best case scenario if these categories are completely reduced to 25 g/l.

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ACA is concerned that limits below 50 g/l (flat and nonflat) and 100 g/l (PSU's) may be difficult given the current problems associated with VOC test methods. Depending on a test method that is unreliable at lower VOC levels will create a significant enforcement problem. In addition, ACA suggests the District complete a technology assessment to be sure that it is technologically

feasible to lower the VOC limits, especially since certain products need to be kept at the current limits.

2. Small Container Exemption

The 1.9 tpd reduction from the Small Container Exemption (SCE) assumes complete elimination of the entire small container exemption, even though the CTS-01 description mentions creating certain new categories with higher VOC limits (e.g., primer for recycled rubber floor), creating a maximum allowable VOC limit, or phasing out the SCE for only certain coating categories. Note these options are not included in the 1.9 tpd reduction estimate. CTS-01 should include a range of target emissions reductions based on the likely reductions from amending the small container exemption, not just the best case scenario of eliminating the entire exemption.

ACA is concerned that eliminating the small container exemption, or even eliminating the exemption for certain categories, is problematic since the small container exemption is critical given the fact that the SCAQMD Rule 1113 limits are the most stringent in the US. This exemption provides a "safety valve" or a last resort option that allows for traditional products in problem situations when the limits in categories become increasingly more stringent or a category is eliminated. There are also a host of niche coatings that manufacturers can now sell in small containers that would need to be categorized if the small container exemption is modified or removed.

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3. Application Techniques with Greater Transfer Efficiency

The 1.0 tpd reduction from the Spray gun efficiency requirements assumes a first phase would incorporate the laser targeted technology, commercially proven to reduce coating usage by 30%. The second phase of incorporating transfer efficiency requirement of 65% may potentially reduce coating usage by up to an additional 30%. ACA requests additional information on the assumptions used to develop the 1.0 tpd estimate, since ACA seriously questions whether the use of laser technology or more efficient spray guns will result in 1.0 tpd of reductions. The District should ensure its emission reductions estimates are realistic before incorporating an arbitrary figure into the AQMP.

ACA is concerned the District's reduction estimates are overly optimistic and we do not believe either the laser technology nor a more efficient spray guns will result in a 30% reduction in coating usage. Spray application of coatings on large flat buildings is drastically different than spraying small odd shaped parts – there is very little over spray associated with spraying buildings. The District should not rely on estimated reductions based on spray booth applications when calculating the potential reductions for architectural coatings applications. Further, since architectural coating contractors already have a financial incentive to reduce coating usage, it is very unlikely that increased gun efficiency will reduce coatings usage by 30%. ACA requests background information the District used to estimate the 30% reduction so that we can adequately comment on this issue.

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Reducing VOC Emissions in South Coast will Not Reduce Ozone

ACA Comments – South Coast Draft 2012 AQMP

August 31, 2012

ACA is concerned that SCAQMD is neglecting to adequately consider the science-based fact that ozone formation in the SCAQMD region is ultimately limited by nitrogen oxides (NOx), or is NOx-limited. The District concluded in the 2007 AQMP that major reductions in emissions of oxides of sulfur (SOx), particulate matter less than 2.5 microns (PM2.5) and NOx are necessary to attain the air quality standards for ozone and particulate matter by the dates mandated by federal law. Less emphasis is placed on emission reductions of VOCs because of the greater emphasis on NOx emission reductions, which is a precursor to both ozone and PM. ACA suggests the District go even further in the 2012 AQMP and provide more background discussions and modeling information on the benefits of NOx reductions as opposed to VOC reductions. Given this, the District should focus its efforts on adopting NOx reduction control measures, since VOC control measures will not have any impact on ozone attainment in the District.

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Thank you for the opportunity to comment. If you have any questions or need any further information on the issues discussed here, please feel free to contact me at (202) 462-6272.

Sincerely,

/s/

/s/

David Darling, P.E.
Director, Environmental Affairs

Tim Serie, Esq.
Counsel, Government Affairs

**** Sent via email ****

The following is a copy of comment letter D:

Attachment B (June 13, 2012 ACA Comments)

June 13, 2012

Dr. Philip Fine and Joe Cassmassi
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: SCAQMD 2012 Air Quality Management Plan (AQMP) Advisory Group
Meeting #9 – Control Measure Concepts; ACA Comments

Dear Dr. Fine and Mr. Cassmassi:

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ACA Comments – South Coast Draft 2012 AQMP

August 31, 2012

The American Coatings Association (ACA) submits the following initial comments on CTS-01 *Further Emission Reduction from Architectural Coatings (Rule 1113)* that were presented at the May 17, 2012 Air Quality Management Plan (AQMP) Advisory Group Meeting.

Architectural and Industrial Maintenance (AIM) Coatings Inventory

ACA wants to assure that appropriate inventory credit is given for the significant reductions already achieved in mass and reactivity of VOC emissions from architectural coatings, and additional reductions to come from requirements for colorants, VOC limit reductions and thinning/cleaning solvents.

SCAQMD should fully explain any discrepancies or changes to the architectural and industrial maintenance (AIM) coatings inventory. At the May AQMP meeting, staff released a preliminary draft AIM inventory of 26.16 tpd for 2008, 22.87 tpd for 2014, and 24.72 tpd for 2023. Recent revised information suggests the inventory for 2008 is now 21.9 tpd (16.1 tpd for AIM coatings; 2.8 tpd for thinning/ cleaning/additives; and 3.1 tpd for colorants). ACA requests additional information on what the 2.8 tpd for thinning, cleaning and additives includes. ACA has also requested additional information on the 2014 inventory. ACA suggests the estimated 2014 inventory is too high, considering the 2011 Rule 1113 Staff Report where the District estimated the 2009 inventory to be as low as 11.6 tpd. Assuming the 2009 and 2014 inventories are similar (11.6 tpd), the original 2014 estimate of 22.87 tpd may be as much as two times too large. Instead of accounting for 22% of the AIM inventory, the proposed CTS-01 would instead account for nearly 43% of the AIM inventory.

ACA suggests the District develop an AQMP strategy that relates development/implementation of CTS-01 to future AIM emissions. If for example the District is able to document (via Rule 314) that the AIM emissions in 2012 are less than say 12 tpd (hypothetical number), then the District would not need to develop/implement CTS-01, since the District could take credit for the reductions in Rule 314. If on the other hand, the AIM emissions in 2012 are more than 12 tpd, then the District would develop and implement CTS-01 to reduce the industry emissions to below 12 tpd. Another benefit of this option is that it resolves District concern that the recent inventory reductions are economy related (i.e. the emissions will increase once the economy improves).

AIM VOC Reduction Estimate

ACA assumes that the 4-5 tons per day in CTS-01 will come from reductions from the recent Rule 1143 (9.75 tpd) and Rule 1113 amendments (4.4 tpd) since the estimated a 4-5 tpd reduction from CTS-01 is too large based on the associated CTS-01 synopsis. In comparison, the 2011 Rule 1113 amendments resulted in estimated reductions of 4.4 tpd, which included VOC limit reductions for 11 categories (0.4 tpd), changes/phase-out of the averaging provision (1.2 tpd) and limits on colorants (2.8 tpd). ACA requests further details on the estimated CTS-01 reductions, since ACA is concerned that the reductions detailed in the synopsis will not result in 4-5 tpd of reductions, therefore the District will be forced to lower VOC limits for other coatings categories.

Further, similar to our comments on the 2007 AQMP (letter dated December 7, 2006), ACA is concerned that if these extreme and unproven reductions are approved, the industry will be

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forced to achieve the VOC targets regardless of whether the CTS-01 control measures are technologically feasible. As ACA commented in the past, we are concerned that once these reduction estimates are approved in the AQMP and the State Implementation Plan, the District may sidestep the technical concerns claiming that it has no choice since the reductions are “locked” into the Plan/SIP. Given this significant concern, the Plan should clearly state that any specific numeric goals or targets are subject to the District’s statutory authority to regulate non-mobile sources and may be adjusted in the future based on technological feasibility analyses.

CTS-01 Control Measure Technological Concerns

ACA is currently reviewing the potential control measure concepts in CTS-01, however ACA offers the following initial comments:

1. Reduce VOC Emissions from Flat, Nonflat and Primer, Sealer, Undercoaters (PSU)

ACA is concerned that limits lower than 50 g/l (flat and nonflat) and 100 g/l (PSU’s) may be difficult given the current problems associated with VOC test methods. In addition, ACA suggests the District complete a technology assessment to be sure that it is technologically feasible to lower the VOC limits, especially since certain products need to be kept at the current limits. See attached ACA comments dated 2/4/2011.

2. Small Container Exemption

ACA is concerned that eliminating the small container exemption, or eliminating the exemption for certain categories is problematic since the small container exemption is critical given the fact that the SCAQMD Rule 1113 limits are the most stringent in the US. This exemption provides a “safety valve” or a last resort option that allows for traditional products in problem situations when the limits in categories become more stringent or a category is eliminated. There are also a host of niche coatings that manufacturers can now sell in small containers that would need to be categorized if the small container exemption is modified or removed. See attached ACA comments dated 2/4/2011.

3. Application Techniques with Greater Transfer Efficiency

ACA is concerned the District is imposing transfer efficiency requirements on equipment used to apply AIM coatings. With regards to the laser paint targeting system, ACA is concerned that the system is sold exclusively by Iowa University and has not been widely distributed throughout the US. While this technology may be useful for training contractors to properly apply coatings in an automotive refinish shop under controlled conditions, this technology may not be applicable to field applied coatings. As such, ACA is concerned that it may be difficult for the District to document and receive SIP credit for increased efficiency from the use of this technology. Further, this equipment is expensive – approximately \$100 per unit (not including replacement of the lithium battery that has a tested average life of only 20 hours). Also, ACA is concerned that this technology was designed for auto refinish coatings shops, and it may not work on AIM spray equipment that is used in the field (large areas, use of wands, rough texture substrates, sunny locations). Finally, it’s unclear whether these units can be properly cleaned.

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ACA is also concerned that if the laser paint targeting system control measure is abandoned for some reason the District will be forced to impose the 65% efficiency requirements for all AIM spray equipment, which is problematic.

Lack of Technological or Economic Assessment

ACA is also generally concerned with the absence of the following in the AQMP:

- (1) No assessment of technological or economic feasibility of the proposals, which may amount to pointless bans on useful products.
- (2) No assessment of potentially significant unintended adverse environmental impacts from either (a) substitution of inadequate alternatives, or (b) lack of adequate protective maintenance painting.
- (3) No demonstration that further reductions in VOC emissions from architectural coatings would be necessary or helpful in achieving ozone attainment under the increasingly NO_x-limited conditions of the South Coast Air Basin.

Thank you for the opportunity to comment. If you have any questions or need any further information on the issues discussed here, please feel free to contact me at (202) 462-6272.

Sincerely,

/s/

David Darling, P.E.
Director, Environmental Affairs

The following is a copy of comment letter received for the 2007 AQMP, responses can be found at: http://www.aqmd.gov/aqmp/07aqmp/07AQMP_modified.html.

Attachment C (December 7, 2006 Comments)

December 7, 2006

Mr. Joseph Cassmassi
Manager Planning, Rule Development and Area Sources SCAQMD
21865 Copley Drive
Diamond Bar, CA 91765-4182

RE: 2007 Air Quality Management Plan (AQMP); NPCA Comments

Dear Mr. Cassmassi,

NPCA³ is pleased to submit the following initial comments on the SCAQMD Preliminary Draft 2007 AQMP.

The Draft AQMP appears to recognize that additional mass-based VOC reductions, beyond those already required by the limits SCAQMD has previously imposed on architectural and industrial maintenance coatings are not feasible based on currently available technology. NPCA agrees that the 56 ton reduction in emissions that SCAQMD expects to achieve from AIM coatings and other solvents must remain in the "black box" reactivity-based controls as proposed (as CM #2007LTM-01) for Architectural Coatings, Miscellaneous Coatings and Solvents, and Consumer Products, and as to other potential "advanced technologies" discussed in the Draft AQMP. NPCA is greatly concerned that if this extreme and unproven reduction target is adopted by the SCAQMD Board as a short- or mid-term control measure of the AQMP, and approved as part of the California SIP by ARB and EPA, the industry will be arbitrarily "locked" into achieving the target whether or not it is technologically possible -- in which case the regulation becomes a wholesale ban on architectural coatings. NPCA and the paint industry have been subject to other SIP-approved AQMP control measures in the past, and SCAQMD sidestepped technical concerns claiming it was "locked" into these measures through the SIP approval and enforcement process. On Page 4-63, the proposed SCAQMD plan itself notes that "reformulation based on lower reactive compounds need to be evaluated and considered" and does not know what additional reductions are actually achievable. NPCA does not want to see this happen again with the 2007 AQMP. Given this concern, NPCA recommends that a specific numerical goal not be set until technical feasibility issues are carefully examined.

NPCA recognizes that the technological and economic feasibility of the proposed "black box" measure cannot be fully assessed at this time. However, NPCA believes it is critical that it be documented that any specific numerical "goal or target" can be adjusted in the future based on technological and economic feasibility findings. If this long-term "black box" measure is adopted, NPCA is prepared to work with the District in ensuring that any future emissions rulemakings implementing the control measure be technologically and commercially feasible.

We note that the control measure proposes to require that paints be reformulated with "50 percent minimum by volume acetone reactivity-equivalent materials by 2015." The main problem with this is that while industry has long advocated consideration of reactivity-based limits for architectural coatings, no reactivity-based regulation exists today, nor is it yet understood how much, if any, *additional* reduction in ozone-formation potential may be possible by means of a reactivity-based rule. We believe that, to set an extreme goal of 50 percent reduction without any technical basis to assure feasibility is unwarranted.

At the November 16th SCAQMD Public Workshop, NPCA requested information on how the control measure reduction target was selected. SCAQMD staff responded by saying that the

³ NPCA is a voluntary, nonprofit trade association representing some 350 manufacturers of paints, coatings, adhesives, sealants, and caulks, raw materials suppliers to the industry, and product distributors. As the preeminent organization representing the coatings industry in the United States, NPCA's primary role is to serve as ally and advocate on legislative, regulatory and judicial issues at the federal, state, and local levels. In addition, NPCA provides members with such services as research and technical information, statistical management information, legal guidance, and community service project support.

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target had no technical basis other than the district's own computer modeling estimates as to what degree of VOC reduction would be needed to project attainment of the ozone standard. We note that § 182(e)(5) of the Clean Air Act requires the District to identify enforceable contingency measures if a "black box" control measure is ultimately incapable of achieving the proposed reductions. LTM-01 states that the proposed 56 ton emission reductions would be achieved through mass-based limits if reactivity is not feasible. It is not clear whether SCAQMD intends that mass-based reductions are to be the contingency measure, should reactivity-based controls be insufficient to achieve the reductions. Since the current mass-based limits for architectural coatings in the SCAQMD are already so low, NPCA believes that further reductions to such an extreme degree will not be possible via reactivity nor mass-based limits, and the entire control measure, whether the reductions are based on limits on VOC reactivity, or VOC mass, must remain in the "black box," and specific contingency measures be proposed if such reductions are not achievable.

In addition, NPCA is concerned that SCAQMD is not giving adequate consideration to the science-based fact that ozone formation is ultimately NOx-limited. As such, with sufficient NOx reductions, VOC control will not further contribute to attainment of the ozone standard.

Finally, NPCA supports SCAQMD suggestion (page 4-50) that additional reactivity research is necessary especially for the magnitude of reductions suggested by SCAQMD. NPCA also suggests that SCAQMD incorporate atmospheric availability in its inventory assessment - since the current assumption that 100% of solvents in coatings are available for ozone formation is not accurate.

Thank you for your consideration of our comments.

Sincerely,

/s/

David F. Darling, P.E.,
Director, Environmental Affairs

/s/

Jim Sell
Senior Counsel, Government Affairs

Cc: Catherine Witherspoon, ARB
Debbie Jordan, EPA Region 9
Bill Wehrum, EPA

**** Sent via email and in hard-copy ****

Responses to Comment Letter P
ACA

Response to Comment P-1:

Staff acknowledges that the architectural coatings industry has made great strides in lowering the VOC emissions from architectural coatings. Even with these reduced emissions, this category is one of the largest sources of VOC emissions under the AQMD's regulatory purview. Staff continues to look at all sources of emission for further reductions and is not seeking to focus solely on the architectural coatings manufacturers.

The reporting pursuant to Rule 314 – Fees for Architectural Coatings indicates that many coatings manufacturers are formulating coatings well below the current VOC limits. While the AQMD is unable to seek SIP credit for the lower emissions as a result of Rule 314 expected in the future due to the fact that the rule does not include enforceable caps that limit emission on a permanent basis, the 2008 baseline in the AQMP is based on the Rule 314 data so it does reflect the lower emissions in the inventory.

The Clean Coatings Certification Program (CTS-02 from the 2007 AQMP), was not implemented and did not include any SIP reductions. The control measure did discuss the concept for seeking SIP credit for reductions due to promoting the use of certified ultra-low VOC coatings. Manufacturers have reported ultra-low VOC coatings under Rule 314, but any emission reductions from those ultra-low VOC coatings are not enforceable and permanent because manufacturers have the ability to increase the VOC content of coatings up to the applicable VOC limits in Rule 1113, depending on a shift in market demand. Therefore, these emissions reductions cannot be considered permanent or enforceable, two of the four key parameters necessary for SIP emission reductions to be credited on a forward looking basis.

The long term strategy achieves attainment of the ozone standards at all the air quality monitoring stations throughout the Basin by 2023. Modeling analysis shows that significant NOx emissions reductions are the only viable path to attain the 8-hour ozone standards in the Basin. Therefore, the ozone strategy focuses primarily on NOx reductions. However, VOC emissions reductions can also be cost-effective in progressing towards attainment of the ozone standards, especially in the western portions of the Basin. Furthermore, there is a significant health benefit to meeting the ozone standards as soon as possible in as many areas of the Basin as possible. While the current 8-hour ozone design value site is at Crestline in the San Bernardino Mountains, projections in 2023 show that the design value site will be at Glendora in the San Gabriel Valley to the west. As shown in the 2023 baseline 8-hour ozone NOx/VOC isopleths for Glendora and other western sites presented in the attachment to

Appendix V, VOC reductions will help to lower ozone concentrations in the San Gabriel Valley and Western portions of the Basin. This is true near the level of the 8-hour ozone standards, but is even more significant along the path to attainment. This is due to the higher VOC/NO_x ratios projected to occur in future years, especially in the western Basin.

To this end, short-term VOC controls (through 2020) will help offset the impact of the increased VOC/NO_x ratio in the impacted areas of the Basin, such as the San Gabriel Valley, that are immediately downwind of the primary emissions source areas. As such, a nominal amount of VOC reductions are proposed in the Draft 2012 AQMP. The proposed VOC control measures in the Plan are based on implementing all feasible control measures through the application of available technologies and best management practices, while seeking a fair share reduction from both mobile and stationary sources. As zero and near-zero technologies are implemented for mobile sources to reduce NO_x emissions, concurrent VOC reductions from mobile sources are expected. Thus, stationary sources must continue to achieve their fair share of VOC reductions in the future. This plan proposes a modest 6 tpd of VOC emissions reductions out of a total 21 tpd of VOC reductions needed for basin-wide attainment in 2023.

Response to Comment P-2:

Again, staff concurs that the coatings industry has made great strides in lowering the VOC emissions from architectural coatings. Staff agrees that this may in part be attributed to market demands, as well as the financial incentives in Rule 314. However, staff notes that majority of the emissions reductions achieved are the result of three main phases of amendments to Rule 1113 – Architectural Coatings (previously included in the AQMP) that took place over a 12 year period, often with litigation from the architectural coatings industry.

While staff is not taking forward looking SIP credit for the coatings that are sold below the current VOC limits, the baseline VOC emission inventory will reflect those lower VOC coatings. With the adoption of Rule 314, the inventory is more accurate as the estimates are based on the coating sold into and within the AQMD as reported by the manufacturers on an annual basis. Prior to 2008, the AQMP relied on data collected by CARB for coatings sold throughout California which were reported every 4 – 5 years. The inclusion of Rule 314 data ensures that the emission inventory included for planning purposes is current.

Many factors contribute to the significant emissions reductions that have been achieved in architectural coatings, including implementation of Rule 314. However, staff is unable to attribute quantifiable emission reductions or the 10 tons of reductions mentioned in the comment to Rule 314. In addition to the strides the manufacturers have shown in lowering the VOCs, and the change to incorporate Rule 314 data to

calculate the emissions inventory, the industry experienced a large compression due to the economic recession. However, the VOC reductions achieved from the recessionary sales of architectural coatings are not permanent. Moreover, manufacturers have the ability to increase the VOC content of coatings up to the applicable VOC limits in Rule 1113, depending on a shift in market demand. Therefore, these emissions reductions cannot be considered permanent or enforceable, two of the four key parameters necessary for SIP emission reductions to be calculated on a forward looking basis.

Staff concurs with the costs associated with Rule 1113 amendments and Proposed Amended Rule 1107. However, staff is unable to determine how the ACA estimated the cost of \$41.4 million for the implementation of Rule 1143. The March 6, 2009 staff report estimated the annualized cost at approximately \$12 million. Staff is also unclear how the ACA estimated the cost of \$13.65 million for implementing Rule 314. Since Rule 314 implementation starting in CY-2009, the AQMD has received a total of less than \$8 million over four years, well below the projected revenue of \$14.5 million.

While the district agrees that passenger cars, off-road equipment, light duty trucks, etc. need to be considered in the overall control strategy for meeting the federal and state requirements, architectural coatings and low vapor pressure solvents found in consumer products also need consideration for additional control. Even with the lower emission baseline for 2008, architectural coatings remain the highest source of VOC emissions under the AQMD's current regulatory authority.

Staff agrees that the fee program may provide some incentive for formulation of lower VOC coatings, which was one of the goals of implementing Rule 314 and including the fee exemption for coatings that are less than 5 g/L of material. The benefits of those lower-VOC coatings cannot be quantified and credited on a forward looking basis because they cannot be considered permanent or enforceable. To the extent, however, the emission reductions currently experienced as a result of Rule 314 and other factors, reflect a permanent trend in future emission inventories, such reductions can play a role in shaping the scope of future amendments to the architectural coatings program.

Response to Comment P-3:

For comments regarding the need for further VOC reductions, please see response to comment P-1.

As staff works to implement CTS-01, they will work with stakeholders to ensure future limits are technically feasible and cost effective. Instead of including a hard target for the projected VOC emission reductions, staff included a range of reductions in CTS-01 (2 -4 tpd) and has yet to quantify the potential reductions in CTS-04.

Response to Comment P-4:

Staff has investigated the source of the discrepancy in the emission numbers between the table in CTS-01 and chapter 3 Appendix III and the necessary corrections have been made in the Final 2012 AQMP.

Staff is encouraged to see that while the volume of architectural coatings has increased, the emissions have remained relatively flat. Staff would like to see this trend continue. It is not likely that emissions will increase to the levels they were in 2008 in the near future, largely because the VOC limits in Rule 1113 have decreased since 2008. But as the housing market recovers and coating sales continue to rise, the VOC emissions from the application of architectural coatings will inevitably increase, albeit not potentially at same rate as previously seen. Due to the adoption of Rule 314, staff will be able to monitor the emissions on an annual basis.

Response to Comment P-5:

CTS-01 lists the potential emission reductions for lowering the VOC limit for flat, non-flat and primer, sealer, undercoater categories as “up to” 1.7 tpd, it is not a hard target of 1.7 tpd. Further, the table lists the total VOC reductions for architectural coatings as a range between 2 – 4 tpd. Staff notes that the lower end of the range will be submitted into the SIP and individual strategy targets will not be placed in the SIP.

Staff agrees that improvements in VOC test method, and/or a change in the metric to VOC of material will likely be necessary to implement a 25 g/L VOC limit, as proposed. Staff will work with industry, the U.S. EPA, CARB and academia in an effort to incorporate an improved test method.

Response to Comment P-6:

Staff does not agree that this exemption is a necessary safety valve for the VOC limits in Rule 1113. Aside from a few niche categories or new categories that may be necessary, there are ample products available in the marketplace that meets the VOC limits in Rule 1113. Staff is mindful, however, of the usefulness of the small container exemption to manufacturers and end users, especially for niche products, as well as repair, touch-up and maintenance. As part of the rule development process, staff will consider all options in regard to the small container exemption, including creating small volume categories with higher VOC limits if necessary.

The control measure states that the elimination of the small container exemption may potentially reduce VOC emissions by “up to” 1.9 tpd; it is not a hard target of 1.9 tpd. The estimates for individual strategies relative to the architectural coatings will not be included in the SIP.

Response to Comment P-7:

Please note that even though multiple rules are listed in the control measure, its scope and emission reduction commitment is fairly modest. The objective of the control measure is to be achieved by focusing on a few select coating/product categories of a few rules and not through a wholesale or across the board lowering of VOC limits. Staff has revised the language of CTS-02 to specifically to identify the four main rules that have been targeted for emission reduction potential. Rules 1124, 1144, 1168, 1171 include certain product categories, as indicated in the control measure source category description, that are being considered, including coatings used in aerospace applications, adhesives used in a variety of sealing applications, solvents usage, cleaning or graffiti abatement activities, and lubricants used as metalworking fluids to reduce heat and friction to prolong life of the tool, improve product quality and carry away debris. Staff agrees that the marine and pleasure craft coatings activities in the District do not currently represent a significant portion of emissions or emission reduction potential. As such, specific reference to Rule 1106, 1106.1, as well as to the other two rules identified in the draft control measure have been removed to indicate that the estimated emission reductions do not rely upon rule amendments in those areas.

The District remains committed to considering all miscellaneous coatings, adhesives, solvents and lubricant categories for incorporation as feasible measures as required by the Clean Air Act Section 172(c)(1); however, the extent such measures are available and technologically and economically feasible to implement in the aforementioned non-specified rules is expected to be limited as reflected in the revised language.

Response to Comment P-8:

Please see response to comment P-1.

CTS-04 represents potentially one of the largest VOC emission source categories. VOC emissions from consumer products are projected in 2020 to be the largest source of emissions in the district exceeding light duty passenger vehicles and dwarfing emissions from stationary sources such as coatings and petroleum marketing. As such, it is incumbent on the AQMD to investigate all areas for potential emission reductions, including evaluation of any existing regulatory exemptions or exclusions.

Current USEPA, CARB and AQMD emissions inventory and photochemical air quality models include speciation profiles that account for total organic gases (TOGs), including reactive compounds, unreactive and exempt compounds, as well as LVP-VOC compounds. Model results for ozone non-attainment areas have demonstrated that even compounds with low photochemical reactivity or LVP-VOCs contribute to photochemical ozone formation and not including these would compromise the ozone attainment demonstrations. Staff recognizes that some multi-media models that incorporate partitioning concepts such as “Atmospheric Availability” or

“Environmental Fate” may have been recently developed; however, current peer-reviewed ambient ozone models used by CARB and AQMD do not include such partitioning concepts. District staff will continue to work with USEPA and CARB staff on ozone model improvements, especially if additional peer-reviewed environmental fate and atmospheric availability studies justify incorporation into these predictive models.

Because substitution of traditional VOC containing materials indicates an increased use of LVP-VOCs, a review of the specific and extent of LVP-VOCs utilized and the associated applications is required to ensure that VOC emission reductions and ozone reduction benefits are maintained as originally intended. Following a study, “Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds”, U. Või and M. Morris, August 2012

(<http://www.aqmd.gov/prdas/Coatings/VOCs/RedefiningVOCs.pdf>), that indicates that some LVP-VOCs can evaporate nearly as rapidly as other VOC materials, AQMD staff believes that additional review of specific materials and applications and the associated LVP-VOC qualification criteria may help identify air quality improvement opportunities.

The proposed control measure is intended to further study the air quality improvement potential for replacing LVP-VOC containing compositions with alternative low VOC formulations. The AQMD, through the implementation of the Clean Air Cleaners Program and Rule 1143 – Consumer Paint Thinners and Multi-Purpose Solvents, has identified alternative low-VOC, cost-effective technologies that are currently commercially available and used that do not rely upon the LVP-VOC exemption. The proposed control measure may involve eliminating or amending the CARB LVP-VOC criteria based on scientific data, which may include MIR and similar photochemical reactivity parameters. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the rule development process to ensure overall efforts are feasible, productive and cost-effective. Further, the control measure includes requirements for CARB to collect speciated LVP-VOC data by category as a part of future surveys. This information will assist CARB and AQMD, as well as industry, in identifying additional categories that have the types and greatest LVP-VOC penetration, and result in more focused changes to the LVP-VOC exemption.

Response to Comment P-9:

AQMD staff agrees that the 2012 AQMP development schedule was initially compressed. The attainment demonstration modeling could not begin until input data from SCAG’s 2012 RTP and CARB’s emissions inventories were available. AQMD staff has made every effort to provide all data and information to the public as soon as it became available in an open and transparent process. The review period for many of

the documents has also been extended, additional workshops and regional public hearings have been added scheduled for November 13 - 15, and the Governing Board adoption hearing date has been delayed to December. The AQMD staff is committed to providing sufficient time for public comment, and continues the enhanced outreach efforts to all stakeholders, while keeping the U.S. EPA submittal deadline in December of 2012 in mind.

Response to Comment P-10:

The recent VOC reductions achieved in Rules 1113 and 1143 have been accounted for in the VOC inventories included in the 2012 AQMP. The following table summarizes the reductions and full implementation dates:

	2008 Emissions (tpd)	2014 Reduction (tpd)	2015 Reduction (tpd)
Architectural Coatings	16.1	1.3	0.3
Solvents (Thinning/Cleaning/Additives)	2.8	2.66	
Colorants	3.0	2.8	
Total	21.9	6.76	0.3

Draft control measure CTS-01 also summarizes VOC inventories for 2019 and 2023, which includes the earlier VOC reductions but include a growth factor to account for increased coatings usage due to population growth.

As staff works to implement CTS-01, staff will work with stakeholders to ensure future limits are technically feasible and cost effective. Instead of including a hard target for the projected VOC emission reductions, staff included a range of reductions in CTS-01 (2 -4 tpd) and has yet to quantify the potential reductions in CTS-04.

Staff acknowledges that the VOC reductions achieved surpass the commitments in the 2007 AQMP. However, modeling shows the need for modest VOC reductions, and the ozone levels are affected by an atmospheric ratio of VOC to NOx. The long term strategy achieves attainment of the ozone standards at all the air quality monitoring stations throughout the Basin by 2023. Modeling analysis shows that significant NOx emissions reductions are the only viable path to attain the 8-hour ozone standards in the Basin. Therefore, the ozone strategy focuses primarily on NOx reductions. However, aggressive NOx reductions can increase ozone levels in the western portions of the Basin. VOC emissions reductions can also be cost-effective in progressing towards attainment of the ozone standards, especially in the western portions of the Basin. Furthermore, there is a significant health benefit to meeting the ozone standards as soon as possible in as many areas of the Basin as possible. While the current 8-hour ozone

design value site is at Crestline in the San Bernardino Mountains, projections in 2023 show that the design value site will be at Glendora in the San Gabriel Valley to the west. As shown in the 2023 baseline 8-hour ozone NO_x/VOC isopleths for Glendora and other western sites presented in the attachment to Appendix V, VOC reductions will help to lower ozone concentrations in the San Gabriel Valley and Western portions of the Basin. This is true near the level of the 8-hour ozone standards, but is even more significant along the path to attainment. This is due to the higher VOC/NO_x ratios projected to occur in future years, especially in the western Basin.

To this end, short-term VOC controls (through 2020) will help offset the impact of the increased VOC/NO_x ratio in the impacted areas of the Basin, such as the San Gabriel Valley, that are immediately downwind of the primary emissions source areas. As such, a nominal amount of VOC reductions are proposed in the Draft 2012 AQMP. The proposed VOC control measures in the Plan are based on implementing all feasible control measures through the application of available technologies and best management practices, while seeking a fair share reduction from both mobile and stationary sources. As zero and near-zero technologies are implemented for mobile sources to reduce NO_x emissions, concurrent VOC reductions from mobile sources are expected. Thus, stationary sources must continue to achieve their fair share of VOC reductions in the future. This plan proposes a modest 6 tpd of VOC emissions reductions from stationary sources out of a total 18 tpd of VOC reductions needed for basin-wide attainment in 2023.

Since the submittal of this comment letter, the inventory and anticipated emission reductions have been modified. In 2023, the VOC inventory is estimated to be 19.3 tpd and the projected reductions from CTS-01 are 4.4 tpd. Thus, the VOC reductions will be much less than 40% of the inventory. The initial draft control measure CTS-01 has been revised, listing the VOC reductions as a range between 2 – 4 tpd. Staff further notes that the lower end of the range will be submitted into the SIP. Staff believes that the proposed control measure is technically feasible, and staff will conduct a thorough technology assessment a part of a public rule amendment process.

Response to Comment P-11:

Staff acknowledges that using the most accurate and currently available VOC inventory is vital when considering VOC reductions. With the adoption of Rule 314 in 2008, the 2008 and subsequent inventory is more accurate as the estimates are based on the coating sold into and within the AQMD as reported by the manufacturers on an annual basis. Prior to 2008, the AQMP relied on data collected by CARB for coatings sold throughout California which were reported every 4 – 5 years. The inclusion of Rule 314 data ensures that the emission inventory included for planning purposes is current. The differences in the inventory data that was released in the preliminary draft and prior meeting on the AQMP included references to the earlier estimates based on the older

CARB survey data. Those discrepancies have been addressed and the current inventory estimates and projections are based on the Rule 314 data and include the recent VOC reductions achieved through Rules 1113 and 1143. The following table summarizes the projected emission trends:

	2008	Rule reductions by 2014	2014	Rule reductions by 2015	2019	2023
Inventory	21.9		15.8		17.5	19.3
Reductions					2.0 – 4.0	2.2 – 4.4
Remaining					13.5 – 15.5	14.9 – 17.1
Rule Reductions		6.76		0.3		

Staff is encouraged to see that while the volume of architectural coatings has increased, the emissions have remained relatively flat. Staff would like to see this trend continue. It is not likely that emissions will increase to the levels they were in 2008 in the near future, largely because the VOC limits in Rule 1113 have decreased since 2008. But as the housing market recovers and coating sales continue to rise, the VOC emissions from the application of architectural coatings will inevitably increase, albeit not potentially at same rate as previously seen. Due to the adoption of Rule 314, staff will be able to monitor the emissions on an annual basis.

Response to Comment P-12:

Please see response to comment P-10.

Response to Comment P-13:

Staff originally estimated that draft CTS-01 may potentially achieve VOC reductions of 4.4 tpd. Based on the concern and subsequent discussions with the industry, CTS-01 has been revised to reflect potential emission reductions ranging from 2-4 tpd, with 2 tpd to be included in the SIP, which is technically feasible based on currently available technology. Developing a VOC cap for architectural coatings is an interesting suggestion, but even with the suggested 12 tpd target, architectural coatings remain the highest source of VOC emissions under the AQMD’s current regulatory authority, and the AQMD is obligated to evaluate each and every feasible approach toward attaining the ozone standards.

Response to Comment P-14:

Based on the concern and subsequent discussions with the industry, CTS-01 has been revised to reflect potential emission reductions ranging from 2-4 tpd, with 2 tpd to be included in the SIP.

Response to Comment P-15:

CTS-01 has been revised to include a range of potential emission reductions from 2-4 tpd. As clearly demonstrated in previous rule amendments to Rule 1113, District staff will evaluate technical feasibility during the rule development process, working closely with the manufacturers on any specific rule proposals.

Response to Comment P-16:

Based on the concern and subsequent discussions with the industry, CTS-01 has been revised to reflect potential emission reductions ranging from 2-4 tpd, with 2 tpd to be included in the SIP. The range of potential emission reductions reflects the alternative options for each of the three strategies, including potentially creating subcategories from the large volume coating categories for certain niche uses, as necessary.

Staff agrees that an improved VOC test method is needed in order to achieve further VOC reductions. Draft CTS-01 includes a proposal to lower VOC limits in conjunction with the adoption of a gas chromatographic test method for more accurately measuring of VOC content, and a change of the metric from VOC of coating to VOC of material. In addition, staff plans to perform a technology assessment, in conjunction with the industry, as part of the rule amendment process.

Response to Comment P-17:

Based on the concern and subsequent discussions with the industry, CTS-01 has been revised to reflect potential emission reductions ranging from 2-4 tpd, with 2 tpd to be included in the SIP. The range of potential emission reductions reflects the possibility of carving out new, higher-VOC categories for niche uses.

Staff does not agree that the small container exemption is a necessary safety valve for the VOC limits in Rule 1113. As part of any rule development activities, staff will evaluate the need for any niche categories with higher VOC limits that may be necessary for certain small volume uses. However, based on a review of data submitted by manufacturers, there are ample products available in the market place that meet the VOC limits in Rule 1113.

The District has not yet attained compliance with national air quality standards, and has a continued need to evaluate all technically-feasible and cost-effective reductions for criteria pollutants, including VOCs. With consideration for potential more stringent ozone standards in the near future, it is vital to fully evaluate the need for any and all exemptions from VOC rules, including Rule 1113.

Response to Comment P-18:

Draft CTS-01 inclusion of transfer efficiency requirements focuses on application equipment, including the laser paint targeting tool, with data supporting an increase in transfer efficiency by 30%, and HVLP or equivalent technology, with data supporting 65% transfer efficiency. Staff took a conservative estimate ranging from 2% to 10% reduced coatings usage, which can potentially result in significant reductions in volume of coating used, estimated to be between 150,000 to 685,000 gallons annually.

Staff plans to conduct a thorough technical analysis, including evaluating cleaning and maintenance, during the rule development period.

Response to Comment P-19:

Please see response to comment P-10.

Q. SC Johnson, Nancy Levenson, August 31, 2012



Global Government Relations
1667 K Street, NW
Suite 650
Washington, DC 20006

August 31, 2012

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182
(Via e-mail: <http://www.aqmd.gov/aqmp/2012aqmp/Comments.htm>)

Subject: Draft 2012 Air Quality Management Plan (AQMP)

Dear Sir or Madam,

S. C. Johnson & Son, Inc. (SC Johnson) appreciates this opportunity to provide comments on the Draft 2012 Air Quality Management Plan (AQMP) released by the South Coast Air Quality Management District on July 19, 2012.

By way of background, SC Johnson is a family-owned and managed business dedicated to innovative, high-quality products, excellence in the workplace, and a long-term commitment to the environment and communities around the world in which it operates. Based in Racine, Wisconsin, our company is one of the world's leading manufacturers of household cleaning products and products for home storage, air care, shoe care, and insect control. Among the well-known leading brands we market in the U.S. are GLADE®, PLEDGE®, OFF!®, RAID®, SCRUBBING BUBBLES®, SHOUT®, WINDEX®, KIWI®, and ZIPLOC®. Founded 126 years ago, SC Johnson has more than \$9 billion in annual sales, employs approximately 13,000 people globally, and markets products in virtually every country in the world.

Our company takes very seriously our responsibility to act as the environmental steward of our products, thus we continuously seek to improve them, particularly relative to human health and environmental impact. This effort is driven in part by Greenlist™, our patented internal environmental classification program that institutionalizes a greener, more informed selection process that surpasses regulatory requirements and motivates our scientists and formulators to use raw materials and ingredients that are safer for consumers and better for the environment. Through Greenlist™, we strive to ensure that our products have the least impact on the environment, while also delivering the performance, efficacy, and other benefits that consumers have come to expect from our products – including essential public health benefits associated with our pest control products.

Working directly and through our trade association, the Consumer Specialty Products Association (CSPA), we have engaged the California Air Resources Board (CARB) over the years to develop and implement a number of regulatory proposals for consumer products that have resulted in significant reductions in emissions of volatile organic compounds (VOC). To date, these regulations have obtained more than 50% reductions in VOC emissions from consumer products – a significant accomplishment for state regulators and our industry, which remains committed to ensuring that consumer products provide maximum benefits and minimal environmental impacts in California and elsewhere. In fact, our



Q-1

Greenlist™ program helped us meet more stringent air quality regulatory requirements by removing 1.8 million pounds of VOCs from WINDEX® glass cleaner.

Along with continuously seeking to improve our product ingredient selections, SC Johnson also continues to work on advances for our packaging. In 2010, SC Johnson launched its first aerosol product in the U.S. utilizing compressed air as the propellant rather than liquefied petroleum gas (LPG), providing a quieter spray and softer feel without the VOCs typically associated with aerosols. Early products have included PLEDGE® Multi Surface Spray, GLADE® Premium Aerosols, and WINDEX® Electronics Cleaner, and we continue to explore ways to expand the use of compressed gas technology across our product categories.

While we will continue to innovate and develop products with lesser impact on human health and the environment, the transition to developing and marketing greener, more sustainable chemistries takes time, as manufacturers must engage in a variety of complex and often costly reformulation and related research and development activities to arrive at the desired end-use product. As this transition occurs, it will be vitally important for formulators like SC Johnson to have the flexibility to utilize existing limited exemptions and alternative compliance methods previously approved by CARB. Of particular importance is the continued availability to SC Johnson and other formulators of the current exemption for Low Vapor Pressure (LVP) compounds.

We are very concerned that South Coast has included CTS-04, Further VOC Reductions from Consumer Products [VOC], which calls for working with CARB to identify categories of consumer products where it may be appropriate to “revise or eliminate the LVP-VOC exemption,” in its Draft AQMP. In addition to supporting the arguments in defense of the LVP exemption that are articulated in comments submitted to South Coast in July and August of this year by CSPA, of which we are a member, we wish to highlight a few concerns specific to SC Johnson:

- SC Johnson has invested many years and significant resources reformulating our products utilizing LVP-VOCs, water and compressed air to replace VOCs to meet the increasingly lower VOC standards;
- Almost all of SC Johnson’s products contain LVP-VOCs. SC Johnson has several hundred products currently used in North American that have been optimally formulated to meet both consumer needs and VOC standards;
- Product efficacy would be severely affected causing consumers to use more of the product resulting in more emissions; and
- Unintended consequences are very likely to occur, including but not limited to having to reformulate with less ‘green’, more toxic, less tested, and corrosive substitutes to maintain product efficacy.

We also wish to highlight our concerns with a June 21, 2012, presentation entitled “Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds,” prepared by Mike Morris and Uyen-Uyen T. Vo of the SCAQMD staff that summarizes findings from a study on evaporation of LVP compounds, specifically:

- The study does not remotely approximate LVP usage in consumer products, and should not be used as a policy basis;

Q-1

Q-2

- The authors do not specify what they mean by non-volatile, semi-volatile, and volatile. Thus, they fail to establish the million-dollar correlation: vapor pressure at 20°C (the current regulatory parameter) and evaporation. They do not seem to be even asking the right questions in this study;
- Many LVPs (such as in household cleaners) are exposed to the atmosphere for seconds, before they are wiped up and properly disposed of;
- LVPs do not usually exist as pure chemicals in consumer products. The mixing of chemicals (whether forming solutions, emulsions, or other blends) will affect the vapor pressure of the mixture as a whole, and thus, the ability of the mixture itself to evaporate. Additionally, what is in the mixture will affect the ability of individual molecules in the solution to evaporate. This has to do with relative strength or weakness of the intermolecular attraction;
- Use of hydrotreated distillates light, a complex mixture of higher and lower volatility chemicals, should not be used as representative of a process that has properly classified most LVP chemicals; and
- The presentation at best indicates that a check of potential marginal LVP materials may be prudent, but does not demonstrate that the majority of classified materials are already appropriately classified.

Q-2

For the reasons stated in CSPA's comments and the concerns we have outlined above, SC Johnson respectfully requests that SCAQMD reconsider the inclusion of Control Measure CTS-04, which is aimed at requiring CARB to remove the LVP exemption from the Consumer Products Regulation, in the final South Coast Air Quality Management Plan.

SC Johnson greatly appreciates the opportunity to comment on the Draft 2012 AQMP. We look forward to working cooperatively and collaboratively with South Coast, CARB, and other relevant stakeholders to improve air quality for all California citizens. If you have any questions regarding our comments, please feel free to contact me directly at 202-331-1186 or by email at nrlevens@scj.com.

Sincerely,



Nancy R. Levenson
Director – Global Government Relations

cc: Elizabeth Jameson, Global Regulatory Affairs, SC Johnson
D. Douglas Fratz, Consumer Specialty Products Association
Joseph T. Yost, Consumer Specialty Products Association

Responses to Comment Letter Q
SC Johnson

Response to Comment Q-1:

Staff appreciates the efforts made by S.C. Johnson to reduce VOC emissions and advance packaging technology for consumer products. The AQMD is very supportive of the use of compressed air as a propellant in lieu of a VOC (e.g., LPG) and commends S.C. Johnson's role in successfully developing and commercializing such aerosol products. AQMD staff expects that CARB will leverage your technology into future regulatory requirements to further lower VOC emissions from Consumer Products offered in aerosol form.

The inclusion of LVP-VOCs as an exemption may be accomplishing the substitution of one solvent considered to be a VOC with another that is not considered a VOC by CARB. However, the AQMD has concerns regarding the associated equivalent ozone benefits of such an approach, since many of the LVP-VOCs readily evaporate, have Maximum Incremental Reactivity (MIRs) values greater than ethane's, and therefore readily contribute to ozone formation. ("Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds", U. Vö and M. Morris, August 2012.) While there will be potential need for reformulation of products that contain LVP-VOCs, the AQMD, through the implementation of the Certified Clean Air Cleaners Program and Rule 1143 – Consumer Paint Thinners and Multi-Purpose Solvents, has identified alternative low-VOC, cost-effective technologies that are currently commercially available and used, and do not rely upon the LVP-VOC exemption.

The Certified Clean Air Choices Cleaner program has nearly 50 institutional and industrial (I&I) cleaners that do not rely upon the LVP-VOC exemption. These products consist of full I&I product lines to cover nearly all cleaning and maintenance needs. Other certification programs have several hundred I&I cleaners, most of which do not rely upon the LVP-VOC exemption. If, in fact, there are specialty cleaning operations for which no product is available, then the regulations would likely be drafted to reflect the special situation by carving out those narrow uses. It is not reasonable to minimize ozone benefits by allowing blanket exemptions, such as the LVP-VOC exemption, when the vast majority of uses do not need such an exemption.

Except for very few niche applications where efficacy of certain products may be impacted from a complete exclusion of a LVP-VOC, for the great majority of operations, environmentally preferable cleaners have equal or superior performance at equal or lower costs. Many cities and school districts have completely switched to environmentally preferable janitorial products and have found no degradation in performance at no extra cost. In some cases, lower overall costs have been seen and included in the cost-effectiveness section of the control measure. The City of Santa Monica reported spending 5% less on its cleaning products costs when it switched from conventional

cleaners to less-toxic brands a decade ago. An article entitled, “The Benefits of Green Cleaning” by Dr. Robert W. Powitz on the ISSA website (November 2008), states, “We’ve heard the excuses, most of which can be grouped into one sentence: Eco-friendly products do not work and are more expensive. But this is simply not so.” The Green Seal and EcoLogo certification programs include efficacy performance standards to address claims in deterioration of performance. Again, Green Seal and EcoLogo have certified hundreds of I&I products most of which do not rely upon the LVP-VOC exemption.

Further, under AQMD Contract #11519, the AQMD conducted a study “Evaluate Protocols for Measuring Emissions from Cleaning of Application Equipment and Surfaces using Solvents” with an objective to develop an approach to measure mass emissions from cleaning paint brushes and surface cleaning using five different low vapor pressure (LVP) solvents, as well as acetone and a commercially-available lacquer thinner formulated with 95% acetone and 5% methyl soyate. The other objective was to determine the relative amount of solvent used, and then calculate the total ozone formation potential of each solvent based on its established Maximum Incremental Reactivity (MIR) value. The study indicated that ozone formation potential of acetone and acetone-containing products was much lower than comparative LVP-VOC solvents, especially for panel cleaning. The summary of this report can be accessed from:

http://www.aqmd.gov/tao/Demonstration/Reports/2011AnnualReport_2012PlanUpdate.pdf, pages C-25 to C-26. Contrary to the assertion that these products may degrade the environmental profile, many of the products that do not rely on the LVP-VOC exemption are specifically designed to meet stringent environmental profiles. Many are certified as environmentally preferred products through programs like Clean Air Choices Cleaners and U.S. EPA’s Design for the Environment or third party certification organizations like Green Seal and EcoLogo. When already environmentally preferable certified products were tested, less than ten percent relied on the LVP-VOC exemption to meet the VOC limits. See table below.

Environmentally Preferable Products VOC Content (No LVP-VOC Exemption)

Product Type	Dilution Rate	VOC (g/l)
Air Freshener	RTU	24
Bathroom Cleaner	RTU	19
Bathroom Cleaner	1:18	5
Bathroom Cleaner	1:20	2
Carpet Cleaner	1:20	1
Carpet Cleaner	1:64	1
Dishwashing Soap	1:1536	1
Disinfectant	1:64	1
Floor Polish	1:24	2
General Purpose Cleaner	1:10	1
General Purpose Cleaner	1:08	1
General Purpose Cleaner	1:64	1
General Purpose Cleaner	1:12	1
General Purpose Cleaner	1:15	1
General Purpose Cleaner	1:512	1
Glass and General Purpose Cleaner	RTU	1
Glass and General Purpose Cleaner	1:128	1
Glass and General Purpose Cleaner	1:128	1
Glass Cleaner	1:20	1
Glass Cleaner	1:64	1
Glass Cleaner	1:15	5

RTU = Ready to Use

Please note that CTS-04 does not include an emission reduction commitment nor does it necessarily require a complete elimination of the LVP-VOC exemption. Rather, it seeks the re-evaluation of the necessity, scope of the existing exemption LVP-VOCs are currently enjoying and the efficacy of such an exemption, starting first with consumer product categories where LVP-VOCs are widely used in formulations and proceeding in later phases with other categories.

Lastly, as a part of phased implementation, CARB staff is expected to assess the efficacy of different categories that may be impacted by modification of the LVP-VOC exemption proposed under Control Measure CTS-02.

Response to Comment Q-2:

A study, “Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds”, U. Vø and M. Morris, August 2012, tested commonly used LVP-VOC compounds and a few product blends, mainly lubricants of varying viscosity. There may be some difference in evaporation rates in fully formulated products, which needs additional review and may be part of future studies. However, many fully formulated products use significant quantities of LVP-VOC in their products, some as high as 100% as is the case with certain multi-purpose solvents. Currently, these LVP-VOCs are not included in emission calculations despite, in some cases, having similar evaporation rates as the VOC solvents they were meant to replace. As a part of implementation activities, CARB is expected to conduct detailed surveys of LVP-VOC content currently found in different categories of Consumer Products in an effort to develop a revised inventory and to understand potential additional impacts from the use of LVP-VOCs.

The presentation referred to by the commenter does include charts of solvents that fall under non-volatile, semi-volatile, and volatile. The full details are included in the technical paper available on the AQMD website which can be accessed from: <http://www.aqmd.gov/prdas/Coatings/VOCs/RedefiningVOCs.pdf>. The paper specifies the criteria used for determining volatility:

- Volatile – 5% or less non-volatile after 180 days at ambient temperature
- Semi-Volatile – Between 5% and 95% non-volatile after 180 days at ambient temperature
- Non-Volatile – 95% or greater non-volatile after 180 days at ambient temperature

The current LVP-VOC exemption does not distinguish between solvents that remain exposed to the atmosphere and those that are not (i.e. wiped and disposed or “down the drain”). In fact only a few (i.e. toilet/urinal cleaners, laundry products, hand soap, motor vehicle wash, shaving products) of the numerous product categories contained in the consumer product regulation are intended to be wiped and disposed or immediately washed down the drain. The majority (i.e. adhesives, air fresheners, automotive products, most cleaners, disinfectants, insect repellants and insecticides, lubricants, multi-purpose solvents and paint thinners) are intended to remain for long periods of time exposed to the atmosphere. Even if the products are wiped and disposed quickly or flushed down the drain, atmospheric availability or environmental fate criteria are not included in the LVP-VOC exemption nor current peer-reviewed ozone models. The LVP-VOCs may readily evaporate from the wiping cloth/paper, depending on storage of the solvent-laden materials, or may be released during the wastewater treatment process.

Hydrotreated light distillates qualify as an LVP-VOC as currently defined. Hydrotreated light distillates are used as an example, since these have been used as a 100% substitute in certain multi-purpose solvents, replacing petroleum distillates used in previous formulations. It was one of more than 20 samples tested to review evaporation profiles at ambient temperatures. (“Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds”, Uyên-Uyên T. Võ, August 2012). Many of the LVP-VOCs commonly used in consumer products were found to be completely volatile at ambient temperature in less than 180 days. However, the study also found that there were organic compounds that were non-volatile and likely do not contribute to ozone formation. Many of the environmentally preferable cleaning products use non-volatile organic compounds and are representative of a process that would properly classify them as LVP-VOCs.

Staff concurs that the study indicates that a check of potential marginal LVP materials may be prudent. The study recommends a reevaluation of the criteria which currently defines LVP-VOC status to exclude materials that clearly contribute to ozone formation. The study also recognizes that there are non-volatile organic compounds which do not evaporate under ambient conditions and are already appropriately classified. Taking the overall study into consideration, Control Measure CTS-04 calls for a phased in approach and would start with the most volatile and reactive compounds that may have the greatest emission impacts.

R. Orange County Transportation Authority (OCTA), Kurt Brotke, August 31, 2012



AFFILIATED AGENCIES

- Orange County Transit District
- Local Transportation Authority
- Service Authority for Freeway Emergencies
- Consolidated Transportation Service Agency
- Congestion Management Agency
- Service Authority for Abandoned Vehicles

August 31, 2012

Dr. Barry R. Wallerstein
 Executive Officer
 South Coast Air Quality Management District
 21865 Copley Drive
 Diamond Bar, CA 91765

Dear Dr. Wallerstein:

The Orange County Transportation Authority (OCTA) appreciates the opportunity to review and comment on the Draft 2012 Air Quality Management Plan (AQMP) for the South Coast Air Quality Management District (District). The related socio-economic report has not yet been made publically available; therefore, OCTA would appreciate an extension of the comment period in order take this additional analysis into consideration. Please note that the comments provided below may require additions or modifications once OCTA reviews the results of the socio-economic report.

There are three issues that currently raise concerns with OCTA:

1. Inclusion of the ozone attainment strategy;
2. The suggested "Enhanced Environmental Analysis" that is discussed in Chapter 9; and,
3. The "Infrastructure Planning Actions" that are discussed in Appendix IV-B under control measure ADV-01.

According to federal law, the current AQMP is required to demonstrate attainment for inhalable coarse particles (PM₁₀) and fine particles (PM_{2.5}); however, it is not required that ozone attainment be addressed until the 2015 AQMP. The ozone target needs to be looked at in a comprehensive manner, rather than piecemeal, to ensure that we are actually reducing emissions in the most cost efficient and effective manner. This would be best achieved by reserving discussion of the ozone attainment to the 2015 AQMP. OCTA looks forward to participating in these discussions, and working with the District to develop an achievable 2015 AQMP that meets all of the federal Clean Air Act standards.

The Enhanced Environmental Analysis recommends performing additional analysis that goes beyond the requirements of the California Environmental Quality Act (CEQA). As noted in the Draft AQMP, the *Ballona Wetlands Land*

R-1

R-2

Dr. Barry R. Wallerstein
August 31, 2012
Page 2

Trust v. City of Los Angeles (2011) and the *South Orange County Wastewater Authority v. City of Dana Point* (2011) ruled that this type of analysis is not required under CEQA. Therefore, OCTA suggests omitting this policy recommendation from the 2012 AQMP.

R-2

Regarding the Infrastructure Planning Actions identified in ADV-01, the District is suggesting that in order to support zero and near-zero emission technologies for freight trucking, new infrastructure such as wayside electric or magnetic power built into roadways, refueling and battery recharging stations, and dedicated truck lanes may be required. Furthermore, the District states under the ADV-01 actions and schedules, it is important that project approvals for near-term goods movement projects ensure implementation of these types of infrastructure. However, the District also states that at this time it is unknown if the zero and near-zero emission technologies will requires these types of infrastructure.

R-3

OCTA believes that there are too many unknowns regarding the zero and near-zero technologies to justify including infrastructure commitments in project approvals at this time. The types of infrastructure suggested could have significant financial implications. Furthermore, they may not be feasible for any number of reasons, such as costs, right-of-way limitations, resulting environmental impacts, or limited availability of the specific technology(ies). For these reasons, OCTA requests removal of the language suggesting that project approvals ensure implementation of infrastructure to support zero and near-zero emission technology.

Thank you again for the opportunity to comment on the Draft AQMP. OCTA requests that the District address these concerns and recommendations in the Final Draft 2012 AQMP. Please contact Greg Nord, Senior Transportation Analyst, at (714) 560-5885 to further discuss these comments.

Sincerely,



Kurt Brotcke
Director, Strategic Planning

KB:gn

Responses to Comment Letter R
OCTA

Response to Comment R-1:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the existing 1997 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically adopted in regulatory form at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond. While the District will need to adopt another ozone plan in 2015 to attain the 75 ppb standard by 2032, we cannot afford to delay implementation of the large “black box” in the existing approved 2007 AQMP (241 fpd NOx & 40 tpd VOC).

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NOx and VOC emission reduction commitments contained

in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment R-2:

The commenter correctly states that recent court rulings have found that CEQA does not require this type of "enhanced environmental analysis" (with the exception of new school sites). However, lead agencies retain the authority to conduct an analysis of potential health effects on project occupants either within a CEQA document, or outside of it prior to making a decision on the project. Text has been added to Chapter 9 to clarify that AQMD staff recommendations for enhanced environmental analysis will continue to be consistent with existing guidance from both the CARB Air Quality and Land Use Handbook and the AQMD Clean Communities Plan.

Response to Comment R-3:

Staff believes that transportation projects should be designed with recognition of the environmental impacts of freight transport, and that such projects should be part of the solution to our air quality problems. The AQMP language referred to in this comment merely states the district’s view that it is “important” that near-term decisions on major freight transportation infrastructure (such as the I-710 project and new railyards) not miss what may be the only opportunity to incorporate environmental conditions needed for our region to attain air quality standards. Staff notes that the control measure does not state that “it is important that project approvals for near-term goods movement projects ensure implementation of” “wayside electric or magnetic power built into roadways, refueling and battery recharging stations, and dedicated truck lanes.” as indicated by the Commenter, rather, the measure description is far more general: It is therefore important that such project approvals be fashioned to assure that the projects participate in the technology development and demonstration activities for trucks described below, and that the project approvals ensure implementation of resulting technologies when determined to be feasible. This language (which the Commenter requests be removed) is in a paragraph describing that certain “major regional infrastructure projects” will be considered for approval in “the near term, while the technology development and demonstration actions described below are being

undertaken.” The paragraph specifically refers to three projects: the proposed new Southern California International Gateway Railyard, the proposed expansion of the Union Pacific Intermodal Transfer Facility, and the I-710 project. The paragraph notes that other major projects may also be considered for approval in the same timeframe. The main point of the paragraph is that these projects will “comprise key portions of regional freight infrastructure for many decades to come” and “the action to approve such projects will be a key opportunity to establish appropriate operating and environmental requirements for the infrastructure.” In some cases, the paragraph notes, “the project approval action may be the only opportunity to establish requirements.” Staff continues to believe the statements in the above paragraph are accurate, and the comment does not dispute them. We also continue to believe it to be “important” that major freight movement projects such as the two railyards and I-710 “participate” in technology development and demonstration activities, and that project approvals (which, again, may be the only opportunity to include environmental conditions) require implementation of clean technologies “when determined to be feasible.” All of this language is, in our view, reasonable for projects of the magnitude described in the paragraph.

Regarding the commenter’s concern about the need for and feasibility of the infrastructure it mentions (e.g. wayside electric or magnetic power built into roadways), the measure sets out a schedule over the coming decade to determine whether such infrastructure will be needed. Specifically, the measure’s Major Agency Implementation Actions sets out a schedule for AQMD, SCAG and CARB actions. These include a determination in the 2015-2016 timeframe regarding “the need for wayside power infrastructure for trucks on major freight movement corridors.” It is staff’s intent that these determinations would be made based upon the ability of zero and near zero emission on-road technologies to serve the needs of the region without wayside power. Key questions would include the range and cost (and other factors bearing on feasibility) of technologies not relying on wayside power. By 2015-16, these agencies, and the other “implementing agencies” listed at the end of the measure (e.g. LA Metro, Caltrans, ports, etc) would have the benefit of additional years of technology development and evaluation. We believe this sets an appropriate schedule to collaboratively make determinations regarding needed and feasible technologies. We also note that these provisions are consistent with the proposed action schedules to develop zero and near zero emission transport that are included in the RTP update adopted earlier this year.

S. LA Department of Water & Power, August 31, 2012



ANTONIO R. VILLARAIGOSA
Mayor

Commission
THOMAS S. SAYLES, *President*
ERIC HOLOMAN, *Vice President*
RICHARD F. MOSS
CHRISTINA E. NOONAN
JONATHAN PARFREY
BARBARA E. MOSCHOS, *Secretary*

RONALD O. NICHOLS
General Manager

August 31, 2012

Mr. Philip Fine
Planning and Rules Manager
South Coast Air Quality Management District
Planning, Rule Development & Area Sources
21865 Copley Drive
Diamond Bar, CA 91765-4182

Dear Mr. Fine:

Subject: Comments on the Draft 2012 South Coast Air Quality Management District (AQMD) Draft Air Quality Management Plan (AQMP) and Related Documents

Dear Mr. Fine:

The Los Angeles Department of Water and Power (LADWP) has reviewed the Draft 2012 Air Quality Management Plan (AQMP) and appreciates the opportunity to provide preliminary comments on the proposed control measures that have the potential to impact LADWP operations, as well as on the associated documents, including the California Environmental Quality Act (CEQA) and Socio-economic analysis and the Joint Vision document. General comments are discussed in the following summary; technical comments have been also been provided on specific control measures. It is noted that at this time neither the full CEQA document, nor the socio-economic analysis has been made available for public review. As such, after review of these documents, LADWP may submit additional comments when the next draft AQMP and CEQA analysis are released.

GENERAL COMMENTS

1. The primary purpose of the 2012 AQMP is to identify control measures needed to attain the federal standard for particulate matter less than 2.5 microns in diameter (PM2.5) by 2014. Although there is no federal requirement to submit an ozone plan at this time, LADWP is aware of the enormous challenge with regards to ozone and the urgency AQMD sees for developing an ozone strategy. LADWP would be supportive of keeping the ozone strategy in the plan, but not submit as part of the State Implementation Plan (SIP) which would result in legally binding emission reductions upon approval by the Environmental Protection Agency (EPA).

S-1

Water and Power Conservation ... a way of life

111 North Hope Street, Los Angeles, California 90012-2607 Mailing address: Box 51111, Los Angeles 90051-5700
Telephone: (213) 367-4211 Cable address: DEWAPOLA



Mr Philip Fine
Page 2
August 31, 2012

2. Although the CEQA scoping document identifies the analysis of the PM2.5 measures as a feasible alternative, the Draft Environmental Impact Report (EIR) has not been completed and released for public review. Specifically, this alternative will be reviewed as it relates to environmental impacts on the environment if this alternative is deemed the "project". LADWP will be reviewing the analysis and providing comments on the full EIR upon its availability.
3. AQMD predicts attainment of the PM2.5 standard within several years (2014). As such, LADWP supports the deferral of a Regional Clean Air Incentive Program (RECLAIM) shave to the 2015 AQMP. Since the average rulemaking schedule for a "shave" can take up to two years, dividing the "shave" into two phases as proposed under the 2012 AQMP may not be feasible. With the conversion factor of Nitrogen Oxides (NOx) to PM2.5, minor emission reductions will be achieved through RECLAIM for PM2.5. LADWP recommends substituting a PM2.5 measure for the proposed RECLAIM shave.
4. The Joint "Vision" document has been discussed and vetted in a Public Hearing; however, it is also embedded in the 2012 AQMP as a reference document. LADWP supports unlinking the Vision document from the 2012 AQMP as it is not regulatory in nature.
5. A substantial amount of emission reductions are projected from the implementation of "incentive" programs. It is possible that given the current economic state, a majority of those funds will no longer be available. LADWP is concerned that if emission reductions cannot be achieved through mobile sources, the stationary sources could be held responsible for additional emission reductions.
6. LADWP is concerned that with the proposed electrification in the Basin, impacts on utilities have not been thoroughly evaluated in the CEQA document. This is especially true for many of the incentive programs that aim to reduce emissions from federal sources (ships/trains/aircraft) by requiring sources to substitute electricity for fuel when possible. The CEQA document should carefully evaluate this category for impacts, and identify potential mitigation measures.

S-2

S-3

S-4

S-5

COMMENTS ON PROPOSED CONTROL MEASURES

CMB-01 Further Emission Reductions from NOx RECLAIM [NOx]

LADWP is concerned that this control measure, if fully implemented, could have the potential to impact the operation of in-basin power plants and inadvertently limit the ability of electric utilities to fully advance electrification technology in the transportation sector.

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Mr. Philip Fine
Page 3
August 31, 2012

In May, 2011, AQMD's Governing Board adopted the "AQMD Energy Policy" which supports many of the existing policies and programs that are going forward on a statewide and local level. LADWP participated and supported the policy, which adopts policies and principles relative to energy use. LADWP has been aggressively pursuing the same goals of achieving emission reductions through the use of clean and efficient energy technologies to meet air quality, renewable energy and climate change objectives. A key strategy to achieving emission reductions is the transition of existing energy sources to the established statewide renewable energy mandate of 33% by 2020. As LADWP implements projects to meet this mandate, the repowering of our in-basin facilities to reduce air pollutant emissions under provisions of the RECLAIM program have been a major undertaking.

LADWP agrees that the increased use of electricity is an essential part of a comprehensive plan to reduce the existing levels of air pollution and bring the basin into compliance with federal air quality standards. LADWP supports these policies that promote the electrification of the transportation sector while recognizing that electrification could result in a shift in emissions to utilities. With the anticipation of an emissions shift to utilities from the transportation sector, preservation of the electric sector's NOx allocation becomes a critical issue; and any "shave" will need to be closely examined to determine the extent of impact it will have on electricity generation.

The determination of Best Available Retrofit Control Technology (BARCT) versus Best Available Control Technology (BACT) levels that are currently in place is also of interest to LADWP during AQMD's proposed second phase of the NOx shave. Any changes in the BARCT levels may have a significant impact on LADWP and the operation of its in-basin power plants. Although it has been portrayed that this measure will not have a significant impact on RECLAIM facilities, LADWP has concerns with the approach to divide the NOx shave into two phases. From a compliance perspective, as well as from an administrative view, the proposed NOx shave ought to be evaluated as a complete measure. LADWP requests that AQMD carefully review the impacts this proposed shave may have on the RECLAIM market, in particular how it will affect the availability of future NOx credits and its pricing. LADWP also requests that during the rulemaking process, AQMD hold a series of public workshop regarding amendments to BARCT standards with an adequate review and comment period.

In summary, LADWP is supportive of an alternative to AQMD's proposed NOx shave. LADWP would support deferring a NOx shave to the 2015 AQMP, thoroughly assessing impacts related to a shift in emissions from transportation to utilities, and protecting existing NOx allocations for electrical generating facilities to achieve AQMD's goal of promoting electrification in the South Coast Air Basin.

S - 6

Mr. Philip Fine
Page 4
August 31, 2012

MCS-01 All Feasible Measures Assessment [All Pollutants]

This control measure is to address the state law requirement for all feasible measures for ozone. Existing rules and regulations for pollutants such as Volatile Organic Compounds (VOC), NOx, Sulfur Oxides (SOx) and Particular Matter (PM) reflect current BARCT. However, BARCT continually evolves as new technology becomes available that is feasible and cost-effective. This control measure has the potential to impact every piece of LADWP equipment permitted with the AQMD, from internal combustion engines to power plant boilers, as this is a "catch all" measure. The issue of BARCT implementation at power plants is a critical discussion for LADWP. LADWP supports that during the rulemaking process, AQMD identify a working group and hold a series of public meetings regarding amendments to BARCT standards with adequate review and comment period.

S-7

I appreciate your consideration of these comments and look forward to AQMD's final AQMP. Should you have any questions, please contact me at (213) 367-0403.

Sincerely,



Mark J. Sedlacek
Director of Environmental Affairs

LB:ms

c: Aram Benyamin
Randy Howard
Leila Barker
Dat Quach
Jodean Giese

Responses to Comment Letter S
LA Department of Water and Power

Response to Comment S-1:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the existing 1997 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond. While the District will need to adopt another ozone plan in 2015 to attain the 75 ppb standard by 2032, we cannot afford to delay implementation of the large “black box” in the existing approved 2007 AQMP (241 fpd NOx & 40 tpd VOC).

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NOx and VOC emission reduction commitments contained

in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment S-2:

The two tons per days reduction proposed for the 1st phase of the RECLAIM shave will be incorporated as a contingency emissions reduction measure to satisfy CAA requirement to be triggered if the NAAQS is not attained by 2015. The BARCT assessment phase of the NO_x RECLAIM shave is to be completed fully by 2015 to be fully achieved by 2020. As such, staff plans to commence the rule amendment process beginning in late 2012 targeting a midyear 2013 adoption date. Staff recognizes that this is an aggressive timetable; regardless every effort will be made to expedite the rule amendment process. The CAA requires that contingency measures be fully adopted and in place prior to the SIP submittal. While the contingency measure is targeted for implementation for 2015 if triggered, U.S. EPA will take into consideration the progress (or completion) of the rule amendment when evaluating the Draft 2012 AQMP for completeness prior to making its recommendation on the plan’s approval. Staff believes that as long as the rule making process is well under way with a reasonable date established for the Public Hearing, that U.S. EPA will not consider this as a barrier to the evaluation and approval process.

Moving the proposed RECLAIM shave control measure to the 2015 ozone AQMP could postpone full implementation of the Phase II reduction to a later date. Staff believes that there are currently sufficient unused RTCs available in the RECLAIM market to provide a cushion for the transition. As part of the Phase II BARCT assessment technology availability, cost, and market impacts will be thoroughly addressed. The rule making process will undergo a fully transparent public evaluation of the potential for emissions reductions coupled with the key element of the BARCT assessment listed above. It should also be noted that the state law requires the RECLAIM program not only undergo periodic BARCT review, but also achieve equivalent reductions as the command and control program.

Response to Comment S-3:

The Vision document serves as a resource document for the development of AQMPs. The actions in the Vision document are possible pathways that show how the region can attain air quality standards by their applicable dates. The Vision document is not a control measure in the 2012 AQMP.

Response to Comment S-4:

Staff appreciates the comment regarding funding. The emission reductions associated with a majority of the funding programs are not proposed to be committed as emission reductions in the SIP.

Response to Comment S-5:

The Program EIR for the 2012 AQMP contains a comprehensive and robust analysis of potential energy impacts, including impacts from increased demand for electricity. Energy impacts associated with PM2.5 control measures were evaluated and determined to be less than significant for electricity, natural gas, petroleum fuels, and alternative fuels impacts. Energy impacts associated with the ozone control measures (see Table 4.3-1 of the Program EIR) were evaluated and determined to be significant for electricity, and less than significant for natural gas, petroleum fuels, and alternative fuels impacts. Please see Subchapter 4.3 of the Draft Program EIR for the complete analysis of potential energy impacts from the 2012 AQMP.

Response to Comment S-6:

Approximately 30 percent of the RTC's in the NOx RECLAIM market are currently not being utilized. The two tons per days reduction proposed for the 1st phase of the RECLAIM shave will be incorporated as a contingency emissions reduction measure to satisfy CAA requirements to be triggered if the NAAQS is not attained by 2015. The BARCT assessment phase of the NOx RECLAIM shave is to be completed in 2015 and fully achieved by 2020. The two to three tons per day shave proposed in the 2012 AQMP is expected to have only a minor impact on the stakeholders. (The form of the Phase I proposed shave, to be initiated as a contingency measure, is anticipated to be implemented across the board with reductions to be shared equally by the RECLAIM universe. The form of the subsequent BARCT shave will be determined as a component of the rule development process.)

Moving the proposed RECLAIM shave control measure to the 2015 ozone AQMP could postpone full implementation of the Phase II reduction to a later date. Staff believes that there are currently sufficient unused RTCs available in the RECLAIM market to provide a cushion for the transition of the existing energy sources to a 33 percent renewable energy base by 2020. As part of the Phase II BARCT assessment technology availability, cost, and market impacts will be thoroughly addressed. The

rule making process will undergo a fully transparent public evaluation of the potential for emissions reductions coupled with the key element of the BARCT assessment listed above. It should also be noted that the state law requires the RECLAIM program not only undergo periodic BARCT review, but also achieve equivalent reductions as the command and control program.

Response to Comment S-7:

The District agrees with the commenter's suggestion. BARCT implementation at any facilities needs to be carefully discussed and analyzed, thus the District will identify a working group, hold necessary public meetings, and provide adequate review and comment periods during the rule making period.

T. Southern California Business Coalition (SCBC), August 31, 2012



August 31, 2012

Dr. William A. Burke, Chairman
Members of the SCAQMD Governing Board
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar, CA 91765

RE: 2012 Air Quality Management Plan

Dear Chairman Burke and Governing Board Members:

The Southern California Business Coalition (Coalition) appreciates the opportunity to provide comments on the Draft 2012 Air Quality Management Plan (AQMP). The Coalition is comprised of leaders from some of Southern California's largest regional business entities and associations. The final 2012 Air Quality Management Plan, and the rule making that will eventually stem from it, will directly affect many of these businesses' interests. The Coalition's highest priority is to work with SCAQMD to develop a well-balanced strategy that addresses federal requirements through an economically feasible compliance program. To that end, we offer the following comments:

1. Delays and Changes Have Hampered our Ability to Respond Effectively

The District released the initial version of the draft proposed AQMP control measures on June 12. However, the descriptions of those control measures in the CEQA Initial Study, released on June 28, conflicted with the actual measures themselves. To further confuse the process, the Draft AQMP released on or about July 17 had revisions to some of the proposed control measures that had been included in the Initial Study. Most recently, the Notice of Preparation and Initial Study were released again for "recirculation" on August 1 with a comment deadline of August 31. Finally, although the District held five public meetings in July to discuss the Draft AQMP, the Draft AQMP was not released until after the fourth meeting, which regrettably prevented meaningful public comment.

The District has strongly recommended that comments on the Draft AQMP be submitted by August 31. Unfortunately, the regulated community has had limited time to review the AQMP, and we still have not seen the entire document. Appendix V, the Modeling and Attainment Demonstrations, was only released on August 10. At the time this letter was developed, the separate Socio-Economic Analysis and Draft Program EIR were still pending. These documents are integral to our full and comprehensive understanding of the impacts of the Plan and the various proposed control measures. *We cannot adequately analyze or comment on the AMQP without them.*

T - 1

In contrast to the previous AQMP adopted in 2007, documents were initially released for review October 6, 2006. The document was not formally adopted until September 7, 2007 – a full eleven months. *This year's process has been rushed into a much tighter time frame.*

Nevertheless, based on the amount of information available to us at this time, we are providing these initial comments. Moving forward, we respectfully ask that the AQMD release all future documents in a timely manner and then allow sufficient time for a comprehensive review by the regulated community.

2. Proposed Alternatives to the Project as Currently Defined

The legal requirement for the current AQMP is to demonstrate attainment of the federal 24-hour standard for PM-2.5 by 2014, whereas an ozone attainment Plan is not required until 2015, three years from now.

If the current Plan were focused solely on PM-2.5 attainment, attainment of both the 24-hour and the annual PM-2.5 standards could be achieved by 2014, at a level of cost and effort that is not likely to be objectionable. However, by contrast, the proposed "early action" 183(e)(5) ozone strategy is reasonably expected to require significantly greater effort. For example, the District has estimated that the annual cost will exceed \$115 million per year. This is the sum of the annual costs for only the six mobile source control measures, which are the only sources for which annual costs have been estimated. The annual cost of the fifteen stationary source measures has not been determined and is not included.

We respectfully request that the Board consider adopting an alternative project as the Air Quality Management Plan. The alternative project would be comprised of only the proposed short term PM-2.5 attainment measures since that is all that is required. That is, the 182(e)(5) stationary source and mobile source measures are not required now.

This alternative project will allow the Governing Board to consider all the options provided to it for a 2015 Ozone Plan, and will ensure much needed flexibility and additional time in developing those options. While it is appropriate to be discussing the next wave of ozone controls at this time, we recommend that the District Board fully utilize the three years provided by federal regulations to craft a well-integrated, economically defensible ozone attainment plan. This alternative project strategy avoids putting the fragile regional economic recovery at risk.

Further, the Coalition has specific comments on control measure CMB-01, NOx RECLAIM, now included in the Draft AQMP as Phases I and II. Although Phase I is included as a short term PM-2.5 control measure, we understand that the proposed NOx reduction of between two and three tons per day has virtually no beneficial impact on the PM-2.5 attainment demonstration. We further understand that the District has not yet taken credit for NOx reductions associated with the Residential Wood Burning and Open Burning control measures, BCM-01 and -02, which we understand to be several times greater than the proposed Phase I RECLAIM NOx reductions. Residential Wood Burning and Open Burning NOx reductions should be substituted for the proposed NOx RECLAIM Phase 1 measure in the PM 2.5 control strategy.

T-1

T-2

T-3

In summary:

- We strongly believe that the District would be better served by a PM 2.5-only AQMP at this time.
- We recommend that the Draft EIR present and analyze a project alternative that represents a PM 2.5-only control strategy.
- We recommend that the District take credit for the significant NOx reductions associated with BCM-01 and -02, and that these credits substitute for CMB-01 Phase I, which should be deleted from the Plan.
- Finally, we recommend that the ozone attainment strategy be developed as one entire integrated package for the 2015 AQMP.

As the process moves forward, we look forward to our continued partnership with SCAQMD. Please know that the business community remains committed to helping develop a balanced, workable 2012 AQMP that provides for both environmental and economic success.

We welcome further discussion of these comments; please contact Tracy Rafter, CEO of BizFed (Tracy.rafter@bizfed.org) or Matt Petteruto, Vice President of Economic Development for the Orange County Business Council (mpetteruto@ocbc.org).

Sincerely,

Southern California Business Coalition - AQMP Stakeholders Working Group

Comprised of members of the following associations:



Tracy Rafter
BizFed, Los Angeles County Business Federation



Matt Petteruto
Orange County Business Council



Gary Toebben
Los Angeles Area Chamber of Commerce



Jay McKeeman
CA Service Station & Auto Repair Association
CA Independent Oil Marketers Association



Steven Schuyler
BIA of Southern California, Inc.



Sandy Cajas
Regional Hispanic Chamber of Commerce



Eric Sauer
California Trucking Association



John Kelsall
Greater Lakewood Chamber of Commerce



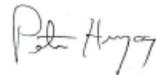
Paul C. Granillo
Inland Empire Economic Partnership



Clayton Miller
Construction Industry Air Quality Coalition



Gary W. Hambly
CalCIMA



Peter Herzog
NAIOP SoCal Chapter



Terri K. Crain
Santa Clarita Valley Chamber of Commerce



Carol Schatz
Central City Association



Randy Gordon
Long Beach Area Chamber of Commerce



Stuart Waldman
Valley Industry & Commerce Association



Bill LaMarr
California Small Business Alliance



T.L. Garrett
Pacific Merchant Shipping Association



Rob Evans
NAIOP Inland Empire Chapter



Don Sachs
Industry Manufacturers Council



Ron Wood
Valley Economic Alliance

Responses to Comment Letter T
SCBC

Response to Comment T-1:

AQMD staff agrees that the 2012 AQMP development schedule was initially compressed. The attainment demonstration modeling could not begin until input data from SCAG's 2012 RTP and CARB's emissions inventories were available. AQMD staff has made every effort to provide all data and information to the public as soon as it became available in an open and transparent process. The review period for many of the documents has also been extended, additional workshops and regional public hearings have been added, scheduled for November 13-15, and the Governing Board adoption hearing date has been delayed to December. The AQMD staff is committed to providing sufficient time for public comment, and continues the enhanced outreach efforts to all stakeholders, while keeping the U.S. EPA submittal deadline in December of 2012 in mind.

Response to Comment T-2:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the existing 1997 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called "black box" emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond. While the District will need to adopt another ozone plan in 2015 to attain the 75 ppb standard by 2032, we cannot afford to delay implementation of the large "black box" in the existing approved 2007 AQMP (241 fpd NOx & 40 tpd VOC).

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NO_x and VOC emission reduction commitments contained in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA’s recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs will need to further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment T-3:

The Draft Final 2012 AQMP has removed the RECLAIM Phase I NO_x reductions from the list of control measures directed towards achieving attainment of the 24-hour PM_{2.5} standard. The Phase I NO_x RECLAIM measure has been moved to the contingency measure category, to be implemented if the Standard is not achieved in 2014. Staff is committed under the contingency measure provisions of the CAA to have the measure in rule form ready to be implemented based on a trigger of non-attainment. To this end, staff will commence the process to amend Rule 2002 to meet the contingency requirement of having the provisions in place by June of 2013. If not implemented as a contingency measure, the Phase I NO_x RECLAIM commitment of 2 tons per day will be incorporated with the following Phase II NO_x RECLAIM BARCT assessment targeting full implementation by 2020. Proposed control measures BCM-01 and BCM-02 will constitute the proposed control strategy to achieve attainment of the 24-hour PM_{2.5} standard by 2014. Regional air quality modeling simulations presented in the Draft Final 2012 AQMP have demonstrated that with implementation of control measures BCM-01 and BCM-02, the Basin is expected to attain the 24-hour PM_{2.5} standard by 2014. Like the Phase I NO_x RECLAIM rule, adoption of these control

measures is targeted towards the 2nd quarter of 2013 to meet U.S. EPA's completeness requirements for evaluation of the SIP submittal.

U. Enstrom, James E, UCLA School of Public Health, August 30, 2012

**Criticism of Draft 2012 South Coast Air Quality Management District
Air Quality Management Plan Appendix I Health Effects
and
Request for California Health and Safety Code Section 40471 (b) Hearing on
Health Impacts of Particulate Matter Air Pollution in South Coast Air Basin**

James E. Enstrom, Ph.D., M.P.H.
UCLA School of Public Health
Los Angeles, CA 90095-1772
jenstrom@ucla.edu
(310) 825-2048

August 30, 2012

Summary of Attached Pages:

- 1) Enstrom Criticism of Draft 2012 AQMD AQMP Appendix I Health Effects makes the primary points that a) overwhelming epidemiologic evidence indicates particulate matter is not killing Californians; b) since 2001 AQMD has not prepared reports on "the health impacts of particulate matter in the South Coast Air Basin" in accord with California Health and Safety Code (CHSC) Section 40471 (b); c) the AQMD Advisory Council failed to properly peer review AQMP Appendix I Health Effects; and d) AQMD must hold a Governing Board Hearing on AQMP Appendix I Health Effects before the 2012 AQMP is finalized.
- 2) Enstrom Op-Ed for The Desert Sun on particulate matter in the Coachella Valley, which was scheduled to be published on April 4, 2012 but which has never been published, makes a strong case that a) particulate matter is not currently harming Coachella Valley residents and b) there will be no health risk from particulate matter after the Sentinal Power Plant is operational.
- 3) Figure 21 from 2000 Health Effects Institute Reanalysis Report by Krewski, Jerrett, et al., shows clear and large variation in PM2.5 mortality risk across the US, with low risk in California
- 4) Enstrom Table 1 summary of the epidemiologic evidence shows NO relationship between PM2.5 and total mortality in California.
- 5) Enstrom Table 2 summary of the epidemiologic evidence shows NO relationship between PM10 and total mortality in California; also, US EPA summary of PM NAAQS indicates revocation of the annual PM10 standard in 2006 due to lack of long-term health effects.
- 6) NCHS US map shows 2009 age-adjusted total death rate by state, with California third lowest; also, California county data shows that the death rate in the South Coast Air Basin is lower than the death rate in every state except Hawaii.

Criticism of Draft 2012 South Coast Air Quality Management District
Air Quality Management Plan Appendix I Health Effects

The Southern California Air Quality Management District (AQMD) has released its Draft 2012 Air Quality Management Plan (AQMP) (<http://www.aqmd.gov/aqmp/2012aqmp/index.htm>). This plan proposes aggressive and costly emission control measures, such as, increased use of zero emission vehicles and severe restrictions on wood-burning fireplaces, in order to reduce air pollution in the South Coast Air Basin (SCAB). This air basin includes about 17 million residents in Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino Counties. The primary goal of the AQMP is to bring the SCAB into compliance with the US Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS) for criteria pollutants, such as, particulate matter (PM2.5 and PM10) and ozone. These standards are based on the nationwide health effects of these pollutants (<http://www.epa.gov/air/criteria.html>).

However, the AQMP needs to address the health effects of air pollution in the SCAB. In particular, California Health and Safety Code (CHSC) Section 40471 (b) specifically states "On or before December 31, 2001, and every three years thereafter, as part of the preparation of the air quality management plan revisions, the south coast district board, in conjunction with a public health organization or agency, shall prepare a report on the health impacts of particulate matter air pollution in the South Coast Air Basin. The south coast district board shall submit its report to the advisory council appointed pursuant to Section 40428 for review and comment. The advisory council shall undertake peer review concerning the report prior to its finalization and public release. The south coast district board shall hold public hearings concerning the report and the peer review, and shall append to the report any additional material or information that results from the peer review and public hearings." (<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=40001-41000&file=40460-40471>).

As best I can determine, AQMD never prepared a "report on the health impacts of particulate matter air pollution in the South Coast Air Basin" at the end of 2001, 2004, 2007, or 2010. The only "health impacts" reports that I can find are Appendix I "Health Effects" of the 2003 AQMP, 2007 AQMP, and Draft 2012 AQMP. However these reports do not specifically address "the health impacts of particulate matter air pollution in the South Coast Air Basin." Indeed, the 2003 AQMP Appendix I states "The purpose of this appendix is to provide an overview of air pollution health effects, rather than to provide estimates of health risk from current ambient levels of pollutants in specific areas of the SCAB." (http://www.aqmd.gov/aqmp/docs/2003AQMP_AppI.pdf).

Failure to comply with CHSC Section 40471 (b) is a serious matter because the local health effects of PM provide the primary public health justification for the entire AQMP. Overwhelming epidemiologic evidence now indicates that there is NO relationship in California between PM and total mortality (also known as "premature deaths"), as I explained in the June 4, 2012 Orange County Register (<http://www.ocregister.com/articles/air-357230-california-pollution.html>).

U-1

This null relationship in California has been known since 2000, but the specific null evidence is only partially presented in the Draft 2012 AQMP and was entirely omitted from the earlier AQMPs. For instance, each AQMP Appendix I cites the 2000 Health Effects Institute Special Report "Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality," a major report relied upon by EPA and AQMD. However, only the nationwide PM2.5 mortality risk results in this report are cited in the AQMP, whereas Figures 5 and 21 show substantial geographic variation in PM2.5 mortality risk across the US, with Los Angeles ranking fifth lowest among 49 cities (<http://www.scientificintegrityinstitute.org/HEIFigure5093010.pdf>).

U-2

In total, ten separate analyses of five major California cohorts have found no relationship between PM2.5 and total mortality. Indeed, detailed analyses of two of these cohorts, funded by AQMD and completed in 2011, have found no relationship between any criteria pollutant and total mortality in California (www.scientificintegrityinstitute.org/Enstrom081512.pdf). Keep in mind, total mortality is the primary health impact that justifies the NAAQS. However, these national standards are not based on health effects or mortality in California or the SCAB. In 2009 the SCAB had an age-adjusted total death rate lower than the death rate in every state in the continental US (<http://www.scientificintegrityinstitute.org/NCHSRR070811.pdf>).

The 16 members of the 2012 AQMD Advisory Council were asked on June 7, 2012 to review and comment on Appendix I, particularly regarding the "health impacts of particulate matter air pollution in the South Coast Air Basin," and to attend a July 11, 2012 meeting at AQMD regarding Appendix I. Only 7 members submitted any written comments. The three members with the most relevant scientific expertise on PM did not address the "health impacts of particulate matter air pollution in the South Coast Air Basin". UCLA Professor John R. Froines did not submit any written comments; USC Professor Rob S. McConnell did not submit any comments on PM health effects; and LLU Professor Samuel Soret failed to reveal the null PM findings from AHSMOG in the December 2011 LLU Dr. P.H. dissertation of Lie Hong Chen (http://books.google.com/books/about/Coronary_Heart_Disease_Mortality_and_Long.html?id=PA8ltwAACAAJ).

U-3

Dr. Soret served on the committee for Dr. Chen's highly relevant dissertation, CORONARY HEART DISEASE MORTALITY AND LONG-TERM EXPOSURE TO AMBIENT PARTICULATE AIR POLLUTANTS IN ELDERLY NONSMOKING CALIFORNIA RESIDENTS. The Abstract states "The purpose of this study is to assess the effect of long-term concentrations of ambient PM on risks of all causes The health effects of long-term ambient air pollution have been studied with up to 30 years of follow-up in the AHSMOG cohort, a cohort of 6,338 nonsmoking white California adults."

Before the Draft 2012 AQMP is finalized and approved, AQMD must hold a public hearing on the health impacts of air pollution in the SCAB, in accordance with CHSC Section 40471 (b). If the hearing confirms the overwhelmingly null evidence cited above, then the AQMP should not propose emission control measures necessary to comply with NAAQS that are not appropriate for California or the SCAB. Instead, AQMD should request a waiver from compliance with the NAAQS using the special waiver status granted to California in Section 209 of the Clean Air Act (<http://www.epa.gov/otaq/cafr.htm>).

U-4

From: "Folmer, James" <jfolmer@palmspri.gannett.com>
To: "James E. Enstrom" <jenstrom@ucla.edu>
Date: Tue, 3 Apr 2012 09:44:35 -0700
Subject: RE: Proposed Op-Ed on Particulate Matter Health Effects in CV

Dr. Engstrom, here's the edited version. I did minimal editing, just a few tweaks to match AP style. I replaced $\mu\text{g}/\text{m}^3$ with "micrograms per cubic meter." Please let me know if that's acceptable.

Also, I took your website references out of the body of the column and put them in a breakout (below) to make it more readable.

It will be in Wednesday's edition. Thanks for the contribution.

The Desert Sun has recently published a special report and an editorial on the Sentinel power plant that is under construction by Competitive Power Ventures. Substantial concern has been expressed about the impact of the particulate matter (PM) pollution that will be generated by the plant. I would like to provide my perspective on the PM levels associated with the plant and the health effects associated with PM. PM consists of "inhalable coarse particles" (PM10) and "fine particles" (PM2.5).

Based on the April 15, 2010, California Energy Commission air quality assessment for the Sentinel plant, Table 13 indicates that the maximum annual background PM10 level in the Coachella Valley will be increased from 54.9 microgram per cubic meter to 55.33 during plant operation. This represents a "worse case (maximum)" increase of only 0.8 percent. Based on the South Coast Air Quality Management District (AQMD) Final 2007 Air Quality Management Plan, the maximum annual average PM10 level in the Coachella Valley (Salton Sea Air Basin) is only 45.7 micrograms per cubic meter.

All these levels are quite similar to the U.S. EPA's 1987-2006 annual standard for PM10 of 50 micrograms per cubic meter. However, this standard was revoked in 2006 due to "inadequate" evidence of long-term health effects of PM10, as summarized in the 2004 and 2009 EPA Integrated Science Assessment for Particulate Matter.

The Desert Sun claim that "the Sentinel plant would increase the (PM10) level to 277 percent above the state standard" is highly misleading because it is based on the California Energy Commission's Table 13 comparison of 55.33 micrograms per cubic meter with the California annual standard for PM10 of 20. But this state standard was established by the California Air Resources Board in 2002 and does not reflect the extensive null evidence on PM10 health effects that has been published since 2002.

In January 2007, the Air Resources Board and AQMD approved \$1,034,358 in funding, half from each agency, for two major epidemiologic studies on the relationship between PM (PM10 and PM2.5) and death in California. The study based on the American Cancer Society cohort was conducted by UC Berkeley professor Michael Jerrett and 13 other investigators.

The study based on the California Teachers Study cohort was conducted by Michael Lipsett of the California Department of Public Health and nine other investigators. A primary purpose of these studies was to produce new California evidence "to assist with the review of ambient air quality standards."

The results of these two studies were published in 2011 and they both found no relationship between PM and total mortality in California. The Jerrett Study found that total mortality during 1982-2000

among about 75,000 California adults was not related to either PM10 or PM2.5 in eight of nine models tested. The Lipsett Study found that total mortality during 2000-2005 among about 75,000 female

California teachers was not related to either PM10 or PM2.5.

The studies found some unexplained evidence of increased cardiovascular disease risk and decreased cancer risk, but there was no overall increased risk of death. These null results agree with the overwhelmingly null results for California that have been published since 2000, which include my 2005 results.

Thus, based on all the evidence described above, there is no health risk associated with PM in the Coachella Valley or in California as a whole and there will be no health risk from PM after the Sentinel power plant is operational. However, since AQMD and others have a different perspective and since The Desert Sun stated that "Robust debate on this issue is needed," I propose that an open forum be organized so that AQMD Executive Officer Barry Wallerstein and I can debate our different views on the health effects of PM in the Coachella Valley. Hopefully, our debate will help resolve the PM health effects issue.

James E. Enstrom is on the research faculty at the UCLA School of Public Health and has been conducting epidemiologic research there since 1973. Email him at jenstrom@ucla.edu

LEARN MORE ABOUT PARTICULATE MATTER

Read the California Energy Commission air quality assessment for the Sentinel plant at mydesert.com/opinion

Websites cited by James E. Engstrom:

www.epa.gov/pm/
www.aqmd.gov/aqmp/07aqmp/aqmp/Chapter_2.pdf
www.epa.gov/ttn/naaqs/standards/pm/s_pm_history.html
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wmbiggs.com/blog/?p=4587
ajrccm.atsjournals.org/content/184/7/828.short
www.scientificintegrityinstitute.org/Enstrom081111.pdf

From: "Folmer, James" <jfolmer@palmspri.gannett.com>
To: "James E. Enstrom" <jenstrom@ucla.edu>
Date: Wed, 28 Mar 2012 13:11:05 -0700
Subject: RE: April 5 DSun Op-Ed on PM Health Effects & Enstrom Photo

Photo is fine. I'll try to remember to send you the edited version. Feel free to pester me on Tuesday, but we can never promise exactly when a column will run depending on what's happening in the news.

Thanks.

Responses to Comment Letter U
Enstrom, James

Response to Comment U-1:

The AQMD has prepared an Appendix I to the past Air Quality Management Plan updates which include a discussion on the health impacts of particulate matter, which are applicable to the South Coast Air Basin. Staff believes that these reports fulfill the California Health & Safety Code requirements contained in section 40471(b). Staff also notes that the Clean Air Act requires the attainment of the National Ambient Air Quality Standards. The AQMP updates provide the plan to attain the particulate matter standards.

The commentator appears to believe that the purpose behind Appendix I is to promote criticism of the PM 2.5 NAAQS, with the ultimate goal of having the Governing Board reject the applicable NAAQS and seek a waiver from it. The legislative analysis of SB 1195, which led to section 40471(b), refutes this belief. Thus, the Senate Floor analysis of SB 1195, just prior to the bill's adoption, states that one of the purposes of the bill is "intended to require the district to update its most recent plan adopted for the attainment of [fine particulate matter] standards." And to make it perfectly clear that the legislators were concerned about the health impacts of fine particulate matter, the analysis noted the following fact: "Recent scientific studies have linked fine particulate air pollution with serious public health problems, including premature death, aggravated asthma and acute respiratory distress."

Response to Comment U-2:

The commenter refers to a "null relationship" in California regarding particulate matter and mortality and that this was only "partially presented" in the draft 2012 AQMP, and that there were variations in the PM_{2.5} mortality risk across the U.S. noted in a study from the Health Effects Institute. Staff has included additional discussion on the range of findings in the studies referenced in the Appendix. However, that there were regional difference in the association of PM_{2.5} and mortality in the report (Krewski, 2000) was, in fact, noted in the draft Appendix. Commenter also refers to two reports co-funded by AQMD (Lipsett, 2011 and Jerrett, 2011). Staff has presented a summary of several studies on particulate matter health effects, including those referred to by the commenter. Also included are the findings of two studies that looked specifically at the effects of PM_{2.5} among the American Cancer Society cohort residents of the Los Angeles metropolitan area. (Jerrett, 2005 and Krewski, 2009), both of which reported associations of mortality with PM_{2.5}, and found that the associations were higher than those reported in the national cohort. Additionally, since the initial draft of the 2012 AQMP Appendix I was compiled, the U.S. EPA issued a Regulatory Impact Report (Regulatory Impact Analysis related to the Proposed Revisions to the National Ambient Air Quality Standards for Particulate Matter EPA-452/R-12-003, June 2012

(http://www.epa.gov/ttn/ecas/regdata/RIAs/PMRIACombinedFile_Bookmarked.pdf), in conjunction with a proposal to revise the PM2.5 NAAQS (<http://www.gpo.gov/fdsys/pkg/FR-2012-06-29/pdf/2012-15017.pdf>), that looked at California specific studies regarding PM2.5 and mortality published in the scientific literature. The EPA analyses concluded "most of the cohort studies conducted in California report central effect estimates similar to the (nation-wide) all-cause mortality risk estimate we applied from Krewski et al. (2009) and Laden et al. (2006) albeit with wider confidence intervals. A couple cohort studies conducted in California indicate higher risks than the risk estimates we applied." Thus in EPA's judgment, the California related studies provided estimates of mortality consistent with or higher than those from the national studies.

Response to Comment U-3:

As required by the California Health and Safety Code section 40471(b), Appendix I was submitted to the Advisory Council appointed pursuant to section 40428 to review and comment on Appendix I. Section 40428 provides that the Governing Board appoint the Advisory Council, which was done according to procedures adopted by the Governing Board. Briefly, each Governing Board member has authority to nominate a member to the Council, and each of the Governing Board standing Advisory Groups also nominated one member. Comments from the Advisory Council were given at the July 11, 2012, and October 11, 2012 meetings, as well as in written comments received. All comments received were included in the Appendix I. The Draft Appendix I will be revised in the process of developing the final report, as informed by comments received from the Advisory Council and from the public hearings, as well as other comments from the public, other reviewers and other information that comes to staff's attention. As requested by the Advisory Council, there will be additional opportunities to review and comment on the updated drafts. Also as called for by the Health and Safety Code, any additional material or information resulting from the review and public hearings will be appended to Appendix I.

Response to Comment U-4:

The commenter refers to the requirement that public hearings be held concerning Appendix I and its peer review. The AQMD has held public regional hearings on the entire Draft AQMD, including Appendix I. Also, the Appendix I will be discussed at the Board Adoption Hearing scheduled for December 7, 2012. In staff's opinion, this fulfills the requirements of the California Health and Safety Code. Commenter further implies that the AQMD may request a waiver from compliance with the NAAQS under provision of Section 209 of the Clean Air Act. There is no provision in the Clean Air Act that allows exemption by Districts for meeting National Ambient Air Quality Standards. Section 209 refers to mobile source emission controls, and provides procedures in which California may seek waiver from federal motor vehicle standards if they are replaced with at least equally protective standards.

The Draft Appendix I relies on the conclusion of EPA reviews on the health effects of air pollutants. Tables summarizing the EPA conclusions are included in the discussion. The purpose of Appendix I is not to provide a re-evaluation of the National Ambient Air Quality Standards. See also response to Comment U-1. The establishment of the NAAQS are under the sole discretion of the EPA Administrator, as provided in the Clean Air Act. The District has no authority to establish or alter ambient air quality standards. The Draft 2012 AQMP is designed to provide a pathway to attain the NAAQS for PM_{2.5} by the statutory deadlines. Failure to adopt or implement a plan to attain the NAAQS by the deadlines can trigger severe adverse consequences to the region, restrictions on transportation and highway funds to the region, increases in required emissions offset ratios, and implementation of a Federal Implementation Plan to attain the standard.

V. Air Conditioning Heating, and Refrigeration Institute (AHRI), August 31, 2012

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August 31, 2012

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4178

Re: AHRI Comments on the Draft 2012 Air Quality Management Plan

Dear Sir/Ma'am:

These comments are submitted by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) in response to the South Coast Air Quality Management District's (AQMD) issuance of the draft 2012 Air Quality Management Plan (AQMP).

AHRI is the trade association representing manufacturers of heating, cooling, water heating, and commercial refrigeration equipment. More than 300 members strong, AHRI is an internationally recognized advocate for the industry, and develops standards for and certifies the performance of many of the products manufactured by our members. In North America, the annual output of the HVACR industry is worth more than \$20 billion. In the United States alone, our members employ approximately 130,000 people, and support some 800,000 dealers, contractors and technicians. The membership of the AHRI Furnace Section includes all the major manufacturers of commercial space heating equipment being sold in the district today.

In general, we recognize the AQMD staff's dedication to do what it can within its authority to improve the air quality in the district. We ask that staff consider the following comments regarding one of the control measures proposed in the draft 2012 AQMP:

CMB-03: Reductions from Commercial Space Heating [NOx]

The estimated NOx reduction of 0.18 tons per day (TPD) is not sufficiently validated. We recommend that at this stage of AQMP development the potential NOx reduction for this measure be noted as "To be determined."

Page IV-A-64 of Draft 2012 Appendix IV-A states "staff estimates that 45 to 60% of all commercial, light manufacturing, warehouse, office, school and government building floorspace is heated by commercial forced air units." This estimate was based on national estimates that were developed by the U.S. Department of Energy (DOE). The estimates of the current daily NOx emissions from commercial space heating equipment and the potential reductions in this control measure should have been based on information that reflects the commercial space heating inventory and the percentage of commercial buildings heated by commercial gas furnaces within the district. The

V-1

characteristics of the district respective to population and the high saturation of gas-fired equipment are so above average that national average values should not be used.

V-1

Another concern with the draft AQMP analysis for this measure is that it fails to account for the energy savings that will be achieved by the implementation of the California Energy Commission's (CEC) 2013 *Building Energy Efficiency Standards* (California Code of Regulations, Title 24). In particular, the improved building envelope requirements of the 2013 Title 24 regulations will reduce building heating loads, thereby lowering the amount of gas consumed to heat the building. This reduction in gas consumption directly reduces the NOx emissions and must be factored in any estimates of NOx reductions from this control measure. Furthermore, this factor of the analysis would be conservative since California's building efficiency standards are updated on a three-year cycle, so it is highly likely that there will be at least one more revision to the Title 24 standard before the AQMP's proposed 2018 implementation period.

V-2

The projected implementation date for this measure is 2018. In view of the complexities in developing gas-fired equipment with reduced NOx emissions and the current ongoing project to reduce NOx emissions from residential gas furnaces, we recommend that this 2018 implementation date not be changed to any earlier date as the associated rule is developed. The manufacturers of commercial gas central furnaces are the same companies who manufacture residential gas furnaces. Those manufacturers are already working towards redesigns that would allow equipment to satisfy the requirements of Rule 1111. Technical feasibility studies are ongoing but it has not yet been confirmed that the 14 ng/J NOx emission limit for gas-fired furnaces less than 175,000 Btu/h is practical in the field. Recognizing that manufacturers are being required to provide furnaces that are compliant with Rule 1111 by 2014, 2015 or 2016, depending on the particular furnace category, the proposed adoption date associated with CMB-03 within the 2012 draft AQMP is nominally only 2 to 3 years later. Past experience with rules on redesigning gas fired equipment to reduce NOx emissions suggests that even a 2 to 3 year lead time may not be enough. However, that experience clearly shows that it cannot be anything shorter.

V-3

The adoption schedule in the draft 2012 AQMP does not allow adequate time for manufacturers to shift their focus from furnaces less than 175,000 Btu/h to furnaces greater than or equal to 175,000 and less than 2,000,000 Btu/h. In our opinion, manufacturers should not be required to work on developing new designs for residential and commercial furnaces simultaneously. It cannot be assumed that the emission reduction technologies are easily transferrable from residential to commercial products. Manufacturers would have to undergo extensive research to ensure that no adverse impact is placed on product safety while meeting the AQMD's reduction requirements. Hence, we recommend that the adoption dates be postponed so that manufacturers have sufficient lead times to comply with the requirements of the 2012 AQMP; Phase I (technical assessment) should be moved to 2015 and Phase II should be moved to 2017. The implementation period may need to be adjusted as well to accommodate the postponement of the adoption dates.

V-4

Chapter 3 and Appendix IV-A of the draft 2012 AQMP do not provide any reference to the NOx inventory of 2.2 TPD for commercial space heating equipment. How was this baseline estimate deduced for the district? We believe that the reduction levels specified

V-5

in CMB-03 need to be investigated further. The draft 2012 AQMP does not explain how the proposed reduction of 0.18 TPD by 2023 was achieved. Furthermore, the total reduction of 0.6 TPD was calculated based on national estimates and not the inventory available in the district. We feel that the AQMD will have a better understanding of the reduction levels upon the completion of the technical assessment. Hence, we recommend that at this stage of the AQMP development, the potential NOx reduction for both these reduction levels be replaced with the phrase "To be Determined."

} V-5

AHRI appreciates the opportunity to provide these comments. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely,



Aniruddh Roy
Regulatory Engineer
Air-Conditioning, Heating, and Refrigeration Institute
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Responses to Comment Letter V
AHRI

Response to Comment V-1:

The methodology for developing the commercial space heating emissions inventory is well established, has been used in previous AQMPs and incorporates EPA emission factors, local data on gas use by different sectors from local gas utilities and information from the California Energy Commission, CARB and local agencies. The inventory incorporates local growth projections and gas utility provided energy conservation projections. The factor in inventory development that may need further enhancements is the proportion of heating provided by forced air furnaces versus boilers. Both kinds of heating are used with a split of approximately 50% each. While it is true that Southern California uses more gas-fired heating appliances than other parts of the country, our boilers are also gas-fired. The percentage of floor space heated by forced air versus boilers depends more upon the numbers and size of various types of commercial buildings (their construction) than on other factors. The percentage of floor space heated by forced air units may be more than the 45% used by staff to estimate a minimum total reduction of 0.6 tons/day after 20 years of implementation. If this is the case, AQMD staff will use local floor space data when available and adjust the inventory and the emission reduction higher during rule development.

Response to Comment V-2:

The baseline and future inventories for space heating incorporate federal, state and local energy conservation measures. The emission reductions from this proposed measure are in addition to reductions achieved by potential energy conservation beyond current standards of funded programs.

Response to Comment V-3:

AQMD staff does not expect the compliance date for a rule based on control measure CMB-03 to be earlier than 2018.

Response to Comment V-4:

The current project to develop prototypes of Rule 1111 compliant residential furnaces is progressing well and is expected to be completed by the summer of 2013. Based on progress to date, AQMD staff does not expect a delay in Rule 1111 implementation. Staff believes that the current schedule in measure CMB-03 provides sufficient time for development of larger products based on residential furnace technology (multiple small burners) or single burner technologies used in other applications.

Response to Comment V-5:

Please refer to response to comment V-1. The inventory methodology for commercial space heating is well established and has been accepted for previous AQMPs. Current and future emission inventories are based on gas consumption by categories of use provided by local gas utilities. The baseline inventory uses emission factors developed by EPA. The methodology for estimating NO_x reductions from control measure CMB-03 is explained in the control measure. The reduction of 0.18 ton/day in 2023 is based on a compliance date of 2018 for new sales and an average equipment life of 20 years. Thus each year 1/20 of the total number of commercial space heaters will be replaced by compliant units resulting in a reduction of 0.18 ton/day in 2023 (0.06 ton/day X 1/20 X 6 years = 0.18 ton/day reduction in NO_x).

W. Western States Petroleum Association (WSPA), August 31, 2012



Western States Petroleum Association
Credible Solutions • Responsive Service • Since 1907

Patty Senecal
Manager, Southern California Region and Infrastructure Issues

VIA ELECTRONIC MAIL

August 31, 2012

Barry Wallerstein, D. Env.
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: **Comments on the Draft 2012 Air Quality Management Plan (AQMP)**

Dear Dr. Wallerstein:

The Western States Petroleum Association (WSPA) is a non-profit trade association that represents twenty-seven companies that explore, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California and five other western states. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA member companies operate petroleum refineries and other facilities in the South Coast Air Basin and thus have a major stake in the Air Quality Management Plan (AQMP) being prepared by the South Coast Air Quality Management District (SCAQMD or District), and any rule developments that might stem from the final AQMP as adopted by the District's Governing Board.

WSPA appreciates the opportunity to submit these comments on the Draft 2012 AQMP and continues to support the South Coast regional air quality planning process and the successes achieved to date. The attainment of the National Ambient Air Quality Standard (NAAQS) for PM_{2.5}, which is now imminent, represents a significant public health milestone for Southern California residents and industry. We also wish to acknowledge that the technical inputs and tools used by the District staff for this AQMP represent a significant improvement over prior plans. These important advances provide the opportunity for stakeholders and decision makers to be better informed about the state of air quality in Southern California and the regional economy. Over the last two decades, Southern California's industrial facilities (i.e., stationary sources including the region's petroleum refineries) have reduced their emissions by over 70 percent for most criteria pollutants including nitrogen oxides (NO_x) and sulfur oxides (SO_x).

Page 1

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PHONE: (310) 678-7782 • FAX: (310) 324-9063 • PSenecal@wspa.org • www.wspa.org

This letter presents WSPA's general comments, with detailed comments on specific AQMP measures to follow under a separate letter. WSPA may submit additional comments during this process as the District releases additional 2012 AQMP documents including, but not limited to a reported second Draft AQMP. We understand all submissions will be given due consideration by the District staff and the Governing Board.

Our general comments on the Draft 2012 AQMP (dated July 2012) are as follows:

1. **Although the District has prepared an integrated AQMP that addresses both PM_{2.5} and ozone, the focus of the 2012 AQMP control strategy and the associated State Implementation Plan (SIP) submittal, should be limited exclusively to the PM_{2.5} plan consistent with EPA requirements.**

The District's current obligation under the Clean Air Act is to prepare an AQMP to attain the PM_{2.5} standard and continuing to implement 2007 AQMP measures. Showing attainment of the 8-hour ozone standard is the obligation of the 2015 AQMP. This strategy makes sense because there are scientific and technical improvements that need to be made before the District can provide a meaningful update to the basin's ozone strategy at this time. The magnitude of the ozone challenge for future milestone years (i.e., 2023 and 2032) is a function of forecasts and assumptions which will only become better understood with time, but under any scenario the District's "Black Box" commitment under Clean Air Act Section 182(e)(5) still requires significant emission reductions for which this plan quantifies very little. That is because the overwhelming majority of these emission reductions must come from transportation and can only be provided by new technologies which are as yet unidentified. While the District has "sketched out" a path for identification, development and commercialization of such technologies, this part of the AQMP remains speculative. Meanwhile, potential co-benefits from other regulatory initiatives like the California Air Resources Board's (CARB) AB32 Program (e.g., Cap-and-Trade, Low Carbon Fuel Standard, etc.) remain largely unconsidered in this plan.

Given these facts, there is no benefit to pushing new ozone measures into the SIP at this time. Rather, such action would only serve to unnecessarily constrain the future options available to the District and Southern California businesses. The District should wait and develop the revised ozone attainment strategy when it is required as part of the 2015 AQMP. At that time, we will all have a better understanding of the needed emission reductions and better information on the economic factors and technologies required to meet the region's air quality challenge. New control measures in the 2012 AQMP and the associated SIP submittal should be limited exclusively to the PM_{2.5} attainment demonstration consistent with EPA requirements.

W-1

2. WSPA agrees that the region can attain the PM_{2.5} NAAQS by 2014 through the use of focused, time & place control measures. This is the most efficient and cost effective path to attainment of the PM_{2.5} standard.

Most of the basin is already in attainment of the PM_{2.5} NAAQS, and the District's modeling forecast suggests that the area around the Mira Loma monitoring station will be very close to achieving the standard by 2014. Based on the information provided in the Draft AQMP, measures BCM-01 and BCM-02 are by themselves sufficient to demonstrate PM_{2.5} attainment in 2014. These measures would enhance restrictions on residential wood burning (BCM-01) and open burning (BCM-02) whenever key areas of the air basin are forecast to approach the federal 24-hour PM_{2.5} standard. Similar measures been successfully implemented in other jurisdictions and are technologically feasible and cost effective.

The Draft AQMP currently proposes eight short term PM_{2.5} control measures, but as summarized in Table 1, only three of these measures have any quantified emissions benefits for 2014.

TABLE 1: 2012 AQMP Proposed PM_{2.5} Control Measures (Tons per Day)¹

2014 Emissions	NO _x	SO _x	PM _{2.5}	VOC	NO _x Equiv	Reference
Baseline Emissions	499.9	18.4	70.4	451.4	1821.6	App III, Table A-2
CMB-01	-2.0	0	0	0	-2.0	App IV-A
BCM-01	-14.84	-0.37	-5.36	-6.46	-95.4	App IV-A & App III Table A-2
BCM-02	-1.52	-0.47	-4.60	-3.23	-70.4	App IV-A & App III Table A-2
BCM-03	0	0	0	0	0	App IV-A
BCM-04	0	0	0	0	0	App IV-A
IND-01	0	0	0	0	0	App IV-A
EDU-01	0	0	0	0	0	App IV-A
MCS-01	0	0	0	0	0	App IV-A
Total Measures	-18.36	-0.84	-9.96	-9.69	-167.7	
Controlled Emissions	481.5	17.6	60.4	441.7	1653.9	

W-2

The Draft AQMP reports that BCM-01 and BCM-02 will reduce direct PM_{2.5} emissions,² but these two measures also yield significant reductions in NO_x and VOC emissions during control episodes which were not presented in the AQMP report. Those emission reductions, which are presented in Table 1, are based on the emission inventory presented in Appendix III of the Draft AQMP, will significantly contribute to attainment of the 24-hour PM_{2.5} NAAQS.

Using the District's "NO_x equivalent" weighting system, BCM-01 and BCM-02 would provide about 166 tons per day (tpd) of NO_x equivalent emission reductions which includes 16 tpd of

¹ "NO_x Equivalent" emissions are computed based on the relative contributions of precursor emissions reductions to simulated controlled future-year 24-hour PM_{2.5} concentrations discussed in Section 5 of the Draft AQMP. As presented in Table 5-2, PM_{2.5} has a standardized contribution to ambient PM_{2.5} mass of 14 times that of NO_x. The factors for SO_x and VOC are 6 and 0.5, respectively. (See Draft AQMP, p. 5-15).

² SCAQMD, Draft 2012 AQMP, Table 4-2.

NO_x reductions. Based on these figures, 99% of the emission reductions quantified for the PM_{2.5} attainment demonstration are attributable to BCM-01 and BCM-02. These two measures, by themselves, will deliver the needed emissions reductions and represent the most efficient and most cost effective path to attainment of the PM_{2.5} standard by 2014.

3. Proposed Control Measure CMB-01 (Further NO_x Reductions from RECLAIM - Phase I) is not needed for the PM_{2.5} attainment demonstration. CMB-01 should be removed from the Short-Term PM_{2.5} Control Measures.

In part, the 2012 AQMP is designed to evaluate potential control measures and their effectiveness in meeting the federal 24-hour PM_{2.5} NAAQS. The predicted 24-hour PM_{2.5} Design Value for 2014 at the Mira Loma monitoring station was 37.3 µg/m³, which exceeds the 24-hour PM_{2.5} standard of 35 µg/m³.³ The controlled scenario includes measures BCM-01 and BCM-02 which would restrict residential wood burning and open burning on a basin-wide basis on days predicted to have an ambient concentration of 30 µg/m³ or greater (approximately 60 no-burn days used in the modeling). With those controls, the Design Value for 2014 was predicted to be 34.2 µg/m³ which is below the 24-hour NAAQS.⁴

The Draft AQMP does not include a sensitivity analysis for the short-term PM_{2.5} control measures, but using the District's "NO_x equivalent" weighting system it is reasonably deduced that CMB-01 (Phase I) does not meaningfully contribute to the PM_{2.5} attainment demonstration. As shown above in Table 1, BCM-01 and BCM-02 would provide about 166 tpd of "NO_x equivalent" emission reductions, including 16 tpd of NO_x. By comparison, proposed measure CMB-01 (Phase I) would only reduce 2 tpd NO_x which represents a mere 1% of the NO_x equivalent emission reductions proposed for 2014. This equates to less than 0.1 µg/m³ of quantified ambient improvement which is statistically irrelevant to the PM_{2.5} attainment demonstration for 2014.

The Draft AQMP succeeds in showing that Control Measures BCM-01 and BCM-02 can provide all of the air quality improvement needed for the District to demonstrate attainment of the 24-hour PM_{2.5} NAAQS by 2014. As such, CMB-01 should be removed from the Short-Term PM_{2.5} Control Measures in this plan.

W-3

³ 2012 AQMP Chapter 5 and Appendix V.

⁴ It is not clear from the Draft AQMP and supporting Appendix V whether the pollutant co-benefits (e.g., 16 tpd NO_x) attributable to measures BCM-01 and BCM-02 were accounted in the CMAQ model. If not, that inclusion would drive the predicted design value for the controlled scenario lower than the reported value of 34.2 µg/m³.

4. **Proposed Control Measure CMB-01 (Further NO_x Reductions from RECLAIM) needs to be wholly reconsidered. The Draft AQMP fails to properly consider RECLAIM market demand, or the cost implications of supply reductions. CMB-01 should be removed from the 2012 AQMP.**

As recognized by all stakeholders, the region still has a long way to go to meet the federal ozone NAAQS. The Draft AQMP notes:

“The Basin faces several ozone and PM attainment challenges, as strategies for significant emission reductions become harder to identify and the federal standards continue to become more stringent.

... In finding the most cost-effective and efficient path to meet multiple deadlines for multiple air quality and climate objectives, it is essential that an integrated planning approach is developed.”⁵

We agree with this concept and would suggest that the Draft AQMP does not achieve this objective. Proposed Control Measure CMB-01 (Phase I) suggests:

“The proposed Phase I reductions are designed to enhance timely attainment of the 24-hr PM_{2.5} standard by 2014 by taking advantage of currently approximately 8 tpd of excess RTC in the market. A shave of 2 tpd of NO_x RTCs should not cause a significant impact to the market.”⁶

This statement is inaccurate for several reasons: (1) the Draft AQMP provides no evidence to support the assertion concerning the future RECLAIM RTC supplies; (2) there is no evidence presented or implied to support a position that a 2 tpd NO_x reduction in the market is reasonable nor feasible in the short- or long-term; and (3) there is no suggestion of a control strategy that would be the basis for such emission reductions. Finally, we reiterate that Control Measure CMB-01 is unneeded for the PM_{2.5} attainment demonstration.

- **The market data used to support CMB-01 (Phase I) reflected a major recession (i.e., 2008-2010); those data do not reflect a “normal” economy and are not indicative of the RECLAIM RTC supply needed to support the Southern California economy.**

The Draft AQMP suggests that the NO_x RECLAIM market has a surplus which can be “shaved” with no significant impact to the market. This supposition is based on the District’s review of NO_x RTC data from 2008-2010. Elsewhere in the Draft AQMP it is acknowledged that the 2008-2010 period was impacted by a major recession. That recession significantly suppressed economic activity in most sectors of the economy including transportation, goods movement, and electricity demand. Those recessionary impacts are indeed reflected in the referenced 2008-2010

⁵ SCAQMD, Draft 2012 AQMP, p. ES-12.

⁶ SCAQMD, Draft 2012 AQMP, Appendix IV-A, p. IV-A-14.

W-4

RTC market data. But more importantly, that time period is an inappropriate basis for forecasting future RTC demand.

- The District's ozone attainment strategy is dependent on the advancement of zero/near-zero technologies for transportation. That strategy will require that the NO_x RECLAIM market have sufficient RTC supply for significant new electricity generation.

W-4

As explained in the Regional Transportation Plan (RTP) and the Draft AQMP, attainment of the ozone NAAQS will not be possible without significant NO_x emission reductions from the transportation sector. The Draft AQMP notes this repeatedly:

"...a transition to zero- and near-zero emission technologies is necessary to meet 2023 and 2032 air quality standards and 2050 climate goals. Many of the same technologies will address air quality, climate and energy goals."⁷

"Since most significant emission sources are already controlled by over 90%, attainment of the ozone standards will require broad deployment of zero- and near zero emission technologies in the 2023 to 2032 timeframe. On-land transportation sources such as trucks, locomotives, and cargo handling equipment have technological potential to achieve zero- and near-zero emission levels. Current and potential technologies include hybrid-electric, battery-electric, and hydrogen fuel cell on-road vehicle technologies. Other technologies and fuels may also serve regional needs, e.g. natural gas-electric hybrid technologies."⁸

W-5

In short, this strategy involves transitioning the transportation sector from petroleum-based energy sources to electricity. California has some of world's most aggressive policies to reduce emissions from the electricity sector including demand management (e.g., energy efficiency) programs and emission standards. Part of that strategy includes the Renewable Portfolio Standard (RPS) which would eventually have utilities supplying 33% of electricity generation from zero emission technologies like solar and wind. But that leaves 60+% of our electricity coming from fossil-fueled sources for the foreseeable future.⁹

Terminology aside, electricity is not zero-emissions and going forward much of the increased electricity demand in Southern California would need to be delivered from fossil-fueled power plants in the South Coast Air Basin. That electricity generation will need to be accommodated under the NO_x RECLAIM market, and it is not in the 2008-2010 baseline.

⁷ SCAQMD, Draft 2012 AQMP, p. ES-13.

⁸ SCAQMD, Draft 2012 AQMP, p. 4-20.

⁹ Hydroelectric and nuclear power plants are expected to supply less electricity to Southern California going forward due to declining snow packs and the threatened retirement of SONGS (in part or whole).

- The District needs to consider electricity sector impacts associated with a broad-scale electrification initiative for transportation before proposing any new NO_x RECLAIM shave. Failure to plan for such a structural change would challenge the feasibility of the District's zero/near-zero technologies strategy, negatively impact the Southern California economy, and may be contrary to State requirements under Assembly Bill 1318.

Broad-scale transportation electrification will mean significant new demand for electricity. The District has worked to preserve emission offsets availability for electricity generation, in particular with certain exemptions for non-RECLAIM pollutants under Regulation XIII. But that could prove irrelevant if the NO_x RECLAIM market lacks sufficient RTC supply to cover the NO_x emissions associated with natural gas-fueled power plants needed to serve future load demand. And failure to plan for this under the RECLAIM market would complicate this AQMP's ambitions for zero/near-zero emission technologies. Yet the Draft AQMP fails in this regard:

"Energy projections made in this chapter reflect past energy usage in the South Coast Basin and energy projections made from utility and other agencies' planning documents. These projections reflect existing policies and regulations. **This review does not include an analysis of energy implications from the control measures within this AQMP; this analysis is conducted within the EIR review.**"¹⁰ (emphasis added)

W-5

In fact, CARB is working on a similar study as required under California Assembly Bill (AB) 1318. That law requires CARB, in consultation with the California Energy Commission (CEC), California Public Utilities Commission (CPUC), California Independent System Operator (CAISO), and the State Water Resources Control Board (SWRCB) to prepare a report for the Governor and Legislature that evaluates the electrical system reliability needs of the South Coast Air Basin. The report is to include recommendations for meeting those reliability needs while ensuring compliance with state and federal law requirements for emission offsets (i.e., ERCs and RTCs).

The AB 1318 study was demanded by the legislature specifically because of concerns about current air permitting issues facing power plants under SCAQMD jurisdiction. The CARB report is to include recommendations for long-term, sustainable permitting of additional needed capacity. Under the statute, this report was due on or before July 1, 2010 but was not delivered. At this time, the draft AB 1318 report is scheduled for release in "Fall 2012."¹¹ The results of this study, which is the first of its kind for Southern California, are critical to understanding the baseline forecast against which the District would consider the additional electricity sector impacts associated with a broad-scale electrification initiative for transportation. It would be

¹⁰ SCAQMD, Draft 2012 AQMP, p. 10-1.

¹¹ CARB, AB 1318 Project Overview and Status Report: South Coast Air Basin Electric Reliability and Offset Needs Assessment, June 22, 2012.

premature to consider any new NO_x RECLAIM shave which could constrain future power plant operations prior to the review of this report and additional needs analysis.

Based upon the above and given that the proposed NO_x RECLAIM shave under CMB-01 (Phase I) is not needed for the PM_{2.5} attainment demonstration, we recommend that CMB-01 (Phase I and Phase II) should be removed from the 2012 AQMP.

- Any future RECLAIM shave should be limited to those required under BARCT authority.

According to the Draft AQMP, the California Health and Safety Code (H&SC) requires the District to monitor the advancement in Best Available Control Retrofit Technology (BARCT), and if BARCT advances the District is required to periodically reassess the RECLAIM market, overall facility caps, and reduce the RTC holdings, as if the equipment located at the facilities would be subject to applicable equivalent command-and-control BARCT levels. The BARCT evaluation must include an evaluation of the maximum degree of reduction achievable with advanced control technologies taking into account the environmental, energy, and economic impacts for each class or category of source.

Any proposed NO_x RECLAIM shave should be limited to those required under this BARCT authority. The size of any such shave cannot be specified until the required BARCT evaluation has been completed.

- Any NO_x RECLAIM shave would impose significant costs on the Southern California economy. The AQMP must include a proper cost effectiveness analysis for CMB-01.

The Draft AQMP makes several representations concerning the cost effectiveness of Control Measure CMB-01.

CMB-01 (Phase I): "It is expected that the cost effectiveness for this control measure would be in the neighborhood of \$7,950 per ton for Phase I based on the most recent RTC trading prices."¹²

CMB-01 (Phase II): "It is expected that the cost effectiveness for this control measure would be in the neighborhood of \$16,000 per ton NO_x reduced."¹³

Subsequent to the release of the Draft, District staff suggested in several public meetings that the cost of the Phase I NO_x shave could actually be "zero." The cost to Southern California businesses of the proposed CMB-01 would most certainly not be zero, and we would respectfully submit that the cost figures presented in the Draft AQMP are also improperly deduced.

¹² SCAQMD, Draft 2012 AQMP, Table 6-4 and Appendix IV-A-15.

¹³ SCAQMD, Draft 2012 AQMP, Table 6-5 and Appendix IV-A-59.

W-5

W-6

W-7

RECLAIM is the oldest locally designed and implemented air emissions “cap and trade” program. As with any cap and trade program, the cost of allowances (i.e., RTCs) is dictated by both the market’s view of the current supply-demand balance and the market’s view of the future supply-demand balance. Any reduction in market supply (e.g., a shave), will cause the market to reassess the supply-demand relationship and the RTC market price will adjust accordingly. Past market prices cannot be used to forecast future prices when a major structural change is being proposed, such as a nearly 20% supply reduction. And if RECLAIM is unable to support key industrial sectors, the economic consequences could be enormous.

W-7

Stakeholders and decision makers need to be presented a cost effectiveness analysis that is based on appropriate economic principles and information. The Draft 2012 AQMP fails to do that for proposed Control Measure CMB-01 (Phase I or Phase II).

- **There is insufficient time to implement the proposed CMB-01 (Phase I) control measure.**

The Draft AQMP proposal for Control Measure CMB-01 (Phase I) suggests that the rulemaking for amending Regulation XX would be completed in 2013 and be in effect in 2014. This timetable is inadequate. First, a rulemaking of this type would be difficult to complete in 12 months especially because the proposed measure includes a number of controversial issues. Key among those issues would be the shaving methodology. The Draft AQMP states “staff will work with stakeholders to evaluate various shaving methodology (e.g., sector-specific or across-the-board).”¹⁴ That analysis alone will take time. Depending on the outcome of that evaluation, certain stationary sources may need to evaluate installation of new emission controls. Stationary sources would need no less than 2-4 years to design, construct, and operationalize new emissions controls necessitated by a reduction of NO_x RTC allocations (assuming control technology options are available). Given these realities, the implementation schedule for proposed measure CMB-01 (Phase I) is simply not achievable.

W-8

- **In summary, proposed measure CMB-01 (Phase I or Phase II) is not well considered. Since CMB-01 (Phase I) is not needed for the PM_{2.5} attainment demonstration, proposed measure CMB-01 (Phase I and Phase II) should be removed from the 2012 AQMP.**

5. **If EPA issues a SIP call for an updated attainment plan for the (now revoked) 1-hr ozone NAAQS, that should be covered in a standalone plan (i.e., not in the 2012 AQMP).**

W-9

There has been much discussion over the last several months concerning recent litigation and court decisions suggesting that the District might need to prepare a new 1-hour ozone SIP. Should the District actually receive a SIP call to prepare a 1-hour ozone plan (which has not yet

¹⁴ SCAQMD, Draft 2012 AQMP, Appendix IV, p. IV-A-14.

occurred), that requirement should be satisfied in a separate plan in accordance with the schedule applicable to that SIP call. The District should not attempt to deal with that requirement in the 2012 AQMP because the requirements applicable to the 1-hr ozone standard, including inventory, model performance, modelled output, and emission reduction strategies are wholly different from those required under the current AQMP.

We expect that a revised 1-hour ozone plan will be eclipsed by the District's 8-hour ozone strategy as presented in the 2007 AQMP and revised in the 2015 AQMP. The compliance milestones for the 1-hour and first 8-hour (80 ppb) ozone plans would both be 2023. Based on prior District estimates, the overall emission reduction requirements for meeting the 1-hour ozone standard are within the range needed for the 8-hour ozone standard (particularly the 75 ppb NAAQS). To date, no full-scale assessment has been made to confirm this assertion.

The District has not prepared a recent attainment demonstration for the 1-hour ozone NAAQS, so the existing analyses are based on outdated inputs, models and EPA guidance. The 1-hour and 8-hour ozone NAAQS also have different forms (beyond the averaging periods) which make quantitative comparisons problematic. The Draft 2012 AQMP notes these issues:

"If a 1-hour ozone SIP is requested by U.S. EPA, the SIP would be due within 12 months of such a SIP call. The attainment demonstration in the SIP would have to show attainment within 5 years with a potential 5-year extension, which would be a similar timeframe as is required for the 1997 8-hr ozone standard (deadline of 2023). However, many new technical issues such as modeling for the attainment demonstration and other CAA requirements would require U.S. EPA's guidance, since the previous preambles/guidelines are no longer directly applicable. Based on previous modeling estimates, the control strategies that are needed to attain the 8-hour ozone standard are nearly identical to those that would be needed to attain the 1-hour ozone standard."¹⁵ (emphasis added)

Should EPA issue a 1-hour ozone SIP call, the District should take the full 12 months allotted to develop a standalone 1-hour ozone AQMP using current inputs, models and updated EPA guidance. The 2012 AQMP should make no assertions concerning the attainment strategy for the 1-hour ozone NAAQS; the required technical analyses have not been completed.

6. Proposed Control Measure MCS-03 (Improved Startup-up, Shutdown and Turnaround Procedures) was covered in the 2007 AQMP and is already in rule development based on that authority. The measure should be removed from the 2012 AQMP.

As noted in the Draft AQMP, this proposed measure would be a carryover from the 2007 AQMP and SIP submittal. The District has already commenced rule development activities for this measure on the basis of the 2007 AQMP authority. For that very reason, the inclusion of proposed measure MCS-03 in the 2012 AQMP is duplicative and unnecessary.

W-9

W-10

¹⁵ SCAQMD, Draft 2012 AQMP, p. 8-3.

Proposed Control Measure MCS-03 should be removed from the 2012 AQMP. Notwithstanding this fact, WSPA will submit detailed comments on proposed Control Measure MCS-03 under separate cover.

W-10

7. The schedule for this AQMP has not provided stakeholders with the opportunity to effectively review and comment on key documents. The District should lengthen the AQMP schedule to ensure stakeholder input and comments can be given due consideration.

Despite the best intentions of District staff, the process and schedule for this AQMP has been altered and compressed, which has impaired stakeholders ability to effectively review and comment on key documents. Despite months of AQMP Advisory group and Scientific, Technical & Modeling Peer Review (STMPR) group meetings, the strategy outlined in the Draft AQMP released on 12 July was radically different from that which had been presented by District staff to public stakeholders only two weeks earlier. We cannot understand how such abrupt change of direction occurred given that EPA and CARB stakeholders were active participants in those Advisory and STMPR group meetings.

Then the Notice of Preparation/Initial Study required for compliance with the California Environmental Quality Act (CEQA) was released on 28 June. That document contained outdated information and other material errors which led to a revised NOP/IS having to be issued on 2 August. Despite that, stakeholders are being "strongly urged" to deliver their comments on the Draft AQMP by 31 August when it has already been announced that a brand new Draft AQMP is set to be released in mid-September with as-yet-unspecified changes. It seems unlikely that public comments submitted by 31 August could reasonably be considered prior to issuance of the second draft plan. Furthermore, the as-yet-unseen socioeconomic analysis and the Draft Environmental Impact Report (DEIR) won't be released until mid-September, yet the District continues to suggest this public process can be completed by December 2012.

W-11

This continued schedule compression has left stakeholders without sufficient time for review of AQMP products (those actually released, as well as yet to be released). Furthermore, District staff are not going to have sufficient schedule or resources to fairly consider and respond to stakeholders' comments. This is an unacceptable situation for a plan of such importance to the health and welfare of Southern Californians. The only available remedy for this condition is to relax the 2012 AQMP schedule to allow for full and proper consideration of stakeholder inputs and comments.

As for the 2015 AQMP, we would strongly encourage the District staff to defer debate on the region's ozone strategy for that plan and begin that public process much earlier. The District should confer with key stakeholders early to ensure the current AQMP process situation is not repeated.

8. Economic impacts need to be considered in the AQMP. The Draft AQMP has not provided sufficient information to stakeholders and decision makers. Information on the economic impacts of the AQMP should be released with sufficient schedule to allow proper review, comment, and decision making.

The regional air quality plan should strive to achieve our environmental objectives as cost efficiently as possible. And plan actually states that as an objective:

“...this Draft 2012 AQMP strives to identify the most cost-effective and efficient path to achieve federal clean air standards.”¹⁶

Stakeholders and the Governing Board need to have a full and (reasonably) complete understanding of the costs and benefits of the policy options before them. While the Draft AQMP provides some of this information, to date it has fallen short of providing an acceptable level of detail on the economic costs and impacts associated with the proposed plan. The cost analyses provided in this Draft AQMP have often been incomplete, deferred or summarily dismissed. The plan suggests certain control measures are cost effective without providing evidence to support those claims. And certain economic analyses, most notably the socio-economic analysis, are still yet-to-be-released. This is interesting given that one of the actions under the “AQMD Air Quality-Related Energy Policy” directed the following:

“Conduct appropriate socioeconomic studies to identify the societal costs and benefits for the implementation of zero and near-zero emissions strategies, including but not limited to, further electrification and impacts on businesses and jobs.”¹⁷

These studies have not been released to the public, leaving stakeholders and the Governing Board without sufficient information to consider important policy choices. We would suggest that the AQMP schedule needs to be revised (i.e., extended) to allow these important economic information to be released and sufficient time for stakeholders to review, understand, and comment on the economic information related to this plan. In the meantime, we reiterate our position that the SIP submittal for this 2012 AQMP should be limited exclusively to the PM_{2.5} attainment demonstration consistent with EPA requirements to allow proper consideration of the region’s next ozone strategy.

W-12

¹⁶ SCAQMD, Draft 2012 AQMP, p. ES-12.

¹⁷ SCAQMD, Draft 2012 AQMP, p. 10-3.

WSPA appreciates the opportunity to submit these general comments. As noted in our preamble, WSPA intends to submit detailed comments on specific measures contained in the Draft 2012 AQMP under separate cover. WSPA may submit additional comments during this process as the District staff release additional 2012 AQMP documents.

Please contact me with any questions at (310) 678-7782 or psenecal@wspa.org.

Sincerely,



Patty Senecal
Manager, Southern California Region and Infrastructure Issues
Western States Petroleum Association

Responses to Comment Letter W
WSPA

Response to Comment W-1:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the existing 1997 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond. While the District will need to adopt another ozone plan in 2015 to attain the 75 ppb standard by 2032, we cannot afford to delay implementation of the large “black box” in the existing approved 2007 AQMP (241 fpd NOx & 40 tpd VOC).

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NOx and VOC emission reduction commitments contained

in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment W-2:

AQMD staff agrees that the proposed PM_{2.5} control strategy is the most efficient path in achieving the 24-hour PM_{2.5} NAAQS, as well as providing co-benefits in equivalent NO_x emissions.

Response to Comment W-3:

You are correct in your conclusion that the short-term strategy outlined in the Draft 2012 AQMP that incorporates Control Measures BCM-01 and BCM-02 can provide the necessary air quality improvements to demonstrate attainment. As a result, CMB-01 has been removed from the short-term strategy and is listed now in the revised Draft 2012 AQMP as a contingency measure.

Response to Comment W-4:

As discussed in the responses to comment S2 and S6, the proposed 2 TPD NO_x RECLAIM emissions shave will be incorporated into the 2012 AQMP as a contingency emissions reduction measure to be triggered if the Basin does not attain the 24-hour PM_{2.5} standard in 2015. If not triggered, the 2 TPD shave will be rolled into the proposed Phase II BARCT rule amendment process. This process will undergo a full assessment of available technology, costs, affordability, and market impacts to the RECLAIM stakeholder community.

Response to Comment W-5:

The 2012 AQMP, as with all previous plans, does incorporate growth factors for all sectors of our economy, including the fossil-fueled power plants to meet future demand. Please also note that the revised Draft 2012 AQMP, except for a few technology demonstration measures, does not include any specific zero- and near-zero technology penetration targets that would necessitate commensurate adjustments to the baseline emissions. However, as future revisions to the AQMP begin to better define such

penetration targets, it would be reasonable to expect appropriate adjustments be accounted in emissions inventories and targets. During the BARCT evaluation phase, future needs for electrification will be considered.

Response to Comment W-6:

The District partially disagrees with the commenter. The commenter is correct by stating that the California H&SC requires the District to monitor the advancement of BARCT, and if BARCT advances the District is required to reduce the facility RTC holdings as if the equipment located at the RECLAIM facilities would be subject to applicable BARCT. The commenter however is incorrect by stating that the District cannot estimate the projected size of such shave in the AQMP until the District has completed the BARCT evaluations. The current reductions estimates were based on applicable BARCT established for non-RECLAIM sources. However, BARCT continually evolves as new technology becomes available. Therefore, the size of the shave may vary as a result of the rule making process. It is important for the RECLAIM facilities to know as soon as possible the potential impact of the shave and the direction that the District is heading so that the RECLAIM facilities can provide input and engage early in the development of the AQMP. As an example, the BARCT evaluations were refined continuously through the 2005 and 2010 RECLAIM rule development and resulted in larger shaves than those estimated in the 2003 and 2007 AQMPs.

Response to Comment W-7:

Staff plans to commence rule amendment for the RECLAIM NO_x Phase I contingency emissions reductions of 2 TPD in late 2012. The NO_x shave will target surplus unused RTC's currently in the NO_x RECLAIM market. The 2 TPD target represents approximately 25 percent of the un-used RTC's in the RECLAIM universe. While staff acknowledges that the economic turndown post 2008 had an impact on the RECLAIM market, the current RECLAIM market has approximately one third (8 TPD) of the total RTC's not being utilized which is a significant safety margin. Therefore, the 2 TPD shave proposed in the 2012 AQMP is expected to have only a minor impact on the program. The rule making process will undergo a fully transparent public evaluation of the potential for emissions reductions, and potential economic impacts.

Response to Comment W-8:

As discussed in response to comment S2, staff plans to commence the rule amendment process for the contingency measures in late 2012 targeting a midyear 2013 adoption date. Staff recognizes that this is an aggressive timetable; regardless every effort will be made to expedite the rule amendment process.

Response to Comment W-9:

U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. The attainment demonstration for the 1-hour ozone standard was analyzed and the results provided in a separate appendix to the 2012 AQMP for consideration of the Governing Board at the same time. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019, for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment W-10:

It is correct that Control Measure MCS-03 is a carry-over measure from the 2007 AQMP. Although the implementation of the control measure has already commenced in terms of gathering information from various facilities, the rulemaking process is far from being complete. Therefore, considering the importance of the control measure in evaluating the potential for additional emission reductions from the start-up, shut-down and turn-around operations and the strong desire and interest from the community to better quantify and reduce emissions from this source category, MCS-03 is included in the 2012 AQMP, which will help insure its enforceability.

Response to Comment W-11:

AQMD staff agrees that the 2012 AQMP development schedule was initially compressed. The attainment demonstration modeling could not begin until input data from SCAG’s 2012 RTP and CARB’s emissions inventories were available. AQMD staff has made every effort to provide all data and information to the public as soon as it became available in an open and transparent process. The review period for many of the documents has also been extended, additional workshops and regional public hearings have been added, and the Governing Board adoption hearing date has been delayed to December 2012. The AQMD staff is committed to providing sufficient time for public comment, and continues the enhanced outreach efforts to all stakeholders, while keeping the U.S. EPA submittal deadline of December of 2012 in mind.

Response to Comment W-12:

A socioeconomic report on the 2012 AQMP was released to the public on September 28, 2012, with a 45-day public review and comment period until November 12, 2012. The Revised Draft 2012 AQMP had been released three weeks earlier but the ability to comment was extended to overlap with the socioeconomic report comment period. The socioeconomic report provides the cost of the control measures, including capital,

installation, operation and maintenance. The socioeconomic analysis also determines the benefits to clean air as result of implementing the Plan, such as improved health, visibility and material, as well the job impact. The cost effectiveness (in terms of dollars per tons of emission reductions) of each control measure can be found in Appendices IV-A and IV-B if such data was available and/or applicable. Some control measures require technology assessment to establish emission reduction potential and control effectiveness before a cost effective value can be determined (e.g., dairy measure). The ranking of control measures based on cost effective values can be found in Chapter 6. Specifics on how the cost effective values were determined was made available to the public in early August after the July 2012 AQMP Advisory Group meeting and can be found at

http://www.aqmd.gov/gb_comit/aqmpadvgrp/2012AQMP/meetings/2012/july26/agenda.html.

X. Bear Valley Electric Service, August 31, 2012



August 31, 2012

Dr. Elaine Chang
Deputy Executive Officer
Planning, Rule Development, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

SUBJECT: Bear Valley Electric Service Comments on AQMD Draft 2012 Air Quality Management Plan

Dear Dr. Chang:

Bear Valley Electric Service (BVES) is pleased to submit the attached comments on the South Coast Air Quality Management District (AQMD) Draft Air Quality Management Plan (AQMP). We appreciate the opportunity to provide input before it is finalized.

BVES is a division of Golden State Water Company (GSWC), an investor owned utility (IOU). BVES provides electric distribution service to approximately 21,500 residential customers in a resort community with a mix of approximately 40 percent full-time and 60 percent part-time residents. Its service area also includes about 1,400 commercial, industrial and public-authority customers, including two ski resorts.

BVES purchases wholesale power to meet the majority of its energy requirements. To aid in meeting peak demand for electric energy, BVES installed and now operates the Bear Valley Power Plant (BVPP), a natural gas-fired, 8.4 MW generation plant in its service area. The BVPP became commercially operational on January 1, 2005.

BVES is supportive of the goals of the AQMP, including some specific AQMP measures. Listed in the attached are the chapters and measures that we believe are particularly relevant to BVES operations, as well as associated background information and comments. Some of the measures are goals that BVES either has been working toward already, or is willing to consider; others may not be appropriate for a small utility such as BVES. While we are interested in working with the AQMD, it is important to note that BVES is under the jurisdiction of the CPUC, and BVES' actions, therefore, must be approved by the CPUC prior to implementation.

If you have any questions or comments regarding the above, please feel free to contact me at (909) 866-4678.

Sincerely,

Tracey Drabant
Energy Resource Manager

Attachment: Bear Valley Electric Service Comments on the AQMD Draft 2012 Air Quality Management Plan

cc: Dennis Yates, South Coast AQMD
Ronald O. Loveridge, South Coast AQMD
Judith Mitchell, South Coast AQMD
Shawn Nelson, South Coast AQMD
Dr. Joseph K. Lyou, South Coast AQMD
Megan Buchanan, EN2 Resources, Inc.

P.O. Box 1547, 42020 Garstin Drive, Big Bear Lake, California 92315
Tel: (909) 866-4678 Fax: (909) 866-5056

Bear Valley Electric Service Comments on the
AQMD Draft 2012 Air Quality Management Plan

Bear Valley Electric Service (BVES) appreciates the opportunity to submit comments regarding the South Coast Air Quality Management District (AQMD) Draft Air Quality Management Plan (AQMP) that was released on July 19, 2012. Listed below are the chapters and sections that we believe are particularly relevant to BVES operations, as well as associated background information and comments. It is important to note that BVES is under the jurisdiction of the California Public Utilities Commission (CPUC), and BVES' actions, therefore, must be approved by the CPUC prior to implementation.

Chapter 4, EDU-1: Further Criteria Pollutant Reductions from Education, Outreach, and Incentives (page 4-29)

Background: BVES has made a number of attempts to work with its customers in the area through discussions regarding renewable energy and energy efficiency measures. In 2005, BVES' parent company (Golden State Water Company) installed a 165 kW solar array in Apple Valley that is still in operation. The energy is used onsite, with excess generation contributing to Southern California Edison's grid.

Comment: BVES has implemented several energy efficiency programs for its customers that have been in place since 2009. Also, if approved by the CPUC, in 2013 BVES will offer incentives via the Bear Valley Solar Initiative (BVSI). The BVSI will offer rebates similar to those offered by the California Solar Initiative. BVES maintains its interest in trying to work with energy users in its area to promote energy conservation and efficiency. BVES is also seeking approval for a solar demonstration project called the Green Zone (Phase I). The Green Zone would include a rooftop solar array at BVES' offices. BVES welcomes AQMD and other support that may facilitate cooperative initiatives in the future.

X-1

Chapter 4, ONRD-01: Accelerated Penetration of Partial Zero-Emission and Zero-Emission Vehicles (page 4-31)

Background: BVES has been transitioning into the CPUC-adopted policies of AB 32. BVES evaluates, at least annually, how best to reduce its carbon footprint. BVES recently purchased hybrid vehicles as part of its fleet. BVES has considered purchasing some all-electric vehicles as part of its fleet, but due to BVES' service territory requiring 4-wheel drive capability during the winter season, and because all-electric vehicles are predominantly 2-wheel drive, BVES cannot yet justify acquisition of electric-only vehicles at this time.

Comment: BVES would be willing to consider potential electrification of a portion of its fleet. Additionally, BVES would be willing to work with the AQMD to investigate the options for installing a Plug-in Electric Vehicle (PEV) station for public use. A potential first step may be to design and send a survey to BVES customers to determine local interest in PEVs. Electricity rate structures that incentivize off-peak charging and other electricity use would be a major consideration for helping BVES to balance its loads and resources. Any changes to existing customer rate structures would require approval from the CPUC.

X-2

Chapter 4, Reductions from District's Stationary Source Control Measures (page 4-41)

Background: Appendix A-IV includes proposed measures for the reduction of pollutants from stationary sources that contribute to ozone, including VOC, NOx, and PM. In reviewing the appendix, it appears (Table IV-A-2) that measure MCS-03 applies to all stationary sources that involve start-up, shutdown, and related operations where emissions are not currently well understood. However, the corresponding discussion section for MCS-03 later in the appendix seems to apply only to refinery flares and similar operations.

Comment: BVES requests that the AQMD clarify that measure MCS-03 applies only to refinery and similar processes, and does not more generally apply to all stationary sources that have start-up and shutdown operations. BVES' Bear Valley Power Plant is a natural gas-fired peaking plant, and energy generation from its operations is not similar to refinery operations. BVES believes it is possible that the AQMD did not intend to include all stationary sources as part of MCS-03. If the AQMD did intend to include all stationary sources, then BVES requests that it become a member of the working group(s) that inventory, assess, and develop recommended control measures for start-up and shutdown operations.

X-3

Chapter 10, Efficiency Incentives and Financing (page 10-22)

Background: There are two basic forms of demand-side management. These are energy efficiency and demand response. BVES does not currently have a formal demand response program. In California, there are two general types of ratepayer funded energy efficiency programs. Those programs are low-income energy efficiency (LIEE), which provides direct install energy efficiency upgrades for income qualified residential customers; and non-income specific residential and nonresidential energy efficiency financial incentives/rebates (EE). BVES has offered the LIEE program since 2002 (now called Energy Savings Assistance, or ESA, Program); in its 2009 general rate case decision, BVES received approval to offer ratepayer funded EE rebate programs. BVES' non-low income EE Programs are designed to replace specific customer equipment (lighting, refrigeration, etc.) with more efficient equipment. These programs are now fully operational.

Comment: BVES already has an aggressive energy efficiency program. BVES is willing to consider expanding its programs further to incorporate additional, targeted activities that could contribute to the AQMD's goals of improving air quality in the South Coast Air Basin. Implementing such actions, as noted above, would be subject to the approval of the CPUC.

X-4

Chapter 10, Southern California's Energy Future (page 10-23)

Background: As noted above, if approved by the CPUC, in 2013 BVES will offer incentives via the Bear Valley Solar Initiative (BVSI). BVES is also seeking approval for a solar demonstration project called the Green Zone (Phase I).

Comment: If approved by the CPUC, the BVSI will offer rebates similar to those offered by the California Solar Initiative. The Green Zone would include a rooftop solar array at BVES' offices. As part of its Green Zone, BVES would be willing to consider adding a small demonstration wind turbine (Phase II) to further increase public education and awareness, and would also be willing to consider adding a location where the public can properly dispose of CFL light bulbs.

X-5

Chapter 10, Transformation of the Energy Sector (page 10-25)

Background: As noted above, BVES has made a number of attempts to work with customers regarding renewables and energy efficiency measures. BVES continues to support programs that help achieve air quality and energy goals.

Comment: BVES maintains its interest in participating in AQMD efforts that promote energy efficiency and renewables. BVES requests that it be notified in advance regarding upcoming opportunities to contribute to AQMD meetings, conferences, and workshops, including interagency working groups, and welcomes AQMD and other support that may facilitate cooperative initiatives in BVES' service territory in the future.

X-6

Responses to Comment Letter X
Bear Valley Electric

Response to Comment X-1:

Implementation of renewable energy projects such as the one mentioned are good examples of clean air and energy projects to be promoted. We will contact utilities with any support we might provide to incentivize these types of projects through utilities.

Response to Comment X-2:

Staff appreciates BVES's offer to partner to further expand the deployment of zero-emission vehicles in the Bear Valley region. Staff will keep BVES apprised of such opportunities.

Response to Comment X-3:

Control measure MCS-03 is carried over from the 2007 AQMP. Although the initial scope of review for startup, shutdown and turnaround activities is likely to focus on the minimization of potential flaring emissions at refineries, staff believes that it is possible to develop procedures that can lead to optimization, operational efficiency and emission minimization opportunities applicable to other industries.

The District approach under MCS-03 would be to initially focus on better quantifying emission impacts from startup, shutdown and turnaround activities at refineries, as well as analyzing emission reduction potential. Should the results of these analyses and emission assessments warrant further investigation, a review of potential emission reduction efforts would follow, including a determination of the applicability to other industries. Any subsequent rulemaking efforts would include technical feasibility, socioeconomic impact, and environmental impact assessments, including safety considerations, and certainly involve outreach to affected stakeholders.

Response to Comment X-4:

Staff appreciates your support on this measure and will work with utilities during implementation.

Response to Comment X-5:

Adding a wind turbine for educational purposes and cfl recycling program are good educational and resource components under this measure. As this measure is implemented we will keep these in mind and partner with utilities.

Response to Comment X-6:

We will provide outreach to inform utilities, the public, and other stakeholders in advance regarding meetings, conferences/forums, and workshops relating to implementation of this measure.

Y. Southern California Edison, August 31, 2012

August 31, 2012

Dr. Barry Wallerstein
Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: 2012 Air Quality Management Plan

Dear Dr. Wallerstein:

Southern California Edison (SCE) appreciates the opportunity to comment on the South Coast Air Quality Management District's (District) proposed 2012 Air Quality Management Plan for PM_{2.5} (Plan or AQMP) and additional early action measures for ozone (Early Action Measures). Moving the District's air basins into attainment is a step toward improved air quality and improved economic growth by increasing the ability of businesses to operate in this region. The District's proposed Plan is an effective set of control measures that if adopted into rules by the District and other agencies will lead the region toward attainment with the National Ambient Air Quality Standards (NAAQS) for PM_{2.5} through cleaner transportation and stationary source technologies. SCE recognizes that adopting the control measures in the AQMP is the first step in the process through which the District, CARB and other agencies will develop the control measures into proposed rules, and that the rulemaking process is the point at which the detailed examination of issues such as cost-effectiveness, feasibility, total cost, environmental impacts and "upstream" energy sectors impacts will occur. SCE also recognizes that many control measures will not become rules but instead require the District and stakeholder community to secure additional funding sources to enable research, development and demonstrations as well as education programs and incentive based commercialization programs. SCE supports this overall direction and effort to bring the region into attainment with NAAQS.

Regarding the Early Action Measures, SCE shares the concerns expressed by CCEEB regarding the legally binding reductions associated with the measures (not with the concepts in the measures). CCEEB is suggesting an alternative approach in which, if these reductions were not met, other sources in the District would not be penalized. We believe this approach is worthy of exploration.

SCE also recognizes that, occasionally, past control measures have not been developed successfully into rules because of issues discovered in the rulemaking process, and that the result was that other rules on different source categories or new incentive programs were developed to replace the emission reductions from the original proposed measures. Given this challenging situation, SCE will continue to work with the District, community stakeholders, and other agencies to determine the most cost-effective, least impact rules resulting from the control measures in this AQMP and to secure funding for cost-effective pollution reductions from incentive programs.

Y-1

Additionally, SCE stresses the need for reform of the New Source Review requirements. The current emission reduction credit (ERC) shortage has resulted in the lack of ability to site new needed natural gas fired electric generation. Unless this problem is resolved, the reliability of the region's electric supply system is at significant risk. Moreover, the District's vision of relying more on electricity to provide clean power for the transportation sector will be threatened. SCE is participating in the Regulatory Flexibility Group represented by Latham & Watkins to develop alternatives to the present NSR process to achieve the goals of the Clean Air Act. The District should look closely at these methods and integrate the ideas into the District's approach to make needed changes to the program.

Y-2

SCE is working with the District to facilitate development of goods movement electrification and public awareness for plug-in electric vehicles. These two programs complement the direction taken in the AQMP for PM_{2.5} reduction measures, and in the Early Action Measures for ozone reduction. We also are collaborating with the District and the Southern California Association of Governments (SCAG) to develop plans for new infrastructure for the next AQMP in 2015.

As SCE mentioned in our September 2011 letter on the District's draft Air Quality Related Energy Policy, we believe it is important for the District to work with other state agencies to ensure there is consistency in the state's energy and environmental policies. The District continues to demonstrate inter-agency collaboration in this AQMP and the related Vision for Clean Air process. SCE reiterates our interest working with the District and other agencies to examine complex issues holistically, especially in the rule development process in order to help understand both the positive role that electricity can play in helping meet NAAQS attainment and the impacts of proposed rules on the operation and affordability of the electric energy supply system.

We look forward to continued work with the District on this AQMP and Early Action Measures. Our comments on some specific parts of the Plan follow.

1. Support for Further Controls on Emissions from Berthing of Ships and Port Drayage Trucks

SCE supports control measure ONRD-05, that calls for CARB to develop a new rule by 2015 to require port drayage trucks that service rail yards within five miles of the port to have zero-emission miles by 2020. We also note that four of the five suggested technologies will have significant impacts on the electricity grid, and recommend the examination of this and related "upstream" issues in the rule-development process.

If the grid-connected approach is found to be the preferred approach in the rule development progress, then we note the need to also solve the shortage of ERCs which makes the siting of new generation (likely needed to support ONRD-05) very difficult in the South Coast Air Basin.

SCE supports control measure OFFRD-05, that calls for CARB, SCAQMD, and the San Pedro Bay Ports to develop a rule which, through grid connection or alternative means, further reduces emissions from ocean-going marine vessels while at berth. As with ONRD-05, impacts on the grid and the requirements for adequate generation will need to

Y-3

be examined in the rule development process. SCE also supports the proposed backstop rule for the ports (IND-01).

2. Support for Early Actions to Deploy Advanced Control Technologies

SCE supports the efforts to accelerate the commercialization of advanced control technologies, including the aforementioned electrification technologies in control measures ADV-01, ADV-02, ADV-03, ADV-04, and ADV-06. SCE can provide assistance, as appropriate, to the District regarding aspects of the draft early action control measures' proposed actions, including:

- o Seeking of funding sources
- o Evaluation of technology options and funding mechanisms
- o Demonstrations
- o Deployments and field evaluation / testing
- o Working groups that will examine electrification among other alternatives, and
- o Technology symposiums.

Commercializing new technologies is not easy. The normal process of research, development, prototypes, field testing/demonstrations, and large-scale deployment must be implemented. The AQMP has thoughtfully considered the complexity of the issues and processes and provided time for each stage.

Y-4

3. Support for Continuation and Expansion of Incentive Funds

SCE supports control measures (ONRD-01 and ONRD-03) to extend or supplement the funding of two existing CARB rebate programs (HVIP and CVRP) in order to encourage the purchase of the cleanest on-road vehicles. These programs are important because they encourage the transition to near-zero and zero-emission vehicles.

SCE supports control measures (ONRD-02 and ONRD-03) to fund accelerated retirement of older light-, medium-, and heavy-duty vehicles with a focus on small fleets and/or vehicles that are high-emitting in between smog check tests. SCE similarly supports the similar control measures for off-road equipment (OFFRD-01 and MSC-04C). We further request the inclusion of a sliding-scale incentive in the final control measures, when outlining the design of the proposed voucher program for purchase of a replacement vehicle or equipment. The replacement voucher should provide a larger incentive for the purchase of near-zero and/or zero-emission vehicles/equipment and use a definition that considers multiple environmental issues.

Y-5

4. Support for Continued Education and Outreach

SCE supports EDU-01, which will be used to educate the general public on the environmental benefits of energy-efficiency measures, and the environmental impacts of using high-VOC solvents and cleaners. The general public, in most cases, does not see the clear benefit to air quality that results from their own reduced energy use. We believe this education program will help the public understand this critical connection. In many cases the general public is not aware of the effects caused by the use of certain cleaning products and coating materials. Education on the contribution of VOCs to

Y-6

ozone creation would allow for well-informed consumers to understand the need for changes in cleaning solvents and coatings in order help reduce harmful air pollutants.

SCE also supports education outreach on the use of plug-in electric vehicles and battery electric vehicles as a means to reduce air pollution and move the South Coast Air Basin toward attainment with the NAAQS. Education and outreach in this area would be in agreement with the goals of the District's 2011 Air Quality Related Energy Policy.

Y-6

5. SCAG Control Measures (Appendix IV-C)

With regard to Appendix IV-C, Regional Transportation Strategy and Transportation Control Measures (TCMs), many of the strategies and TCMs improve efficiency of the existing system and would have no impact on SCE operations. However, the measures in Appendix IV-C call for more than \$150 billion in capital improvements (funded and unfunded) to the local transit, commuter, and high-speed rail and goods-movement systems (pages 7-8), many of which include a "zero or near-zero" emissions component. As noted above, this expansion of electric transportation would have an impact on the electric system and the need for new transmission, distribution and generation, and is yet another example of the need to address New Source Review reform. Another issue that is not clear from TCM Emissions Tables 1 & 2 is whether the District has accounted for emissions from the construction and operation of energy infrastructure to feed the increase in electric, natural gas, and other alternative fuels. While page 10 of the appendix recognizes the need for improved infrastructure planning and investment to support alternative-fueled vehicles, it does not discuss if any TCMs will be updated or amended to account for and support the development of the required infrastructure.

Y-7

SCAG is a strategic partner in a regional effort to accelerate fleet conversion to near-zero and zero-emission transportation technologies. A significant expansion of alternative-fuel infrastructure is also needed throughout the region to accommodate the anticipated increase in alternative-fueled vehicles. SCE is working with SCAG and the District to develop a framework for the necessary infrastructure changes.

SCE encourages the District to support development of infrastructure for alternative-fueled vehicles as part of future TCMs in the 2015 AQMP. Example locations include destination locations or locations such as park-and-ride lots where vehicles park for long period. Future TCMs could also include monetary or non-monetary incentives to encourage infrastructure for zero and near-zero emission transportation. Similarly SCE urges consideration of publicly accessible car-share services to serve as a critical component to completing the "last mile" of trips taken by transit.

6. SCE Supports INC - 01

This proposal will incentivize conversion to near-zero and zero-emission technology for boilers, water heaters, and space heating. These technologies, if developed, could have a significant impact in reducing criteria pollutant emissions. SCE looks forward to the development of this control measure and the introduction of new technology in this area.

Y-8

7. SCE Supports INC - 02

The Southern California region is still suffering the effects from the economic downturn. This control measure would seek to address that by calling for incentives for companies to manufacture zero-and near-zero emission technologies locally. Specifically, the incentives are to include expedited air permits and facilitation of the applicable CEQA documents. The call for accelerated permitting for these new technology projects is an important element for success since there are substantial costs associated with delays during the permitting process.

Y-9

8. Define the Term "zero emissions" Broadly to Include Other Environmental Considerations

The AQMP appropriately recognizes the interrelatedness of air quality and air toxics issues with other environmental issues such as climate change and water quality. SCE recommends the AQMP continue to do this by defining the term "zero emissions" in a broad manner so as to include other environmental considerations. Similarly, the term "near-zero-emissions" should be defined in a broad manner, but keep the AQMP's flexibility to define "near-zero" differently for different control categories.¹

Y-10

Southern California Edison appreciates the work that has been put into the AQMP and we look forward to working closely with the District during the rulemaking process.

Sincerely,

Michael Hertel

¹ Draft 2012 AQMP Appendix IV-B-5.

Responses to Comment Letter Y
Southern CA Edison

Response to Comment Y-1:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the existing 1997 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond. While the District will need to adopt another ozone plan in 2015 to attain the 75 ppb standard by 2032, we cannot afford to delay implementation of the large “black box” in the existing approved 2007 AQMP (241 fpd NOx & 40 tpd VOC).

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NOx and VOC emission reduction commitments contained

in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment Y-2:

District staff is committed to continue to work with all stakeholders in exploring and evaluating alternative approaches and/or enhancements that will ensure the long-term viability of the New Source Review program in meeting the Clean Air Act goals and future demands of our region.

Response to Comment Y-3:

Staff appreciates SCE’s support for the ozone implementation measures. As these measures are implemented, the energy demands and capacity will be analyzed and further actions may be needed to enhance current infrastructure. Such analyses will be conducted with all stakeholder input.

Response to Comment Y-4:

See Response to Comment Y-3.

Response to Comment Y-5:

The incentives measures provided in the AQMP recognize on-going funding programs and the need for such programs in the 2015 – 2023 timeframe. The on-going funding programs do contain a “sliding scale” for funding cleaner technologies. We would expect to have a similar approach with any new programs.

Response to Comment Y-6:

We appreciate your support for this control measure and willingness to work with AQMD on implementing this measure.

Response to Comment Y-7:

Staff appreciates the comments regarding the need to expand the alternative fuel infrastructure. By definition in EPA's conformity rules, TCMs are projects and programs that reduce emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Per the U.S. EPA's Transportation Conformity Regulations, vehicle technology-based, fuel-based, and maintenance-based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs.

For the next South Coast Ozone SIP, SCAG will consider holding interagency consultation via SCAG's Transportation Conformity Working Group to discuss whether monetary or non-monetary incentives to encourage infrastructure for zero and near-zero emission transportation could be considered as TCMs.

Response to Comment Y-8:

We appreciate support for this measure and developing/implementing zero and near-zero new technologies.

Response to Comment Y-9:

The District recognizes the effects of the recent recession (see Chapter 1) and has strived to develop a cost-effective control strategy that seeks necessary emission reductions from actions with minimal impact on affected sources and the economic recovery effort. Creative measures, such as INC-02, have been developed to incentivize the manufacturing zero and near-zero emission technology by easing the potential burden of the permitting and CEQA process. We appreciate your support.

Response to Comment Y-10:

Staff appreciates the comments regarding the definitions of zero and near-zero emission technologies. As indicated in the ADV measures, staff is seeking every opportunity to commercialize and deploy zero-and near-zero emission technologies as early as possible and where such opportunities are most appropriate.

Z. Orange County COG, August 31, 2012



- Orange County Council of Governments
- Member Agencies
- Aliso Viejo
- Anaheim
- Brea
- Buena Park
- Costa Mesa
- Cypress
- Dana Point
- Fountain Valley
- Fullerton
- Garden Grove
- Huntington Beach
- Irvine
- La Habra
- La Habra
- La Habra
- Laguna Beach
- Laguna Hills
- Laguna Niguel
- Laguna Woods
- Lake Forest
- Los Alamitos
- Mission Viejo
- Newport Beach
- Orange
- Pasadena
- Rancho Santa Margarita
- San Clemente
- San Juan Capistrano
- Santa Ana
- San Ramon
- Stanton
- Tustin
- Vista Park
- Westminster
- Yorba Linda
- County of Orange
- CCTA
- 7CA
- OC Sanitation District
- ISDOC
- South Coast AQMD

August 31, 2012

Dr. Barry Wallerstein
 South Coast Air quality Management District
 21865 Copley Drive
 Diamond Bar, CA 91765

Subject: Comments of the Draft 2012 Air Quality Management Plan and Notice of Preparation

Dear Dr. Wallerstein:

The Orange County Council of Governments (OCCOG) welcomes its responsibility to comment on the Draft 2012 Air Quality Management Plan (AQMP) and Notice of Preparation (NOP). Additionally, efforts to reach out to Orange County local jurisdictions and stakeholders by the South Coast Air Quality Management District (AQMD) staff and yourself have been well received.

Given the timing of the 2012 AQMP comment period, the comments below have not been considered by the full OCCOG Board of Directors. The OCCOG Technical Advisory Committee and an ad-hoc group of local jurisdiction have reviewed the draft and their input is included below. We have also collaborated on further review with other stakeholders such as the Association of California Cities-Orange County. I believe these preliminary comments to be a reflective consensus review of OCCOG's 39 member agencies based on what we know to date. As additional information related to the AQMP is released, we may have additional comments.

1. OCCOG is concerned that some required documentation related to the AQMP is, as of the writing of this letter, still not available for review. Specifically the socio-economic report has yet to be released. This document is crucial for local jurisdictions to review. OCCOG requests that all AQMP support documents be released as soon as possible and that the public comment period be extended an additional 45-days to allow for required review and comment. While it is unclear as to when comments are officially due, we have been told by AQMD staff that comments received by August 31, 2012 will be responded to. OCCOG desires to have a response to our comments.



Z-1

Dr. Barry Wallerstein
August 31, 2012

2. The draft 2012 AQMP is required to address PM 2.5, not ozone, yet ozone is addressed throughout the draft 2012 AQMP. This is distracting to the primary review. It is recommended that the references to ozone and the proposed control measures to address ozone be postponed for further discussion of the 2015 AQMP.
3. Should the AQMP continue to include references to ozone and control measures, we strongly suggest that they are included in an appendix to the document and not in the AQMP itself. Further, OCCOG requests that it be clearly stated throughout the document and in any adopting resolution that the ozone control measures are strictly VOLUNTARY.
4. OCCOG is also interested in how ozone control measures will be addressed in the Draft Environmental Impact Report (DEIR). Since the ozone control measures are voluntary, they should not be included as mitigation measures in the DEIR but should be referenced in an appendix as Best Management Practices that can be voluntarily implemented.

Z-2

Z-3

Z-4

Again, OCCOG appreciates the opportunity to provide preliminary comments on the 2012 AQMP and NOP. We look forward to working with AQMD on a final plan that balances environmental stewardship with the need for projects and programs needed to keep Orange County moving forward. We look forward to receiving your response to our comments.

Respectfully,


Leroy Mills
OCCOG Chairman

cc: OCCOG Board of Directors

Responses to Comment Letter Z
OCCOG

Response to Comment Z-1:

AQMD staff agrees that the 2012 AQMP development schedule was initially compressed. The attainment demonstration modeling could not begin until input data from SCAG's 2012 RTP and CARB's emissions inventories were available. AQMD staff has made every effort to provide all data and information to the public as soon as it became available in an open and transparent process. The review period for many of the documents has also been extended, additional workshops and regional public hearings have been added, and the Governing Board adoption hearing date has been delayed to December 2012. The AQMD staff is committed to providing sufficient time for public comment, and continues the enhanced outreach efforts to all stakeholders, while keeping the U.S. EPA submittal deadline in December of 2012 in mind.

Response to Comment Z-2:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the existing 1997 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically adopted in regulatory form at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called "black box" emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond. While the District will need to adopt another ozone plan in 2015 to attain the 75 ppb standard by 2032, we cannot afford to delay implementation of the large "black box" in the existing approved 2007 AQMP (241 fpd NOx & 40 tpd VOC).

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NO_x and VOC emission reduction commitments contained in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment Z-3:

Please refer to response to comment Z-2 with regard to the ozone control strategies and measures.

Response to Comment Z-4:

Since the ozone control measures are included as part of the 2012 AQMP, they are analyzed under CEQA in the same way that the PM_{2.5} control measures are analyzed. They are not treated as mitigation measures nor are they treated as best management practices. Regardless of whether or not the ozone control measures are voluntary measures, the analysis takes a conservative approach, uses the assumptions regarding affected sources in the control measure, and analyzes potential environmental impacts accordingly. This approach is consistent with CEQA requirements to analyze the project in its entirety. In addition, the CEQA document does include an alternative of a PM_{2.5} control only strategy.

AA. John Wayne Airport, August 31, 2012



August 31, 2012

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4182
2012aqmpcomments@aqmd.gov

Via E-Mail

Re: Draft 2012 Air Quality Management Plan

To Whom It May Concern:

This letter is submitted on behalf of the County of Orange ("County") in its capacity as the owner and operator of John Wayne Airport, Orange County ("JWA"). This letter contains JWA's written comments on the Draft 2012 Air Quality Management Plan ("2012 AQMP") issued by the South Coast Air Quality Management District ("SCAQMD" or "District") in July 2012. JWA appreciates the opportunity to comment on the 2012 AQMP, which is an important planning and regulatory document for purposes of improving air quality in the South Coast Air Basin. In order to advance the overall objectives of the District, and the 2012 AQMP, JWA offers the following comments:

A. ABSENCE OF AIRPORT-SPECIFIC INVENTORY DATA

As noted in our July 27, 2012 comment letter on the District's Notice of Preparation and Initial Study for the 2012 AQMP, in early May 2012, JWA provided the District with aircraft activity data specific to JWA for incorporation into the 2012 AQMP. JWA provided additional airport-specific data in a number of enclosures to its July 27 letter. In light of JWA's good faith efforts to provide accurate baseline information on airport operations, we anticipated that the 2012 AQMP would include emissions inventories specific to the aviation sector on an airport-by-airport basis.

However, based on our review of the 2012 AQMP, it is difficult to discern whether the airport-specific data provided by JWA was utilized when preparing the aviation forecasts. There is little information in the 2012 AQMP on the aviation forecasts; and, JWA is not broken out in the forecasts as all aviation sector emissions – from 43 airports – are reported on a combined basis.

Relative to the emissions estimate for the 2012 AQMP's 2008 base year, page III-1-15 of Appendix C states that the "sources of activity data included airport operators (for several commercial and military airports), Federal Aviation Administration's (FAA) databases ..., and SCAG's projections." Relative to future emission projections, as provided on page 3-9 of the 2012 AQMP:

"For commercial air carrier operations, SCAG's 2035 forecast, which is consistent with the forecast adopted for the 2012 RTP, reflects the future aircraft fleet mix. The emissions calculation methodology is primarily based

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on the application of FAA's [EDMS] model for airports with detailed activity data for commercial air carrier operations (by aircraft make and model). For other airports and aircraft types (i.e., general aviation, air taxi, military), the total number of landing and takeoff activity data is used in conjunction with the U.S. EPA's average emission factors for major aircraft types (e.g., general aviation, air taxi, military)."

Further, Appendix III of the 2012 AQMP states that "[a]ircraft GHG emissions were determined from jet fuel consumption in California from the Energy Information Administration. The fuel consumption for the Basin was obtained by a ratio of the SOx emissions for the state and the Basin."

As a result of the ambiguities concerning what aircraft activity data specific to JWA was utilized in preparing the emissions inventories presented in the 2012 AQMP, JWA authorized one of its consultants – Fred Greve of Landrum & Brown – to contact SCAQMD and request additional information regarding the emissions inventories' data inputs. On August 28, 2012, Mr. Michael Krause (SCAQMD) provided Mr. Greve with a copy of the *Aircraft Emissions Inventory For 2008 and 2035* (August 2012) prepared by Integra Environmental Consulting, Inc. ("Integra Report") for the District.

Because Mr. Greve did not receive the Integra Report until three days before the close of the public comment period on the 2012 AQMP, JWA is not able to provide detailed comments on the assumptions utilized in preparing the 2012 AQMP's emissions inventories at this time. However, JWA will expeditiously review the Integra Report and anticipates providing additional comments, as necessary, by Friday, September 7, 2012.

B. CONTROL MEASURE REQUIRING FURTHER EXPLANATION

Based on our review of the control measures outlined in the 2012 AQMP, we also have the following specific comment.

ADV-07, Actions For The Deployment Of Cleaner Aircraft Engines, calls for the District to "work with the airlines and local airport authorities to *develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin.*" (2012 AQMP, p. 4-40; italics added.) The parameters of this measure need to be better explained in order to verify that the regulatory purview of the District and local airport authorities is not being incorrectly described because neither the District nor airport operators can ensure that only the "cleanest aircraft" operated by commercial airlines serve the basin; such a requirement would trigger federal preemption and interstate commerce implications.

AA-1

AA-2

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In 2010, and as acknowledged in the 2012 AQMP (page 4-40), the FAA initiated the Continuous Lower Energy, Emissions and Noise ("CLEEN") Program. The CLEEN Program is designed to spur the creation of aircraft technology that reduces fuel burn, energy consumption, greenhouse gas emissions, NOx emissions associated with the landing-and-takeoff cycle, and noise. To the extent that ADV-07 is intended to provide support for the CLEEN Program, JWA has no immediate objections. However, to the extent that ADV-07 is intended to impose some other affirmative obligation on the District or local airport authorities to regulate the aircraft fleet mix serving the South Coast Air Basin, JWA objects to the measure as being incompatible with the jurisdictional authorities and powers of both the District and airport owners/operators. Therefore, JWA requests that the 2012 AQMP be revised to provide more information on the ultimate intent of ADV-07.

AA-2

C. EXPANDED SCOPE OF 2012 AQMP

As provided in the 2012 AQMP's Preface, the "primary task" of the 2012 AQMP is to bring the South Coast Air Basin into attainment with the federal National Ambient Air Quality Standards ("NAAQS"). This particular AQMP is focused on achieving the U.S. Environmental Protection Agency's NAAQS for fine particulate matter ("PM_{2.5}") by 2014, and ozone by 2023. Nonetheless, the scope of the 2012 AQMP is broader than its stated regulatory purpose. More specifically, the 2012 AQMP includes two chapters – Chapter 9 (Near Roadway Exposure and Ultrafine Particles) and Chapter 10 (Energy and Climate) – that address issues beyond the current regulatory framework established by the U.S. Environmental Protection Agency via the NAAQS program, including ultrafine particles, black carbon, and greenhouse gases.

JWA supports further study and evaluation of ultrafine particles, black carbon, and greenhouse gases so that future regulatory or rulemaking efforts, if any, are fully informed. That being said, JWA is concerned about the inclusion of such discussion in the 2012 AQMP, and fears that it may confuse the public regarding the current scope of regulated pollutants. Therefore, JWA encourages the District's Board to adopt a focused, on-point AQMP that exclusively addresses achievement of the PM_{2.5} and ozone NAAQS; the issues addressed in Chapters 9 and 10 of the current draft of the 2012 AQMP then can be separately addressed through the consideration and adoption of stand-alone policy documents considered by the Board.

AA-3

JWA also supports such a bifurcated approach in light of the expedited public review and hearing process that District staff has identified for the 2012 AQMP. Stated differently, while the federal Clean Air Act requires submittal of a plan by December 14, 2012 outlining how the District will achieve the NAAQS for PM_{2.5} in the South Coast Air Basin (see 2012 AQMP, p. ES-2), there is no such deadline for ultrafine particles, black carbon, and greenhouse gases, which are not regulated by NAAQS. We believe it would be prudent for the District and the stakeholders to focus their attention on NAAQS achievement within the narrow window of time available; other air quality-related issues can be addressed via a separate and subsequent process.

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In closing, JWA thanks the District again for this opportunity to comment on the 2012 AQMP. We look forward to engaging in an open, thorough and responsive public process on the 2012 AQMP, and continuing to assist the District with its efforts to improve air quality in the South Coast Air Basin. If you have any questions regarding the comments set forth in this letter, please do not hesitate to contact me at your convenience.

Sincerely,



Alan L. Murphy
Director

ALM:kr

cc: Vice Chair, Shawn Nelson, Orange County Board of Supervisors
Michael Krause, South Coast Air Quality Management District

Responses to Comment Letter AA
John Wayne Airport

Response to Comment AA-1:

AQMD staff has revised the draft emissions inventory to reflect the updated information provided by the airport authority.

Response to Comment AA-2:

Control measure ADV-07 recognizes the efforts with the CLEEN Program to develop cleaner aircraft engines. However, in order to route cleaner aircraft to region, the AQMD staff is proposing to work with the local airport authorities to determine if there are mechanisms, which may include incentives, that will bring cleaner aircraft to the region. We recognize that this effort will involve state and federal agencies and the airlines.

Response to Comment AA-3:

Chapters 9 and 10 of the Draft 2012 AQMP are informational only, and do not contain any SIP-related commitments. As you state, the issues surrounding GHG emissions and near roadway exposure to non-regulated pollutants such as ultrafine particles and black carbon are important topics of concern to Southern California residents. These chapters merely provide background information to inform potential future actions. In Chapter 9, it is clearly stated that ultrafine particles are as yet unregulated in the U.S. One of the main purposes of Chapter 10 is to describe the air quality implications of California's regulatory GHG programs. The Energy discussion in Chapter 10 is a direct follow up to our Governing Board's Air Quality-Related Energy Policy adopted last year, and the inclusion of Chapter 10 in the AQMP is one of the specific actions (Action 10) called for in this Policy. Therefore, we feel these chapters help to educate, rather than confuse, the public regarding the information and current regulatory framework for these pollutants.

BB. California Council for Environment and Economic Balance (CCEEB), August 31, 2012



California Council for Environmental and Economic Balance

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August 31, 2012

Elaine Chang, Dr. P.H.
SCAQMD
21865 Copley Drive
Diamond Bar, CA 91765

RE: Initial Comments – 2012 Draft AQMP

Dear Dr. Chang,

The California Council for Environmental and Economic Balance (CCEEB) is a coalition of business, labor and public leaders that strives to advance collaborative strategies that protect public health and the environment while allowing California's economy to grow. CCEEB greatly appreciates the time that you, Dr. Wallerstein and your staff have spent with CCEEB and other stakeholders in developing the draft 2012 Air Quality Management Plan. The following are CCEEB's initial comments.

Scope

EPA requires the SCAQMD to submit a 2012 AQMP to show attainment of the 2006 24-hour PM_{2.5} standard by 2014. EPA does not require this plan to address ozone. CCEEB is well aware of the enormous challenge facing the District with regard to ozone, but we are highly concerned about including an "early action" ozone strategy with associated legally binding emissions reductions when not required by EPA.

A good example of our concern can be found with Proposed Control Measure OFFRD-01 "Extension of the SOON (Surplus Off-Road Opt-In for NO_x) Provision for Construction/Industrial Equipment." It commits the District to a 7.5 tpd NO_x reduction by 2023. This is a highly ambitious goal (half the inventory for this category) that relies on \$30 million per year of incentive funding. The District has no history of achieving reductions of this magnitude from one source category in such a short time. Our concern is not with the measure, but with the legally binding commitment as part of the State Implementation Plan (SIP). If the funding source for this program falls short, it is unlikely the reductions will be met. If this were to occur, the District would be required to make up the shortfall by turning to other sources. We suggest that the staff recommendation to the Board should identify this control measure, as well as all control measures in the ozone strategy (with suggested changes), as a locally approved measure only, and not submitted to EPA as part of the SIP. As a locally approved measure, other

BB-1

Elaine Chang, Dr. P.H.
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sources in the District would not be penalized for failure to achieve targeted reductions under this measure.

CCEEB is aware that as a result of a court order, EPA staff is close to providing the District with guidance, a SIP call or other information associated with the federal one-hour ozone standard. Should that material influence our views on this AQMP, we will notify you in a timely manner.

With regard to scope and SIP submittal for this plan, CCEEB recommends the following:

- For the PM_{2.5} - 24 hour standard, adopt the plan (with suggested changes) and include as part of SIP.
- For measures in the ozone strategy, keep them in plan (with suggested changes) and seek Board approval as locally approved measures, but do not include them in the SIP.

RECLAIM

CCEEB has several comments with regard to RECLAIM. Our primary concern is the multiple shaves in the NO_x RECLAIM market over the next few years. The Southern California economy is slowly recovering from recession. Particularly in this fragile period, businesses in the RECLAIM program want greater certainty in order to plan needed emission reduction programs and to assess the market. As currently proposed, facilities would face a 2-3-tpd shave in 2014. In a second phase, staff would determine the amount of the shave through an extensive BARCT analysis. An additional shave will likely be included as a control measure in the 2015 AQMP. Finally, as discussed above, we have yet to see the SIP call for the one-hour ozone standard, and we are concerned that it may result in a RECLAIM shave as well.

We recognize that any shave to meet the SIP call may be in-lieu of the 2015 shave, but even under this scenario, the NO_x RECLAIM community is facing at least three shaves in a very short period of time. Because so little is known about these shaves, (percent reduction, timing, impacted facilities, etc.), a high level of uncertainty results for those in the program. Business decisions necessary to establish long-range capital and compliance plans are severely jeopardized due to a lack of certainty.

Our next area of concern with regard to RECLAIM is its inclusion as a control measure for PM_{2.5} (CMB-01). We believe using NO_x RECLAIM to achieve PM_{2.5} reductions is not cost-effective. We instead suggest taking credit for the NO_x emissions associated with "Further Reductions from Residential Wood Burning Devices" (BCM-01) and "Further Reductions from Open Burning" (BCM-02).

In addition to the shaves discussed here, we ask staff to further explain the accounting of the shave that occurred from 2008 to 2011. Specifically, what happened to the 3.7 tpd of NO_x reduction and how was this reduction applied to the SIP? We note that 3.7 tpd of NO_x equates to .26 tpd of PM_{2.5}, a reduction that would help show attainment of PM_{2.5}.

BB-1

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Elaine Chang, Dr. P.H.
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During a recent meeting of the AQMP Advisory Committee, members were told that there is zero cost associated with a RECLAIM shave if there is a surplus in the system. We do not agree. Based on our review of recent data, there is no surplus for the top 24 emitters. These facilities will incur significant cost, either through the purchase of credits or the installation of pollution control equipment. We ask for greater clarification on this point.

BB-2

In summary with regard to RECLAIM, CCEEB recommends that staff delay implementation of all RECLAIM measures until the next required ozone submittal. At that time, any reduction should be based on a complete BARCT analysis.

Cost Effectiveness

The current draft identifies additional steps necessary to approve a measure that exceeds certain cost thresholds. We support the concept of including such language in the plan, but encourage staff to consider additional steps or a cap, to limit exposure to all stakeholders. There is strong sentiment, particularly with respect to the ozone aspects of the plan, that there is no limit to the ever-spiraling costs of the ozone precursor control measures. At some point, the cost of the draft plan will become unbearable and a legislative fix, as discussed in Board committee meetings, must be undertaken. We look forward to seeing the full socio-economic report and hope that it will address this concern.

BB-3

Enhanced Environmental Analysis

CCEEB notes that in Chapter 9 (Near Roadway Exposure and Ultrafine Particulates), there is discussion of an enhanced environmental analysis for projects that would locate sensitive populations close to freeways. In particular, the plan states, "Because of the District's concern about the potential public health impacts of siting sensitive populations within close proximity of freeways, District staff will continue to recommend that, prior to approving the project, lead agencies consider the impacts of air pollutants on people who will live in a new project and provide mitigation where necessary." CCEEB supports this approach. In addition, we suggest that you consider broadening the approach so that it also applies to all projects that would locate residences near industrial facilities.

BB-4

Elaine Chang, Dr. P.H.
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Thank you for considering our views. We would be pleased to discuss our comments with you and your staff at any time.

Sincerely,

A handwritten signature in blue ink that reads "Bill Quinn". The signature is written in a cursive style with a large, prominent "B" and "Q".

William J. Quinn
Vice President & Chief Operating Officer

cc: Dr. Barry Wallerstein
Dr. Phillip Fine
Mr. Gerald D. Secundy

Responses to Comment Letter BB
CCEEB

Response to Comment BB-1:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the existing 1997 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond. While the District will need to adopt another ozone plan in 2015 to attain the 75 ppb standard by 2032, we cannot afford to delay implementation of the large “black box” in the existing approved 2007 AQMP (241 fpd NOx & 40 tpd VOC).

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NOx and VOC emission reduction commitments contained

in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

The commenter suggests it would be appropriate to include the ozone measures as part of the locally adopted AQMP, but not included as enforceable SIP measures. Staff disagrees. With so little time remaining to replace the “black box” with concrete measures, it is important that the relatively modest proposed ozone measures be committed and enforceable. This action will demonstrate that the region and state fully intend to attain the 8-hour ozone standards on time and are committed to the actions needed to do so. The committed reductions represent a small fraction of total reductions needed (i.e., approximately 5% of needed NO_x reductions). Therefore, should substitution measures be needed to meet the SIP commitment, they most likely are needed anyway to meet the standard.

Response to Comment BB-2:

The two tons per days reduction proposed for the 1st phase of the RECLAIM shave will be incorporated as a contingency emissions reduction measure to satisfy CAA requirement to be triggered only if the NAAQS is not attained by 2015. The BARCT assessment phase of the NO_x RECLAIM shave is to be completed in 2015 and fully achieved by 2020. Approximately 30 percent of the RTC’s in the NO_x RECLAIM market are currently not being utilized. The 2 TPD shave proposed in the 2012 AQMP represents approximately 25 percent of the un-used RTC’s in the RECLAIM universe. The 2 TPD target will have only a minor impact on the stakeholders as a whole, recognizing that there will be buyers and sellers individually.

Moving the proposed RECLAIM shave control measure to the 2015 ozone AQMP could postpone full implementation of the Phase II reduction to a later date. Staff believes that there are currently sufficient unused RTCs available in the RECLAIM market to provide a cushion for the transition. As part of the Phase II BARCT assessment technology availability, cost, and market impacts will be thoroughly addressed. The rule making process will undergo a fully transparent public evaluation of the potential for emissions reductions coupled with the key element of the BARCT

assessment listed above. It should also be noted that the state law requires the RECLAIM program not only undergo periodic BARCT review, but also achieve equivalent reductions as the command and control program.

As previously stated, as of the most recent RECLAIM annual report (July 2012), there existed approximately a 30 percent surplus of unused credits in the market. Overall, there is expected to be no regional socioeconomic impact associated with the 2 TPD shave since the impact to buyers will be offset by the gains made by the sellers in the market. Staff recognizes that some stakeholders will be impacted whereby they would need to ascertain additional RTC's to meet the shave requirement. Conversely, others will be able to sell surplus credits at profit. The potential costs to some stakeholders will be analyzed during the rule making process.

Response to Comment BB-3:

The Socioeconomic Report on the 2012 AQMP was released on September 28, 2012, and includes the costs, benefits, and employment impact from implementing the Plan. Most of the proposed control measures (see Appendix IV-A and Appendix IV-B) include cost effectiveness values in dollars per ton of emission reduction, and the proposed control measures are ranked (see Chapter 6 of the Plan) based on these cost effectiveness values. As noted in Chapter 4 of the Plan, the District proposes to establish a cost effectiveness threshold of \$16,500 per ton of VOC reduction and \$22,500 per ton of NO_x reduction. This threshold will trigger further analysis and a Board pre-hearing before the final rule proposal is presented. Only one control measure, CTS-01, has the potential to exceed the VOC threshold on the upper end of the cost effectiveness range. All the other proposed control measures have a cost effective value less than the threshold. Regardless, it should be noted that during rule development a public review and decision process is instituted to seek lower viable cost alternatives.

Response to Comment BB-4:

Staff appreciates CCEEB's support on the District's approach encouraging an enhanced environmental analysis for projects that would locate sensitive populations close to freeways. Staff also agrees that broadening the approach for all projects would locate residences near industrial facilities, particularly those facilities that would pose a health risk, is health protective. CARB's Air Quality and Land Use Handbook does address locating residences and other sensitive land uses near certain types of industrial facilities and provides recommended siting distances. As part of the AQMD's Clean Communities Plan, the AQMD staff will be developing a document entitled "Proximity Matters." This document will expand the list siting recommendations included in CARB's handbook as well as provide additional guidance to reduce exposure toxic air contaminants to residential and sensitive land uses.

CC. Paramount Petroleum, August 30, 2012



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VIA E-MAIL to 2012aqmpcomments@aqmd.gov

August 30, 2012

Dr. Elaine Chang
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Subject: Comments on the Draft 2012 Air Quality Management Plan

Dear Dr. Chang:

Paramount Petroleum Corporation (Paramount) appreciates the opportunity to comment on the Draft 2012 Air Quality Management Plan. Paramount requests that the South Coast Air Quality Management District reconsider the magnitude of NOx reductions proposed in CMB-01 phase 1 and phase 2, as significant financial harm may result to regulated entities from the proposed measures.

In Appendix IV-A of the Draft 2012 AQMP it is stated that the estimated target reduction on a tons per day basis of NOx RTC allocations will account for approximately 38-63 percent of unused RTC holdings. The NOx RTC availability was analyzed for years 2008, 2009, and 2010. Due to recent economic downturn these three years are not representative of potential emissions under normal or preferred financial conditions. Should RECLAIM facility operators have the opportunity to return to the capacity they were at prior to this time period, the proposed NOx shave will have significant negative impacts on their ability to do so. Paramount therefore requests that the District take into account not only the potential for growth within the RECLAIM universe, but also take into consideration the emissions from past years when many facilities were operating under more favorable economic conditions and therefore higher

CC-1

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capacities. Considering all these facts, the magnitude of the proposed NOx RTC reduction will be largely detrimental.

CC-1

Additionally please take into account the fact that many facilities retain a buffer of RTCs as a precautionary measure to avoid potential future compliance issues. This buffer accounts for a significant portion of the current unused RTC holdings that the District plans to target for reductions. The significance of the NOx RTC reduction would therefore be under accounted for by the assumption that all unused RTCs are available or otherwise not needed on the market. When realized, the actual percentage of the unused RTCs that the proposed reduction will eliminate will be much greater.

CC-2

Thank you again for the opportunity to participate in the AQMP process. If any additional information is required, please contact Rebecca Nolan at (562) 748-4706.

Regards,

June Christman
Managing Director of Environmental Affairs

Responses to Comment Letter CC
Paramount Petroleum

Response to Comment CC-1:

District staff has factored the potential of growth in the estimation of future emission inventory and will include growth to refine the emission reductions (or shave) during the rule development phase of CMB-01. Please note that the petroleum industry has firmly asserted that its growth factor is 1.0 (or no growth) ever since the inception of the RECLAIM program. Economic downturn may result in a small increase in RTC surplus (as shown in the RECLAIM audit reports, the surplus for 2009-2010 were 29%-30% of the total allocations in comparison to the surplus of 17%-23% for 2002-2008.) The audit reports reveal that under the favorable economic conditions, there is an average of about 20% surplus RTCs for each compliance year, or about 26.48 tpd x 20% = 5 tpd. This 5 tpd surplus coincides with the upper end of the emission reduction range (3 tpd -5 tpd) proposed by CMB-01. The District is committing to submit only 3 tpd into SIP. Therefore, the District believes that the magnitude of the proposed range reductions for CMB-01 is reasonable. Please note that under the 24-hour PM2.5 attainment strategy, CMB-01 is now being proposed as a contingency measure to deliver 1-2 tpd of NOx reductions. Under the proposed 8-hour ozone attainment, a subsequent phase of CMB-01 will seek to reduce 3-5 tpd reductions beginning in 2017. As stated above, only 3 tpd of reduction range is proposed to be included as a SIP commitment.

Response to Comment CC-2:

District staff disagrees with the commenter. The RECLAIM facilities are expected to operate their equipment efficiently to comply with the facility caps and resolve potential compliance issues either by installing control equipment to reduce the facility's emissions or purchasing RTCs to offset the facility's emissions increase. District staff understands the desire for retaining a buffer of RTCs as a precautionary measure to cope with unexpected adversary scenarios. As such, during the rule development phase in 2005 and 2010, the District incorporated a compliance margin of 10% when determining the shaves. In addition, the District has incorporated other necessary safety valves to sustain market viability, e.g. the District added rule language to establish a non-tradable RTC account starting in 2015 so that whenever the market price of discrete RTCs is higher than \$50,000 per ton, the Governing Board can hold public hearings to decide whether or not to convert any portion of the non-tradable RTCs to tradable and help balance the trading market. The 10% compliance margin and safety valves are applied to assure that there is sufficient buffer of RTCs available for RECLAIM facilities.

DD. Latham & Watkins, August 31, 2012

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LATHAM & WATKINS LLP

August 31, 2012

By Electronic Mail
2012aqmpcomments@aqmd.gov

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File No. 018282-0000

Re: Regulatory Flexibility Group Comments

Dear Chairman Burke and Members of the SCAQMD Governing Board

Thank you for the opportunity to provide comments regarding the draft SCAQMD 2012 Air Quality Management Plan (AQMP). These comments are submitted on behalf of the Regulatory Flexibility Group (RFG), a coalition of California entities whose operations are subject to regulation under the Clean Air Act and corresponding state and regional air quality programs. RFG members include aerospace and electronics manufacturers, electric utilities and electric generating facilities, natural gas utilities, oil and chemical companies and other regulated entities. RFG members have participated in the review of and comment on SCAQMD regulations since the fall of 1990, when the coalition was formed.

I. OVERVIEW AND MAJOR RECOMMENDATIONS

We appreciate the Board's increasing sensitivity to the delicate balance between the region's economic health and continued air quality progress. We believe that the next decade poses unique and unprecedented challenges in crafting an air quality strategy that can meet the region's dual economic and environmental goals. Most of the readily identifiable control strategies for sources within the District's traditional jurisdiction already have been implemented. Future regulation thus will require that the District craft new approaches that are tailored to the region's unfinished business. Future strategies may need to focus to a greater degree on sources that have not yet been fully regulated and for which some opportunities may still remain to achieve cost-effective reductions (e.g., legacy fleets). We also agree with the SCAQMD staff recommendation that the District should consider selective time and place control measures to address specific problem areas without harming the economy.

William Burke
August 31, 2012
Page 2

LATHAM & WATKINS LLP

Recognizing the extent of existing stationary source regulation, future measures for such sources should proceed only after very careful technical evaluation of the feasibility of achieving further reductions at a reasonable cost. Given the economic and employment risk of further burdening stationary sources, we strongly believe that future stationary source regulation should include very clear incremental cost-effectiveness benchmarks to ensure that control measures, as implemented, remain within reasonable economic boundaries.¹ Furthermore, any future stationary source measures should contain appropriate alternative compliance mechanisms (e.g., an alternative compliance fee set at the relevant incremental cost benchmark level and used to fund clean technologies) to ensure that sources have a ready compliance alternative when costs near the benchmark level. We applaud the District for considering the adoption of cost benchmarks in the draft AQMP and urge the District to use the benchmarks appropriately, as noted below.

DD-1

Although the current draft AQMP is limited in scope to the attainment of the PM2.5 standard, we note that the plan contains the seeds of an emerging ozone attainment strategy.² Because both attainment strategies raise significant policy issues, we believe that the development of this year's plan is an appropriate time for the Board to consider some of the most important, overarching challenges that have emerged in recent years. These include the need to streamline stationary source permitting, to constrain regulatory costs and to reform significantly the region's offset program.

Before discussing the RFG recommendations in each of these three areas, we note the reasons why we believe that such reform will be critically important to the region. First, although we believe that, in theory, economic and environmental health can go hand in hand, coincident outcomes are unlikely without major change. Currently there is a material risk that the traditional burdensome permitting process, offset scarcity and continued imposition of technology-forcing regulations will result in environmental regulations thwarting economic health. This can happen whenever stationary sources choose not to site their operations, and their jobs, in Southern California due to the length, uncertainty and relatively high cost of seeking a permit here rather than in more hospitable regions. In many circumstances, we find that it is not even practical or cost-effective to site new "cleantech" operations (e.g., renewable energy projects for electricity generation or low-carbon transportation fuels) in the South Coast Air Basin. We are also concerned that we may lose many of the businesses currently operating

DD-2

¹ For some context on this subject, consider President Clinton's July 16, 1997 memorandum to EPA ("Presidential Memorandum"), issued contemporaneously with the adoption of the eight-hour ozone and fine particulate standards. 62 Fed. Reg. 38421 (July 18, 1997). As stated in the Memorandum, "[i]t was agreed that \$10,000 per ton of emission reduction is the high end of the range of reasonable cost to impose on sources."

² As explained below, because the 2012 AQMP does limit its scope to the attainment of the PM2.5 standard, we also believe that the Clean Air Act 182(e)(5) commitments in the draft AQMP are premature and better left for the 2015 AQMP. Waiting for the 2015 AQMP will allow the various stakeholders sufficient time to work with the District in identifying, fully vetting, and implementing "black box" control strategies without the expedited timing pressures associated with this 2012 AQMP process.

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in the District if they believe they will be unable to achieve or afford emerging regulations. These unfavorable conditions can be avoided, or at least substantially reduced, by reforming the current regulatory program.

Significant reform can no longer wait. As recently as 1990, there were reported to be 1,141,167 manufacturing jobs in the Los Angeles-Long Beach-Santa Ana region. In just 20 years (by 2010), this number has dropped by fifty percent, to only 569,085, while population in the region has grown during the same period from 11.3 million to 12.8 million.³ We understand that the loss of manufacturing is not unique to Southern California and has been experienced to some degree throughout the United States. But, given the economic opportunity value associated with manufacturing and manufacturing jobs, we want Southern California to preserve those manufacturing jobs that it still has and to capture those that may become available. This opportunity is currently being squandered *because our region cannot permit new facilities fast enough or cheaply enough to compete with alternative destinations*. When such projects go elsewhere, we often lose not just the jobs but also the opportunity to build a more sustainable community, in which energy and consumer good production and consumption are co-located.⁴

DD-2

We recommend three major actions to preserve existing manufacturing and to capture new opportunities:

A. Expedite and Streamline Stationary Source Permitting

The District now has almost forty years of experience in evaluating control options (e.g., Best Available Control Technology (BACT)) for the permitting of new and modified stationary sources. Certainly, the time has come when the District can identify, in advance, for the vast majority of the stationary sources it permits in the region, precisely what the control technologies will be for sources permitted here. We urge the District to develop a presumptive BACT approach by which sources can immediately receive a permit for most equipment types without the traditional extensive review period. We believe that such an approach can be approved under existing law provided that the District develops a process for distinguishing between permit applications that reasonably require further evaluation and those that do not.

DD-3

³ See US Department of Commerce Bureau of Economic Analysis; <http://bea.gov/iTable/iTable.cfm?ReqID=70&step=1>. Manufacturing employment in the same region was as high as 24% of the employable population in 1970 and is now only 7.8%.

⁴ Remarkably, it takes truly extraordinary effort, including special state legislation (e.g., Assembly Bill 1318) and litigation, to permit the very cleanest natural gas-fired power plants in the region even when those plants are essential to back up the state's growing renewable energy portfolio or are essential to avoid blackouts. These problems have existed for over a decade - recall the need for special federal, state and regional executive orders and special administrative orders during the 2000-01 power crisis to allow Southern California to bring in even the cleanest new generation.

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B. Reform the Offset Program

For over a decade we have urged the SCAQMD, the ARB and the EPA to pursue major offset reform. The current system is seriously broken and the result is that it is near impossible for a manufacturing or energy project to be sited in the South Coast even though any such facility would necessarily install BACT. We have proposed a three-tier approach to reform the current system. Under this approach, (1) a facility would seek to obtain any available offsets at or below a predetermined offset price (e.g., similar to the AQMP cost-effectiveness benchmarks); (2) if a sufficient supply is not available on the market, then the facility would purchase offsets from a pre-funded clean air investment fund (CAIF)⁵ administered by the District or by other appropriate publicly-accountable entities; and (3) to the extent a sufficient offset supply is still not available, then the facility would pay the benchmark fee to the CAIF. The CAIF would invest in appropriate emerging low-emissions technologies that the Board determines will be necessary for attainment and to meet the region's public health objectives.

DD-4

C. Ensure AQMP Flexibility and Compliance Flexibility and Provide Safe Harbor

As the District considers even more stringent, technology-forcing regulations, it must recognize that some of the anticipated technologies may never develop, may emerge later than predicted or may cost more than anticipated.⁶ Accordingly, the District should take special care to ensure that control measures can in fact be achieved at the projected scale and the predicted cost.⁷ We strongly recommend

DD-5

⁵ See, e.g., Presidential Memorandum, *id.* at 38429 ("The EPA will encourage the use of concepts such as a Clean Air Investment Fund, which would allow sources facing control costs higher than \$10,000 a ton for any of these pollutants to pay a set annual amount per ton to fund cost-effective emissions reductions from non-traditional and small sources. Compliance strategies like this will likely lower the costs of attaining the standards through more efficient allocation, minimize the regulatory burden for small and large pollution sources, and serve to stimulate technology innovation as well.")

⁶ We are particularly concerned about proposed further volatile organic compound (VOC) reductions from the reformulation of coatings and solvents. We are highly skeptical of whether yet another tightening of such rules can be achieved without harming the regional economy, which relies heavily on the use of such materials.

⁷ We note, for example, that the current draft AQMP contains some measures for which the necessary technical and economic feasibility work has not been done. Early indications are, for example, that the available emission reductions for off-road industrial equipment (SOON) may be only a fraction (e.g., ~10%) of the estimated 7.5 tons per day of NOx. Further, while we fully support the SOON program and its ability to achieve near-term NOx emission reductions (and obtain these reductions effectively for both the regulators and the regulated entities through incentives), in these budgetary times, the continued funding for the SOON program unfortunately cannot be counted upon moving forward. We argue that the more prudent approach is to vigorously pursue programs like SOON,

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that the District take the following steps to protect against unintended harm to regulated stationary sources. It should:

1. Conduct appropriate technology evaluations before placing measures in the AQMP;
2. Avoid making SIP emission reduction commitments until it has very high confidence that a measure can be achieved at the anticipated cost;
3. State emission reduction commitments in a manner that maximizes the District's flexibility to shift reductions, as necessary, should technologies not emerge as hoped, without the need to seek EPA approval for necessary reduction in credit for technology-forcing rules; and
4. Ensure that future stationary source regulations include both alternative compliance options and an appropriate safe harbor (e.g., ceiling price "in lieu" payment to a CALF) or some other appropriate cost-containment mechanism.

DD-5

We stand ready to work closely with the District and other stakeholders on these major recommendations.

II. SPECIFIC ADDITIONAL AQMP COMMENTS

In addition to the foregoing, we wish to share the following specific comments regarding the draft AQMP:

A. RECLAIM

Ever since the 2001 RECLAIM amendments, we have been concerned that the program is no longer a true market, but is instead being used as a transitional device to compel the installation of Best Available Retrofit Control Technology (BARCT). So long as this is how the program is used, we believe the District should allow sources that have installed BARCT to be removed from RECLAIM. Otherwise, the program merely becomes a tax on already well-controlled units. The proposed RECLAIM control measure raises this risk by suggesting that a ratchet wholly unrelated to BARCT equivalency should be included in the AQMP simply because there is a belief that there are surplus RECLAIM Trading Credits in the market. If the District wishes to return RECLAIM to a market model, instead of a BARCT transition model, then it should specify a formal price cutoff – i.e., a price point at which the program would automatically come to a stop - or implement a ceiling price for RTCs that can guarantee compliance. Without such a circuit breaker, the District runs that risk that it may be wrong about the excess credits in the market. We note, for example, that many of the largest RECLAIM

DD-6

but not make legally binding emission reduction commitments in the 2012 AQMP. We are also highly skeptical of whether the estimated RECLAIM ratchet would be warranted by a more detailed analysis of available control technologies. See further discussion of the RECLAIM in this letter.

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facilities are in fact short, not long, on RTCs and that the weak economy may mask the actual long-term demand for credits. We strongly recommend that the District defer further RECLAIM NOx reductions until it has conducted a thorough BARCT equivalency analysis. The risk of harming the market prematurely is too great.

DD-6

B. Cost-Effectiveness Benchmarks

We applaud the use of cost-effectiveness benchmarks, but urge the District to define such benchmarks so that costs are calculated individually for each specific type of technology or source. To be useful, control costs must be highly differentiated and must reflect incremental, not average, cost-effectiveness. Further, as noted above, we recommend that the District take other precautions to ensure that errors in predictions about technology development pace or cost do not result in harm to businesses or jobs.

DD-7

C. Clean Air Act 182(e)(5) Commitments

While the current draft of the AQMP limits the scope of attainment to the PM2.5 standard, it also includes Clean Air Act §182(e)(5) proposed implementation measures with binding ozone reduction commitments. We acknowledge that significant ozone emission reductions will be needed to demonstrate attainment in 2023 and 2032 and are committed to working with the District and fellow stakeholders to identify and implement control measures for VOC and NOx that will provide these "black box" reductions. However, the abbreviated planning process for the 2012 AQMP does not afford stakeholders the time to fully review, analyze, and offer input on the proposed control measures currently in the draft AQMP. As touched on above, while we think many of the identified actions have value, we think additional technical and economic feasibility studies are necessary prior to committing to reductions. These control measures and reduction commitments are better left for the 2015 AQMP (or if the upcoming SIP call for the one hour ozone standard requires them), which will give the District and the various stakeholders time to develop a comprehensive and fully vetted ozone attainment plan without the expedited timing pressures of this 2012 AQMP.

DD-8

Thank you for the opportunity to submit these comments. We look forward to further discussions with the SCAQMD staff and with other stakeholders.

Sincerely,



Robert A. Wyman
of LATHAM & WATKINS LLP

Responses to Comment Letter DD
Latham & Watkins

Response to Comment DD-1:

District staff is very cognizant of the environmental and economic challenges our region is facing. We recognize that that the road to attainment is steep and that there are cost implications associated with future regulatory actions intended to improve air quality and protect the health of the breathing public. Undoubtedly, the state of our economy renders the task at hand all the more difficult. But such challenges should not be a cause for complacency because there are even greater societal costs associated with inaction. Therefore, given the challenges at hand, we agree with you that any future regulatory proposals must be very carefully designed and implemented. To that end, in developing the current attainment strategy for the federal 24-hour average PM_{2.5} standard, staff and the stakeholders as you know, collectively, invested countless hours sifting through volumes of information to arrive at the current control strategy proposal which reflects the shortest and least costly path to attainment. We are committed to do the same with respect to the 8-hour ozone and other future attainment demonstrations. Furthermore, in an effort to reflect our commitment and sensitivity toward addressing the cost concerns that many stake holders articulated during the plan development process, the 2012 AQMP, as you point out, includes specific cost-effectiveness bench marks that, if triggered, would necessitate even more robust and detailed evaluation and analysis of the cost impacts of a proposed regulation than what would currently be conducted.

With respect to your comments regarding the 182(e)(5) measures, please note that the District is committed to develop a comprehensive attainment plan for the new 0.75 ppm 8-hour ozone standards in the 2015 timeframe. However, given the fact that the attainment year for the 1997 0.80 ppm 8-hour ozone standard is 2023 and considering the sizable “black box” of the 2007 AQMP and, hence, the significant level of emission reductions that must be achieved during the few remaining years, it is of paramount importance that the emission reduction effort is maintained. The proposed ozone control measures, while constituting about 5% of reductions included in the black box, are intended to provide a modest but significant advanced payment towards the black box obligation.

Response to Comment DD-2:

As indicated in response to comment Y-2, staff is committed to continue to work with all stakeholders to evaluate and explore avenues to further improve the efficacy of the New Source Review (NSR) program, including offsets. As indicated in response to comment DD-1, staff is also committed to redouble its efforts in evaluating the cost impacts of its proposed regulations. Similarly, staff is open and would always welcome permit streamlining suggestions that would allow the District to achieve the Clean Air

Act goals in a more efficient manner. Please note that the Draft 2012 does include two incentive measures: Control Measure INC-01 intended to promote and encourage adoption and installation of cleaner more-efficient equipment and Control Measure INC-02 intended to provide expedited permitting and CEQA preparation to facilitate the manufacturing of zero- and near-zero technologies. Staff is certainly open to additional suggestions. While identifying NSR offsets with respect to certain pollutants (especially for PM10) in the open market could be highly challenging, the District has taken several creative steps in recent years to address the challenge and meet the demand for offset credits. Please note that these efforts allowed the District to continue to issue annually approximately 10,000 permits to new and existing facilities. Staff would be interested in hearing more concrete examples of sources having difficulty in locating to the District and the specific reasoning.

Response to Comment DD-3:

Thank you for your suggestions regarding expediting and streamlining stationary source permitting. Staff would like to receive additional clarification with regards to the presumptive BACT approach. Please be mindful that when identifying BACT for major sources, the District is obligated to rely on the LAER Clearinghouse. With respect to minor sources, please note that the District's BACT can act as a presumptive BACT.

Response to Comment DD-4:

We appreciate your concern about the availability of offset credits and thank you for your suggestions to address the issue. As discussed in response to comment DD-2, District staff has taken a number of steps to address the offset scarcity in the open market with respect to certain pollutants by opening its internal bank for certain critical projects for our region. Unfortunately, a portion of our past efforts intended to provide relief to a larger number of regionally critical projects did face legal challenges and was held up by the courts. We acknowledge that much more needs to be done and are open to new and all ideas that would contribute to the resolution of this very important issue provided they are within the bounds of the Clean Air Act and approvable by CARB and USEPA, and would not set our local stakeholders in legal jeopardy.

Response to Comment DD-5:

Thank you for your AQMP flexibility and compliance flexibility suggestions. Please note that the District is already implementing many of your suggestions in designing the AQMP control strategy and in developing its regulations. For instance, we do conduct technology evaluations prior to including a control measure into the AQMP. Granted, the District conducts a much more thorough and detailed technology assessment during the rule making stage, initial technology evaluations such as those conducted in support of a control measure are critical in determining the emission reduction potential of the measure and its cost impacts. To address uncertainties with

respect to these initial evaluations, often the emission reduction potential and cost effectiveness are expressed as ranges that include a lower and an upper bound estimate. The AQMP would typically commit the lower bound emission reduction estimate into the SIP. Furthermore, in formulating its emission reduction commitment for the SIP, the AQMP, typically, commits to a grand total emission reduction figure that reflects the grand sum of the lower bound reduction estimates of the emission reduction ranges of each measure in a manner that allows emission reduction substitution among measures to cover any potential shortfall from a particular measure(s). The idea of providing alternative compliance options, including “in lieu fee” payments to extend effective dates has been used in numerous prior rulemakings and we intend to continue this practice in the future, as necessary. Relative to your comment regarding the technology not evolving to the level set by a technology forcing limit by the applicable dates, in addition to exploring the “in lieu fee” option, the District often revisits the rule in question and either extends the effective dates or modifies the applicable limits to reflect the state of the technology or both. The existing 2007 AQMP includes a “set-aside” of emission reductions that can be used if rule limits are modified. We would welcome further discussion on these issues.

Response to Comment DD-6:

As indicated elsewhere, Control Measure CMB-01 is no longer an element of the control strategy for the 24-hour average PM_{2.5} standard and is now listed as a contingency measure for the 24-hour PM_{2.5} attainment demonstration. Based on the initial analysis conducted to support this control measure, it appears that there are additional reductions to be gained through the installation of BARCT to certain emission sources. Many of your concerns that you express in your comment are germane to how these reductions are translated into percent RTC shave and how the shave is distributed among the facilities participating in the program. The control measure deliberately does not commit to a specific shave methodology to allow the discussion of various different approaches during the rulemaking process, which staff intends to initiate promptly.

Response to Comment DD-7:

Thank you for supporting the cost-effectiveness bench marks proposed for inclusion in the 2012 AQMP. These bench marks, if triggered during the rulemaking process, would necessitate a more robust cost analysis compared to the one normally conducted, and would trigger a Board “pre-hearing” on the measure, but would not act as a bar to preclude adoption of the measure. Please be cognizant that costs and cost-effectiveness are typically estimated based on specific technology or set of technologies. While estimating source specific cost-effectiveness may be desirable from the affected facility’s perspective, it may not be practical, especially with industry sectors with multiple sources (i.e. industry sectors with hundreds or even thousands of sources).

Using cost-effectiveness ranges that reflect the variability in cost effectiveness across a source category would be a more reasonable approach.

Response to Comment DD-8:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the existing 1997 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond. While the District will need to adopt another ozone plan in 2015 to attain the 75 ppb standard by 2032, we cannot afford to delay implementation of the large “black box” in the existing approved 2007 AQMP (241 fpd NOx & 40 tpd VOC).

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NOx and VOC emission reduction commitments contained

in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

EE. Dairy Cares, August 31, 2012



VIA EMAIL to 2012aqmpcomments@aqmd.gov

August 31, 2012

Dr. William A. Burke
SCAQMD Governing Board Chairman
21865 Copley Dr.
Diamond Bar, CA 91765

Re: Comments on Draft 2012 Air Quality Management Plan

Dear Dr. Burke:

On behalf of Dairy Cares, we submit the following comments on the Draft 2012 Air Quality Management Plan for the South Coast Air Quality Management District (SCAQMD). Dairy Cares is a coalition of California's dairy producer and processor associations, including the state's largest producer trade associations (*Western United Dairymen*, *California Dairy Campaign*, and *Milk Producers Council*) and the largest milk processing companies and cooperatives (including *California Dairies, Inc.*, *Dairy Farmers of America-Western Area Council*, *Hilmar Cheese Company*, *Joseph Gallo Farms*, *Producer Bar 20 Dairy*, and *Land O'Lakes*). Formed in 2001, Dairy Cares is dedicated to promoting the long-term sustainability of California dairies.

SCAQMD released the draft version of the 2012 Air Quality Management Plan (2012 AQMP) in July 2012. As a stakeholder group, dairy representatives have reviewed material related to dairy control measures before the Draft 2012 AQMP was released. We appreciate the SCAQMD staff taking the time to meet with our representative, Rob Vandeneuvel of Milk Producers Council, on June 29 regarding the proposed control measure "BCM-04: Further ammonia reductions from livestock waste."¹ We appreciate that several changes have been made to the current version of the measure consistent with our requested revisions.

The Draft 2012 AQMP states that Phase I will consist of a technical assessment of the application of SBS at local dairies to evaluate the technical and economic feasibility of the measure. We support the decision to complete this technical assessment before any rulemaking for dairy control.

EE-1

¹ Previously MCS-04B.

We have a few remaining comments about the existing language listed below.

Technical Comments

We would like to reiterate the technical concerns we have, as described in more detail in the summary² (Attachment A) we provided in advance of our meeting.

1. Evidence of ammonia reductions is limited to laboratory experiments of dairy slurry, not corrals. As you are aware, dairy slurry reacts very differently than dry corral manure.
2. Field experiments using SBS on dairies, which SCAQMD previously used to determine proposed application rates and calculate cost effectiveness, are not applicable to the proposed measure.
3. SBS impacts to worker safety and animal health are unknown for the proposed use.
4. SBS threatens groundwater quality by adding salt to manure that will be used as a fertilizer. This is particularly important in the Inland Empire where the Chino Water Basin and San Jacinto district face severe salt issues.

EE-2

Suggested Revisions

We suggest that the following changes be made to the language for BCM-04 included in the draft AQMP:

1. **Applicability to other jurisdictions.** The Draft 2012 AQMP states that the Phase I technical assessment “will evaluate the application of SBS at *local dairies*” (emphasis added). Any determination resulting from this technical assessment should clearly state that the suitability of SBS as a dairy NH₃ control measure is specific to the area in the jurisdiction of the SCAQMD – or, more specifically, to the dairies in the South Coast Basin (Basin) similar to the local dairies where this type of SBS application will be evaluated. This can in no way be presumed to be a “Reasonably Available Control Measure” in other nonattainment areas, such as the San Joaquin Valley. Multiple research projects and modeling analyses have shown that in the San Joaquin Valley, NO_x controls, and not NH₃ controls, would be the most effective control strategy to reduce PM_{2.5} concentrations.
2. **Excessive salt loading.** The Draft 2012 AQMP states that “the use of SBS should be carefully considered in areas that are sensitive to salts and/or with existing high salt loading in soil.” However, we encourage the SCAQMD to be clearer in the Draft 2012 AQMP that applying large quantities of SBS to manure (as may be needed to achieve potential reductions) that will eventually be land applied may not be feasible or allowed. The Regional Water Quality Control Board (RWQCB) would need to be consulted to determine if current or proposed regulations would prohibit or restrict the application to land of manure treated with SBS. BCM-04 should indicate that is a required component of the Phase I assessment.

EE-3

EE-4

² Acid salt (SBS) ammonia reduction claims lack evidence from 'real-world' dairies.

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3. **Worker safety and animal health.** SBS is a caustic salt that irritates skin and is hazardous if ingested or inhaled.³ There is minimal discussion in the Draft 2012 AQMP of the effects of SBS on animal health and no discussion on the impacts to worker safety. We strongly suggest that SCAQMD review the potential safety hazards to workers and impacts to animal health and include these risks in the AQMP measure. These impacts must be analyzed in the Phase I assessment.

EE-5

Sincerely,



J.P. Cativiela
Dairy Cares Program Coordinator

- C: William C. Van Dam, Dairy Cares Chairman
Robert Vandenheuvel, Milk Producers Council
Michael L.H. Marsh, Western United Dairymen
Dr. Julia Lester, ENVIRON

³ See MSDS, <http://www.sciencelab.com/msds.php?msdsId=9927267>.

ATTACHMENT A

ACID SALT (SBS) AMMONIA REDUCTION CLAIMS LACK EVIDENCE FROM 'REAL-WORLD' DAIRIES

Current research doesn't support effectiveness, while potential concerns remain for animal health, worker safety and water quality

South Coast Air Quality Management District (SCAQMD) is considering episodic application of acid salt (sodium bisulfate or SBS) to fresh dairy livestock waste to reduce ammonia emissions. This proposal is premature, given no evidence quantifying SBS' ammonia reduction efficiency in real-world dairy conditions.

Laboratory experiments suggest SBS may reduce ammonia under tightly controlled conditions. But no known experiments quantify actual ammonia reductions under non-optimal, real-world conditions outside the lab. Even if future study validates field effectiveness, SCAQMD should consider worker safety, animal health, groundwater quality and other environmental impacts before suggesting dairies apply large amounts of caustic acid salts:

1. Evidence of ammonia reductions in dairy slurry is limited to laboratory experiments. UC Davis researchers (Sun et al, 2008)⁴ collected and carefully mixed manure in a lab, creating ideal conditions to maximize ammonia emissions in the control, and for even application of SBS for maximum effectiveness. These ideal conditions simply do not exist on real-world dairies, where mixing of manure, temperature variation, wind, drying, disturbing of manure by animals and many other factors would influence effectiveness of mitigation, likely reducing both initial emissions and mitigation effectiveness. Without field information, no effectiveness or cost-effectiveness analysis is possible, nor can SCAQMD determine what impact the rule would have on design values used for modeling air quality improvements.
2. Field experiments using SBS on dairies, which SCAQMD uses to determine proposed application rates and calculate cost effectiveness, are not applicable to the proposed measure. Limited work (Stackhouse et al)⁵ in dairy corrals *did not* measure ammonia reductions and therefore is not applicable.
3. SBS impacts to worker safety and animal health are unknown for the proposed use. A caustic salt, SBS irritates skin and is hazardous if ingested or inhaled.⁶ In other settings, such as poultry, SBS use requires special protective equipment and management to safeguard workers and animals. It's not clear that SBS safety to workers or animals is established for the proposed use, which generally would require larger and more frequent application than in other uses and settings. Exposure may increase due to open-air use and mixing with corral dust that can become windblown.
4. SBS threatens groundwater quality by adding salt to manure that will be used as fertilizer. Even if SBS were to be proven effective and safe for ammonia control, it would likely result in significant

⁴ "Effects of Sodium Bisulfate on Alcohol, Amine and Ammonia Emissions in Dairy Slurry," Journal of Environmental Quality, 37:608-14, 2008.

⁵ "Effects of Acidifier Application Reducing Emissions from Dairy Corrals," http://www.aq.iastate.edu/wastemgmt/Mitigation_Conference_proceedings/CD_proceedings/Animal_Housing_Amendments/Stackhouse-Acidifier_Applications.pdf

⁶ See MSDS, <http://www.sciencelab.com/msds.php?msdsid=9927267>

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August 31, 2012
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additional impacts to groundwater by adding salt to manure, all of which is used as fertilizer for agricultural crops. Use of SBS would add at least 70,000 pounds of sodium⁷ and up to 930,000 pounds of sodium to manure every week it is used in the air basin. Virtually all of this salt could be expected to end up in groundwater, even if the manure were exported outside of the basin.

Conclusion

SBS on dairies should be approached with caution. Its efficacy, safety, impacts to animal health and the environment and cost-effectiveness should be fully investigated before considering actions that could result in expanded use.

⁷ Assuming the product is only used on about 7.5 percent of dairy surface areas, otherwise identified as "high traffic" areas.

Responses to Comment Letter EE
Dairy Cares

Response to Comment EE-1:

AQMD staff appreciates the support of the dairy industry to conduct a technical assessment of sodium bisulfate (SBS) in advance of seeking additional rule requirements and would appreciate feedback as part of the stakeholder process.

Response to Comment EE-2:

For the technical assessment, staff is seeking one or more dairy partners that are representative of the majority of operations here in the South Coast Air Basin. The AQMD will conduct the assessment at its own expense and is optimistic that application may contribute to improved air quality, with a focus of application during episodic periods of forecasted poor air quality.

Response to Comment EE-3:

AQMD staff acknowledges that, due to climatic conditions, there is a certain uniqueness of local dairy operations as compared to elsewhere in the state and country. As such, the requirements may not be applicable to dairies elsewhere where a site-specific assessment would need to be made relative to those particular operations. Each air district will likely need to conduct its own assessment as to application of SBS in their jurisdiction. This has been clarified in the control measure.

Response to Comment EE-4:

AQMD staff intends to assess the potential impact of salt loading on groundwater from the land spreading of manure treated with SBS. Although the incremental increase is expected to be low, the overall impact relative to Regional Water Quality Control Board threshold requirements will need to be examined. Staff intends to work with stakeholders at the water board relative to the potential ground water impacts. This too has been clarified in the control measure.

Response to Comment EE-5:

Although not noted in the control measure, health impacts associated with use of SBS would be included in the Phase I technical assessment. Upon review of the MSDS and the comment letter attachment, staff has added to the control measure that the technical assessment will also examine impacts to animal and worker health and safety associated with uses of SBS.

FF. Clean Energy, August 31, 2012

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Todd R. Campbell, MEM, MPP
Vice President, Public Policy and Regulatory Affairs



August 31, 2012

Dr. Elaine Chang
South Coast Air Quality Management District
21865 Copley Dr
Diamond Bar, CA 91765

Re: Clean Energy's comments on SCAQMD's 2012 Air Quality Management Plan

Dear Dr. Chang,

Clean Energy is appreciative for the opportunity to comment on the draft "2012 Air Quality Management Plan" (2012 AQMP), a plan focused on reducing particulate matter and ozone emissions by the South Coast Air Quality Management District. Clean Energy, a California-based company and AB 32 success story, fuels approximately 26,000 vehicles daily at over 310 strategically located refueling stations nationwide with compressed natural gas (CNG), liquefied natural gas (LNG) and renewable natural gas (RNG).

Upon reviewing the 2012 AQMP, we believe the document would benefit from a broader discussion of promising strategies that could provide environmental, economic and energy security benefits to the South Coast Air Quality Management District (AQMD). As a California-based company focused on delivering clean lower carbon fuels to market, we support the goal to advance zero and near-zero emission strategies. However, we believe that if the 2012 AQMP is to achieve the attainment goals outlined, the 2012 AQMP must include an informed discussion of natural gas, conventional and renewable, used as a transportation fuel in compressed and liquefied form. These fuels, inherently and in combination with existing or developing clean air technologies, can play a significant role in tackling the AQMD's air quality challenges for ozone (O₃) and fine particulate matter (PM), as well as other criteria pollutants and greenhouse gases (GHG).

FF-1

While the 2012 AQMP outlines the benefits of zero and near zero emission technologies with an extraordinary focus on hydrogen fuel cell and electric vehicles, the draft would be more comprehensive in scope if the specific 2050 emissions inventories needed were identified with corresponding vehicle emissions in grams/mile or grams/bhp-hr for the number of vehicles proposed to be in the marketplace in 2050. Then clean alternatives to electric and hydrogen technologies could also be identified. This would be the appropriate fuel neutral signal to the transportation industry that AQMD should send. Highlighting certain fuels more than others throughout the report could erupt into a battle between fuel types and drastically hinder progress. It would be much more beneficial to the transportation industry and the air if various alternative fuels worked together to create optimal strategies.

FF-2

Further, natural gas applications should be viewed in this document as a fuel strategy that can offer low to ultra low carbon results, capable of achieving near zero emissions for oxides of nitrogen and particulate matter with indications of further reductions by engine manufacturers, one that can be combined with efficiency strategies, and one that can deliver these benefits in the near, mid- and long-term to each class of vehicle today.

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Lastly, while the report mentions the importance of economics briefly throughout, it needs a more in depth economic analysis for each fuel type in order to better evaluate the feasibility of implementation. Without economics, the report optically reads that fuel cell and battery technologies are better than all other clean air strategies when in reality this may not be the case. Instead of foregoing economic analyses of clean fuel strategies and presenting illustrative zero emission scenarios (even though they are extremely costly and not technologically capable) that appear to demonstrate favoritism, the report should provide a balanced analysis that broadly covers all promising strategies capable of helping the AQMD attain its air quality goals.

As the report itself states, "*it is imperative for the District to work closely with businesses and industry groups to identify the most cost-effective and efficient path to meeting clean air goals*" (1-20). Natural gas as a vehicle fuel can achieve this goal exactly. This point would become clearer if the AQMD performed a more in-depth economic analysis of each fuel type to recognize that natural gas is one of the most cost-effective strategies that can meet the Air Basin's standards while hydrogen fuel cell and battery electric are much more expensive, experimental and in need of significant development and technological advancement.

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Natural Gas Can Help the AQMD Meet State and Federal Air Quality Goals

Heavy-duty trucks are constantly on California's roads and consume on average 15,000-20,000 gallons of diesel fuel per year. The significant cost savings associated with natural gas, up to \$2.00 per gallon, could therefore present a market pull scenario for clean trucks operating throughout the South Coast Air Basin. For example, the emissions benefits associated with the conversion of a *single* diesel truck to natural gas has the potential to reduce up to 23 tons of criteria emissions over the lifetime of the truck (Calculated using Moyer Calculator, pre-2002 trucks). When RNG is applied, emissions reduction benefits can be nearly four times greater. Because emissions from the ports of Los Angeles and Long Beach are large emitters of criteria and climate change pollutants, heavy-duty trucks that run on natural gas instead of diesel can directly and significantly combat these harmful emissions threatening both federal attainment and the state's AB 32 goals.

A. Natural Gas Vehicles Significantly Reduce NOx Pollution

In Figure 3-8 and 3-9 of the AQMP, the graphs show heavy-duty diesel trucks are by far the largest contributor to NOx. In order to significantly curb this, heavy-duty diesel trucks could be converted to natural gas, and natural gas engine technologies and fuels could be further advanced. Natural gas engines have historically achieved low NOx emissions performance and have made the case for tighter NOx emission standards for medium- and heavy-duty trucks. In fact, SULEV was a category created by natural gas light-duty vehicles as these vehicles achieved a 90% reduction of emissions from the ULEV standard. Another and more recent example would be the fact that natural gas engines were able to meet the 2010 NOx

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and PM standards as early as 2007 – three years in advance of the federal deadline. In fact, today’s natural gas engines far surpass the existing NOx emissions standard for heavy-duty truck engines by 35%, and engine manufacturers have since announced plans to target a 75% reduction in NOx over the next few years.

What’s more, newer technology that is currently being demonstrated promises even cleaner NOx results. Clean Energy supports the immediate adoption of a series of optional low NOx standards for California that will allow manufacturers to begin the process of receiving credit for lower emissions technology. Clean Energy also would like AQMD to identify emissions targets needed to meet attainment of both NOx and PM emissions rather than implicate certain “preferred” clean air strategies so that the 2012 AQMP can be a more “fuel neutral” document that will encourage all clean air strategies to blossom.

B. Natural Gas Engines Significantly Reduce PM Pollution

Figure 3-14 from the draft shows that heavy-duty diesel trucks are the second largest contributor to PM 2.5. According to certification data produced by the California Air Resources Board, natural gas engines can reduce particulate matter emissions by 80% below the federal 2010 heavy-duty truck standard. These superior PM emissions have been achieved using a simple three-way catalyst technology and certainly could be improved upon with further technology advancement.

C. Natural Gas Engines Significantly Reduce GHG Pollution

Both CNG and LNG are listed as low carbon fuels under California’s Low Carbon Fuel Standard and can reduce GHG emissions by up to 23% for heavy-duty vehicles and 29% for light-duty vehicles when compared to their diesel and gasoline counterparts. If RNG is used to power a natural gas vehicle, GHG emissions can be further reduced by up to 88.1%, which exceeds the federal and state’s 2050 emissions goals today. Not only is RNG listed as an ultra low carbon fuel, it is the best performing ultra low carbon fuel across the board and it can be delivered to natural gas vehicle engines in both compressed and liquefied form.

D. Emissions Performance for Natural Gas Engines Are Bound to Improve on Near Zero Emissions Levels

While current natural gas engine technology is achieving near zero emissions already, it is about to significantly improve further. Recently, Cummins-Westport announced plans to develop an engine with <0.05 g/bhp-hr NOx. Their focus is on NOx because Cummins-Westport engines already provide virtually zero PM emissions. The development of this near zero engine technology is currently underway and is expected to be commercially available in 3 to 5 years.

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In addition, ICR Turbine Engine Corporation (ICRTEC) has teamed up with Kenworth to create a natural gas hybrid engine with NOx emissions of 0.0249 g/bhp-hr (8x lower than EPA standards) and CO emissions of 0.0205g/bhp-hr (750x lower than EPA standards). This new engine is cheaper than current natural gas engines and is estimated to retail for the same price as a diesel engine, yet it has the potential to deliver near zero emissions. It also provides 10-20% better fuel efficiency, is half the size of a conventional diesel or natural gas engine, significantly reduces maintenance, and significantly reduces emissions far below CARB/EPA standards without sophisticated pre- or after-treatments.

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NGVs Offer the South Coast Air Basin with a Great Opportunity to Improve Air Quality Today and Well Into the Future

A. Natural gas and renewable natural gas are both abundant and domestic.

Not only is natural gas clean, it is domestic and abundant in North America with over a 100-year supply, and new reserves are being discovered almost daily. In fact, the United States currently produces about 20 billion cubic feet per day from shale, and that number is predicted to double by 2020 [Navigant Consulting, Inc. (2012, January). Drilling Redirection, Supply Abundance, and Exports. Retrieved August 13, 2012, from [www.navigant.com/http://www.navigant.com/~media/www/site/downloads/energy/ngmarket_notejanuary2012pdf.aspx](http://www.navigant.com/~media/www/site/downloads/energy/ngmarket_notejanuary2012pdf.aspx)].

B. Greater natural gas use as a transportation fuel can boost the economy.

Due to its abundance, natural gas as a transportation fuel is extremely cheap and is thereby capable of providing high discounts to its users. For whatever reason, the 2012 AQMP draft appears to overlook the importance of cost-effectiveness.

For business and government funding alike, based on our experience, cost-effectiveness is one of the most important aspects for justifying the transition of a vehicle or fleet to an alternative fuel. Most of the energy sources mentioned in the 2012 AQMP are more expensive than gasoline or diesel, except for one source – natural gas. With all of the new shale discoveries in recent years, natural gas prices have dropped considerably and can save consumers up to \$1.50 per gallon over the energy equivalent of gasoline and diesel. This is a huge benefit that provides businesses and individuals with a cost-effective way to fuel cleanly. Due to the fuel savings, more people will buy natural gas vehicles, which will ultimately lead to greater emissions reductions across the board. Furthermore, as more heavy duty trucks switch from diesel to natural gas as a cheaper alternative fuel, their aggregate fuel usage will displace a significant proportion of emissions.

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C. The economics of natural gas is creating a competitive market for the NGV Industry

At last count, Clean Energy has identified more than 40 private competitors in the NGV space providing services to build out infrastructure:

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Air and Gas Technologies
- CNG and LNG Station Provider

Allsup
- CNG Station; Owner/Operator

ALT
- LNG Plant Owner; LNG Fuel Provider

American CNG
- CNG and LNG Station Owner/Provider

American Natural Gas
- LNG Station Owner

Atlas Copco-Greenfield Compression
- Equipment Provider

AVSG LP
- CNG Station Network; Owner/Operator

CH-4
- LNG Station; Owner/Operator

Chart Industries
- LNG Equipment Provider; Station Installer

Chesapeake Energy
- CNG Station Owner/Operator

Clean Energy Fuels
- CNG, LNG Fuel Provider; Station Network Owner/Operator

CN Gas Group Corp.
- CNG Equipment & Stations/US Agira Representative

Enviro Express Natural Gas LLC
- LNG Station; Owner/Truck Operator

General Electric
- CNG and LNG Equipment Provider

Go Natural Gas
- CNG Station; Owner/Operator

General Physics
- LNG Equipment Provider; Station Installer, Operator

Gulf Oil
- CNG Station Owner

Integrlys
- Pinnacle Gas Systems LLC;
o CNG; Fuel Station Owner/Operator
- Trillium USA
- CNG; Fuel Station Owner/Operator

Kwik Trip Inc.
- CNG Station; Owner/Operator

Lehigh Gas
- CNG Station; Owner/Operator

Linde
- LNG Fuel Provider; Equipment Supplier

Love's
- CNG Station Owner

Mansfield Gas Equipment System, Inc.
- CNG Station; Supplier/Owner/Operator

Nopetro
- CNG and LNG Fueling Systems

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Encana
- CNG & LNG; Station Owner

Engineered Energy Solutions
- Engineering and Design Firm, CNG Station Owner/Operator

OnCue Express
- CNG Network; Owner/Operator

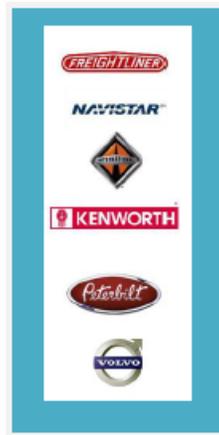
Peake Fuel Solutions
- CNG and LNG Station Equipment Supplier for Stations and Home Refueling

With the realization that it will take billions in investment to transition our country away from conventional fuels, natural gas shows the most promise in weaning ourselves off of foreign oil by the demonstration of strong and growing competition in the natural gas vehicle fueling space.

D. Every Heavy-Duty Truck Manufacturer is now in the business of NGV Trucks due to Demand

As one of the leading indicators of success, most if not all engine manufacturers for heavy- to medium-duty trucks are adopting some form of natural gas vehicle option for their customers. This not only presents an opportunity for American businesses, it also presents an opportunity for clean air as natural gas platforms have consistently presented regulatory authorities, such as the AQMD, with opportunities to reduce both criteria and climate change emissions.

- Freightliner
 - Currently offers CWI 8.9 liter and 11.9 liter expected by 2013
- Navistar / International
 - Committed to deploy full natural gas truck product line
 - Currently offering 7.6 liter Navistar and CWI 8.9 liter
 - 13 liter model expected mid-2013
- Kenworth
 - Currently offers CWI 8.9 liter and 15 liter, 11.9 liter expected by 2013
- Peterbilt
 - Currently offers CWI 8.9 liter and 15 liter, 11.9 liter expected by 2013



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- Volvo
 - Currently offers CWI 8.9 liter, 13 liter announced for 2014 launch



E. Natural gas refueling infrastructure is flourishing nationwide.

There are currently about 500 natural gas stations in California, and recently the heavy-duty sector is taking off with LNG station deployment from distribution fueling leaders such as Clean Energy and Royal Dutch Shell. While the infrastructure of natural gas refueling stations is somewhat established, the current 500 stations in California were not strategically placed to accommodate the trucking routes of the goods movement, nor were the majority of them designed to handle heavy-duty trucks. We can only imagine that the hydrogen and EV infrastructure referenced by the AQMP will befall the same fate, particularly when heavy-duty applications have not been proven for hydrogen fuel cells or EV batteries.

Furthermore, if there is real concern about capturing and cleaning up the 30% of the trucks on California's roads that are from out of state, natural gas provides an option to reduce emissions substantially. Several national networks of LNG and CNG stations have since been proposed directly targeting the goods movement sector. Shell, TravelCenters of America, Integrys, AmericanCNG, and Clean Energy have all announced plans to construct national refueling infrastructure networks. In fact, Clean Energy is on target to build 150 stations from coast to coast and border to border by the end of 2013.



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F. Biomethane production is increasing



Being a California-based company supportive of CARB's Low Carbon Fuel Standard, Clean Energy has embraced the business of producing the lowest carbon fuel identified by the LCFS: biomethane, or RNG. Since then, Clean Energy has founded its subsidiary - Clean Energy Renewable Fuels (CERF) - to finance, build and operate RNG production facilities across the lower 48 states. To date, CERF has been very successful in its efforts to produce RNG from landfill and agricultural-based projects, and it is very interested in participating in sanitation-based projects. CERF's success has come despite the regulated utilities' current ban applied to in-state produced RNG entering the pipeline.

Clearly, it would be beneficial for this 2012 AQMP not only to evaluate the potential of RNG use in transportation fuels, but also to suggest policy actions that can take place to remove existing bans on RNG from entering in-state pipelines as this would directly and efficiently deliver RNG to in-state NGV vehicle fleets.

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Why is AQMD Picking Winners?

Throughout the 2012 AQMP, hydrogen fuel cells and battery electric vehicles are highlighted as key clean air strategies that should be used for multiple applications: from light duty passenger cars to heavy duty trucking, even though these technologies are not optimal or cost effective.

While fuel cells and battery electric vehicles (EVs) can help reduce both criteria and climate change emissions from the transportation sector, the infrastructure is not developed enough to reduce emissions a significant amount, and the cost to consumers is far too high. Most importantly, there are large hurdles in technology limitations for these types of fuels that need to be overcome to be practical.

Battery or fuel cell technology does not currently exist to power a vehicle as large as a heavy-duty truck that meets the demands for shippers or carriers. EVs do not have the range that LNG, CNG or RNG have, leaving customers with substantial "range anxiety": the fear of being stranded due to lack of power. Furthermore, while electric vehicles do not have tail-pipe emissions, it is important to consider how their electricity is generated. Electric vehicles receive their power from the common electricity grid, which in California is derived from 52.7% natural gas, 28.9% renewables, 15.8% nuclear 1% coal and 0.5% petroleum (U.S. Energy Information Administration. (2012). *State Electricity Profiles 2010*. Washington, DC: U.S. Energy Information Administration.). Thus, the largest portion of the power comes from natural gas, so it would be more energy efficient to directly fuel cars with natural gas and cut out the dirty fuels like coal and petroleum.

As for fuel cells, their energy comes from natural gas, hydrogen and alcohols. Currently, the largest source of hydrogen for fuel cells is natural gas. Again, if fuel cells initially derive their

FF-7



energy from natural gas, wouldn't it make more sense to fuel cars with natural gas and further develop natural gas technology using advanced NGVs?

The results of the 2012 AQMP need to be compared to the results of a recent (Aug 1, 2012) National Petroleum Council (NPC) report on all alternative fuels and the role they will play in the marketplace by 2050. In that study, all alternative fuels are "on the table," and the study evaluated the economics of the fuels, vehicles, infrastructure, and fuel production. The results are very different from the 2012 AQMP document. In the NPC study, all alternative fuels made significant inroads against petroleum – but electric and hydrogen technologies were not dominant in the market. The NPC study evaluated greenhouse gas reductions at the end once economic-based market penetrations were determined for each fuel. Results indicated that alternative fuels, based upon economics, would achieve a national reduction of greenhouse gases of about 50% from 2005 levels.

Whether or not the intention of 2012 AQMP was to pick winners, optically the report gives the impression that hydrogen fuel cell and batter technologies are the answer for fueling all applications in the future. Because of this we are worried that decision makers, who are not as versed in air quality and fuels as CARB, SCAQMD, and SJVAPCD, will look at the report and make regulations and legislation based on this assumption. As a natural gas vehicle fueling company, we are worried that because the benefits of natural gas were scarcely mentioned in the report that decision makers will leave natural gas out of the mix in future plans.

In addition, if alternative fuel companies believe that regulatory bodies are favoring certain alternative fuels over others, it will cause arguments and battles to erupt that greatly delay forward progress. Instead of working against each other, different alternative fuels should work together to bring the best technologies to market. In order to achieve this, the 2012 AQMP should identify the various hurdles that each fuel-type faces instead of assuming all hurdles will be overcome and hydrogen fuel cell and battery technologies will dominate the market. Once the report can accomplish this, companies from various alternative fuel companies will be more likely to integrate strategies instead of working against each other.

The definitions of zero and near zero emissions are not clearly defined in the document, and it sounds like fuel cell and battery electric are synonymous with these classifications. Instead of stating the specific technologies, it would be more beneficial to the alternative fuel industry if "zero" and "near zero" emissions were more clearly defined so that all alternative fuels can strive to meet those classifications. It does not make sense to use electricity or fuel cells in a hybrid system with another fuel if the fuel can meet zero or near zero emissions on its own.

NGVs Deserve Equal Consideration under the 2012 AQMP

We are asking that the natural gas industry receive equal, not special, treatment under SCAQMD's incentives and implementation plans. Natural gas vehicles provide comparable,

FF-7

FF-8



if not better, environmental and energy security benefits in relation to other alternative fuels, and they deserve similar support. Instead of advocating for future technologies like hydrogen fuel cell and electric vehicles, rules and incentives should set attainable goals for all fuel types to strive for to develop clean vehicle options for consumers and businesses. By being fuel neutral, SCAQMD can lead the Air Basin's transportation sector into reduced emissions and cleaner air by supporting alternative fuel infrastructure, alternative vehicles, lowering costs to consumers, and pushing alternative fuel providers to improve engine technology. We ask for the same treatment for the natural gas industry. Because there is a great deal of uncertainty regarding which individual fuel-vehicle systems will overcome technology hurdles to become economically and environmentally attractive by 2050, regulations, policies and funding should be technology neutral while market dynamics drive commercialization.

In regards to natural gas incentives, the station fueling infrastructure for natural gas is well established and has more than 40 competitors in the industry, and the fuel makes economic sense, so policies and incentives should be directed toward natural gas vehicles (NGVs). This will help the consumer either cover the initial premium cost NGVs have over conventionally-fueled vehicles or justify paying the premium in their minds.

Concluding Remarks

Clean Energy would truly like to thank the South Coast AQMD for drafting a framework for air quality and climate planning as well as for giving us the opportunity to comment on this document. While the document provides a basis of methods to meet the Air Basin's PM 2.5 and ozone emissions standards, it is troubling to us that a draft by the AQMD, a rule-making regulatory body, barely touches on the current and potential benefits of natural gas used as a transportation fuel.

The 2012 AQMP seems to be a strong proponent of fuel cell and electric vehicles, which are extremely costly, lack infrastructure, have a low range, have technology limitations, and are not realistic for heavy-duty applications. While these energy sources may be an alternative far down the road, natural gas, which is clean, cheap, domestic and abundant, can help the South Coast Air Basin and California accomplish our emissions goals today and beyond and should be considered by AQMD as such. While the natural gas vehicle fueling industry is well established, it continues to grow at a fast pace and needs the support from regulatory bodies like SCAQMD with fuel neutral policies that promote clean fuels and propulsion strategies. As long as it has state support, natural gas technology will advance to the point of complete zero emissions extremely soon. Clean Energy feels that the 2012 AQMP should be edited to illustrate the benefits of natural gas and should position the report as well as future state regulations/incentives as fuel neutral. If natural gas is pushed aside, the South Coast Air Basin's PM and ozone emissions goals will not be met.

Clean Energy strongly recommends that SCAQMD reviews the entire NPC study noted earlier. The study can be found at: <http://www.npc.org/FTF-80112.html>. The NPC study based on economics comes to an entirely different conclusion than the 2012 AQMP. In the study natural gas plays a significant role in changing the transportation fuel mix in the U.S. through 2050 for heavy-duty vehicles and the light duty consumer market. If the South Coast Air Basin focuses on a technology specific agenda – it may be totally out of step with the rest

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of the U.S. which may cost the Air basin and California the ability to economically compete with the rest of the country.



Thank you,

A handwritten signature in black ink, appearing to read "Todd Campbell", written over a horizontal line.

Todd Campbell
Vice President, Policy and Regulatory Affairs



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Responses to Comment Letter FF
Clean Energy

Response to Comment FF-1:

Staff appreciates the comments relative to the role of clean lower carbon fuels in helping to meet air quality goals in the South Coast Air Basin. While the draft 2012 AQMP covers a broad set of strategies in order for the region to attain future air quality standards, the AQMP refers to discussions such as the AQMD Technology Office Clean Fuels Plan, which provide more specific details in conducting research and demonstration of various vehicle technologies using cleaner carbon fuels. Staff welcomes the commenter's participation in these efforts.

Response to Comment FF-2:

Staff believes the commenter is referring to the "Vision for Clean Air" document relative to the greenhouse gas 2050 goal since the draft 2012 AQMP does not contain any emissions inventories beyond 2035. The comments will be considered as the draft "Vision for Clean Air" document is finalized. In addition, see Response to Comment FF-1.

Response to Comment FF-3:

As noted in the discussion of setting lower emission standards discussed in the draft Appendix IV-B, staff recognizes the importance for such standards and that alternative fuel engine technologies that include the use of natural gas will play in helping the region achieve future air quality standards.

Response to Comment FF-4:

The draft 2012 AQMP provides a set of actions that the region needs to continue to move forward in the near-term to help reach the 2023 ozone air quality standard and does not provide a specific set of strategies that are needed to demonstration attainment of the 2023 ozone air quality standard. As such, more specific analysis including economic analyses will be included in the next AQMP, which will focus on the 2023 and 2032 ozone attainment demonstration strategies.

Response to Comment FF-5:

Staff appreciates the comments relative to the development of natural gas engine technologies and the potential greater emissions benefits natural gas engine technologies have to offer. Such benefits will be considered as staff implements the "ADV" measures identified in Appendix IV-B. See also Response to Comments FF-1 and FF-3.

Response to Comment FF-6:

See Responses to Comments FF-1, FF-3, and FF-5.

Response to Comment FF-7:

Staff believes that as battery-electric and fuel cell technologies are further developed, there will be potential integration with alternative fuel based engine technologies such as natural gas. Staff will continue to work with all technology stakeholders to commercialize the cleanest engine technologies as early as possible.

Response to Comment FF-8:

Staff believes that the ADV measures provided in Appendix IV-B does consider all available engine and fuel technologies and does not favor one technology over another. However, some technologies are more mature than others. As such, greater research and development emphasis are placed on those technologies that need to be further developed. While other technologies that are more mature, staff has emphasized the need for incentives to accelerate deployment of such technologies.

Response to Comment FF-9:

Staff appreciates the comments relative to the benefits of natural gas engine technologies. Staff is reviewing the NPC study along with other studies as part of the efforts on the "Vision for Clean Air" document. See also Responses to Comments FF-8.

GG. SoCal Gas / Sempra Utilities, August 31, 2012



A Sempra Energy utility™

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August 31, 2012

Dr. Elaine Chang
Deputy Executive Officer
South Coast Air Quality Management District

RE: Draft 2012 Air Quality Management Plan (AQMP)
Submitted to: 2012aqmpcomments@aqmd.gov

Dear Dr. Chang:

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide comments with respect to the South Coast Air Quality Management District's (SCAQMD) Draft 2012 AQMP. SoCalGas strongly supports the efforts of the SCAQMD to develop an AQMP that will demonstrate attainment of the PM_{2.5} 24-hour Clean Air Act standard through cost-effective control measures. The attainment of Clean Air Act standards is important to all communities in which SoCalGas operates and provides natural gas service. We continue to demonstrate our support of SCAQMD through participation in your regulatory processes, operation of our in-basin facilities in compliance with SCAQMD's existing rules, and support to our customers in the clean and energy-efficient operation of their natural gas-fueled equipment.

We first would like to inform you of a new rule just announced by EPA and NHTSA that is a major development for natural gas vehicles. (Go to <http://epa.gov/otaq/climate/regs-light-duty.htm>) EPA and NHTSA will now allow vehicle manufacturers to count NGVs they produce when calculating their Corporate Average Fuel Economy (CAFE) and EPA's Light-Duty Vehicle Greenhouse Gas Emissions Rule, known as the National Program of harmonized greenhouse gas and fuel economy standards. This is an important change, because it removes a regulatory disincentive to vehicle manufacturers who wish to market NGVs. The national natural gas industry worked hard to get this change; SoCalGas participated. Here is the relevant excerpt from the EPA rule discussion in the Federal Register:

In order to provide temporary regulatory incentives to promote advanced vehicle technologies, EPA is finalizing, as proposed, an incentive multiplier for CO₂ emissions compliance purposes for all electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs), and fuel cell vehicles (FCVs) sold in MYs 2017 through 2021. In addition, in response to public comments explaining how infrastructure and technologies for compressed natural gas (CNG) vehicles could serve as a bridge to use of advanced technologies such as hydrogen fuel cells, EPA is finalizing an incentive multiplier for CNG vehicles sold in MYs 2017 through 2021. This multiplier approach

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means that each EV/PHEV/FCV/CNG vehicle would count as more than one vehicle in the manufacturer's compliance calculation. EPA is finalizing, as proposed, that EVs and FCVs start with a multiplier value of 2.0 in MY 2017 and phase down to a value of 1.5 in MY 2021, and that PHEVs would start at a multiplier value of 1.6 in MY 2017 and phase down to a value of 1.3 in MY 2021.⁸⁶ EPA is finalizing multiplier values for both dedicated and dual fuel CNG vehicles for MYs 2017-2021 that are equivalent to the multipliers for PHEVs. All incentive multipliers in EPA's program expire at the end of MY 2021. See Section III.C.2 for more discussion of these incentive multipliers.

GG-1

As you can see, EPA based its decision upon the idea that compressed natural gas fueling infrastructure could serve as a bridge to hydrogen fueled vehicles. SoCalGas has researched reforming of natural gas into hydrogen, and continues to discuss possibilities with interested parties. However any future plans will likely depend upon the outcome of our compression services tariff request to the CPUC. We will need policy clarification from the CPUC to plan how, and to what extent, SoCalGas can participate in the compressed natural gas fueling infrastructure.

We are also supportive of the direction of the change in the definition of "near-zero emissions:"

GG-2

The term —near-zero emissions refers to emissions approaching zero and will be delineated for individual source categories through the process of developing the Air Quality Management Plan/State Implementation Plan and subsequent control measures. Based on current analyses, on-land transportation sources will need to achieve zero emissions where possible, and otherwise will need to be substantially below adopted emission standards — including standards with future effective dates. Near-zero emissions technologies can help meet this need, particularly if they support a path toward zero emissions (e.g. electric/fossil fuel hybrids with all-electric range). (Please see Chapter 4 - Control Strategy and Implementation page 4-19, of the draft 2012 AQMP.)

This new approach will allow more flexibility, and the opportunity for more cost effective approaches to getting down to these very low emission levels. For example see the discussion of the concept of "Net-Zero" emission locomotive system" on page 20 of this comment letter.

As set forth in greater detail in our comments, SoCalGas would like to underscore the following points with respect to SCAQMD AQMPs in general:

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- 1) The draft 2012 AQMP should focus on attainment of the 2006 24-hour PM_{2.5} standard, and SCAQMD should not make legally binding commitments beyond attainment of this standard, until they are necessary.
- 2) SCAQMD should continue to address the "black-box" commitments in the 2007 AQMP with cost-effective measures, but should not submit the Section 185(e)(5) control

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measures for inclusion in the CA SIP at this time. SoCalGas remains committed to working with the SCAQMD and all stakeholders to overcoming the challenge of the black box, and has put forward studies of how to do this and new technologies that make the use of natural gas even cleaner; and

- 3) All SCAQMD planning efforts, analyses and control measures should remain fuel neutral.

GG-3

The comments are organized and presented in the following attachments by control measure. To facilitate further discussion and mutually beneficial coordination, we have included a contact person's name and contact information for each of the control measure comments. The most effective way to contact SoCalGas staff is through email, but please do not hesitate to contact me directly (213-244-8851).

Comments are provided on the following control measures:

Attachment	Control Measure	SoCalGas Contact
Attachment 1	CMB-01: Further NO _x Reductions from RECLAIM	Charles Humphrey chumphrey@semprautilities.com
Attachment 2	CMB-03: Reductions from Commercial Space Heating	Steve Simons SSimons@semprautilities.com
Attachment 3	BCM-03: Further PM Reductions from Under-Fired Charbroilers	Steve Simons SSimons@semprautilities.com
Attachment 4	EDU-01: Further Criteria Pollutant Reductions from Education, Outreach, and Incentives	Lance DeLaura LDelaura@semprautilities.com
Attachment 5	INC-01: Economic Incentive programs to Adopted or Near-Zero Technologies	Lance DeLaura LDelaura@semprautilities.com
Attachment 6	Federal CAA Section 182(e)(5) Implementation Measures for Ozone - Mobile Sources	Cherif Youssef CYoussef@semprautilities.com

SoCalGas has not been able to independently verify the modeling for demonstration of attainment of the PM_{2.5} standard. And, therefore, expresses no independent opinion on the need for any of the specific control measures to be used to meet the 2006 PM_{2.5} standard by 2014.

Sincerely,

Lee Wallace

Lee Wallace
Environmental Affairs Manager

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Acronyms used in this Document

AT-PZEV	Advanced Technology - Partial Zero-Emission Vehicle
AQMP	Air Quality Management Plan
ARPA-E	Advanced Research Projects Agency – Energy
BARCT	Best Available Retrofit Control Technology
BEV	Battery-Electric vehicles
blp-hr	Brake Horsepower-Hour
Biogas	Renewable Natural Gas
Btu/hr	British Thermal Units per Hour
CAA	Clean Air Act
CARB	California Air Resources Board
CAFE	Corporate Average Fuel Economy
CLEEN	Federal Aviation Administration’s Continuous Lower Energy, Emissions and Noise Program
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CVRP	Clean Vehicle Rebate Pilot
ECI	Energy Conversions, Inc.
EFMP	AB 118 Enhanced Fleet Modernization Program
EGR	Engine Gas Recirculation
EIA	Energy Information Administration
EMD	Electro-Motive Diesel, Inc.
FCV	Fuel Cell Vehicles
GHG	Green-House Gases
GTI	Gas Technology Institute
HRA	Home Refueling Appliance
LNG	Liquefied natural gas
µg/m ³	Microgram per Cubic Meter
MPPC	Micro Pilot Pre-Chambers
MSRC	Mobile Source Air Pollution Reduction Review Committee
NGV	Natural Gas Vehicles
NO _x	Oxides of Nitrogen
OEM	Original Equipment Manufacturer
PHL	Pacific Harbor Line, Inc.
PM	Particulate Matter
PM _{2.5}	Particulate Matter that is 2.5 micrometers in diameter and smaller
PM _{2.5}	Also known as fine particulate
PPM	Parts Per Million
PZEV	Partial Zero-Emission Vehicle
RTC	RECLAIM Trading Credit or facility emission cap
SCAG	Southern California Association of Governments
SCR	Selective Catalytic Reduction
SCRRA	Southern California Regional Rail Authority, aka Metrolink
SIP	State Implementation Plan

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SoCalGas	Southern California Gas Company
SwRI	Southwest Research Institute
TPD	Tons Per Day
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
WBCT	West Basin Container Terminal

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Attachment 1

SoCalGas has not been able to independently verify the modeling for demonstration of attainment of the PM_{2.5} standard. And, therefore, expresses no independent opinion on the need for these Control Measures to be used to meet the PM_{2.5} requirement by 2014.

Short-Term PM_{2.5} Control Measure

CMB-01: Further NO_x Reductions from RECLAIM (Phase I and Phase II) [NO_x]

Summary Description of Control Measures

Phase I is classified as a short-term PM_{2.5} control measure and seeks further reductions of 2 TPD of NO_x by 2014 by reducing (shaving) the equivalent number of RTCs in the RECLAIM market.

Phase II of this control measure is classified in the draft 2012 AQMP as a federal CAA Section 182(e)(5) implementation measure. Section 182(e)(5) allows extreme ozone nonattainment areas to include measures that rely on the development of new technology or advancement of existing technology. Such measures are known as "black box" measures. In the draft 2012 AQMP, the Section 182(e)(5) implementation measures such as Phase II, are designed to implement some of the "black box" measures from the 2007 AQMP. Phase II seeks NO_x reductions of an additional 1 TPD over that of Phase I.

Proposed Method of Control and Emissions Reduction

Phase I: The proposed measure states that the annual RECLAIM audits from 2008 to 2010 showed approximately 22–30% programmatic excess in RTC holdings (6.5 TPD – 8.0 TPD) over the three years. Thus, the measure proposes to reduce the total program's RTC allocations by 2–3 TPD by 2014. Staff would seek, with stakeholder input, to identify appropriate approaches during rulemaking to evaluate various shaving methodologies; e.g., a sector-specific or across-the-board reduction. Rulemaking to begin Phase I is expected to begin in 2013 for implementation in 2014.

Phase II: The proposed measure states that the RECLAIM program is subject to the California Health and Safety code, which requires evaluation of the advancement in Best Available Control Retrofit Technology (BARCT). Thus, the measure proposes a periodic facility reassessment and if BARCT changes, the facility's NO_x RTC holdings would be reduced by an equivalent amount as if the facility's equipment was subject to applicable command-and-control BARCT levels. The draft 2012 AQMP states that the January 2005 amendment to the RECLAIM rules "reflected" such a BARCT reassessment resulting in NO_x RTC reductions of approximately 22.5%. Staff may incorporate concepts of facility modernization, and other feasible control measures such as increased energy efficiency and zero and near-zero emission technologies during the rulemaking process that is scheduled to be complete in 2015 with implementation in 2020.

Comments

Phase I: As a point of clarification, there are various references to the amount of reductions sought from Phase I alternatively indicate either as 2 TPD NO_x (Chapter 4, page 4-9) or 2-3 TPD

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NO_x (Chapter 4, Table 4-2 and Appendix IVA). Phase II, a Section 182(e)(5) implementation measure, proposes an additional 1-2 TPD of NO_x reduction. In Appendix IVA, the table at the top of page IV-A-57 (CMB-01, Phase II) lists the combined NO_x reductions from Phase I and Phase II as a minimum of 3 TPD to a maximum of 5 TPD. A footnote on the table notes that the lower ends of the range (2 and 1 TPD, respectively) will be the SIP commitment for the control measures. Finally, the parenthetical in the first sentence at the top of page IV-A-59 states “from overall 3-5 tpd NO_x RTC reductions discussed in the first phase.” These references are confusing, appear inconsistent and could be construed as misleading with respect to the proposed Phase I RECLAIM NO_x reductions.

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For consistency and to avoid confusion as this control measure undergoes rulemaking, SoCalGas strongly urges that all text references and tables in the draft 2012 AQMP should only list the SIP commitment of 2 TPD.

Phase II: We question the need for two RECLAIM “shaves” so close together in the draft 2012 AQMP. We note that the difference in emission reductions between the adopted SIP and those achieved from the Phase I rulemaking could be significant as evidenced by the 2007 AQMP and subsequent RECLAIM rulemaking. This is borne out in the Annual RECLAIM Audit Report for 2009 Compliance Year, Chapter 3 - Emissions Reductions Achieved in which it is stated that cumulative changes will result in 22.5% reductions when fully implemented. Given the estimated 2010 excess in RTC holdings of 8 TPD (page IV-A-15), it is reasonable to expect that the Phase I rulemaking will propose more reductions than the 2 TPD SIP commitment for Phase I. As such, a periodic technology assessment only need be performed when the BARCT “true-up” is actually expected to result in emission reductions. The draft 2012 AQMP does not provide information on the impacts of such a BARCT evaluation prior to implementation of the proposed Phase II RTC shave. An evaluation of the potential impacts is necessary to ensure the proposed cost-effective threshold of \$22,500/ton is realistic, especially in light of new technologies being developed resulting in near-zero or zero emissions. The BARCT true-up must not underestimate future energy utilization, which is significantly lower due to continued economic doldrums, but energy use might return to historic levels as long as the cost of additional, incremental regulatory control does not affect manufacturers’ competitiveness.

SCAQMD must also consider that most of the stationary sources in RECLAIM are also regulated under California’s AB32 Cap and Trade regulations. As a result, these sources will likely have reductions in both criteria pollutants and GHGs. Impacts to businesses as a result of the Cap and Trade regulation could be significant, including relocation and shut down, or reduced production at existing operating facilities. The draft 2012 AQMP should provide an analysis of the potential likelihood and magnitude of emissions co-benefits due to other drivers as well as impacts of other regulations prior to initiating Phase II. We believe additional NO_x reductions should not be committed under Phase II, and that such commitment should be incorporated into the 2015 8-hour ozone AQMP.

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Finally, we anticipate that widespread industry involvement in Cap and Trade programs will have an impact on overall energy use as companies endeavor to streamline operations and began to operate more efficiently. The incentive to increase operational efficiency will lead companies to ultimately reduce fuel use thus reducing combustion emissions from daily operations. Though

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changes in energy demand cannot be readily quantified at this time, stationary sources, fleets and other mobile sources will all be affected to the extent that the Cap and Trade Program will be a strong ally of the AQMP’s NO_x reduction efforts.

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Attachment 2

Short-Term PM_{2.5} Control Measure
CMB-03: Reductions from Commercial Space Heating [NO_x]

Summary Description of Control Measure

This proposed control measure proposes NO_x emission reductions from commercial fan-type central furnaces used for space heating and rated from > 175,000 Btu/hr to < 2,000,000 Btu/hr and will apply to manufacturers, distributors, sellers, installers and purchasers of this type of equipment.

Proposed Method of Control and Emission Reductions

This measure proposes to establish a NO_x emission limit for new space heaters for commercial applications, which can be achieved through the use of low NO_x burners.

Comments

SoCalGas wants to ensure that the technological, economic, and operational impacts of this control measure on commercial businesses is minimized and ameliorated. The proposed control measure will require the development of advanced furnace products, which do not exist today and yet must meet existing safety and efficiency standards, and be reliable, durable and affordable. Our specific comments follow.

1. **Proposed Timing:** This measure will be implemented in two phases. Beginning in Phase I with a technical assessment to be completed by 2014, and completing Phase II rule development by 2016. SoCalGas supports this proposed two phase approach for this control measure. However, we do have concerns regarding the proposed time allowed for manufacturers to develop and commercialize these new low-emission products. Manufacturers are already being pushed to meet the 2014 deadline required for condensing residential furnaces and the 2015 deadline for non-condensing residential furnaces (SCAQMD Rule 1111). Based on the current research projects that are jointly co-funded by SoCalGas and SCAQMD, manufacturers may be hard-pressed to complete initial furnace designs and to have prototype residential units adequately field tested and safety certified in to order to meet commercialization timing targets in 2014 and 2015. Potential delay with the Rule 1111 residential products could impact the timing for development and commercialization of commercial units as proposed in this control measure. The Phase I technical assessment should consider the number of models of residential and commercial furnaces that have to be developed, field tested and safety certified before public sale by a manufacturer and the cumulative time needed to meet the emissions standard and accomplish these challenging tasks. The Phase I assessment should consider the technological, economic, and operational impacts upon specific customer categories. These customer categories cannot be treated as if they will react in the same way to the additional costs and maintenance requirements.
2. **SIP Commitment:** SoCalGas has concern regarding the SIP commitment of 0.18 TPD NO_x by 2023 and 0.6 TPD NO_x total proposed for this control measure. Our concern is

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based on what SCAQMD admits is a poorly defined equipment inventory. Because the SIP commitment is legally enforceable under the Federal Clean Air Act, we believe a more prudent approach would be to submit this control measure without a specified emissions reduction target. This approach is consistent with other control measures where equipment and emission inventories are not well defined.

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Attachment 3

Short-Term PM_{2.5} Control Measure

BCM-03: Further PM Reductions from Under-Fired Charbroilers [PM_{2.5}]

Summary Description of Control Measure

This proposed control measure would reduce PM_{2.5} emissions directly emitted from restaurant operations that use under-fired charbroilers by applying unspecified emission control technologies.

Proposed Method of Control and Emissions Reduction

The proposed control measure would be implemented in two phases. Phase I involves the assessment of several candidate emission control technologies/equipment at the University of California at Riverside's Center for Environmental Research & Technology's (CE-CERT) test kitchen. Phase II includes technical and economic feasibility analysis and evaluation of rule development (or amendment of existing Rule 1138 - Control of Emissions from Restaurant Operations) to implement feasible controls for under-fired charbroilers.

Comments

SoCalGas wants to ensure that the impacts of this proposed control measure on the restaurant industry are minimized and ameliorated. The SCAQMD must ensure that any hood capture-systems or other control technologies developed to control PM_{2.5} emissions from under-fired charbroilers meet existing safety standards, and are reliable and affordable. Additionally, the cost effectiveness analysis must demonstrate that the cost of control is reasonable. Our specific comments follow.

1. Phase 1 Feasibility Study: SoCalGas supports the proposed plan to conduct an initial Feasibility Study to identify cost-effective particulate controls for use with under-fired charbroilers. It is important that this study thoroughly investigates capital, operating and routine and periodic maintenance costs of the system and equipment. The cost assessment for maintenance should include labor and non-labor costs such as energy expenses, costs for cleaning agents such as soap and solvents, replacement filters and all other materials used in day-to-day operations.

If testing at CE-CERT identifies a good candidate control technology, then SoCalGas would be interested in cosponsoring (with SCAQMD and the California Restaurant Association) a follow-on field demonstration at an area restaurant to further validate operating costs and emission reductions of the equipment.

2. Technology issues: Other unique technical challenges include the need for direct access to the front of the under-fired charbroiler to manage the cooking process and the need for the cooked meats to maintain a charbroiled taste and appearance. Many restaurants base their culinary reputations on charbroiled foods. The Feasibility Study needs to consider all these technical issues, in addition to emission reduction capabilities.

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In summary, the SCAQMD should take the time necessary to understand fully the technology and product issues, related costs, and assess the impacts on various food service operations. As part of this assessment, SCAQMD should provide complete data for the incremental cost effectiveness and estimated emission reduction calculations. Finally, SoCalGas would consider co-funding a field demonstration of equipment that is shown to be good candidate technology in the Phase 1 laboratory evaluations conducted by CE-CERT.

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Attachment 4

Federal CAA Section 182(e)(5) Implementation Measures for Ozone
EDU-01: Further Criteria Pollutant Reductions from Education, Outreach, and Incentives
[All Pollutants]

Summary Description of Control Measure

This proposed control measure seeks to provide educational outreach and incentives for consumers to contribute to clean air efforts. In addition, this proposed measure intends to increase the effectiveness of energy conservation programs through public education and awareness as to the environmental effects and benefits from conservation. Educational and incentive tools to be used include comparison of energy usage and efficiency, social media, and public/private partnerships.

Proposed Method of Control and Emissions Reduction

Emissions reductions have not yet been quantified but examples of emissions reduction methods include the usage of energy efficient products, new lighting technology, "super compliant coatings," tree planting, and the use of lighter colored roofing and paving materials to reduce energy usage by lowering ambient temperature.

Comments

Assuming SCAQMD has the funding and resources, SoCalGas supports the adoption of this measure and programs to help promote clean air purchases, efficiency projects, and conservation techniques that provide criteria pollutant emissions benefits. We believe that creating awareness of the benefits of choosing efficient equipment, making energy upgrades, and using cleaner energy sources are critical to reaching the state's public health, air, and greenhouse gas goals. SoCalGas offers a number of rebates, incentives, and other programs to help transform the market towards more energy efficient products. We believe there are opportunities to work closely with SCAQMD to help craft effective programs and partner on these types of efforts.

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Attachment 5

Federal CAA Section 182(e)(5) Implementation Measures for Ozone
INC-01: Economic Incentive programs to Adopted or Near- Zero Technologies [NO_x]

Summary Description of Control Measure

The primary objective of this measure is to develop programs that promote and encourage adoption and installation of cleaner, more efficient combustion equipment with a focus on zero and near-zero technologies, such as boilers, water heaters, and commercial space heating, through economic incentive programs, subject to the availability of public funding.

Proposed Method of Control

Avail economic incentive programs from public funding including grants and loans for new purchase of equipment where long term cost savings from increased efficiency are achieved.

Comments

Assuming SCAQMD has the funding and resources, SoCalGas supports the adoption of this measure and programs that promote and encourage the adoption and installation of cleaner, more efficient stationary combustion equipment. We believe that providing incentives and loans to replace combustion equipment will accelerate their replacement and help reduce the public's exposure to air pollutants and greenhouse gas emissions. Providing incentives to help mitigate the costs associated with new purchases and other energy saving upgrades can significantly impact whether or not customers participate in these types of activities. SoCalGas offers a number of rebates, incentives, and other programs to help transform the market towards more energy efficient products. We believe there are opportunities to work closely with SCAQMD to help craft effective programs and partner on these types of efforts.

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Attachment 6

Federal CAA Section 182(e)(5) Implementation Measures for Ozone - Mobile Sources

General Comments

The draft 2012 AQMP demonstrates attainment of the federal 2006 24-hour PM_{2.5} standard of 35 µg/m³ by 2014. It also updates the approved 8-hour ozone AQMP with new commitments for short-term NO_x and VOC reductions and updated emissions inventories and projections to make major progress toward achieving the 1997 8-hour ozone standard of 0.08 parts per million (ppm) by 2023 and the 2008 standard of 0.075 ppm by 2032. As stated previously, SoCalGas does not believe SCAQMD should submit control measures for inclusion in the SIP if they are not needed to show attainment with the 2006 PM_{2.5} 24-hour standard, but we do in general support the concepts in the Section 185(e)(5) mobile-source control measures.

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As a matter of policy, SoCalGas supports a technology agnostic approach to meeting emission reduction goals. Within that perspective, SoCalGas believes that the draft 2012 AQMP incorporates too little natural gas technology. This is not based on SoCalGas' role as a distributor of natural gas but rather on the demonstrated performance and predictable advances in natural gas technologies, while achieving emission reductions in both criteria pollutants and green-house gases (GHG). Natural gas technologies offer one of, if not the, lowest cost alternatives for reduction of criteria and GHG emissions, and vehicles running on renewable natural gas (biogas) have been certified by CARB as the lowest GHG-emitting vehicles. CARB analysis shows that natural gas vehicles (NGVs) employing biogas fuel are lower GHG emitters than both battery-electric vehicles (BEVs), and fuel-cell vehicles (FCVs). Additionally tailpipe criteria emissions can be mitigated to very near-zero levels.

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The focus of the mobile source measures in the draft 2012 AQMP includes accelerated retrofits or replacement of existing vehicles or equipment, acceleration of vehicle turnover through voluntary vehicle retirement programs, and greater use of cleaner fuels in the near-term. The draft 2012 AQMP envisions that, in the longer-term, in order to attain the federal 8-hour ozone standard, there is a need to increase the penetration and deployment of near-zero and zero-emission vehicles such as plug-in hybrids, BEVs, and FCVs, increased use of cleaner fuels (either alternative fuels or new formulations of gasoline and diesel fuels), and additional emission reductions from locomotive and aircraft engines. The proposed technology solutions all have merit but in general are currently very expensive, may require expensive infrastructure improvements, and major technology development to meet the stated goals cost effectively. Natural gas technology, on the other hand, is cost effective now and relatively mature. Even if viewed as a bridge fuel, good public policy would support aggressive adoption of compressed natural gas (CNG) and liquefied natural gas (LNG) now, and let technology advances determine the role of natural gas fuel beyond 2025.

Natural gas, a domestically produced fuel, is expected to continue to offer cost advantages over diesel and gasoline (mostly refined from imported crude oil) for a long time. Natural gas also offers more reductions in NO_x, CO, CO₂ and PM_{2.5} than liquid fuels.

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SoCalGas believes the incorporation of near-zero emissions technology along with flexibility to define that term both in terms of current emissions and progress toward zero-emission pathways is a positive step toward the type of performance-based, technology-agnostic and pragmatic approaches that SoCalGas advocates. SoCalGas looks forward to working with the SCAQMD on supportive paths to zero emissions such as hydrogen-CNG blends, biogas, advanced after-treatment and reformation of natural gas to produce hydrogen fuel.

SoCalGas can support all the Advanced Control Technologies measures that accelerate the penetration of lower emissions (On-Road & Off-Road) vehicles, marine vessels and locomotives, if they are not submitted as control measure in the PM_{2.5} SIP, include the potential for NGVs as near-zero emission technologies, and the use of NGVs and infrastructure as a path to zero-emission technologies. Natural gas technologies that are currently available or being developed can provide cost effective alternative solutions in addition to the other fuels being considered.

Our specific comments are divided into five categories as follows:

Category 1: Control measures related to partial-zero and zero-emission vehicles and light-, medium- and heavy-duty vehicles.

ONRD-01: Accelerated Penetration of Partial-Zero Emission and Zero-Emission Vehicles
Summary Description of Control Measure

This measure proposes to continue incentives for the purchase of zero-emission vehicles and hybrid vehicles that have a portion of their operation in an all electric range mode. The state Clean Vehicle Rebate Pilot (CVRP) program is proposed to continue from 2015 to 2023 with a proposed funding for up to \$5,000 per vehicle. The proposed measure seeks to provide funding assistance for up to 1,000 zero-emissions or partial-zero emission vehicles per year.

ONRD-02: Accelerated Retirement of Older Light- and Medium-Duty Vehicles
Summary Description of Control Measure

This proposed measure calls for promoting the permanent retirement of older eligible vehicles through financial incentives currently offered through local funding incentive programs and the AB 118 Enhanced Fleet Modernization Program (EFMP). The proposed measure seeks to retire up to 2,000 older light- and medium-duty vehicles (up to 8,500 lbs gross vehicle weight) per year. Funding incentives of up to \$2,500 per vehicle are proposed for the scrapping of the vehicle, which may include a replacement voucher for a newer or new vehicle.

Light-Duty Vehicles: ONRD-01 and ONRD-02

Category 1, Light-Duty Vehicles Comments

SoCalGas requests inclusion of light-duty PZEV NGVs in the draft 2012 AQMP as qualifying partial-zero emission vehicles. Although the Honda GX (dedicated CNG) is the only certified Partial-Zero Emission Light-Duty vehicle, other OEM's have indicated interest in developing vehicles. The development of a cost effective Home Refueling Appliances (HRA) can provide a large boost for light-duty market potential and other technology advances such as CNG/Electric hybrid, engine efficiency advances and numerous other technology advances can reduce

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emission further. SoCalGas would welcome the opportunity to consider joint technology programs with SCAQMD to advance these technologies and other zero-emission pathway approaches such as hydrogen-CNG blends.
Medium-Duty Vehicles: ONRD-03

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ONRD-03: Accelerated Penetration of Partial-Zero Emission and Zero-Emission Light Heavy and Medium Heavy-Duty Vehicles
Summary Description of Control Measure

The objective of the proposed action is to accelerate the introduction of advanced hybrid and zero-emission technologies for Class 4 through 6 heavy-duty vehicles. The state is currently implementing a Hybrid Vehicle Incentives Project (HVIP) program to promote zero-emission and hybrid heavy-duty vehicles. The proposed measure seeks to continue the program from 2015 to 2023 to deploy up to 1,000 zero- and partial-zero emission vehicles per year with up to \$25,000 funding assistance per vehicle. Zero-emission vehicles and hybrid vehicles with a portion of their operation in an all electric range mode would be given the highest priority.

Category 1, Medium-Duty Vehicles Comments

SoCalGas requests inclusion of medium-duty PZEV NGVs as qualifying partial-zero emission medium-duty vehicles. At this time the Ford 150, Chrysler Ram and Chevy Silverado are the only CNG bi-fuel trucks and they do not qualify as partial-zero emission vehicles. Landi Renzo, USA announced that USEPA certified a CNG-fueled 2012 Ford 6.8L V10 engine (Ford F-450/550/650 Chassis Cab and F53/F59 Step Van Chassis). Other OEMs and third party up-fitters have expressed interest in the development of other medium-duty vehicles that have the potential of achieving partial-zero emissions. SoCalGas proposes to jointly co-fund, with the SCAQMD, the demonstration of newly developed lower emissions trucks and vans.

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Heavy-Duty Vehicles: ONRD 04, ONRD 05, ADV-01 and ADV-03

ONRD-04: Accelerated Retirement of Older On-Road Heavy-Duty Vehicles
Summary Description of Control Measure

This proposed measure seeks to replace up to 1,000 heavy-duty vehicles per year with newer or new vehicles that at a minimum, meet the 2010 on-road heavy-duty NO_x exhaust emissions standard of 0.2 g/bhp-hr. Given that exceedances of the 24-hour PM_{2.5} air quality standard occur in the Mira Loma region, priority will be placed on replacing older diesel trucks that operate primarily at the warehouse and distribution centers located in the Mira Loma area. Funding assistance of up to \$35,000 per vehicle is proposed and the level of funding will depend upon the NO_x emissions certification level of the replacement vehicle. In addition, a provision similar to the Surplus Off-Road Option for NO_x (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation will be sought to ensure that additional NO_x emission reduction benefits are achieved.

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ONRD-05: Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards

Summary Description of Control Measure

This proposed control measure calls for a requirement that any cargo container moved between the Ports of Los Angeles and Long Beach to the nearby railyards (the Intermodal Container Transfer Facility and the proposed Southern California International Gateway) be with zero-emission technologies. The measure would be fully implemented by 2020 through the deployment of zero-emission trucks or any alternative zero-emission container movement system such as a fixed guideway system. The measure calls for CARB to either adopt a new regulation or amend an existing regulation to require such deployment by 2020. To the extent the measure can feasibly be extended beyond near-dock railyards, this would be considered for adoption by CARB.

ADV-01: Actions for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles

Summary Description of Control Measure

This measure would continue the efforts underway to develop zero-emission and near-zero emission technologies for on-road heavy-duty vehicle applications. Such technologies include, but not limited to, fuel cell, battery-electric, hybrid-electric with all electric range, and overhead catenary systems. Hybrid-electric systems incorporate an engine powered by conventional fuels or alternative fuels such as natural gas. The actions provided in the proposed measure are based on the SCAG 2012 Regional Transportation Plan.

ADV-03: Actions for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment

Summary Description of Control Measure

This measure recognizes the actions underway to develop and deploy zero- and near-zero emission technologies for various cargo-handling equipment. The San Pedro Bay Ports are currently demonstrating battery-electric yard tractors. In addition, battery-electric, fuel cell, and hybridized systems could be deployed on smaller cargo handling equipment. In addition, the use of alternative fuels for conventional combustion engines could potentially result in greater emissions benefits.

Category 1, Heavy-Duty Vehicles Comments

SoCalGas requests changes to these control measures to include and encourage development of natural-gas powered partial-zero emission vehicles. The current Federal and CARB NO_x emission standard for heavy-duty vehicles is 0.2 g/bhp-hr, while the draft 2012 AQMP proposes a 95% reduction, or 0.01 g/bhp-hr (Appendix IV –B-54). In our research and demonstration projects, SoCalGas is targeting near-term emission reductions of 80%, or 0.05 g/bhp-hr. Several engine manufacturers are developing various sizes of heavy-duty engines to meet less than 0.2 g/bhp-hr. Doosan (a Korean engine manufacturer) is developing an eleven-liter engine that will utilize blended hydrogen fuel and other emissions control techniques to achieve near-zero emissions. Brayton Energy is developing microturbines, and hybrid-CNG heavy-duty engines. US Hybrid is working with Freightliner and GTI in demonstrating a hybrid-CNG engine in a class-eight drayage truck. SoCalGas and several other parties are participating in demonstrating

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catenary CNG-hybrid trucks at the Port of Los Angeles. Also, Ebus is demonstrating a new CNG-Hybrid bus. All of these projects have one common goal, which is to use natural-gas fuel along with innovations to achieve near-zero emissions. As an example, the SCAQMD could encourage future development by setting several qualifying emission-reduction levels over time, such as 50% NO_x reduction over 2010 emission standards within the next 5 years, 75% NO_x reduction over 2010 emission standards within the next 10 years and provide higher incentives for higher emission reductions.

Hybrid technology, including CNG-hybrid trucks, would be encouraged by the use of the concept of “zero-emission miles traveled” as another metric to determine whether or not a technology is a near-zero emission technology or even a zero-emission technology. We urge SCAQMD and CARB to consider further discussion of this concept soon, in order for truck manufacturers to understand the concept of zero-emission miles traveled so they may incorporate it into their development plans. As you know, truck manufacturers must have a long lead time to develop and introduce new vehicles. They need to know the new “rules of the game” as soon as possible.

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Category 2: Control measures related to Surplus Off-Road Options for NO_x (SOON)

OFFRD-01: Extension of the SOON Provision for Construction/Industrial Equipment
Summary Description of Control Measure

This measure seeks to continue the Surplus Off-Road Option for NO_x (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation beyond 2014 through the 2023 timeframe. In order to implement the SOON program in this timeframe, funding of up to \$30 million per year would be sought to help fund the repower or replacement of older Tier 0 and Tier 1 equipment, with reductions that are considered surplus to the statewide regulation with Tier 4 or cleaner engines.

ADV-06: Actions for the Deployment of Cleaner Off-Road Equipment

Summary Description of Control Measure

SCAQMD, its Mobile Source Air Pollution Reduction Review Committee (MSRC), and CARB have been conducting an off-road —showcase program for retrofit technologies to further reduce emissions from older off-road equipment. In addition, several major off-road engine manufacturers are investigating the potential use of hybrid systems to further reduce criteria pollutant and greenhouse gas emissions. Potential advanced technologies include hybrid systems that utilize batteries, fuel cells, or plug-in capabilities, which could result in lower emissions compared to Tier 4 emission levels when combined with future Tier 4 compliant engines. The measure is implemented by the District, CARB and U.S. EPA.

Category 2 Comments

SoCalGas requests modifications to both OFFRD-01 and ADV-06 control measures to explicitly allow the use of natural gas equipment for off road applications to achieve partial-zero emissions.

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Category 3: Control measures related to locomotives

OFFRD-02: Further Emission Reductions from Freight Locomotives

Summary Description of Control Measure

The proposed control measure is to meet the commitment in the 2007 SIP for the accelerated use of Tier 4 locomotives in the South Coast Air Basin. The measure calls for CARB to seek further emission reductions from freight locomotives through enforceable mechanisms within its authority to achieve 95 percent or greater introduction of Tier 4 locomotives by 2023.

OFFRD-03: Further Emission Reductions from Passenger Locomotives

Summary Description of Control Measure

This measure recognizes the recent actions by the Southern California Regional Rail Authority (SCRRA or Metrolink) to consider replacement of their existing Tier 0 passenger locomotives with Tier 4 locomotives. The SCRRA adopted a plan that contains a schedule to replace their older existing passenger locomotives with Tier 4 locomotives by 2017. More recently, SCRRA released a Request for Quotes on the cost of new or newly manufactured passenger locomotives with locomotive engines that meet Tier 4 emission levels.

ADV-02: Actions for the Deployment of zero- and Near-Zero Emission Locomotives

Summary Description of Control Measure

This measure calls for the development and deployment of zero-emission and near-zero emission technologies for locomotives. Such technologies include overhead catenary systems, hybrid locomotives that have some portion of their operation in an all electric range mode, and alternative forms of external power such as a battery tender car. The actions provided in the proposed measure are based on the SCAG 2012 Regional Transportation Plan.

Category 3 Comments

SoCalGas requests modifications to OFFRD-02, OFFRD-03 and ADV-02 control measures to explicitly allow the use of natural gas-powered partial-zero emission locomotives. SoCalGas is collaborating with Energy Conversions Inc. (ECI) and Ioxus on an ARPA-E project to develop the systems for a Tier 5 CNG-hybrid commuter locomotive. This technology offers a viable near-zero emission transition for passenger rail. The project will develop and demonstrate novel locomotive architecture that integrates several recently proven technologies at locomotive scale. It offers reduced operating costs and emissions with enhanced performance and redundancy. Because of its economic practicality and small infrastructure footprint, it could result in a very practical transition from diesel to natural gas in the publicly visible sector of the United States transportation system. In some instances it will prove to be a practical and economic substitute for rail electrification.

Converting to CNG-hybrids in the existing fleet of F40/59 locomotives will provide cleaner, higher performing locomotives at a similar cost to buying new diesel passenger locomotives. This could lower fuel cost by 80% and yield a yearly savings of approximately \$17.1 million. Emissions are 75% below Tier 4 NO_x and result in a 40% decrease in GHGs. In terms of performance it could double the acceleration rate, increase average train speed by 10%, and offer a minimal increase in energy expenditure for additional train stops.

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A TIAX report discussing the LNG switcher locomotive demonstration project below is attached (Attachment 6-B) for reference.¹

In 2009, the ports of Long Beach and Los Angeles, working with Pacific Harbor Line, Inc. (PHL) acquired one switcher locomotive fueled by liquefied natural gas (LNG) to demonstrate the technology's suitability and emissions reduction characteristics at the Port of Los Angeles' West Basin Container Terminal (WBCT). This 1,200 HP LNG locomotive (BNSF 1203) was the primary switcher locomotive used at WBCT during the duration of the demonstration project. The objective of the demonstration was to compare the performance of the system with PHL's older (phased out) 1,200 HP diesel-electric switchers, using recent historical data. This provided an "apples to apples" comparison because the two types of switcher locomotives are similar in size and capabilities. In addition, emissions comparisons were made under the revised plan of the LNG switcher versus both types of diesel-electric locomotives (the older phased out baseline switcher, and the new Tier 2 switcher). Using the modified demonstration test plan as approved by the Ports, the LNG switcher was operated by PHL for a period of 36 weeks.

Based on PHL-provided data and observations from the demonstration, the following conclusion can be made: Overall, the LNG locomotive performed "adequately to well" in railcar switching service. Although there were a few logistics and mechanical issues associated with storing and combusting LNG fuel that negatively impacted the locomotive's reliability and service capability, and despite the apparent higher rate of fuel consumption, the LNG locomotive cost approximately 23% less to fuel on an energy-equivalent basis, due to the lower price paid by PHL per Btu of LNG fuel compared to diesel fuel. LNG is also a viable option for switchers and might provide further fuel cost benefits. Additionally, the LNG switcher locomotive emits an estimated 92% less NO_x and 76% less PM compared to the baseline (uncontrolled) diesel locomotives. The LNG switcher locomotive emits an estimated 81% less NO_x and 57% less PM than PHL's new Tier 2 locomotives.

OFFRD-2 seeks to accelerate the locomotive fleet turn over to have 95% of locomotives operating in the South Coast Air Basin at Tier 4 emissions levels. This would require the participating railroads to purchase new locomotives in order to retire reliable and functional locomotives. Not only are these new locomotives a significant and unnecessary capital cost, these newer locomotives will cost more to operate and require more routine maintenance. LNG conversion systems can be a cost effective option for re-powering existing EMD locomotives, despite the possible need after treatment. These systems would not only exceed the reductions required by Tier 4, but cut operating costs in half.

Regarding OFFRD-3, SCAQMD, SoCalGas and Metrolink participated in a program called GasRailUSA. This program ended abruptly when the participating engine manufacturer stopped supporting it, but in the process it generated test results on several different natural gas locomotive engine technologies. For NO_x reduction and thermal efficiency, the most promising technology was micro pilot prechambers (MPPC). MPPC uses a micro pilot of diesel fuel in a prechamber to ignite a very lean mixture of premixed natural gas. This technology has recently

¹ Demonstration of a Liquid Natural Gas Fueled Switcher Locomotive at Pacific Harbor Line, Inc.

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been tested and refined in several research programs for smaller engines with even more promising results.

In a collaborative effort ECI, Ioxus, SoCalGas and SwRI submitted a grant proposal to ARPA-E to develop the needed systems to upgrade existing EMD passenger locomotives to CNG-hybrid commuter locomotives. Utilizing the frequent start-stop operation of the commuter-rail duty cycle combined with MPPC, natural gas engines, and ultra capacitive energy storage this system is predicted to have NO_x emissions below the upcoming Tier 4 emission standard.

It appears that SCAQMD staff is looking for optional NO_x standards that could be incorporated into the draft 2012 AQMP. The CNG-hybrid system discussed above could facilitate discussion towards a new, optional "Tier 5" emission standard for Commuter Locomotives.

The CNG-hybrid system is more likely to accelerate the transition of the passenger locomotive fleet because it reduces operating costs by 70% and doubles the acceleration performance of the trains. In the long term the performance increase is highly desirable and the fuel cost savings over the life of the system make the CNG-hybrid system less expensive than any diesel fueled Tier 3 or Tier 4 systems.

The "Tier 5" CNG-hybrid commuter locomotive is also a viable and practical step toward a "Net-Zero" emission locomotive system. The natural-gas piston engines could be replaced when they need overhaul with ultra-low NO_x natural gas turbines. In 8 to 10 years, the Intercooled Recuperated Gas Turbine engines in development with ceramic turbines will have the reliability and efficiency of current diesel locomotive engines with NO_x outputs below 5 ppm. This future engine-technology upgrade will benefit from current investment in natural-gas storage and hybrid equipment.

SoCalGas believes conversion to natural gas of EMD 2-stroke engines is an early action to meet Tier 4 standards and a viable path to near-zero emissions with future replacement of the piston engine with a gas turbine.

Natural gas conversion is a promising early and rapid Tier 4 adoption for rail because it will also cut fuel operating costs in half. This is in contrast with SCR and high EGR as Tier 4 solutions, which will increase operating costs. Unlike electrification it does not require significant infrastructure change; and, unlike Tier 4 diesel, it cuts operating costs in half.

Category 4: Control measures related to Marine Vessels and Harbor Craft

OFFRD-04: Further Emission Reductions from Ocean-Going Marine Vessels while at Berth
Summary Description of Control Measure

This measure seeks additional emission reductions from ocean-going marine vessels while at berth. The actions would affect ocean-going vessels that are not subject to the statewide Shore Power regulation (Title 17 Section 93118.3, Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port) or vessel calls that are considered surplus to the statewide regulation. The measure seeks at a minimum to have an additional 25 percent of vessel calls beyond the statewide regulation to deploy shore

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power technologies or alternative forms of emissions reduction as early as possible. Such actions could be implemented through additional incentives programs or through the San Pedro Bay Ports as part of the implementation of the Ports Clean Air Action Plan.

OFFRD-05: Emission Reductions from Ocean-Going Marine Vessels

Summary Description of Control Measure

This measure recognizes the recent actions at the Ports of Los Angeles and Long Beach to initiate an incentives program for cleaner ocean-going vessels to call at the ports. The program has been initiated as part of the San Pedro Bay Ports Clean Air Action Plan. The program will provide financial incentives for cleaner Tier 2 and Tier 3 ocean-going vessels to call at the ports. This measure also recognizes the need to monitor progress under such programs and augment them as necessary to ensure sufficient results. The program will be monitored on annual basis and, if necessary, any adjustments to the program will be made.

ADV-04: Actions for the Deployment of Cleaner Emission Commercial Harbor Craft

Summary Description of Control Measure

Several commercial harbor craft operators have begun deployment of hybrid systems in their harbor craft to further reduce criteria pollutant emissions and improve fuel efficiency. Other cleaner technologies include the use of alternative fuels, retrofit of existing older marine engines with selective catalytic converters, and diesel particulate filters. This measure recognizes several efforts between SCAQMD and the Ports of Los Angeles and Long Beach to further demonstrate control technologies that could be deployed on commercial harbor craft that could go beyond the statewide Harbor Craft regulation (Title 17 Section 93118.5, Airborne Toxic Control Measure for Commercial Harbor Craft and Title 12 Section 2299.5, Low Sulfur Fuel Requirement, Emission Limits and Other Requirements for Commercial Harbor Craft).

ADV-05: Actions for the Deployment of Cleaner Ocean-Going Marine Vessels

Summary Description of Control Measure

The Ports of Los Angeles and Long Beach, CARB, and SCAQMD have sponsored research and demonstration of various control technologies to further reduce emissions from ocean-going vessels. In addition, the San Pedro Bay Ports Clean Air Action Plan contains a measure to further demonstrate such technologies on ocean-going vessels. This measure recognizes many of these efforts and the need to further demonstrate retrofit technologies on existing ocean-going vessels.

Category 4 Comments

SoCalGas supports these control measures with the caveats set out in our general mobile source comments. Both CNG and LNG fuels have the potential to achieve near-zero emissions for marine vessels and harbor craft. Please see the attached detail report by American Clean Skies Foundation (Attachment 6-A) on this topic².

This study offers the first in-depth look at the challenges and prospects of converting U.S. marine vessels to liquefied natural gas, which is more often viewed as a fuel for long haul

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² NATURAL GAS FOR MARINE VESSELS - U.S. MARKET OPPORTUNITIES

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trucking. Most marine vessels operate on liquid petroleum fuel—either marine distillate or marine residual oil.

Based on current forecasts, natural gas delivered for production of LNG is now at least 70% less expensive on an energy equivalent basis than marine residual fuel and 85% less expensive than marine distillate fuel. EIA currently projects that this relative price advantage will continue, and even increase, through 2035. In addition, conversion of vessels to LNG operation is expensive, it can cost up to \$7 million to convert a medium-sized tug to operate on natural gas, almost \$11 million to convert a large car and passenger ferry, and up to \$24 million to convert a Great Lakes bulk carrier. Approximately one sixth of this cost relates to conversion of the vessel engines and the rest is for installation of LNG storage tanks and related safety systems and ship modifications.

Another issue which will affect the economics of LNG conversion for some vessels is implementation of federal emissions regulations and fuel sulfur restrictions, which become effective between 2016 and 2020. In particular, significant reductions in allowable fuel sulfur, for vessels operating in federal waters and in the North American and Caribbean Sea Emission Control Areas, will require switching to more expensive distillate fuel, or installation of expensive emission controls for vessels that currently burn residual fuel. For these vessels, the incremental cost of compliance relative to current fuel costs may significantly improve the economics of conversion to naturally low-sulfur LNG.

Below³ is a link to an article about Fjord Line Ferries that converted to 100% LNG. Bergen Fosen is building two ships with Rolls-Royce BV12PG engines. Two new international cruise ferries by the Egersund, Norway-based Fjord Line will be powered solely by LNG, rather than the originally announced dual fuel system.

Category 5: Control measures for aircraft engines

ADV-07 –Actions for the Deployment of Cleaner Aircraft Engines

Summary Description of Control Measure

Mobile Source Air Pollution Reduction Review Committee (MSRC): This measure recognizes the efforts of the Federal Aviation Administration's Continuous Lower Energy, Emissions and Noise (CLEEN) Program. The goal of the CLEEN Program is the development of new aircraft engines that potentially can be up to 60 percent cleaner in NO_x emissions than current aircraft engines. The actions under this measure are to continue the development of cleaner aircraft engines and work with the airlines and local airport authorities to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin.

³ http://www.fleetandfuel.com/files/lng/2012/07/fjord-line-ferries-100-lng.htm_source=FleetFuel01August2012&utm_campaign=August152012&utm_medium=email

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Category 5 Comments

SoCalGas has no comments on this control measure except that we advocate that only those control measures required to demonstrate attainment with the 2006 24-hour PM_{2.5} standard be submitted for the SIP at this time.

Responses to Comment Letter GG
SoCal Gas / Sempra

Response to Comment GG-1:

Thank you for your comments regarding the recent EPA and NHTSA rulemaking. We are aware of the proposed credit approach for greenhouse gas purposes and continue to support greater use of alternative fueled vehicles as a vital solution to meeting ambient air quality standards in the South Coast Air Basin.

Response to Comment GG-2:

District staff looks forward to the next generation of cleaner alternative fueled combustion engines. District staff believes that the potential to integrate the next generation of cleaner combustion engines with hybrid systems that have the capability of operating in a "zero-emission" mode will be necessary in order for the South Coast Air Basin to achieve air quality standards by their applicable dates. We look forward to working with all stakeholders in the development of the cleanest engine technologies as early as possible.

Response to Comment GG-3:

These three main points are addressed in detail in the following responses. The district is committed to fuel neutral policies and actions, provided that the associated emissions are zero or near-zero allowing the Basin to reach its air quality goals.

Response to Comment GG-4:

Several improvements have been made to Control Measure CMB-01 to clarify its intent. Most importantly, please note that, as pointed out in response to comment W-3, reductions from Control Measure CMB-01 are no longer needed for demonstrating attainment with the 24-hour PM_{2.5} standard. As a result, Control Measure CMB-01 in the revised Draft 2012 AQMP is listed as a contingency measure for PM_{2.5} and not as part of the short-term control strategy, although the proposed BARCT adjustment is now listed as an ozone measure.

Response to Comment GG-5:

Please see response to comment GG-4. District staff is cognizant that implementation of the AB32 program, in addition to the GHG reductions, in many instances, may result in criteria pollutant reduction co-benefits. Such co-benefits in criteria pollutants would be welcome and could be factored in future program designs to the extent such benefits could be quantified during the program design phase.

Response to Comment GG-6:

AQMD staff does not expect the compliance date for a rule based on control measure CMB-03 to be earlier than 2018. The current project to develop prototypes of Rule 1111 compliant residential furnaces is progressing well and is expected to be completed by the summer of 2013. Based on progress to date, AQMD staff does not expect a delay in Rule 1111 implementation. Staff believes that the current schedule in measure CMB-03 provides sufficient time for development of larger products based on residential furnace technology (multiple small burners) or single burner technologies used in other applications. The various types of commercial space heaters will be evaluated as part of the rule development process.

Response to Comment GG-7:

The methodology for developing the commercial space heating emissions inventory is well established, has been used in previous AQMPs and incorporates EPA emission factors, local data on gas use by different sectors from local gas utilities and information from the California Energy Commission, CARB and local agencies. The inventory incorporates local growth projections and gas utility provided energy conservation projections. The factor in inventory development that may need further enhancements is the proportion of heating provided by forced air furnaces versus boilers. Given the inventory for this control measure is based on sound data and AQMD staff has used a conservative approach to estimate emission reductions, staff proposes to take credit for this reduction and revise the emission reduction upward during rule development if it is warranted.

Response to Comment GG-8:

As outlined, the Phase I of the technical assessment will evaluate all costs associated with the purchase, installation, and operation and maintenance of the charbroiler control device. Consideration will be given to compatibility and local codes (e.g. fire suppression) relative to implementing the technology. The assessment of costs will also include the cleaning and/or replacement of filters. This has been clarified in the control measure.

AQMD staff hopes for and anticipates more than one affordable and feasible technology and appreciates the offer to co-sponsor and co-fund one of technologies in the field. A real-world assessment would be most beneficial to proving the success of the control device. It should be noted that the San Joaquin Valley APCD created a program with \$500,000 to demonstrate technologies at a restaurant and had no takers. So, the Gas Company's assistance in identifying a restaurant would be most helpful and will be discussed as part of the stakeholder process.

Response to Comment GG-9:

One of the intents of the testing program at CE-CERT is to demonstrate a technology that any control installations not augment the cooking process; therefore the focus is for in-hood or rooftop/duct work placement of the device so as not to impact the taste or appearance of the charbroiled meat. This has also been clarified in the control measure.

Recognizing that any feasible control device must be affordable to the restaurant operator, one focus of the testing program was to evaluate potential control devices that have a capital and installation cost below \$30,000 and annual operating costs below \$10,000. Evaluation of cost (including incremental cost) impacts associated with purchase, installation, and operation and maintenance (e.g., cleaning and/or replacing filters) of the equipment will also be assessed. This has also been clarified in the control measure. AQMD appreciates the offer to co-fund a demonstration project.

Response to Comment GG-10:

We appreciate your support for this control measure and willingness to work with AQMD on implementing this measure.

Response to Comment GG-11:

We appreciate your support for this control measure and willingness to work with AQMD on implementing this measure.

Response to Comment GG-12:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the existing 1997 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically adopted in regulatory form at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also

underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond. While the District will need to adopt another ozone plan in 2015 to attain the 75 ppb standard by 2032, we cannot afford to delay implementation of the large “black box” in the existing approved 2007 AQMP (241 fpd NO_x & 40 tpd VOC).

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NO_x and VOC emission reduction commitments contained in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment GG-13:

As noted in the draft 2012 AQMP, the primary focus is on attainment of the 24-hour PM_{2.5} air quality standard. However, actions needed in the near-term to help attain the 2023 ozone air quality standards are identified with no emission commitments. As with previous AQMPs and SIP submittals, emission reduction commitments are designed with the flexibility to substitute specific control measures to achieve the emission reduction commitments. Staff believes that it is important that the early actions identified in the draft AQMP will provide more certainty in the types of research, development and demonstration, and deployment efforts needed for advanced cleaner combustion engines and zero- and near-zero emission technology development.

Response to Comment GG-14:

ONRD-1 and ONRD-2 focus on existing incentives programs based on guidelines that focus on partial-zero and zero-emission vehicles developed by the state. The Commenter is urged to provide similar comments as the state continues to enhance its guidelines for future funding programs. The AQMD staff welcomes the opportunities with work stakeholders in the development of natural gas-hybrid vehicle technologies.

Response to Comment GG-15:

See Response to Comments GG-14 as it applies to medium-duty vehicles.

Response to Comment GG-16:

Staff appreciates the comments regarding cleaner engine emissions levels, and is in discussions with various stakeholders for the development of such technologies.

Response to Comment GG-17:

OFFRD-01 is specific to the deployment of commercially available Tier 3 and Tier 4 technologies. There are no restrictions in funding alternative fueled engine technologies as long as such engines are commercially available. Relative to ADV-06, staff welcomes proposals for alternative-fueled engines integrated with hybrid systems in off-road applications. There are no limitations on proposed projects that have the potential for emission reductions beyond Tier 4 off-road engine standards.

Response to Comment GG-18:

OFFRD-02, OFFRD-03, and ADV-02 do not limit Tier 4 or cleaner locomotive engine technologies to conventionally fueled technologies. As such, if natural gas locomotive engines that meet Tier 4 or cleaner emission levels are commercialized, such technologies will be welcomed. As discussed in "ADV-02", natural gas locomotive engines have a potential role in meeting cleaner than Tier 4 emission levels. See discussions beginning on Page IV-B-63.

Response to Comment GG-19:

Staff appreciates the comments relative to ocean-going vessels and harbor craft and the references to deployment of natural gas engine technologies. Staff will continue to work with stakeholders in the development of such technologies.

HH. Port of Los Angeles & Port of Long Beach, August 30, 2012



August 30, 2012

Barry Wallerstein, D. Env.
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Re: Comments on the Draft 2012 Air Quality Management Plan

Dear Dr. Wallerstein:

The Port of Long Beach and Port of Los Angeles (Ports) appreciate the opportunity to serve on the South Coast Air Quality Management District's (AQMD) 2012 Air Quality Management Plan (AQMP) Advisory Committee. We support the AQMD's clean air goals and have a proven leadership record of developing and implementing appropriate and effective strategies that have resulted in the port-related goods movement industry's achievement of real and dramatic emissions reductions. Although the Ports do not own or control the emission sources, the Ports have worked cooperatively with business operators in the port area and the air quality regulatory agencies (i.e. Environmental Protection Agency, California Air Resources Board, and AQMD) to help the port industry reduce its fair share of air quality impacts to the region from port-related operations, as outlined in the San Pedro Bay Ports Clean Air Action Plan (CAAP) and the associated San Pedro Bay Standards. As a result, between 2005 and 2011 emissions from port-related sources were reduced by 73 percent for diesel particulate matter (DPM) and by 50 percent for nitrogen oxides (NOx). The Ports' San Pedro Bay Standards for 2014 established goals to reduce port-related DPM by 72 percent and NOx by 22 percent. Therefore, as a result of implementation of aggressive actions by the port industry, port-related emission reductions have exceeded our goals several years ahead of schedule.

While we remain a committed partner in the effort to improve air quality in the region, we have significant concerns with several proposed control measures in the Draft 2012 AQMP that improperly misclassify the Ports as "stationary sources" or "indirect sources" under AQMP Stationary Source measures, or as "implementing agencies" of specific AQMP mobile source measures. In particular, the proposed Stationary Source Measure IND-01, "Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources" contains many legal flaws, as explained in greater detail below, and inappropriately proposes to impose enforcement actions on the Ports for emissions generated by emissions sources that the Ports do not own,

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operate, or control, which is counterproductive to the cooperative relationship that our agencies have established since we began working together on the voluntary CAAP in 2006.

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This letter provides the Ports' specific comments on the control measures in the Draft 2012 AQMP that we believe must be addressed prior to finalization and adoption by your agency.

Proposed Stationary Source Measure IND-01

There are three fundamental problems with Proposed Measure IND-01, "Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources." First, the proposed backstop rule would transform the Ports' voluntary CAAP into the AQMD's mandatory regulation of the Ports. This would jeopardize the Ports and the Port-related emissions sources' grant funding for equipment replacement and modernization if it is now necessary to comply with regulation, while offering nothing to assist the Ports with compliance in terms of additional technologies, facilitating regulations, tools, or funding. Second, although the CAAP was a voluntary cooperative effort of the Ports and the air agencies designed to encourage the industry operators of regulated equipment to go beyond regulation, the proposed backstop rule would improperly subject the Ports to the AQMD's enforcement action for industry's missed emissions reductions by equipment not operated or controlled by the Ports, or even potential loss of federal funding under federal conformity principles if the AQMP is adopted into the State Implementation Plan (SIP) and approved by the U.S. EPA as federal law. Third, the proposed backstop rule exceeds the AQMD's authority and if implemented may violate the State Tidelands Trust. If Measure IND-01 (as well as the Offroad Mobile Source Measures discussed below) are in reality the AQMD's regulation of Port-related mobile emissions sources such as locomotives, ships, rail, and trucks, then this is beyond AQMD's legal authority and AQMD should obtain a waiver under the Clean Air Act from the U.S. EPA. The Ports provide further detailed comments on Proposed Measure IND-01 below, and object to it being included in the 2012 AQMP.

HH-2

Based upon the AQMD's modeling results, existing control measures are expected to result in attainment of the Federal 24-hour PM2.5 standard by the 2014 deadline without Measure IND-01. Section 39602 of the California Health and Safety Code states that the State Implementation Plan (SIP) shall only include those provisions necessary to meet the requirements of the Clean Air Act. Hence, there is no identified need or legal basis for implementing Measure IND-01. The AQMD's proposed measure will not result in any additional benefit for the region beyond what is currently being achieved and expected to be achieved in the near future, and is therefore unnecessary.

HH-3

The Ports are neither "direct emissions sources" nor "stationary sources" subject to AQMD permitting, and the AQMD has not complied with requirements for regulation under Health and Safety Code. The Ports are also not "indirect sources" subject to an AQMD indirect source review program within the meaning of the Clean Air Act, and the AQMD has not complied with requirements of the Clean Air Act, 42 U.S.C. §7410 and various other requirements for indirect source classification. The Ports are also not air agency regulators. The Ports do not own, operate, regulate, or control any of the goods movement equipment serving the Ports that are

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targeted emissions sources under Measure IND-01. Additionally, the equipment are mobile sources regulated by state, federal, and/or international regulation, sometimes under jurisdiction preempting Port or AQMD action. It is inappropriate for the AQMD to regulate the Ports without the Ports' ownership, operation, or jurisdiction to regulate the various industry businesses actually causing the emissions within our boundaries.

HH-4

The proposed backstop measure continues to state that if there is a South Coast Air Basin-wide shortfall in emission reductions, then the AQMD will mandate additional emission reductions from the Ports, even if the port-related sources have already met their commitments. This moving target standard is unconstitutionally vague and therefore illegal. The Ports are unfairly targeted, as there are no backstop measures proposed for other entities or source categories should other modeling assumptions not come to pass, such as anticipated natural fleet turnover, or other non-regulated initiatives failing to meet their goals, such as those expected by the Carl Moyer Program. If the AQMD's emissions projections for achieving attainment are incorrect, including control factors and growth rates, this measure appears to imply that the Ports will be specifically tasked with rectifying the shortfall. If the Basin fails to achieve the federal air quality standard, the proper channel to address this is through the established SIP process, not to establish a contingency rule to unfairly burden one specific industry out of the entire Basin.

HH-5

AQMD staff has indicated that Measure IND-01 is proposed to account for measures that are not backed by enforceable requirements. However, significant programs such as the CAAP's Clean Truck Program, Ocean-going Vessel Low Sulfur Fuel Program, Cargo-handling Equipment requirements, and the Shore-side Power/Alternative Maritime Power programs are currently backstopped by CARB and International Maritime Organization (IMO) regulations. The Ports also require higher rates of vessel or equipment compliance than regulation through terminal leases, when such commercial opportunities are able to be negotiated with tenants. Therefore, Proposed Measure IND-01 is unnecessary.

HH-6

Measure IND-01 is vague and incomplete. It is unclear whether the AQMD has taken credit for actual/current emission reductions in the baseline only, or if assumptions have been made for future year reductions. We take issue with a measure moving forward where emissions projections are "on-going." Further, no detail is provided on the level of emission reductions that are needing to be maintained. This is further complicated by the differences that exist between the emissions inventories produced by the Ports and the inventory used for the AQMP. It is unclear if a specific emission reduction shortfall will trigger implementation of the measure, or if it is simply left to the discretion of the AQMD. Additionally, the control costs have not yet been developed or justified in a cost-benefit analysis.

HH-7

The CAAP is a planning document that provides a guideline of strategies and targets that are often "stretch goals," which ultimately are implemented through individual actions adopted by the Long Beach and Los Angeles Boards of Harbor Commissioners (Boards). The Ports are sovereign Tidelands granted to the cities of Los Angeles and Long Beach by the state under the oversight of the State Lands Commission. Each city has been appointed as a trustee and has established their respective Board of Harbor Commissioners with exclusive control and management of the Tidelands and revenues and expenditures from the Tidelands. However,

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such discretion must be exercised in accordance with their obligations to prudently manage Tidelands assets and revenues within a nexus and proportionality to the Tidelands Trust interests, as well as in accordance with applicable laws such as the California Environmental Quality Act (CEQA) and principles of federal preemption.¹ The AQMD cannot mandate action by each Port's Board of Harbor Commissioners, nor can the AQMD direct how the Ports obligate state Tidelands money; only the appointed trustee can make discretionary actions to obligate state Tidelands funds. Specifically, the CAAP measures listed in the Draft 2012 AQMP each require the Boards to authorize the expenditure of incentive monies and program costs, or to approve conditions of infrastructure project development in their discretion as CEQA lead agency and as Tidelands trustees.

HH-8

We strongly believe that the voluntary and cooperative CAAP process established by the Ports remains the most appropriate forum for the Ports and the air regulatory agencies to discuss technical and policy issues related to reducing emissions from port-related sources. As stated above, we remain committed to achieving the clean air goals identified in the CAAP and working with port industry and the air regulatory agencies on implementation of appropriate strategies.

For your reference, attached is our comment letter dated July 10, 2012, expressing our preliminary concerns related to the proposed Measure IND-01 and a comment letter dated May 4, 2010, in which the Ports initially expressed concerns regarding backstop rules.

Proposed Off-Road Mobile Source and Advanced Control Technology Measures

The Draft 2012 AQMP also identifies the San Pedro Bay Ports as "Implementing Agencies" for several of the proposed Off-Road measures (OFFRD-02, OFFRD-04, and OFFRD-05) and Advanced Control Technology measures (ADV-01, ADV-02, ADV-03, ADV-04, and ADV-05). The Ports should not be listed as Implementing Agencies, which the AQMP Appendix IV-A defines as "the agency(ies) responsible for implementing the control measure." While the Ports have been moving forward with voluntary efforts in these areas, as mentioned above, the Ports are not air agency regulators. We also do not own or operate the equipment identified in the proposed measures, and therefore we do not have direct control over any of the sources listed. During the Advisory Committee meetings, AQMD staff has provided clarification that the Ports are listed as Implementing Agencies because of our voluntary commitments to work on these

HH-9

¹ The Ports' experience with the first phase of the 2006-2010 CAAP showed that in actual implementation, many CAAP measures were carried out in a different manner than originally conceptualized, or not carried out at all, based on limitations on the Boards' opportunities and their exercise of their discretion to manage Tidelands assets and funds under real-world circumstances. Some of the CAAP measures can only be implemented if businesses apply to the Ports for permits to build or expand their lease premises and CEQA mitigation required by law or lease conditions that can be negotiated with a Port tenant. Other CAAP measures involve emissions sources (rail or ocean vessels) that may assert federal preemption against efforts to compel use of specific technology, so the CAAP goals involve the Ports offering economic incentives in voluntary compliance programs, such as the Ocean Vessel incentive programs. However, only the Boards have the legal authority to fund such incentives or impose CEQA mitigation or lease conditions to project approval, which decisions also fall within the Boards' sole discretion regarding their respective Port's properties and their individual Harbor Revenue Fund budgets, which may be affected by the global economy.

Dr. Wallerstein
August 30, 2012
Page -5-

efforts, and that being listed as an implementation agency does not obligate the Ports to any specific requirement, however, this is contrary to the language of the AQMP that implementing agencies are "responsible for implementing the control measure." We believe that listing the Ports, and not including all of the other public and private partners that are also working on these efforts, gives the impression that the Ports do have an assigned obligation, or that the Ports must bear a larger burden in the effort to implement these programs. We also repeat our comment stated above that the AQMD cannot mandate in the AQMP that the Ports must expend monies in these voluntary efforts, since most of these Off-Road and Advanced Control Technology measures require incentive monies to fund demonstration projects or accelerated use of new technology.

HH-9

We believe that the appropriate Implementing Agencies for these measures are the United States Environmental Protection Agency and the California Air Resources Board.

The Ports urge AQMD to make all of the above-requested changes to the draft 2012 AQMP, in particular, to eliminate Measure IND-01 Port Backstop Rule as a legally unnecessary measure exceeding AQMD's authority and violating the State Tidelands Trust. We believe it is much more effective to advance our mutual clean air goals for our agencies to continue working cooperatively together, but if the AQMD takes the above 2012 AQMP measures forward, the Ports will have no choice but to vigorously oppose such action through the administrative and legal process.

Sincerely,



Chris Lytle
Executive Director
Port of Long Beach



Geraldine Knatz
Executive Director
Port of Los Angeles

HAT:s

cc: Peter Greenwald, South Coast Air Quality Management District
Elaine Chang, South Coast Air Quality Management District
Henry Hogo, South Coast Air Quality Management District
Susan Nakamura, South Coast Air Quality Management District
Cynthia Marvin, California Air Resources Board
Roxanne Johnson, Environmental Protection Agency, Region 9
Port of Long Beach Harbor Commission
Port of Los Angeles Harbor Commission
Robert Kanter, Port of Long Beach
Rick Cameron, Port of Long Beach
Dominic Holzhaus, Deputy City Attorney, City of Long Beach
Chris Cannon, Port of Los Angeles
Joy Crose, Assistant General Counsel, City of Los Angeles
David Reich, Los Angeles City Mayor's Office

Responses to Comment Letter HH
Ports of Long Beach and Los Angeles

Response to Comment HH-1:

The AQMD staff acknowledges the Ports efforts in reducing emissions from port related sources through the CAAP and other efforts. Responses to specific concerns are presented in Responses to Comments HH-2 through HH-8.

Response to Comment HH-2:

The AQMD staff acknowledges that inclusion of IND-01 – Backstop Measure for Indirect Sources of Emissions from Ports and Port-related Facilities in the 2012 AQMP would be a mandatory regulation enforced under the AQMD’s indirect source authority. However, IND-01 does not affect any potential grant funding for equipment replacement or modernization since it does not prescribe specific controls or equipment similar to state regulations on port-related sources. This control measure is based on an overall emission reduction targets from port-related sources, and “backstops” those emission targets already expected from existing air quality rules, regulations, and commitments. In addition, the cooperative relationship between the AQMD and the Ports will not change with the adoption of IND-01 in the 2012 AQMP. The AQMD staff is committed to continue our existing relationship with the Ports in order to facilitate our mutual efforts on demonstrating and introducing lower-emitting port-related equipment and vehicles. As previously mentioned above, this control measure is based on emission targets from port-related sources expected from existing air quality rules, regulations, and commitments. Under IND-01, the Ports will not be responsible for reducing emissions beyond their “fair share” original targets. In the situation where the original basin-wide carrying capacity is amended, the District will seek additional reductions from all available sources, including port-related sources. Under this scenario, all sources (including stationary sources) will have a new “fair share” reduction target. Various legal arguments are made in this general comment. We respond to these comments more specifically in response to the individual comments below. Although the commenter claims that including IND-01 in the Draft 2012 AQMP may violate the State Tidelands Trust, no explanation was provided regarding how this control measure could violate the State Tidelands Trust.

The comment reasserts the commenters’ position that the District lacks legal authority to adopt Control Measure IND-01. In brief, the District has authority to regulate indirect sources under existing law. Health & Safety Code §§40716(a)(1); 40440(b)(3). The Ports satisfy the definition of indirect source because they are a “facility, ...installation...[or] real property...which attracts, or may attract, mobile sources of air pollution. 42 U.S.C. §7410(a)(5)(C). Air districts may regulate indirect sources even though the regulation is intended to reduce emissions from the mobile sources associated with the indirect source, and although the district would be preempted from

setting emission standards for those mobile sources. See *Nat'l Ass'n of Home Builders v. San Joaquin Valley APCD*, 627 F. 3d 730 (9th Cir. 2010)

Response to Comment HH-3:

The commenter is correct in that IND-01 only requires additional action by the Ports if their “fair share” reduction is not met or is amended due to the original basin-wide carrying capacity being changed. Furthermore, the AQMD staff considers this control measure to be necessary to ensure that the Basin achieves the federal 24-hour PM_{2.5} ambient air quality standard by 2014. Since IND-01 is included in the Draft 2012 AQMP in order to provide an “insurance policy” or backstop measure to ensure that the needed emission reductions from port-related sources assumed in the plan are met, it does not conflict with Section 39602 of the California Health and Safety Code. Other State Implementation Plan measures have been adopted and approved by EPA which do not themselves provide additional emission reductions, but provide additional assurance that the emission reductions will be achieved, such as monitoring and recordkeeping requirements in Rule 109 and RECLAIM. In addition, the federal CAA, 42 USC sect. 7410 a(5)(a)(i) expressly allows a SIP to include an indirect source review program, such as IND-01.

Response to Comment HH-4:

The AQMD can regulate Port sources under its existing authority under state law. As stated in control Measure IND-01, the District has the authority to adopt rules to control emissions from “indirect sources” under existing law. The Clean Air Act defines an indirect source as a “facility, building, structure, installation, real property, road or highway which attracts, or may attract, mobile sources of pollution,” 42 U.S.C. § 7410(a)(5)(C); CAA § 110(a)(5)(C). Under this definition, the Ports are an indirect source. Specified in the California State Air Pollution Control Laws, as codified in the California Health & Safety Code, districts are further authorized to adopt rules to “reduce or mitigate emissions from indirect sources” of pollution. (Health & Safety Code § 40716(a)(1)). The AQMD is also required to adopt indirect source rules for areas where there are “high-level, localized concentrations of pollutants or with respect to any new source that will have a significant impact on air quality in the South Coast Air Basin,” (Health & Safety Code § 40440(b)(3)). We believe that the Ports fit within the definition of an indirect source. The comment does not explain what it means when it contends that AQMD has not complied with requirements of the Clean Air Act for indirect source regulations. We are not aware of any such deficiency. Also, there is no authority that we are aware of saying that an indirect source measure may only affect mobile sources that are owned or operated by the indirect source. For example, Rule 2202 applies to employers of 250 or more but is intended to reduce emissions from vehicles owned by the employees of the regulated indirect source. An indirect source measure may be valid even though it affects mobile sources for which the Clean Air Act preempts the agency from requiring emission standards. See National Assn of

Home Builders vs. San Joaquin Valley APCD, 627 F. 3d 730 (9th Cir. 2010). In comment HH-2, the Port concedes there are Port-related mobile source emissions, which would otherwise not exist except for the Port.

Response to Comment HH-5:

The justification to include this control measure in the draft Plan is that if the need arises for additional emission reductions due to a shortfall in the original target or to a change in the Basin-wide carrying capacity for 2014 federal 24-hr PM_{2.5} ambient air quality standard, the mechanism for further emission reductions from port-related sources is included as a control measure in the AQMP and staff can proceed with rule development if needed. The measure is not unconstitutionally vague since during the rule development process the emissions reduction target will be set, and if it is later required to be changed, there will be an open and public process before any new target is established and becomes enforceable. The AQMD staff does not think the Ports are unfairly targeted since the emissions from port-related sources are a significant portion of the overall emissions inventory and other sources, including stationary sources are extensively regulated. The Ports have misunderstood the measure. IND-01 does not require them to make up the shortfall from other non port-related sources. The AQMD staff considers IND-01 to be the most appropriate method of addressing any shortfall in port-related source emission reductions or changes to the Basin-wide carrying capacity.

The doctrine against unconstitutionally vague laws is designed to assure that a penal statute defines “the criminal offense with sufficient definitiveness that ordinary people can understand what conduct is prohibited “, and to ensure that the statute establishes “minimal guidelines to govern law enforcement.” *Kolender v. Lawson*, 461 U.S. 352, 357-58 (1983). Control Measure IND-01 does not violate this doctrine because it has not yet been developed into a rule and hence cannot subject anyone to criminal enforcement.

Response to Comment HH-6:

Control Measure IND-01 is based on emission targets from port-related sources, and “backstops” those emissions assumed in the 2012 emission inventory, such as rate of participation of vessel speed reduction, penetration of new clean vessels, as well as existing air quality rules, regulations, and railroad MOUs.

Response to Comment HH-7:

As previously mentioned above, the emission targets in Control Measure IND-01 are based on those emission reductions already expected from existing air quality rules, regulations, and commitments. These reductions are currently assumed in the existing and future baselines emissions from port-related sources. Since no additional emission reductions are needed to meet the 2014 emission target, none were provided in the control measure write-up. We apologize for any confusion this may have caused, but it

is common practice in emission inventory development to project future emissions using “on-going” emission reductions which are codified into existing law and expected to occur in future years. The AQMD staff is aware of the relative differences in emission inventories developed by the Ports and CARB (used for developing the 2012 AQMP). These differences were taken into account when developing the emissions presented in the control measure write-up. Future refinements in emission targets for IND-01 will take into account any additional differences between the two inventories. The “backstop” requirements of IND-01 only will be triggered if the reported emissions for 2014 for port-related sources exceed the 2014 target milestone, or the Basin fails to meet the federal 2014-hr PM_{2.5} standard due to change in the Basin-wide carrying capacity and further emission reductions are needed. This trigger is not discretionary because it is based on objective results. No control costs are provided in Control Measure IND-01 because there are no additional controls placed on the Ports, except for those already existing in state and federal laws, and existing commitments. Any future changes to the emission targets which would require additional controls beyond existing regulations and commitments are unknown at this time. Providing control costs for these unknowns at this time is speculative at best, and as such are not included. Furthermore, the ports will have the flexibility to design the most effective controls they deem feasible and necessary.

Response to Comment HH-8:

The AQMD staff is unsure of what control measures the commenter is referring to as “CAAP measures listed in the Draft 2012 AQMP.” Further clarification is needed for staff to respond to this comment. However, the commenter is referred to the response to comment HH-4 for our rationale in regulating the Ports under existing statute. AQMD staff was unable to locate any legal prohibitions in the Tidelands Trust doctrine that would preclude implementation of this control measure.

The comment asserts that there are serious legal feasibility questions regarding Measure IND-01, including federal preemption because the ports do not own or operate the sources.

The District recognizes the preemption arguments raised by various industries but does not believe that these arguments establish that there can never in any case be a state or local rule affecting such sources. For example, a state rule affecting foreign-flagged vessels, even outside the 3-mile state boundary, was upheld by the Ninth Circuit, and the US Supreme Court declined to review the case. *Pacific Merchant Shipping Ass’n. v. Goldstene*, 639 F. 3d 1154 (9th Cir. 2011). And the Ninth Circuit has held that when a state or local air pollution rule affecting railroads has been approved by EPA into the State Implementation Plan, the courts will harmonize the purposes of the Clean Air Act with the Interstate Commerce Commission Termination Act to determine whether the state or local rule is preempted. Preemption is not automatic. *Ass’n. of American Railroads v. South Coast AQMD*, 662 F. 3d 1094(9th Cir. 2010)

Response to Comment HH-9:

The definition will be expanded to describe agencies that have an ability to implement such measures. Relative to measures involving incentives programs, the definition will be expanded to cover agencies that have historically implemented such programs and are envisioned to implement such programs if funding is available to the agency.

The comment asserts that Measure IND-01 violates constitutional limits requiring that exactions imposed on a party be proportional to the party's contribution, because the ports do not own, operate, or control the emissions sources, when it fails to include all parties involved in the CAAP, including the actual emissions sources.

The basic concept of indirect source contemplates that the emissions to be controlled are from sources not owned or operated by the indirect source. For example, Rule 2202 applies to employers of 250 or more and focuses on emissions from employee vehicles which are not owned or operated by the source. The concept of an "exaction" generally refers to a requirement that, as a condition of a development approval, a developer must dedicate sites for public or common facilities, or make payments to defray the costs of land or facilities or otherwise provide public amenities. Abbott, et al. *"Exactions and Impact Fees In California"* (Solano Press 2001), p. 15. Therefore, a regulation to reduce air pollution would not normally be considered an exaction. Moreover, the principle of proportionality referred to by the commenter was established by the United States Supreme Court which decided that a land dedication requirement must bear a "rough proportionality" to project impacts. *Dolan v. City of Tigard*, 512 U.S. 374 (1994). In this case, all of the impacts of concern are ultimately the result of the fact that the two major ports operate here in the District, so the concept of proportionality to impacts is not violated. Finally, the state and the District are also seeking to impose all feasible emission reduction measures on all types of mobile sources found within the ports, so the regulatory program does not fail to include all parties.

II. International Fragrance Association North America (IFRANA), August 31, 2012



August 31, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

via e-mail - echang@aqmd.gov

RE: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

The International Fragrance Association North America (IFRANA) appreciates the opportunity to offer initial comments on the South Coast Air Quality Management District's (AQMD's) Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. These comments focus on Section CTS-04 of that proposal. IFRANA strongly objects to the inclusion of this measure in the draft AQMP, and urges that CTS-04 not be included in the final 2012 AQMP. In addition to the comments outlined below, we fully support those submitted by the Consumer Specialty Products Association on this issue.

II-1

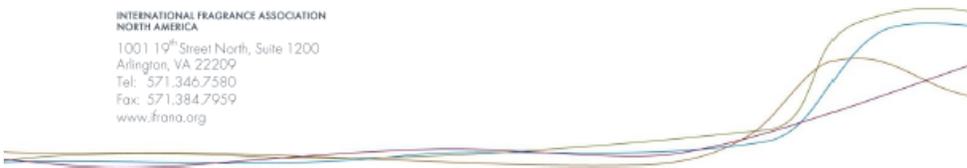
IFRANA represents the fragrance materials industry in the United States and Canada. Our member companies create and manufacture perfumes and fragrances for personal care, home care, and industrial and institutional uses. IFRA North America also represents companies that supply fragrance ingredients, such as essential oils and other raw materials.

Publication of Evaporation Study is Crucial to Provide Adequate Comments to AQMP

In the draft AQMP, section CTS-04 (pages 4-25) states:

"This measure seeks to eliminate or revise the exemption for low vapor pressure solvents in CARB's consumer products regulation, which exempts low vapor pressure volatile organic compounds (LVP-VOC) from counting towards the compliance obligation for consumer product VOC limits. Recent testing conducted by the District on institutional cleaners found that traditionally formulated consumer products may contain significant amounts of LVP-VOC solvents. In some cases, such as certain multipurpose solvents, the products were 100

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percent LVP-VOC solvents. Further testing indicated that many of the LVP-VOC solvents evaporate nearly as quickly as the traditional solvents they were meant to replace and have Maximum Incremental Reactivity (MIR) values well above the threshold considered to be non-reactive, currently based on ethane. Therefore, an evaluation of the continued need for use of LVP-VOC solvents in certain categories is warranted.”

In addition to the referenced AQMP, IFRANA has obtained a SCAQMD document dated June 21, 2012 and titled “Non-volatile, Semi-volatile or Volatile: Redefining Volatile for Volatile Organic Compounds”. This document contains suggestions of technical data that relate to evaporation rate studies which are apparently being used to support the proposals being made by SCAQMD on the matter of the Low Vapor Pressure material exemption. Despite repeated inquiries by industry representatives to obtain the original technical report upon which this document was based—a report that was promised to be shared with the Ozone Transport Commission in November 2011 and to the public several times in the recent weeks—it has not yet been released, so we are still unable to review the technical basis for the SCAQMD recommendations, yet comments on the proposal are due by August 31, 2012. The lack of availability of this report makes it impossible for interested stakeholders to provide meaningful comments in several key areas that are under review. Therefore, we ask that no decisions be taken until adequate time has been allowed for the public to thoroughly analyze and review this technical report.

II-2

Proposal to Remove LVP Exemption Would be Devastating to Consumer Products Industry

The main focus of the SCAQMD initiative appears to concentrate on cleaning and related products having a defined ‘solvent’ component and effect. However, removal of the existing exemption for low vapor pressure “solvents” threatens the existence of entire classes of consumer products without regard for differential contribution to VOC burden. In particular, those consumer product categories that may contain fragrance as an ingredient would be unduly impacted.

As suppliers of fragrance to major consumer product companies across the country, IFRANA (formerly the Fragrance Materials Association of the United States) has worked diligently with California regulators since the inception of the California Air Resources Board (ARB). Our representatives have visited California numerous times and met with ARB staff to provide background information on our products, our business practices, and the technical criteria that must be fulfilled in order to achieve consumer expectations for marketplace products containing fragrance. Those consumer products, particularly in the air care category, have been carefully constructed in order to comply with air quality regulations and also to deliver the consumer benefit stated by the manufacturer. While the SCAQMD proposal seems to focus on a narrow product segment (i.e., solvent-based cleaners) IFRANA’s concern is the potential for broad sweeping impacts across many consumer product categories, gravely damaging whole industry segments.

II-3

Conclusion

IFRANA appreciates the opportunity to comment on the 2012 AQMP. We point to the SCAQMD goal statement: “We are committed to protecting the health of residents, while remaining sensitive to businesses” when analyzing the impact of these control measures on the consumer products industry

II-4

and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Additionally, IFRANA believes that the process for review of SCAQMD proposals, particularly relating to the exemption for Low Vapor Pressure materials in current law, cannot proceed without the availability to interested stakeholders, of the technical report that apparently forms the basis for the AQMD recommendations. After a thorough review of this technical report, IFRANA will provide more in depth comments on the proposal to the AQMD.

If you should have any questions regarding these comments, please do not hesitate to contact me at jwishneff@ifrana.org or 571-346-7584.

Sincerely,



Jane E. Wishneff
Director, Government Affairs & Counsel

cc: James Goldstene, Executive Officer, California Air Resources Board
via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, California Air Resources Board
via email: ctakemot@arb.ca.gov

II-4

Responses to Comment Letter II
IFRANA

Response to Comment II-1:

Staff acknowledges IFRANA's support of the Consumer Specialty Products Association (CSPA) earlier comments and has addressed CSPA's comments elsewhere in the document.

Response to Comment II-2:

Staff has not received a previous request for this paper from IFRANA until this comment letter. Staff had a preliminary discussion regarding this ambient evaporation study with staff from Ozone Transport Commission (OTC) in the fall of 2011, but did not 'promise' a final report to the OTC or any other entity or member of the public.

The paper, "Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds" U. Vō and M. Morris, August 2012, has recently been released and may be accessed from <http://aqmddev/prdas/Coatings/VOCs/vocsMainPage.htm>. The paper contains detailed analysis of an ambient evaporation study, which is the document dated June 21, 2012 that the commenter refers to, and compares the results to established VOC content test methods. While the paper is likely to be important in the determination of appropriate LVP-VOC criteria, the control measure is recognizing the necessity and prudence of reevaluating the LVP-VOC criteria. While staff recognizes that the paper provides additional discussion, the document you already have includes data necessary to highlight the need to re-evaluate the LVP-VOC criteria. However, any potential amendments to the Consumer Products Regulation will involve a public process, providing ample opportunity for stakeholders to provide detailed input.

Response to Comment II-3:

The proposed control measure recognizes the necessity and prudence of reevaluating current LVP-VOC criteria. The reevaluation does not necessarily include the removal of the LVP-VOC exemption as the 'only' option. The paper identifies non-volatile organic compounds that do not evaporate under ambient conditions and therefore are not available for ozone formation. The paper recommends establishing criteria for an LVP-VOC exemption that better represent compounds that do not contribute to ozone formation. Currently, the Consumer Products Regulation contains special provisions for products containing two percent or less VOC-containing fragrance. It is possible that the proposed control measure may impact products (excluding Personal Fragrance Products) that contain more than two percent fragrance. However, the inclusion of fragrances that readily evaporate and are available for ozone formation should be acknowledged in the products' overall VOC content.

Proposed Control Measure CTS-04 calls for a phased in approach, starting with the most volatile and reactive compounds that may have the greatest emission impacts. To date, staff has identified multi-purpose solvents and institutional cleaners as two such categories of interest, but is also calling for CARB staff to conduct detailed surveys of LVP-VOC content currently found in different categories of Consumer Products in an effort to develop a revised inventory and assess potential additional impacts from the use of LVP-VOCs.

Response to Comment II-4:

The availability of the paper has been addressed in response to comment II-2.

JJ. Natural Resources Defense Council (NRDC), September 5, 2012



NATURAL RESOURCES DEFENSE COUNCIL

September 5, 2012

Dr. Phillip Fine
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar, CA 91765

Re: Initial Comments on 2012 Draft AQMP

Dear Dr. Fine:

On behalf of the Natural Resources Defense Council ("NRDC"), I submit these comments on the 2012 Draft Air Quality Management Plan ("AQMP"). NRDC appreciates the opportunity to provide these comments. The comments specifically focus on some of the proposed control measures.

I. DISTRICT'S STATIONARY SOURCE CONTROL MEASURES

IND-01: Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Activities [NOx, SOx, PM2.5]

We appreciate AQMD's on-going recognition that the Ports are the largest single fixed source of air pollution in Southern California, and that emissions from these facilities must be controlled in order for the region to attain the PM2.5 and ozone standards. See AQMP at IV-A-35. As the District is also aware, we have been a long time supporter of a "back-stop" rule for the Ports ever since the concept of the rule was articulated by the Chairman of the Board within the District's "Clean Port Initiative Workplan" in January 2006.

With that said, however, we must communicate some frustration on our part that *over six years* have gone by since AQMD first announced its intentions of adopting a back stop rule, and yet the rule has yet to be fully developed, let alone adopted. Moreover, the measure—as drafted in the 2012 AQMP—lacks any meaningful detail, and is in fact, far less detailed than the drafts of the proposed rule that the District circulated back in Spring/Summer of 2010. Our specific comments on the proposed measure within the 2012 AQMP are as follows:

- We appreciate that the back stop rule will be implemented through a District "rule" as opposed to through another implementation mechanism (e.g., a voluntary, incentive program).

JJ-1

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- The rule will require the Ports to meet emissions targets for 2014. If these targets are not met, then the requirements of the rule will kick-in. Whether the targets are met will be based on the Ports' annual emission inventory. Given that emissions inventories are conducted after the close of every year, this means that no one will know if 2014 emissions targets have been met until 2015, *and after* the 2014 attainment demonstration deadline. Although the District believes, based on the Ports' latest inventories, that the Ports will meet the 2012 AQMP targets necessary for meeting the 24-hr PM2.5 ambient air quality standard, AQMP at IV-A-35, we nevertheless request that adopting the back-stop measure be given priority by the Board and District staff given that 2014 is fast approaching, and the dominance of port emissions in regional air pollution estimates. Further, efforts to develop this rule should resume where they left off two years ago so that resources and stakeholder input is not wasted.
- Important details are omitted from the measure's description, which must be filled-in including:
 - What the 2014 emissions targets will be (e.g., what levels of NOx, SOx and PM2.5 must the Ports achieve).
 - Deadlines for when the Ports' Emission Control Plans will be to be submitted and implemented if the rule is triggered. These deadlines must be extremely short since they will only be required if emissions milestones are exceeded. In other words, the Ports cannot be permitted to emit excessive levels of pollution for months or years as Emission Control Plans are developed, approved and implemented.
 - Details on how the District would enforce the rule (e.g., civil penalties, etc.). We request that the District consider penalties that could mitigate for the excess emissions that will result after milestones are exceeded, and before Emissions Control Plans are implemented. For instance, are there operational limits the District could place on the Ports if milestones are not met and there is a significant delay before the necessary reductions can be achieved?
 - Emissions targets beyond 2014. As the District is aware, Port emissions will not remain flat after 2014, and in fact, according to the control measure's summary, AQMP at IV-A-34, are expected to increase between 2014 and 2019 for both NOx and PM2.5. Accordingly, the District should devise emissions targets for 2014 and beyond.
 - Assuming that the District sets "triennial" emissions targets, as it did in previous iterations of the measure (see 2007 AQMP), we request that the District also set annual milestones to ensure the Ports are on schedule for meeting the emissions targets.
 - Health risk targets with milestones should be added. Previous versions of the rule from 2010 included not only emissions targets but also health risk targets.

JJ-2

JJ-3

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However, there is no discussion of the latter in the current description of the control measure. Given the District’s acknowledgement that Port sources contribute to cancer risk, *see* AQMP at IV-A-35, and its compelling research on this issue (MATES I, II, III), we urge the District to include health risk targets within its rule.

- o BACT requirements should be included. In AQMD’s “Clean Port Initiative Workplan,” the Chairman envisioned that the back stop measure would “prohibit emission increases from new or expanded terminals or other port-related facilities unless best available controls are employed and emissions increases are offset.” While the District has been a strong advocate for the implementation for BACT within its CEQA and NEPA comment letters with respect to major port expansion projects, including a BACT requirement within an enforceable regulation would amplify the District’s abilities to require BACT. Such authority is especially critical given the upcoming Pier S and BNSF SCIG projects which are expected to increase health risks for local communities.

JJ-3

IND-02: Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies [All Pollutants]

We support this measure and appreciate the District’s attempts to accelerate the manufacturing and deployment of zero-emissions technologies in the region. As the District mentions in the AQMP, this control measure will not only benefit air quality, but also result in local job creation. We also appreciate the District’s reassurances that

By agreeing to manufacture and distribute zero and near-zero emission technologies, a proponent would be rewarded with a streamlined administrative review by the SCAQMD *The expedited permitting and review program would only accelerate the processing of applications, which would still need to comply with all applicable rules, regulations, and guidelines.*

JJ-4

AQMP at IV-A-89 (emphasis added). In other words, while we support the District moving forward expeditiously on permits that would enable the manufacturing of zero-emission technologies in the region, we do not support any broader efforts to streamline CEQA. Along those same lines, while we support AQMD elevating or prioritizing the subject permits for administrative review, we would oppose any curtailment of public participation opportunities with respect these permits.

II. PROPOSED SECTION 182(E)(5) IMPLEMENTATION MEASURES

We appreciate the urgency in which the AQMD discusses closing the black box to meet the 80 ppb ozone standard by 2023. AQMP, at IV-B-4. However, we provide the following input on some of the specific measures.

2012 AQMP Comments
September 5, 2012
Page 4 of 6

Group 1: On-Road Mobile Sources

ONRD-04: Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]

We support this measure in concept, including its attempts to prioritize public funding towards the retirement of older trucks serving warehouse and distribution centers. However, the District does not identify where the additional "\$50 million per year" will come from to incentivize the turnover of older diesel trucks; it merely states that "CARB, SCAQMD, or U.S. EPA could jointly or separately implement incentive programs" to offset the costs associated with the replacement, repower or retrofit of older trucks.

JJ-5

ONRD-05: Further Emissions Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NOx, PM]

This measure seeks to accelerate the replacement of up to 1,000 existing heavy-duty vehicles with zero-emission vehicles or a zero-emissions container movement system. This measure would be accomplished by convincing CARB to adopt a regulation by 2015 that would require, by 2020, all containers transported between the Ports and near-dock railyards (e.g., UP ICTF and proposed BNSF SCIG) to use zero-emissions technologies. We support the deployment of zero-emission technologies generally, and particularly with respect to reducing health risks near the UP ICTF and proposed BNSF SCIG.

JJ-6

We encourage the District to provide greater specificity in how this regulation would work, including identifying the regulated party (would it be the Ports, the railroads or both?). Given CARB's historical reluctance to regulate the rail industry, the District should be abundantly clear about how this measure would be implemented, against whom it will be enforced, and how the State has authority to adopt the measure.

Group 2: Off-Road Mobile Sources

Offrd-02: Further Emission Reductions from Freight Locomotives [NOx, PM]

The measure seeks to accelerate replacement of existing freight locomotive engines with engines meeting tier 4 or cleaner exhaust standards. Again, while we are very supportive of measures that seek to require clean up of rail operations, we can't help but point to CARB's historical reluctance to regulate the rail industry. In fact the "2010 Commitments" that CARB entered into with UP and BNSF suggest that CARB will be taking a "hands off approach" with respect to rail emissions so long as the railroads meet set emissions caps by certain dates with respect to four railyards. Accordingly, to increase the chances of this measure being adopted by CARB, the District may want to provide greater specificity on how this measure would be implemented by CARB, how it would be enforced, and how the State has legal authority to adopt

JJ-7

2012 AQMP Comments
 September 5, 2012
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the measure. The District should also describe how this measure intersects with the 2010 Commitments, and in particular, if the terms of the Commitments impose limitations on CARB's ability to regulate BNSF and UP.

JJ-7

Offrd-04: Further Emissions Reductions from Ocean-going Vessels While at Berth [All Pollutants] and Offrd-05: Emissions Reductions from Ocean-going Marine Vessels [NOx, PM]

These two measures seek to incentivize (a) emissions reductions from vessels for which shoreside power is not a viable option; and (b) early introduction and deployment of vessels to the San Pedro Bay ports that have cleaner/newer engines. We support measures that aim to reduce emissions from ocean-going vessels. To improve the strength of these measures, the District should provide details on how much these incentive programs will cost and who will be funding them. The District should also specify when the incentive programs would need to be adopted in order to ensure all of the necessary reductions are timely achieved.

JJ-8

III. SCAG AND AQMD SHOULD MORE EFFECTIVELY USE TRANSPORTATION CONTROL MEASURES ("TCM").

NRDC remains concerned that the 2012 AQMP does not effectively incorporate a range of Transportation Control Measures ("TCM") commensurate with the air quality challenges this region faces. Accordingly, we suggest that the agencies cooperating on this air plan reevaluate the potential for additional TCMs that can enhance mobility while helping tackle the region's persistent air quality challenges.

A. Elements of SCAG's RTP Should Be Included in the AQMP as TCMs.

JJ-9

SCAG's excellent work to adopt its RTP/SCS in April, 2012 resulted in a plan with many useful elements, some of which should be adopted into this plan as TCMs. We recommend:

1. Active Transportation Component, \$6.7B (AQMP, at IV-C-7);¹
2. Transit Component (*id.*); and
3. Passenger and High Speed Rail Component.

B. Expanding parking should not be included as a TCM without evidence that it will lead to real, cost-effective reductions in emissions

JJ-10

Several projects propose to add hundreds of new parking spaces, either at park and rides or at transit facilities. Expanding parking at transit stations, unless priced appropriately to offset the cost of the spaces, increases costs for all transit system users, including the many who do not drive, and takes valuable land in the vicinity of transit stations off the market for what could be

¹ The current list of TCMs includes some bike projects, but it remains unclear what is the criteria for inclusion of these projects as TCMs. Overall, NRDC supports including a much more robust set of active transportation projects as TCMs.

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viable commercial or residential development. Please provide background documentation to suggest that such parking expansions lead to real, cost-effective, equitable reductions in vehicle use and emissions.

JJ-10

C. Expansion of mixed-flow lanes should not be included as TCMs.

Several projects propose to widen roads by adding mixed-flow lanes. Section 108(f)(1)(a) lists high occupancy vehicle (HOV) lanes as appropriate TCMs, but it is less clear that construction of new mixed-flow facilities will yield permanent reductions in vehicle use and emissions. More likely, such expansions—if intended to reduce bottlenecks—may have temporary emissions benefits, and in short order lead to new, induced trips, and potentially induced land development to take advantage of new capacity. The literature on induced demand is extensive and the Regional Transportation Plan guidelines adopted by the California Transportation Commission acknowledge this now broadly accepted planning phenomenon. We strongly recommend that SCAG, AQMD and its member CTCs reconsider whether capacity expansion projects belong on a list of Transportation Control Measures, or whether there are other projects that will more effectively achieve the worthy goals of reducing vehicle use and emissions.

JJ-11

D. NRDC also Recommends Additional Efforts.

Page IV-C-8 references the \$22.1 billion the RTP will invest in arterials. For such a significant investment of resources, we believe an additional goal of the program should be, to create a network of slow-speed streets that are safer for bicyclists and pedestrians. New bike lanes are critical, but even with lanes many riders, particularly women and children, will not ride when the bike lane is on a high-speed street. Low speed streets make these clean, healthy, non-polluting modes of transportation accessible to more SCAG residents and SCAG should work with its member cities and CTCs to identify the best streets for these networks.

JJ-12

On page IV-C-7, we recommend that SCAG supplement its adopted list of TSM strategies with improved data sharing. A plethora of transit-user apps has sprung up since the 2007 AQMP. High quality, real-time, easily-accessible transit vehicle departure and arrival information can help to leverage significant new transit investments with higher ridership. Releasing data is a low-cost way to leverage outside talent to improve usability of transit, biking, and walking.

JJ-13

We appreciate your consideration of our comments. Please do not hesitate to contact Adriano Martinez at (310) 434-2300 if you have questions about these comments.

Sincerely,



Adriano L. Martinez
Staff Attorney

Responses to Comment Letter JJ
NRDC

Response to Comment JJ-1:

While the AQMD staff supports voluntary and other incentive-based efforts by the Ports to reduce emissions from port-related sources, Control Measure IND-01 is necessary to ensure that if additional emission reductions are needed to demonstrate attainment of the federal 24-hr PM_{2.5} ambient air quality standard due to changes in the basin-wide carrying capacity, a mechanism for further emission reductions from port-related sources is included as a control measure in the AQMP. In addition, the AQMD staff thanks the commenter for their support of the measure.

Response to Comment JJ-2:

The AQMD staff acknowledges the importance of timely adoption of IND-01. The anticipated adoption date for the control measure is 2013 as specified in Chapter 4 and Appendix IV-A. Specific timing of rule adoption for control measures contained in the Final 2012 AQMP will be formalized in future rule adoption forecasts. The implementation period is going to take place 12 months after the current regulatory requirements and voluntary reduction strategies specified by the ports are not realized. Under IND-01, emission targets are based on future controlled baseline emission inventories and rely upon emission reductions already expected from existing air quality rules, regulations, and commitments. The AQMD staff will consider adequate enforcement mechanisms to ensure the timing of expected emission reductions during future rulemaking efforts.

Response to Comment JJ-3:

Specific details of the rule adoption for Control Measure IND-01 will be developed and presented during the rule development process. Previous rule development efforts will be used as a basis for future rule requirements, but the AQMD staff will address the commenter's concerns during the rule development process. For purposes of inclusion in the Draft 2012 AQMP, sufficient detail is provided in the current version of control measure write-up.

Response to Comment JJ-4:

Thank you for your support of INC-02 to incentivize the manufacturing of zero and near-zero emission technology through means of reducing the potential burden from the permitting and CEQA process. As noted by the commenter, it is our intent in this control measure to incentivize while maintaining compliance with established rules, regulations and guidelines. The incentive to streamline permitting or CEQA is strictly administrative. Although the program has not been fully developed, the incentive might, for example, advance the processing of an air quality permit or prioritize work

on a CEQA evaluation. It is not intended to bypass any legal requirements, shorten comment periods or avoid public participation.

Response to Comment JJ-5:

Staff appreciates the support for the measure. Funding for the program could come from existing programs such as Proposition 1B or Carl Moyer over the next two to three years. Future funding will depend on programs authorized at that time.

Response to Comment JJ-6:

The implementing agencies discussion has been expanded to include the San Pedro Bay Ports, CARB, and AQMD to the extent that the Ports could extend the Clean Truck Program or the AQMD may have potential funding. This could complement any efforts by CARB to adopt a regulation or amend existing regulations.

Response to Comment JJ-7:

Staff appreciates the comments regarding specificity on implementation approaches. The specifics on implementation will be further developed as stakeholders begin discussions on achieving the objectives of the control measure.

Response to Comment JJ-8:

At this time, the Ports are implementing incentives programs to bring cleaner ocean-going vessels into the Ports. However, it is not clear if the incentive levels are adequate. As such, the Ports will be monitoring the effectiveness of the program and may suggest revisions to the incentives levels. Given the uncertainty in the participation, emission reductions are not provided at this time. However, actual emission reductions from the existing programs will be incorporated in the backstop rule.

Response to Comment JJ-9:

The U.S. Environmental Protection Agency's (EPA) Transportation Conformity Regulations define transportation control measures (TCMs) as those projects and programs that reduce emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Note, SCAG facilitates interagency consultation regarding TCM related issues through SCAG's Transportation Conformity Working Group but SCAG does not have the discretion to expand this regulatory definition, for purposes of conformity.

The Clean Air Act requires TCMs to be included in SIPs only for "serious" and above ozone non-attainment areas. In the SCAG region, only the South Coast Air Basin and the Ventura County portion of the South Central Coast Air Basin are serious or above nonattainment areas and thus include TCMs in their ozone SIPs. To add new TCM

categories that are not in the applicable ozone SIPs, an ozone revision would be required. Nevertheless, TCM type projects are planned for and implemented throughout the six-county SCAG region irrespective of whether or not they are included in an applicable SIP. Specifically, the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (2012-2035 RTP/SCS) constitutes the transportation strategy and control measures portion of the 2012 AQMP (Appendix IV-C), inclusive of all TCMs and TCM type projects therein.

As discussed in the Appendix IV-C and also specified in the 2007 South Coast Ozone SIP, TCM type projects and programs in this plan include the following three main categories of transportation improvement projects and programs:

1. High occupancy vehicle (HOV) measures,
2. Transit and systems management measures (including capacity-expanding active transportation projects such as new bike lane projects), and
3. Information-based transportation strategies.

While all TCM type projects in the 2012-2035 RTP/SCS are included in the transportation strategy and control measures portion of the AQMP, only those TCM type projects which have funding programmed for right-of-way or construction in the first two years of the prevailing Federal Transportation Improvement Program (FTIP) developed by SCAG are considered committed for air quality planning purposes in the applicable SIP. As TCM type projects become committed TCMs through the biennial FTIP process, they are automatically rolled into the SIP as committed TCMs (the “TCM Rollover Process” as described in SCAG’s FTIP Guidelines and 2007 Ozone SIP). To add any new TCM projects that are not in the adopted 2012-2035 RTP/SCS, an RTP/FTIP amendment/update would be required.

Response to Comment JJ-10:

Comments noted. SCAG’s FTIP Guidelines include a Transportation Control Measures chapter with detailed information on the TCM development process including definitions and project categories of TCMs, addition of new TCMs, and the TCM “Rollover” Process.

In the SCAG region, new TCMs are identified by the FTIP process. Projects that meet the TCM criteria become committed TCMs and part of the applicable SIP after the following occurs: 1) funds are committed for right-of-way or construction in the first two years (the fiscally constrained portion) of the FTIP; 2) the FTIP is approved by the Regional Council; 3) state and federal approval of the FTIP; and 4) concurrence with regard to TCMs by US EPA and California Air Resources Board (ARB).

Park-n-ride lot expansion projects are TCMs because park-n-ride lots are intermodal transfer facilities that can increase usage of public transit services.

Response to Comment JJ-11:

As discussed in Appendix IV-C, TCMs for purposes of conformity are projects and programs that reduce emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. TCMs in this plan include the following three main categories of transportation improvement projects and programs:

- High occupancy vehicle (HOV) measures,
- Transit and systems management measures, and
- Information-based transportation strategies.

To facilitate TCM tracking, TCMs are listed by project ID and project description as specifically set forth in the FTIP since TCM project inclusion in the FTIP is the means to track timely implementation. To avoid confusion that may arise from the project descriptions listed in Appendix IV-C, Attachment A, a footnote will be included that clarifies that the TCM is only that portion of the project that meets the definition of the TCM. For example, for a project that adds both mixed flow lanes and HOV lanes, only the HOV portion of the project is considered a TCM.

Response to Comment JJ-12:

SCAG's 2012-2035 RTP/SCS identifies opportunities to increase funding for active transportation. SCAG will continue to work with the County Transportation Commissions in the region to develop new policy strategies that can generate funding for transportation projects that support the goals identified in the 2012-2035 RTP/SCS. Further, at its July 5, 2012, SCAG's Regional Council approved the development of an Active Transportation subcommittee, among 5 other subcommittees responsible for developing policy recommendations to implement the 2012-2035 RTP/SCS. This subcommittee will specifically be responsible for recommending to the SCAG's Transportation Committee (TC) policies which implement the 2012-2035 RTP/SCS as it relates to Active Transportation. Policy recommendations approved by the TC will be forwarded to SCAG's Regional Council for final review and approval. These anticipated, new SCAG policies may assist local jurisdictions and the County Transportation Commissions in initiating additional efforts and funding in support of active transportation.

Response to Comment JJ-13:

The 2012-2035 RTP/SCS was intended to reflect the most feasible, practical and effective TSM Strategies, including Transit Automatic Vehicle Location (AVL), universal transit fare media, next vehicle arrival display etc. SCAG will consider updating the TSM Strategies list in the future to reflect the most current technology applications to transit services in the future RTP/SCS updates as necessary and appropriate.

KK. Mesa Consolidated Water District, September 12, 2012



District Mission:
Dedicated to Satisfying
our Community's
Water Needs

September 12, 2012

Dr. Barry Wallerstein
Executive Officer
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar CA 91765

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RE: Comments to the 2012 Draft Air Quality Management Plan

Dear Dr. Wallerstein,

Mesa Consolidated Water District (Mesa Water) appreciates the opportunity to submit comments on the draft 2012 Air Quality Management Plan (AQMP).

Mesa Water provides water service to an 18-square-mile area that includes most of Costa Mesa, parts of Newport Beach, and portions of unincorporated Orange County, including John Wayne Airport. A coalition of Orange County water and wastewater agencies, lead by the Association of California Cities - Orange County (ACC-OC) has developed a list of common concerns and suggested improvements regarding the AQMP from the perspective of local governments.

In general, Mesa Water agrees with the issues and suggestions for improvement raised by the coalition regarding the draft AQMP and its potential negative impacts on the local government community and the economy as a whole. Some of the major points of concern are listed described below:

1. **Complete an economic analysis as part of the draft AQMP.** This multi-year, regional plan will cost hundreds of millions of dollars to implement and will have significant negative cost impacts on government agencies. At all times, and particularly when municipal budgets are being raided by the state and property and sales tax revenue is low, AQMD should make a concerted effort to identify the potential economic impacts of its plans prior to broad distribution.
2. **The comment period should reflect the significant delay of an economic study.** Due to a lack of an economic impact study, AQMD should significantly extend any comment period following the release of the full economic impact analysis. We understand the constraints imposed by state, federal and other timelines; nonetheless, it would be irresponsible of the AQMD to move forward with this plan without a complete economic analysis.
3. **Ozone Implementation Measures should be included as an appendix or removed from the draft AQMP.** Ozone targets are more than a decade away and implementation measures are not required as part of the 2012 AQMP.

KK-1

KK-2

KK-3

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District Mission:
Dedicated to Satisfying
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Water Needs

September 12, 2012
Dr. Wallerstein
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- 4. **FUG-01 will unintentionally harm cities and local governments without realizing measurable results.** FUG-01 has a stated purpose of expanding AQMD's regulation of vacuum trucks into the petroleum industry. Numerous cities, water, and sanitation districts operate these trucks on a limited basis to comply with State Water Resources Control Board Order No. R3-2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Overflows (SSOs). These trucks are essential to preventing hazardous wastewater from overflowing onto public streets and into homes, businesses, natural habitats and eventually into the ocean. Additional regulation and required retrofits would add considerable costs to already heavily burdened local agencies and achieve limited emissions reductions due to the relatively limited operating hours of these vehicles. Therefore, we request that local governments be exempted from FUG-01.
- 5. **The AQMP ought to focus on a philosophy of "do no fiscal harm."** AQMD and other air quality districts have been tremendously successful over the past decades in reducing air pollution. The air in the South Coast Basin is cleaner now than it was 40 years ago and with many more people and cars (the major source of emissions that dwarfs all others.). Nevertheless, when cities and local governments are suffering through the reduced revenue results of the great recession, now is not the time to "tinker at the edges." Developing a cost per ton of pollutants removed measure would go a long way to providing clarity in rule making and long term planning.

KK-4

KK-5

Local governments are in a unique position to understand the dynamic and difficult task the AQMD has with the preparation of the AQMP, and we can appreciate your challenge. Building consensus around regional public policy is a difficult endeavor. Therefore, we believe that several steps could be taken to mitigate potential issues with the draft plan including an **unrelenting focus on economic impacts and the adoption of a "do no fiscal harm" philosophy.** Thank you again for the chance to provide comments and please feel free to contact us any time.

Sincerely,

Fred R. Bockmiller, Jr., P.E.
Mesa Water Board President

Cc: Mesa Water Board of Directors
Paul E. Shoenberger, P.E., Mesa Water General Manager
Steve Greyshock, Vice President, 21Strat (on behalf of ACC-OC)

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Responses to Comment Letter KK
Mesa Consolidated Water District

Response to Comment KK-1:

The socioeconomic report on the 2012 AQMP has been released on September 28, 2012 and provides an extensive analysis, including the cost of the control measures (e.g., capital, installation, operation and maintenance), benefits of clean air (e.g., health, visibility, congestion relief and material) and job impacts. The report is available online at <http://www.aqmd.gov/aqmp/2012aqmp/index.htm> and the public comment and review period is for 45 days.

Response to Comment KK-2:

As noted in Response to Comment KK-1, the socioeconomic analysis on the 2012 AQMP has been released on September 28, 2012, for a 45-day public comment and review period ending on November 12, 2012. Comments on the Revised Draft 2012 Plan can be received during this time. Commenters are encouraged to send in comments as expeditious as possible to ensure staff will be able to respond in a timely manner. As noted by the commenter, there are federal deadlines imposed on the District in the submittal of the Plan into the State Implementation Plan, however, staff is accommodating the request for an extended comment period.

Response to Comment KK-3:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified and adopted at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the

adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond.

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NOx and VOC emission reduction commitments contained in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs will need to further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment KK-4:

Although FUG-01 does not currently intend to expressly exempt local governments, including cities, special districts, county governments, and others from this measure, because of their limited emissions contribution, the District does not expect the control measure to have a significant financial impact on them. This control measure is based on Bay Area AQMD Regulation 8, Rule 53: Vacuum Trucks Operations, which is limited to emissions of organic compounds from the use of vacuum trucks to move materials that are typically handled at petroleum refineries, bulk plants, bulk terminals, marine terminals, and organic liquid pipeline facilities. Because local governments, cities, special districts, county governments primarily use vacuum trucks to remove trash from parking lots, clean out sewers and water mains for maintenance work, and remove waste from septic tanks and portable toilets, they would typically be outside the intended scope. The Bay Area AQMD regulation does provide an exemption for emergencies that would be applicable to both private and public agencies under defined

circumstances (e.g., a petroleum product spill) where the delay in acquiring and using equipment to comply with the rule would result in a risk of significant harm to facility equipment, personnel, the public, or the environment, and District staff expects to include similar provisions in any rulemaking efforts. Any other use of vacuum trucks that would otherwise be subject to the proposed control measure would be assessed during the rulemaking process with appropriate stakeholder input, along with an evaluation of cost impact and effectiveness to determine the requisite level of inclusion in the control requirements.

Response to Comment KK-5:

Most of the stationary source control measures in the 2012 AQMP have a cost-effectiveness values assigned in dollars per tons of pollutant reduction (see Appendix IV-A and IV-B). The mobile source control measures also provide a value typically based on the annual cost to fund incentives to encourage advancement of zero and near-zero emission technologies. Staff has released cost and cost-effectiveness data for the AQMP control measures that are available online at

http://www.aqmd.gov/gb_comit/aqmpadvgrp/2012AQMP/meetings/2012/july26/CostSummary.pdf

and

http://www.aqmd.gov/gb_comit/aqmpadvgrp/2012AQMP/meetings/2012/july26/DetailCost.xls. The control measures have been ranked (see Chapter 6) in the order to the cost effectiveness to assist in prioritizing adoption and implementation. Also, the District is proposing to establish a cost effectiveness threshold (see Chapter 4) of \$16,500 per ton of VOC emissions, and \$22,500 per ton of NOx emissions. The threshold would not prohibit rule adoption, but trigger additional analysis of economic impacts. Only one control measure, CTS-01 (Architectural Coatings) on the high range exceed the cost effectiveness threshold. During rule development, staff with input from stakeholders can develop viable alternative controls. Finally, as noted in Response to comment KK-1 and MM-2, the full socioeconomic analysis was released late September and includes discussions on the distribution of costs and benefits to 21 sub-regions within the AQMD and presents the resulting regional employment and competitiveness impacts.

Moreover, the AQMD is obligated to submit an attainment plan for PM2.5 which demonstrates attainment by 2014 or face the possibility of sanctions, which include the possibility of losing federal highway funding for regional transportation projects. Maintaining regional transportation infrastructure is an important element of the region's economic vitality.

LL. Joint Orange County Coalition, September 12, 2012



September 12, 2012

Dr. Barry Wallerstein
Executive Officer
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar CA 91765

RE: Comments to the 2012 Draft Air Quality Management Plan

Dear Mr. Wallerstein -

Thank you for this opportunity to comment on the 2012 draft Air Quality Management Plan (AQMP). The Association of California Cities – Orange County (ACC-OC), the Costa Mesa Sanitary District, Independent Special Districts of Orange County, Mesa Consolidated Water District and the Municipal Water District of Orange County, have reviewed the draft AQMP and respectfully submit the following comments.

Combined, the undersigned agencies and organizations represent the interests of Orange County's hundreds of thousands of residents and tens of thousands of businesses across the region. The mission of each agency and organization is unique, but we are strong in our agreement on the issues presented hereafter concerning the draft AQMP and its potential impacts on the local government community and the economy as a whole.

Many of the agencies will prepare individual comment letters. However, the intent of this letter is to articulate the several areas of common concern.

AQMP Comments
ACC-OC, CMSD, ISDOC, Mesa Water, MWDOC

- **An economic analysis must be completed as part of the draft AQMP.** The lack of an economic study to accompany the control and implementation measures of the AQMP is paramount to our concerns. This multi-year, regional plan will cost hundreds of millions of dollars to implement, which will have significant impacts on government agencies. At a time when municipal budgets are being raided by the state and property and sales tax revenue is low, AQMD should make a more concerted effort to identify the potential economic impacts of its plans prior to broad distribution. } LL-1

- **The comment period should reflect the significant delay of an economic study.** Due to a lack of an economic impact study, AQMD should significantly extend any comment period, official or otherwise following the release of the full economic impact analysis. We understand the constraints imposed by state, federal and other timelines. However, it would be irresponsible of the AQMD to move forward with this plan without a complete economic analysis. } LL-2

- **Ozone Implementation Measures should be included as an appendix or removed from the draft AQMP.** Ozone targets are more than a decade away and implementation measures are not required as part of the 2012 AQMP. Implementation and control measures dealing with ozone should be removed from this draft or included as an appendix. } LL-3

- **FUG-01 will unintentionally harm cities and local governments without realizing measurable results.** FUG-01 has a stated purpose of expanding AQMD’s regulation of vacuum trucks into the petroleum industry. However, numerous cities, water and sanitation districts operate these trucks on a limited basis to comply with State Water Resources Control Board Order No. R3-2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Overflows (SSOs). These trucks are essential to preventing hazardous wastewater from overflowing onto public streets and into homes, businesses, natural habitats and eventually into the ocean. Additional regulation and required retrofits would add considerable cost and achieve limited emission reduction. Therefore, we request that local governments be exempted from FUG-01. } LL-4

- **The AQMP should focus on a philosophy of “do no fiscal harm.”** AQMD and other air quality districts have been tremendously successful over the past decade reducing air pollution. By AQMD’s estimates, air pollution has been drastically reduced. We do not dispute the merits of air quality improvement. However, we do question its timing. When cities and local governments are suffering through the worst economic recession since the great depression, now is not the time to “tinker at the edges.” This will continue to thrust unworkable mandates on local jurisdictions, while also driving job- and sales-tax producing companies out of our region. } LL-5

AQMP Comments
ACC-OC, CMSD, ISDOC, Mesa Water, MWDOC

Local governments are in a unique position to understand the dynamic and difficult task the AQMD has with the preparation of the AQMP, and we can appreciate your challenge. Building consensus around regional public policy is a difficult endeavor. However, we believe that several steps could have been taken to mitigate potential issues with staff's draft plan including an **unrelenting focus on economic impacts and the adoption of a "do no fiscal harm" philosophy.**

We look forward to discussing these comments with you in the future. Please do not hesitate to contact us in the meantime.

Sincerely,



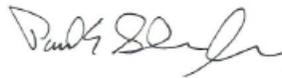
Lacy Kelly
CEO
ACC-OC



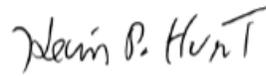
Scott Carroll
General Manager
Costa Mesa Sanitary District



Rich Freschi
President
ISDOC



Paul E. Shoenberger, P.E.
Mesa Water General Manager



Kevin Hunt
General Manager
MWDOC

Responses to Comment Letter LL
Joint Orange County Alliance

Response to Comment LL-1:

The Draft 2012 AQMP Socioeconomic report was released in late September and is available on <http://www.aqmd.gov/aqmp/2012aqmp/DraftSocioeconomicReport.pdf>. The socioeconomic analysis shows that the Draft 2012 AQMP is not expected to result in dramatic impacts on the region's competitiveness. The estimated benefits of the Plan are projected to exceed its implementation costs, resulting in a modest job gain.

Response to Comment LL-2:

The Socioeconomic Report was released on September 28, 2012 with a 45-day comment period ending on November 12, 2012. Staff recognizes that the 2012 AQMP development schedule has been compressed. The attainment demonstration modeling could not begin until input data from SCAG's 2012 RTP and CARB's emissions inventories were available. AQMD staff has made every effort to provide all data and information to the public as soon as it became available in an open and transparent process. The review period for many of the documents has also been extended, additional workshops and regional public hearings have been added, and the Governing Board adoption hearing date has been delayed to December. The AQMD staff is committed to providing sufficient time for public comment, and continues the enhanced outreach efforts to all stakeholders, while keeping the U.S. EPA submittal deadline in December of 2012 in mind.

Response to Comment LL-3:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified and adopted at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called "black box" emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed,

assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are fully achieved by at least 2015 and beyond.

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NO_x and VOC emission reduction commitments contained in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment LL-4:

Although FUG-01 does not currently intend to expressly exempt local governments, including cities, special districts, county governments, and others from this measure, because of their limited emissions contribution, the District does not expect the control measure to have a significant financial impact on them. This control measure is based on Bay Area AQMD Regulation 8, Rule 53: Vacuum Trucks Operations, which is limited to emissions of organic compounds from the use of vacuum trucks to move materials that are typically handled at petroleum refineries, bulk plants, bulk terminals, marine terminals, and organic liquid pipeline facilities. Because local governments, cities, special districts, county governments primarily use vacuum trucks to remove trash from parking lots, clean out sewers and water mains for maintenance work, and remove waste from septic tanks and portable toilets, they would typically be outside the

intended scope. The Bay Area AQMD regulation does provide an exemption for emergencies that would be applicable to both private and public agencies under defined circumstances (e.g., a petroleum product spill) where the delay in acquiring and using equipment to comply with the rule would result in a risk of significant harm to facility equipment, personnel, the public, or the environment, and District staff expects to include similar provisions in any rulemaking efforts. Any other use of vacuum trucks that would otherwise be subject to the proposed control measure would be assessed during the rulemaking process with appropriate stakeholder input, along with an evaluation of cost impact and effectiveness to determine the requisite level of inclusion in the control requirements.

Response to Comment LL-5:

Please see the response to Comment LL-1. Moreover, the AQMD is obligated to submit an attainment plan for PM_{2.5} which demonstrates attainment by 2014 or face the possibility of sanctions, which include the possibility of losing federal highway funding for regional transportation projects. Maintaining regional transportation infrastructure is an important element of the region's economic vitality. See also response to comment KK-5.

MM. The Adhesive and Sealant Council (ASC), September 17, 2012



September 17, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
Planning, Rules and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182

Dear Dr. Chang:

The Adhesive and Sealant Council (ASC) is a North American trade association representing 121 manufacturers of adhesives, sealants and suppliers of raw materials to the industry. As director of government relations for ASC, I appreciate the opportunity to offer comments on the South Coast Air Quality Management District's (SCAQMD) Draft 2012 Air Quality Management Plan (AQMP) which includes an expressed consideration of removing the exemption for low vapor pressure (LVP) solvents.

ASC strongly objects to any consideration of the removal of the LVP exclusion as it would have a significant cost impact to ASC members who have taken the opportunity to reformulate their products when the exemption was first included in SCAQMD Rule 1168.

Removal of the exemption would force companies to reformulate many of their products specifically for the South Coast Basin. One ASC member has estimated that to simply develop packaging artwork for a line of products to be sold in a single air district would cost in the range of \$48,000. Taking into consideration that companies would have to develop unique product formulations as well as the maintain a complicated inventory and distribution system that would market parallel product lines within the State of California, it is clear that the loss of the LVP exemption would result in millions of dollars in additional costs for manufacturers with little or no impact in VOC emissions or ozone formation in the South Coast.

ASC and its members have constructively and cooperatively worked with ARB staff for more than 20 years to assure that our products have the lowest possible VOC content while maintaining the product efficacy that residents of the South Coast have come to expect. We plan to continue to work in a cooperative manner to improve the air quality in California while maintaining our industry's ability to supply effective products that the California consumer can rely upon to contribute positively to their health, safety and quality of life.

If you have any questions, please contact me at 301/986-9700 ext. 112

Respectfully submitted,

A handwritten signature in black ink that reads 'Mark Collatz'. The signature is written in a cursive style.

Mark Collatz
Director of Government Relations

MM-1

Responses to Comment Letter MM
ASC

Response to Comment MM-1:

Staff appreciates the efforts of the Adhesive and Sealant Council's (ASC) efforts to improve the air quality in California. For clarification, the proposed control measure is not intended to establish a separate consumer product regulation for the South Coast Air Basin. The proposed control measure calls for re-evaluation of LVP definition and depending on the outcome of this effort, the CARB LVP-VOC criteria may be revised based on scientific data which may include MIR and similar photochemical reactivity parameters. The purpose of this measure is to ensure anticipated reductions and air quality improvements from the existing consumer product regulations are actually achieved. District staff will work with CARB staff to identify categories where it may be appropriate to revise the LVP-VOC exemption. Staff will also work with CARB staff to review emission inventory data to ensure that the total organic emissions reflected in the inventory, in addition to VOC emissions, accurately capture VOC-exempt solvents and LVP-VOC emissions as well. Any proposed amendments to the Consumer Products Regulations to revise LVP-VOC exemption would be vetted through a full public process. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the rule development process to ensure overall efforts are feasible, productive and cost-effective.

NN. James Enstrom handout, September 20, 2012

**Misrepresentation and Exaggeration of Health Impacts
in South Coast Air Quality Management District
Revised Draft 2012 Air Quality Management Plan Appendix I Health Effects
and
Request for California Health and Safety Code Section 40471 (b) Hearing on
Health Impacts of Particulate Matter Air Pollution in South Coast Air Basin**

James E. Enstrom, Ph.D., M.P.H.
UCLA School of Public Health
Los Angeles, CA 90095-1772
jenstrom@ucla.edu
(310) 825-2048

September 20, 2012

1) In spite of my repeated submissions to AQMD since 2008 of overwhelming evidence of no mortality impacts, including the evidence in my August 30, 2012 Criticism of the Draft 2012 AQMP (<http://scientificintegrityinstitute.org/AQMP083012.pdf>), the September 7, 2012 Revised Draft AQMP Appendix I Health Effects continues to seriously misrepresent and exaggerate the mortality impacts of criteria pollutants, like particulate matter, in the South Coast Air Basin (<http://www.aqmd.gov/aqmp/2012aqmp/RevisedDraft/AppI.pdf>).

2) Since 2000, overwhelming epidemiologic evidence that fine particulate matter is not killing Californians has been published by 26 accomplished doctoral level scientists (Ph.D. or M.D.), including myself. Since 2008, extensive written and/or verbal comments by 16 doctoral level critics, including myself, have been submitted to US EPA, CARB, and/or AQMD and these comments strongly criticize the way the California-specific evidence has been characterized by the three regulatory agencies. The names of the scientists and critics are listed on the next page.

3) The 2012 AQMP (<http://www.aqmd.gov/aqmp/2012aqmp/index.htm>) does not comply with California Health and Safety Code (CHSC) Section 40471 (b): "On or before December 31, 2001, and every three years thereafter, as part of the preparation of the air quality management plan revisions, the south coast district board, in conjunction with a public health organization or agency, shall prepare a report on the health impacts of particulate matter air pollution in the South Coast Air Basin. The south coast district board shall submit its report to the advisory council appointed pursuant to Section 40428 for review and comment. The advisory council shall undertake peer review concerning the report prior to its finalization and public release. The south coast district board shall hold public hearings concerning the report and the peer review, and shall append to the report any additional material or information that results from the peer review and public hearings." (<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=40001-41000&file=40460-40471>).

4) Before the 2012 AQMP is finalized and approved, the AQMD Governing Board must hold a public hearing on "the report and the peer review" regarding "the health impacts of particulate matter air pollution in the South Coast Air Basin," as required by CHSC Section 40471 (b).

NN-1

NN-2

NN-3

Twenty-Six Doctoral Level Scientists Who Have Published Epidemiologic Findings Since 2000 That Show NO Relationship Between PM2.5 and Total Mortality in California

David E. Abbey, Ph.D., Loma Linda University (2000)
Michal Abrahamowicz, Ph.D., McGill University (2000)
Leslie Bernstein, Ph.D., City of Hope National Medical Center (2011)
Richard T. Burnett, Ph.D., Health Canada, Canada (2000, 2011)
Ellen T. Chang, Sc.D., Cancer Prevention Institute of California (2011)
George Christakos, Ph.D., San Diego State University (2011)
Francesca Dominici, Ph.D., Harvard University (2008)
James E. Enstrom, Ph.D., University of California, Los Angeles (2005, 2006, 2010)
Mark S. Goldberg, Ph.D., University of Quebec (2000)
Katherine D. Henderson, Ph.D., Cancer Prevention Institute of California (2011)
Edward Hughes, Ph.D., Edward Hughes Consulting, Canada (2011)
Michael Jerrett, Ph.D., University of California Berkeley (2010, 2011)
Daniel Krewski, Ph.D., University of Ottawa, Canada (2000, 2010, 2011)
Michael J. Lipsett, M.D., California Department of Public Health (2011)
Aidan McDermott, Ph.D., Johns Hopkins University (2008)
William F. McDonnell, Ph.D., US Environmental Protection Agency (2000)
Bart D. Ostro, Ph.D., California Office of Environmental Health Hazard Assessment (2011)
C. Arden Pope III, Ph.D., Brigham Young University (2011)
Peggy J. Reynolds, Ph.D., Cancer Prevention Institute of California (2011)
Jonathan M. Samet, M.D., University of Southern California (2008)
Yuanli Shi, M.D., University of Ottawa, Canada (2011)
Jack Siemiatyck, Ph.D., University of Quebec (2000)
Michael J. Thun, M.D., American Cancer Society (2011)
George D. Thurston, Ph.D., New York University (2011)
Warren H. White, Ph.D., Washington University (2000)
Scott L. Zeger, Ph.D., Johns Hopkins University (2008)

Sixteen Doctoral Level Critics Who Have Criticized Since 2008 the Relationship Between PM2.5 and Total Mortality in California as Characterized by US EPA, CARB, and AQMD

William M. Briggs, Ph.D., Statistician, New York City & Cornell University
John D. Dunn, M.D., J.D., Physician & Attorney, Darnall Army Medical Center, Texas
James E. Enstrom, Ph.D., Epidemiologist, University of California, Los Angeles
Anthony Fucaloro, Ph.D., Chemist, Claremont McKenna College, California
Gordon J. Fulks, Ph.D., Astrophysicist, Oregon
Michael E. Ginevan, Ph.D., Statistician, M.E. Ginevan & Associates, Maryland
Thomas W. Hesterberg, Ph.D., Toxicologist, Navistar, Illinois
Frederick W. Lipfert, Ph.D., Environmental Scientist, New York
Geoffrey C. Kabat, Ph.D., Epidemiologist, Einstein College of Medicine, New York
Matthew A. Malkan, Ph.D., Astrophysicist, University of California, Los Angeles
Roger O. McClellan, D.V.M., Toxicologist, New Mexico
Henry I. Miller, M.D., Physician, Hoover Institution, Stanford University
Suresh H. Moolgavkar, M.D., Ph.D., Epidemiologist, University of Washington
D. Warner North, Ph.D., Risk Analyst, NorthWorks & Stanford University
Robert F. Phalen, Ph.D., Toxicologist, University of California, Irvine
S. Stanley Young, Ph.D., Statistician, National Institute of Statistical Sciences

Responses to Comment Letter NN
James Enstrom

Response to Comment NN-1:

Appendix I discusses a number of health effects studies, and also presents the conclusions of EPA's review of the criteria pollutants health effects. Staff will include additional discussion on the range of effects found in the studies referenced.

Commenter also refers to criticisms of the health effects conclusions of EPA, CARB, and AQMD. Appendix I relies heavily on the conclusions of EPA and CARB in summarizing the health effects of PM_{2.5} and other criteria pollutants. The AQMD Advisory Committee peer review also supported significant health effects from PM_{2.5}. In staff's view, Appendix I is not an appropriate forum to critique the NAAQS or the federal and state reviews. Such criticisms are best directed to the EPA and CARB. Staff notes that the EPA reviews of air pollution health effects are open to public review, and are also reviewed by the EPA Clean Air Scientific Advisory Committee, which was established pursuant to requirements in the Clean Air Act. Also, the review in Appendix I does not establish the underpinning of the draft 2012 AQMP. The purpose of the AQMP is to provide a plan to attain the NAAQS by statutorily required deadlines.

Response to Comment NN-2:

The purpose of the AQMP is to provide a plan to attain the National Ambient Air Quality Standards as required by the Clean Air Act and amendments. In terms of the California Health and Safety code section 40471(b), Staff believes it is in compliance with all the requirements regarding the report of the health impacts of particulate matter air pollution in the South Coast Air Basin. It is staff's opinion that the purpose of the requirement is to provide a thoughtful overview of health effects on PM_{2.5}, and not to provide a forum to advocate for a waiver of the PM 2.5 standard. See response to comment U-1.

Response to Comment NN-3:

The Governing Board will hold an adoption hearing in December on both the 2012 AQMP and Appendix I.

OO. John Dale Dunn, Darnall Army Medical Center, September 28, 2012

Request for a Comprehensive hearing on the Health Impacts of Particulate Matter in the South Coast Basin area in compliance with Section 40471 (b) of the CA Health and Safety Code.

John Dale Dunn MD JD
Emergency Physician Brownwood TX
Policy advisor Heartland Institute, Chicago
Policy advisor, American Council on Science and Health, New York City.
Civilian Contract Faculty, Emergency Medicine, Carl R Damall Army Medical Center, Fort Hood, TX

Members of the South Coast Air Quality Management District Board of Directors:

The recently released draft for Air Quality Management by the Southern California Air Quality Management District (AQMD) proposes very significant regulatory changes for more than 15 million residents of the area, however the South Coast AQMD proposes these changes without benefit of the prescribed triennial Air quality management plan revisions announcements. In conjunction with an effort to elicit public comments. Draft 2012 is, like so many drafts before, the product of a black box project at the South Coast AQMD, the precautionary principle and acceptance of science that has been effectively challenged in public in the past 4 years.

That is not according to Federal or State Clean Air Act law or the intent of environmental compliance provisions.

The Air Quality Management Plan (AQMP) (<http://www.aqmd.gov/aqmp/2012aqmp/index.htm>) proposes aggressive and draconian provisions that would have major impacts on the residents of the South Coast Basin Area.

I have included previous submissions to CARB on air regulations that were the product of the 2008-2010 activities and proposals and public comments made by prominent experts opposed to the new CARB air pollution measures. The South Coast Air Management Plan process should include close review and evaluations of those public comments that criticize and conflict with the studies relied on by the District planners.

The economic impact of the Management plan will kill or harm business, industry, transportation, and agricultural activity for now good reason, since air pollution is not killing anyone in South Coast. The proposed AQM Plan will cause hardship and shorten lives for the residents of the area in addition to depressing the economy with the well-known effect that can be expected, higher unemployment, stress and hardship, resulting in shortened life expectancies and misery—all for AQMD chasing a phantom menace—small particle pollution, that by evidence of the studies, causes no harm or deaths.

AQMP also should follow the law, that specifically states at Section 40471 of the Health and Safety Code “On or before December 31, 2001, and every three years thereafter, as part of the

OO-1

OO-2

OO-3

preparation of the air quality management plan revisions, the south coast district board, in conjunction with a public health organization or agency, shall prepare a report on the health impacts of particulate matter air pollution in the South Coast Air Basin. The south coast district board shall submit its report to the advisory council appointed pursuant to Section 40428 for review and comment. The advisory council shall undertake peer review concerning the report prior to its finalization and public release. The south coast district board shall hold public hearings concerning the report and the peer review, and shall append to the report any additional material or information that results from the peer review and public hearings.” (<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=40001-41000&file=40460-40471>).

OO-3

The district has failed to comply. Therefore they should correct their failure and stand down from pursuing the Plan proposed until the review and hearing process is complete.

For 4 years 2008-2012, the California Air Resources Board (CARB) has attempted to push through air pollution/small particle control regulations that the CARB claimed were based on evidence of human health effects that included deaths from small particles.

Here are the links, which include my previous submissions protesting the inadequacy of the human health effects science relied on by CARB.

Public Comments by experts on the 2008 CARB "Tran" Report

October 24, 2008 CARB Public Comments on Fine PM and Premature Deaths in CA submitted by July 11, 2008

(http://www.arb.ca.gov/research/health/pm-mort/pm-mort_supp.pdf)
(<http://www.scientificintegrityinstitute.org/CARBPMComments102408.pdf>)

July 11, 2008 CARB PM2.5 Premature Mortality Teleconference Transcript 071108
(<http://www.scientificintegrityinstitute.org/CARB071108.pdf>)

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February 26, 2010 CARB Symposium on PM2.5 & Deaths in CA

February 26, 2010 CARB Symposium on PM2.5 & Deaths Home Page Link
(http://www.arb.ca.gov/research/health/pm-mort/pm-mort-ws_02-26-10.htm)

February 26, 2010 CARB Symposium on PM2.5 & Deaths Agenda & Panel
(http://www.arb.ca.gov/research/health/pm-mort/pm_symposium_agenda.pdf)

February 26, 2010 CARB Symposium on PM2.5 & Deaths Webcast
(<http://www.cal-span.org/cgi-bin/archive.php?owner=CARB&date=2010-02-26>)

February 26, 2010 CARB Symposium on PM2.5 & Deaths Transcript
(http://www.arb.ca.gov/research/health/pm-mort/symposium_transcript_2-26-10.pdf)

OO-5

Criticism of June 9, 2011 Draft and October 28, 2011 Final Jarrett Report on PM2.5 Deaths in CA

October 28, 2011 Compilation of All Criticism since June 9, 2011 of Jarrett Report on CA PM2.5 Deaths
(<http://www.scientificintegrityinstitute.org/JarrettCriticism102811.pdf>)

Careful review of the submissions above by previous commenters would justify a stand down from the proposed AQMP outlined by the South Coast MD. Research shows that current ambient air pollution in California is not harmful and doesn't justify aggressive new AQMP plans.

Reputable scientists repeatedly raised important issues and Michael Jarrett's joke of a research project based on his selection of the "conurbation" model data, confirms that the CARB claims of thousands of lives saved by air regs is a house of cards built by CARB on small particle research data dredges to find poorly defined "premature deaths" supposed associated with poorly defined small particle pollution. Such uncertainties certainly cannot justify the extreme elements of the South Coast AMP.

The CARB never was able to properly dispel the objections raised in 2008-2010, and in February of 2010 lost the major face to face debate in a knockout when Dr. Michael Jarrett's project came a cropper and Dr. Jarrett admitted he couldn't find any current air pollution health effects.

Then Dr. Jarrett went back to his computer tricks and decided to redo his research with modeling that is risible, then 9 models showed no effect but one of his ten models finally gave him the results that allowed him to do what CARB asked—support their position that small particles are killers.

Dr. Jarrett's co-authors, an impressive array of fellow travelers in the small particle hunting research community, never excused or explained the decision to rely on the "conurbation" model as more reliable than the 9 models that showed no effect. Although conurbation sounds exotic, it is the game played by researchers called torturing the data, and in this case Dr. Jarrett found a way to dice and chop the geography of California to find populations that had the "associations" of air pollution and deaths he was looking for.

That is called the outcome based research fallacy and is fueled by the fact that Jarrett and his coauthors knew who funded their research, an agency that had a stake in promoting the public perception that small particles are killers.

South Coast Air Management District should comply with California Health and Safety Code Section 40471 (b) and schedule a Hearing for a full vetting of the small particle research issues before implementing the proposed AQMP and then act reasonably and discard the Plan.

There are no impact studies for the past decade, and the AQMD has no reports on health impacts

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OO-7

OO-8

on record for 2001 through 2010 when there should have been at least 3 reports filed, and at one point an AQMD report said, ignoring its responsibility in reporting. "The purpose of this appendix is to provide an overview of air pollution health effects, rather than to provide estimates of health risk from current ambient levels of pollutants in specific areas of the SCAB." (http://www.aqmd.gov/aqmp/docs/2003AQMP_AppI.pdf).

The health effects studies are the foundation for any management plan and have been discarded in favor of aggressive regulatory proposals based on the precautionary principle or good intentions, but not on the science demanded in the Clean Air Act and its corresponding California Statutes. The research presented to the CARB and the public comments provided make a strong case for no effect from current ambient air pollution. No death effect, no measurable health effect from the criteria air pollutants.

Please consider the comments from 2008 on the proposed CARB Tran report, the submissions made for the debate in February of 2010, and the comments by experts on the final version of the Jerrett study that asserted the "conurbation" model justified the CARB pursuit of new and aggressive small particle regulations.

Many studies have found no PM 2.5 health effect and yet the CARB and the South Coast Management district continue to press forward to the detriment of the California economy. California cohorts have found no relationship between PM2.5 and total mortality. Indeed, detailed analyses of two of these cohorts funded by AQMD and completed in 2011, have found no relationship between any criteria pollutant and total mortality in California (www.scientificintegrityinstitute.org/Enstrom081512.pdf).

The CARB and US EPA human health effects research on small particles and other criteria pollutants have been depended on the questionable methodology of data dredging for "premature deaths. The problem is defining premature deaths, and the studies in fact do not count premature deaths as in a medical investigation, but the noise of variation in death rates. That is an opportunity for irresponsible data torturing to find air pollution and daily variation in death rates to call "premature deaths" that are not. The premature deaths projected by researchers, the USEPA and CARB to thousands in the state or nation are projections of deaths that are more than the daily average, not premature deaths of individuals who have been assessed for confounders and found to die short of life expectancy.

The research is unreliable, and misleading, and projections of hundreds of thousands of lives saved is deceitful nonsense. There are no deaths from small particles, the research is deceptive desk top death certificate data dredging that harvests the noise from day to day death rate variations and calls it signal, then projects the "correlations" the population to make impressive scare numbers of "premature deaths."

These data dredged mortalities are the primary health impact used to justify the NAAQS. So the number is the product of data torturing and deception but even if the AQMD accepts the unreliable counting and methodology, the national standards are not based on health effects or mortality in California or the SCAB. In 2009 the SCAB had an age-adjusted total death rate lower than the death rate in every state in the continental US. (<http://www.scientificintegrityinstitute.org/NCHSRR070811.pdf>).

The AQMD is obligated to evaluate the reliability of the research and another consideration is the already mentioned Krewski map that shows no California air pollution effects. That alone should give California policy makers pause before initiating another aggressive regulatory regime.

A good faith effort to review the human health effects science should convince the SC AMD policy makers to reconsider the proposed aggressive Management Plan.

Cordially,

John Dale Dunn MD JD

OO-8

OO-9

Supplemental to the Original Letter

John Dale Dunn MD JD

Diplomate ABEM, ABLM
Admitted but inactive, Texas and Louisiana Bars
Civilian Contract Faculty, Emergency Medicine
Carl R Darnall Army Medical Center, Fort Hood, TX

401 ROCKY HILL ROAD LAKE BROWNWOOD, TEXAS 76801

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10-10-12

Supplemental submission on the AQMP

Members of the Board of South Coast Air Management District,

I write to supplement my previous submission showing that there is no reliable evidence that human health effects in California and specifically in the South Coast District justify the proposed Management Plan.

I must reemphasize that I also believe that the South Coast District is not in compliance with the CA statutes that require a review of human health effects science on a regular basis and particularly when a new Management Plan is promulgated.

OO-10

It is my understanding that before the Draft 2012 AQMP is finalized and approved, AQMD must hold a public hearing on the health impacts of air pollution in the SCAB, in accordance with CHSC Section 40471 (b).

If the hearing is held, in compliance with statute, I am convinced that the policy makers and board will find overwhelming the lack of evidence to justify any proposed plan, particularly the aggressive plan as proposed by AQMD staff.

OO-11

The AQMP should not propose emission control measures necessary to comply with NAAQS that are not appropriate for California or the SCAB. Instead, AQMD should request a waiver from compliance with the NAAQS using the special waiver status granted to California in Section 209 of the Clean Air Act (<http://www.epa.gov/otaq/cafr.htm>).

To reiterate, and reemphasize, in January of 2007, the Air Resources Board and AQMD approved funding for two studies on the human health effects relationship to particle air pollution and the studies by Lipsett, and by Jarrett and others showed no human health effect, no association or relationship between PM and total mortality in California. The Jarrett Study found that total mortality during 1982-2000 among about 75,000 California adults was not related to either PM10 or PM2.5 in eight of nine models tested. He tortured the data to get one model to show an association, the model he called the conurbation model, which was nothing more than slicing the geographical pieces to find a small increase in deaths associated with Air Pollution. I have made fun of such nonsense and data dredging

OO-12

in my first submission. The Lipsett Study found that total mortality during 2000-2005 among about 75,000 female

California teachers was not related to either PM10 or PM2.5. The studies found some unexplained evidence of increased cardiovascular disease risk and decreased cancer risk, but there was no overall increased risk of death but in these studies there is no effort made to avoid the problem of noise in the small ranges of association. However that is the problem with epidemiology funded by government—the researchers know there will be no funds in the future for a study that fails to find what the government entity wants to justify a new regulatory regime.

These null results by Lipsett and Jarrett agree with the overwhelmingly null results for California that have been published since 2000, which include the study by Enstrom on 50,000 Californians. They also are coherent with the Krewski map mentioned before that shows a null California association of deaths and small particle pollution.

Thus, based on all the evidence described in my first submission and in this supplemental submission, I assert there is no health risk associated with PM in the South Coast regions, including the Coachella Valley. There is no evidence of death association in California as a whole and there will be no health risk from PM that would justify concern about the Sentinal power plant.

I urge that the AQMD Board and Staff review carefully review the evidence and consider the negative economic effects from draconian air management regulatory proposals. It is time to focus on the welfare of the public and the California economy is critical to people's well-being.

No human health effects research would justify more damage to the economy of the South Coast region or California as a whole.

Cordially,

OO-12

Responses to Comment Letter OO
John Dale Dunn, MD, JD

Response to Comment OO-1:

The purpose of the 2012 AQMP is to develop a plan to attain the National Ambient Air Quality Standards for particulate matter, as required by the Clean Air Act. The AQMD has held advisory group meetings, and announced public hearings, regarding the draft 2012 AQMP. Commenter indicates the provisions proposed in the Draft 2012 AQMP would have major impacts on the residents of the South Coast Air Basin. However, the large majority of costs associated with the PM2.5 plan derives from transportation control measures. The plan represents staff's best proposals to attain the NAAQS for PM2.5. Staff would always welcome other proposals to evaluate that would result in meeting the standards by the statutorily required deadlines. Failure to submit a plan to attain the standards could also result in penalties that would result in economic impacts in the regions. These could include restrictions on federal transit and highway funds, additional emissions offset requirements, and imposition of a Federal Implementation Plan to attain the standards.

Response to Comment OO-2:

The economic and health impacts of the proposed draft AQMP have been estimated and are contained in the draft Socioeconomic Analysis released in September 28, 2012. As noted above, failure to timely attain the standards can also result in significant economic impacts to the region.

Response to Comment OO-3:

A draft Appendix I, which contains a summary of particulate matter health effects, is being prepared to comply with California Health & Safety Code 40471(b), and not the federal Clean Air Act. The provisions noted in the H&S Code require the report preparation as part of the AQMP updates. However, the DRAFT 2012 AQMP and its proposed provisions are designed to provide the plan for attaining the NAAQS for PM2.5, as required by the Clean Air Act.

Response to Comment OO-4:

Thank you for the links.

Response to Comment OO-5:

Thank you for the links.

Response to Comment OO-6:

The 2012 AQMD is being developed to provide a plan to demonstrate attainment of the National Ambient Air Quality Standard for Particulate Matter, as required by California and federal law. The research described by commenter is discussed in the draft Appendix I of the draft 2012 AQMP. Commenter also states that the AQMD should

“stand down” from the current draft AQMP. However, the purpose of the draft 2012 AQMP is to provide the plan to attain the NAAQS for PM2.5, as noted above.

Response to Comment OO-7:

The AQMD is holding public hearings on the draft AQMP and its Appendix I.

Response to Comment OO-8:

The draft Appendix I provide a summary of particulate matter health effects, which are generally applicable to the South Coast Air Basin. Based on relatively recent studies, additional discussion of health impacts of PM2.5 specifically looking at the South Coast Air Basin population have been added to the discussion. As noted previously, however, the main purpose of the Air Quality Management Plan is to provide a pathway to attain the National Ambient Air Quality Standards by statutory deadlines, as required by the Clean Air Act.

Response to Comment OO-9:

The study referenced in the commenter discussion is included in the Draft Appendix I of the Draft 2012 AQMP. Regarding the discussion of the commenter on whether the health effects of particulate matter justify the National Ambient Air Quality Standards, staff notes that under the Clean Air Act, the EPA Administrator adopts national air quality standards, not states or local districts. The District has no authority to adopt an air quality standard, nor is there any provision under the Clean Air Act to request a waiver from meeting the established NAAQs. The AQMD Draft 2012 AQMP is designed to attain these standards. It is staff’s opinion that the appropriate forum to review the NAAQS is during the EPA review of the standards, not in the development of the updated AQMP.

Response to Comment OO-10:

The Air Quality Management Plan updates have the required report on health effects of particulate matter in the South Coast Air Basin, which is included as Appendix I.

Response to Comment OO-11:

The Clean Air Act requires compliance with the National Ambient Air Quality Standards. The Clean Air Act also calls for severe economic penalties to the region for failure to comply with the National Ambient Air Quality Standards by statutory deadlines. There is no provision in the Clean Air Act to waive compliance with the National Ambient Air Quality Standards. The section 209 waiver that commenter refers to applies to mobile source emission controls, and provides procedures in which California may seek waiver from federal motor vehicle standards if they are replaced with at least equally protective standards. The section 209 waiver clearly does not apply to the NAAQS.

Response to Comment OO-12:

Staff appreciates the references. The two studies mentioned are included in the Appendix I discussion of particulate matter health effects.

PP. Personal Care Products Council, September 28, 2012



September 28, 2012

Via Electronic Mail

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
echang@aqmd.gov

Re: 2012 Air Quality Management Plan

Dear Dr. Chang:

The Personal Care Products Council (Council) appreciates the opportunity to provide comments to the South Coast Air Quality Management District's (SCAQMD) *revised* 2012 Air Quality Management Plan (AQMP), which was issued for comment on September 8, 2012. Our comments focus on the Stationary Source Control Measures for Coatings and Solvents, and specifically CTS-4 that would "revise" the low vapor pressure volatile organic compounds (LVP-VOC) exemption for certain categories of consumer products.

The Council strongly opposes revising the LVP-VOC exemption.

Introduction

Based in Washington, D.C., the Council is the leading national trade association representing the \$250 billion global cosmetic and personal care products industry. Founded in 1894, the Council's more than 600 member companies manufacture, distribute, and supply the vast majority of finished personal care products marketed in the United States. These include many products that have been reformulated – some multiple times – in order to foster the goals of SCAQMD and the California Air Resources Board (ARB) to reduce emissions from consumer products. Reformulated products include antiperspirants, deodorants, hairsprays, numerous other hair care products, nail polish removers, shaving creams, and personal fragrance products.

While the Council's member companies do not manufacture products that fall under the category of "coatings and solvents", and thus will not be directly impacted by the proposed control measure CTS-4, we have serious concerns that any revision of the LVP-VOC exemption for one category of consumer products could eventually lead to its revision, or possibly even elimination, for *all* consumer products – as one stakeholder verbally suggested at the September 12, 2012, ARB public hearing. Such a move would be

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Dr. Elaine Chang
September 28, 2012
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devastating to industry generally, and to our members particularly, while doing almost nothing to significantly reduce VOCs or improve air quality in the South Coast region.

Our member companies continue to innovate and develop personal care products while considering efficacy, consumer acceptance, cost, and a host of other factors. Most importantly, however, our companies focus on safety – both human health and environmental safety – and the products they make are recognized as the safest products regulated by the U.S. Food and Drug Administration. As our members continue to test and reformulate to improve personal care products, it is vitally important that they continue to have the flexibility to utilize the limited exemptions allowed under law; particularly, the current LVP-VOC exemption.

Our Objections

If SCAQMD decides to revise the LVP-VOC exemption for certain consumer product categories, as proposed in its revised 2012 AQMP, our members fear that it will lead to the revision or elimination of the exemption altogether. This fear is based on the following:

- Our member companies have invested significant resources over the years reformulating personal care products in reliance on the LVP-VOC exemption;
- Many personal care products have been optimally formulated to meet both consumer needs and VOC standards;
- Revising or eliminating the LVP-VOC exemption would potentially reduce product efficacy, causing consumers to use more of the product, and thus resulting in more emissions;
- Revising or eliminating the LVP-VOC exemption could result in the potential loss of products or entire product categories; and
- Unintended consequences are likely to occur, as companies are forced to quickly reformulate their products.

Our fear seems further justified in light of the recently proposed rule¹ by the U.S. Environmental Protection Agency, finding that California’s State Implementation Plan (SIP) for the South Coast Air Basin is “substantially inadequate” to comply with the federal one-hour ozone standard. If EPA finalizes this proposed rule, or “SIP call”, a new attainment demonstration for the one-hour ozone standard in the South Coast area will be required within 12 months.

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¹ 77 Fed. Reg. 58072-76 (Sept. 19, 2012).

Dr. Elaine Chang
September 28, 2012
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Even so, SCAQMD appears to believe that the proposed control measures for consumer products – CTS 1, 2, 3 and 4 – will somehow help with attaining the one-hour ozone standard. Yet, air modeling shows that further VOC reductions from consumer products will *not* significantly reduce ozone. In particular, LVPs have only the most minimal impact on VOC emissions, and thus ozone formation; as such, revising or eliminating the LVP-VOC exemption will not help SCAQMD meet its ozone attainment goals.

It would be illogical for SCAQMD to devastate an entire sector of the economy to achieve only incremental VOC reductions, which would be the result of implementing the proposed control measures. Instead, SCAQMD should focus on efforts that will result in substantial NOx and ozone reductions so that it can meet its attainment goals.

The consumer products industry in general has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions would result in even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products technologically and commercially infeasible. To that end, the Council asks that you consider our comments in the following context: while extraordinary progress has already been achieved in the reduction of emissions from personal care products, there is *not* an endless pool of VOCs in these products that can be eliminated. We are now at the point where the VOCs remaining in previously-regulated and unregulated products are essential to the function of the products, and/or present in such small amounts that reduction is not cost-effective for either the California or the industry.

Conclusion

The Council appreciates the opportunity to comment on the revised 2012 AQMP. We urge SCAQMD to seriously consider the impact of these control measures – and the revision or elimination of the LVP-VOC exemption in particular – on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the revised 2012 AQMP should not be included in the final 2012 AQMP.

Thank you, and please call me with any questions or concerns by phone at 202-466-0495 or email at mverst@personalcarecouncil.org.

Sincerely,



Thomas Myers
Associate General Counsel

cc: Linda Murchison, Ph.D., PTSD, CARB, via email: lmurchis@arb.ca.gov
Kurt Karperos, PTSD, CARB, via email: kkarpero@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

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Responses to Comment Letter PP
Personal Care Products Council

Response to Comment PP-1:

Staff appreciates the efforts of the Council's more than 600 member companies to reformulate their products to foster the goals of AQMD and CARB.

Response to Comment PP-2:

The proposed control measure seeks to re-evaluate the LVP-VOC exemption in the Consumer Products Regulation that may lead to potential changes for applicable consumer product categories including personal care products.

CARB will conduct a technical and cost effectiveness feasibility analysis to demonstrate that products available to the consumer provide maximum ozone benefits, are cost-effective and are safe for the consumer. AQMD staff is also interested in reviewing any empirical comparative (side-by-side) studies conducted to assess efficacy of products with and without the use of LVP-VOCs. AQMD staff requests copies of any such studies conducted by members of the Personal Care Products Council or third parties to evaluate effectiveness and safety considering that some of the LVP-VOCs are not only highly reactive, but have some known health impacts.

Response to Comment PP-3:

The long term strategy achieves attainment of the ozone standards at all the air quality monitoring stations throughout the Basin by 2023. Modeling analysis shows that significant NO_x emissions reductions are the only viable path to attain the 8-hour ozone standards in the Basin. Therefore, the ozone strategy focuses primarily on NO_x reductions. However, VOC emissions reductions are also necessary in progressing towards attainment of the ozone standards, especially in the western portions of the Basin. Furthermore, there is a significant health benefit to meeting the ozone standards as soon as possible in as many areas of the Basin as possible. While the current 8-hour ozone design value site is at Crestline in the San Bernardino Mountains, projections in 2023 show that the design value site will be at Glendora in the San Gabriel Valley to the west. As shown in the 2023 baseline 8-hour ozone NO_x/VOC isopleths for Glendora and other western sites presented in the attachment to Appendix V, VOC reductions will help to lower ozone concentrations in the San Gabriel Valley and Western portions of the Basin. This is true near the level of the 8-hour ozone standards, but is even more significant along the path to attainment. This is due to the higher VOC/NO_x ratios projected to occur in future years, especially in the western Basin.

To this end, short-term VOC controls (through 2020) will help offset the impact of the increased VOC/NO_x ratio in the impacted areas of the Basin, such as the San Gabriel

Valley, that are immediately downwind of the primary emissions source areas. As such, a nominal amount of VOC reductions are proposed in the Draft 2012 AQMP. The proposed VOC control measures in the Plan are based on implementing all feasible control measures through the application of available technologies and best management practices, while seeking a fair share reduction from both mobile and stationary sources. As zero and near-zero technologies are implemented for mobile sources to reduce NO_x emissions, concurrent VOC reductions from mobile sources are expected. Thus, stationary sources must continue to achieve their fair share of VOC reductions in the future. This plan proposes a modest 6 tpd of VOC emissions reductions out of a total 21 tpd of VOC reductions needed for basin-wide attainment in 2023.

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NO_x emissions reductions, beyond already adopted rules and measures, will be needed to meet the 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond.

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “black box” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious

attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NO_x and VOC emission reduction commitments contained in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs should further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

QQ. IFRANA, September 28, 2012



September 28, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

via e-mail - echang@aqmd.gov

RE: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

The International Fragrance Association North America (IFRA North America) appreciates the opportunity to offer comments on the South Coast Air Quality Management District's (AQMD's) Revised Draft 2012 Air Quality Management Plan (AQMP). These comments focus on Section CTS-04 of that proposal. IFRANA strongly objects to the inclusion of this measure in the draft AQMP, and urges that CTS-04 *not be included* in the final 2012 AQMP. In addition to the comments outlined below, we fully support those submitted by the Consumer Specialty Products Association on this issue on behalf of the consumer product companies it represents.

Overview

IFRA North America represents the fragrance industry in the United States. Our member companies create and manufacture fragrances and scents for personal care, home care, industrial and institutional use as well as home design products all of which are manufactured by consumer goods companies. IFRA North America also represents companies that supply individual fragrance ingredients, such as essential oils and other raw materials, which are used in perfumes and fragrance mixtures. Our member companies are responsible for over ninety percent of the fragrance market throughout the world and directly employ hundreds of California residents. This is in addition to innumerable indirect jobs and fragrance related economic activity through the sale and production of goods that utilize fragrance and fragrance technologies.

Indisputably, functional fragrance components are essential to achieving consumer-desired product performance across all categories of consumer products. While AQMD has before it a document with admirable objectives to create a workable, science-based program that benefits consumers and the environment, it would do so to the detriment of innovation, investment and functionality. IFRA North America has grave concerns that the proposed reductions in VOCs, and methods of achievement, are neither necessary nor cost effective in addition to being technologically infeasible. Further, we have misgivings that the proposed changes will ultimately harm California consumers and businesses in addition to the welfare of the fragrance industry as a whole.

We have outlined our specific concerns in the subsequent sections.

INTERNATIONAL FRAGRANCE ASSOCIATION
NORTH AMERICA
1001 19th Street North, Suite 1200
Arlington, VA 22209



Unnecessary and Infeasible Reductions

IFRA North America is principally concerned with the proposal to include further reductions in VOCs from consumer products that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts overall on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

Over the past 20 years, the fragrance industry, as well as the consumer products industry, has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions would come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products unnecessary.

Proposal to Remove LVP Exemption Would be Devastating to Consumer Products Industry

Removal of the existing exemption for low vapor pressure "solvents" threatens the existence of entire classes of consumer products, well beyond the coatings and cleaner product categories that are suggested for attention by SCAQMD. The end result would be a disregard for differential contributions to VOC burden. In particular, those consumer product categories that may contain fragrance as an ingredient are not the main focus of the SCAQMD initiative, which appears to concentrate on cleaning and related products having a defined 'solvent' component and effect.

As suppliers of fragrance to major consumer product companies across the country, IFRA North America has worked diligently with California regulators since the inception of CARB. Our representatives have collaborated directly with CARB staff to provide background information on our products, our business practices, and the technical criteria that must be fulfilled for fragrances in order to achieve consumer expectations for marketplace products containing fragrance. Those consumer products, particularly in the air care category, have been carefully constructed in order to comply with air quality regulations and also to deliver the consumer benefit stated by the manufacturer. While the SCAQMD proposal seems to focus on a narrow product segment (i.e., solvent-based cleaners) IFRA North America's concern is for the potential of a broad sweeping impact across many consumer product categories, and this gravely damaging whole industry segments.

Review of SCAQMD Technical Report Warrants Further Examination

Treatment of Chemical Boiling Points

IFRA North America has obtained the SCAQMD technical report dated August 31, 2012 titled "Non-Volatile, Semi-Volatile or Volatile: Redefining Volatile for Volatile Organic Compounds". We believe that a closer examination of some of the hypotheses presented in this report is warranted. In particular, the treatment of chemical boiling points for establishing qualification for Low Vapor Pressure (LVP) status seems at odds with the statement that "[b]oiling point and number of carbon atoms do not appear to be a reliable indicator of volatility." Along these lines, the technical report addresses the role of boiling point in the determination of whether or not a material qualifies as a LVP material. While acknowledging that boiling point is one of the criteria cited by CARB for consideration in the definition of an LVP, the point must be made that potential atmospheric reactivity of a material is much more important than boiling point alone. Thus, the discussion of alternative boiling point criteria (e.g., Canada, Green Seal) is misplaced as it does not address the much more fundamental concern of ozone reactivity. In addition, the focus on mass calculations to achieve reductions in

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ozone-reactive components ignores a much more relevant factor which is Maximum Incremental Reactivity considerations.

QQ - 3

Concerns with Room Temperature Evaporation Study

In the SCAQMD study, a room temperature evaporation study is described for a number of individual materials. It must be recognized that the consumer products that SCAQMD is seeking to address are not single chemical entities, but rather complex formulas of multiple components. While the individual components undoubtedly possess their own boiling points, vapor pressures, etc., in isolation, it is well known that these individual materials behave much differently when present in a mixture, and evaporative loss to air, water and soil compartments is heavily influenced by interactions among these materials in the mixture.

QQ - 4

Justification Behind New Categorization

In the SCAQMD report, the authors propose a new scheme for categorization of materials as "Volatile", "Semi-Volatile" and "Non-Volatile" and they have assigned materials to these categories, apparently by arbitrary criteria (e.g., a material classed as "volatile" is said to evaporate to the extent of 95% within 6 months under ambient conditions). It is not clear what the precedent is for this new assignment scheme, and we must question the relevance of evaporation of single substances from a Petri dish to the evaporations of the same substances when present in a mixture (i.e., consumer product) that may be used for minutes (or less) at a time.

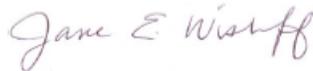
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Conclusion

IFRA North America appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP) and looks forward to collaborating to achieve an agreeable path forward. We point to the SCAQMD goal statement: "[w]e are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the Revised Draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

If you should have any questions regarding these comments, please do not hesitate to contact me at jwishneff@ifrana.org or 571-346-7584.

Sincerely,



Jane E. Wishneff
Director, Government Affairs & Counsel

cc: James Goldstene, Executive Officer, California ARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, California ARB, via email: ctakemot@arb.ca.gov

Responses to Comment Letter QQ
IFRANA

Response to Comment QQ-1:

The long term strategy achieves attainment of the ozone standards at all the air quality monitoring stations throughout the Basin by 2023. Modeling analysis shows that significant NO_x emissions reductions are the only viable path to attain the 8-hour ozone standards in the Basin. Therefore, the ozone strategy focuses primarily on NO_x reductions. However, VOC emissions reductions can also be cost-effective in progressing towards attainment of the ozone standards, especially in the western portions of the Basin. Furthermore, there is a significant health benefit to meeting the ozone standards as soon as possible in as many areas of the Basin as possible. While the current 8-hour ozone design value site is at Crestline in the San Bernardino Mountains, projections in 2023 show that the design value site will be at Glendora in the San Gabriel Valley to the west. As shown in the 2023 baseline 8-hour ozone NO_x/VOC isopleths for Glendora and other western sites presented in the attachment to Appendix V, VOC reductions will help to lower ozone concentrations in the San Gabriel Valley and Western portions of the Basin. This is true near the level of the 8-hour ozone standards, but is even more significant along the path to attainment. This is due to the higher VOC/NO_x ratios projected to occur in future years, especially in the western Basin.

To this end, short-term VOC controls (through 2020) will help offset the impact of the increased VOC/NO_x ratio in the impacted areas of the Basin, such as the San Gabriel Valley, that are immediately downwind of the primary emissions source areas. As such, a nominal amount of VOC reductions are proposed in the Draft 2012 AQMP. The proposed VOC control measures in the Plan are based on implementing all feasible control measures through the application of available technologies and best management practices, while seeking a fair share reduction from both mobile and stationary sources. As zero and near-zero technologies are implemented for mobile sources to reduce NO_x emissions, concurrent VOC reductions from mobile sources are expected. Thus, stationary sources must continue to achieve their fair share of VOC reductions in the future. This plan proposes a modest 6 tpd of VOC emissions reductions out of a total 21 tpd of VOC reductions needed for basin-wide attainment in 2023.

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NO_x emissions reductions, beyond already adopted rules and measures, will be needed to meet the 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This

CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond.

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “black box” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NO_x and VOC emission reduction commitments contained in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA’s recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs will need to further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment QQ-2:

Based on comments received, the Proposed Control Measure CTS-04 (CTS-04) has been revised to reevaluate the existing exemption for LVP-VOC solvents and does not include complete removal of the LVP-VOC exemption, unless technologically feasible. Further, the measure suggests incorporating additional parameters, such as maximum incremental reactivity (MIR) or volatility, to the existing exemption criteria. The proposed control measure aims to recognize the contribution of some LVP-VOC solvents, considering that over the past decade, consumer product manufacturers have increased the use of LVP-VOCs to meet the lower VOC requirements of the regulation. Reformulation of products by substituting fast-evaporating LVP-VOC solvents for other solvents considered to be VOCs may not achieve the ozone reduction benefits anticipated by reducing the VOC content limits. While staff appreciates the efforts made by your industry to carefully construct products that meet the current definition of LVP-VOC, AQMD studies (“Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds”, U. Vö and M. Morris, August 2012) indicate that the ozone reduction benefits sought during rule development may not be realized based on the evaporation rates exhibited by many of the LVP-VOCs. In addition to reevaluating the exemption for LVP-VOC solvents, it may also be necessary to reconsider the current limits in the consumer product category, especially if alternative products are unavailable. The proposed control measure would not necessarily impact the provisions in the current Consumer Products Regulation for products with 2% percent or less fragrance added. However, it is acknowledged that the proposal may impact products, excluding personal fragrance, that contain more than 2% fragrance. While there are many products that do not rely on LVP-VOC solvents to meet the current limits, there may be niche applications where changes to the rule limits are warranted. It is not the intention of the proposed control measure to gravely damage California consumer products industry but to accurately determine the VOC contribution made by consumer products. The proposed control measure further calls for CARB to collect speciated LVP-VOCs data by category in future surveys. This data will greatly assist CARB staff in further identifying overall potential additional VOC contribution from LVP-VOCs, as well as calculating the emission and ozone benefits. Lastly, the control approach calls for implementation in phases, beginning with products with the most reactive compounds that have the greatest emission impacts, such as multi-purpose solvents and institutional cleaners.

Response to Comment QQ-3:

Chemical boiling points are currently utilized by regulatory agencies and some certification programs to define volatility. The paper included an examination of currently used boiling points and compared the regulatory classification to various VOC test methods and ambient evaporation. Staff agrees that potential atmospheric reactivity coupled with volatility is a much better indicator of ozone contribution than boiling point alone. While the paper only compares the results, the control measure

seeks to reevaluate the LVP-VOC definition with scientifically supported criteria including MIR and ambient evaporation considerations.

Response to Comment QQ-4:

The AQMD study acknowledges that the study is a comparative review of pure analytes and may not reflect analyte behavior in complex blends or mixtures. Staff agrees that individual components may behave differently, including being less or even more volatile, when present in a mixture. The comparative review provides evidence for the need to reevaluate the current LVP-VOC definition. The conclusion of the paper describes VOC test method strategies (such as thermogravimetric analysis (TGA) or Gas Chromatography (GC) methods with a general accepted non-volatile endpoint) that could be further considered to better measure VOC content from complex mixtures. However, as indicated in the proposed control measure and response to comment #2, there are some categories that contain 100% LVPs and are not part of a complex mixture that may inhibit or accelerate the evaporation of LVP-VOCs, and therefore the proposed control measure calls for implementation in stages.

Response to Comment QQ-5:

As noted in the previous response, staff acknowledges that the study is a comparative review and may not reflect analyte behavior in complex mixtures. Staff plans to conduct further studies to analyze the volatility of complex mixtures. The categorization scheme presented in the paper is to illustrate the significant differences in volatility for compounds categorized under a single regulatory category (i.e. LVP-VOC). The overall time frame of the study is consistent with other efforts to determine volatility. The assertion by the commenter that consumer products “may be used for minutes (or less) at a time” is inconsistent with the actual use of most consumer products. While a consumer product such as a multi-purpose lubricant, contact adhesive, hairspray or brake cleaner may be discharged from the product container for minutes (or less), the product is likely to remain on an open surface and available to evaporate for an extended period of time. Even in the limited situations where the product is disposed soon after use, the methods of disposal, waste container or drain, are uncontrolled and evaporation into the atmosphere is still a likely possibility.

RR. John Wayne Airport, September 28, 2012



Alan L. Murphy
Airport Director

September 28, 2012

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4182
2012aqmpcomments@aqmd.gov

Re: *Draft 2012 Air Quality Management Plan, The Integra Report*

To Whom It May Concern:

This letter is submitted on behalf of the County of Orange ("County") in its capacity as the owner and operator of John Wayne Airport, Orange County ("JWA" or "Airport"). This letter contains additional written comments from the Airport on the Draft 2012 Air Quality Management Plan ("2012 AQMP"), initially issued by the South Coast Air Quality Management District ("SCAQMD" or "District") in July 2012, with a Revised Draft 2012 AQMP issued in September 2012. Specifically, the Airport's additional comments concern the Aircraft Emissions Inventory For 2008 and 2035 (August 2012) prepared by Integra Environmental Consulting, Inc. ("Integra Report"), which provides the assumptions utilized in preparing the 2012 AQMP's emissions inventories relative to the aviation sector.

As indicated in our August 31 comment letter, it initially was difficult to discern whether the airport-specific data provided by JWA was utilized when preparing the aviation forecasts presented in the 2012 AQMP because (i) there is little information provided in the 2012 AQMP on the aviation forecasts, and (ii) JWA is not broken out in the forecasts as all aviation sector emissions are reported on a combined basis. As a result of the ambiguities concerning what aircraft activity data specific to JWA was utilized in preparing the emissions inventories presented in the 2012 AQMP, Fred Greve of Landrum & Brown (one of the Airport's consultants) contacted SCAQMD in order to request additional information regarding the emissions inventories' data inputs. On August 28, Mr. Greve received a copy of the Integra Report from District staff. Because Mr. Greve did not receive the Integra Report until three days before the close of the public comment period on the 2012 AQMP, JWA was not able to provide detailed comments on the assumptions utilized in preparing the 2012 AQMP's emissions inventories at that time. We have now had an opportunity to review the Integra Report and have the following additional comments.

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South Coast Air Quality Management District
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A. Existing Operations at JWA

Table 3.2.1 of the Integra Report presents the existing operations at JWA. The number of air carrier, air taxi and general aviation (GA) operations appears to be fairly consistent with the data previously provided to SCAQMD; however, the split between GA piston and jet aircraft at the Airport that is provided in Appendix B of the Report overestimates the percentage of GA jet aircraft at JWA. It appears that the split provided in the Report is based upon an FAA generic value of 27.5 percent jet aircraft and 72.5 percent piston aircraft. These percentages are not representative of the GA aircraft mix at JWA. Based on historical data from JWA operations for the period 2007-2009, the approximate split should reflect jet aircraft at 15 percent of operations and piston aircraft at 85 percent of operations. Appendix B should be revised to accurately reflect the enclosed information.

RR - 1

B. Aircraft Specific Data at JWA (2035)

The Integra Report also provides data and analysis regarding the current and projected future fleet mix at JWA. There are a number of inaccuracies in this data/analysis, as provided below.

- (1) The B737-600 aircraft does not currently operate at the Airport and we do not anticipate that it will operate at the Airport at any time in the future;
- (2) FedEx is the only operator of the A300/310 aircraft type at the Airport and they currently operate with only one Average Daily Departure (ADD). Therefore, the total projected A300/A310 operations should not exceed 2 operations/day;
- (3) The F100 and F70 aircraft do not operate at the Airport;
- (4) The B737-900 aircraft is too long to operate at the Airport;
- (5) The MD80, MD90 and RJ200 aircraft no longer operate at the Airport; and
- (6) The B737-700 aircraft is the most common aircraft type currently operating at the Airport – forecasts suggest that the B737-700 aircraft will likely be phased out and replaced with the new generation aircraft coming on line such as the 737-MAX aircraft. The introduction of the A320 neo should also be considered.

RR - 2

It is important for SCAQMD's forecasts to accurately reflect the current and projected future fleet mix at the Airport in order for the 2012 AQMP to contain reasonably accurate emissions inventories for 2035.

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C. Number of Aircraft Operations by Airport (2035)

Table 3.3 in the Integra Report presents the projected future operations by the Airport in 2035. This table indicates that there will be a forty-two (42) percent increase in the annual air carrier operations, an eighteen (18) percent increase in the annual air taxi operations, and a five (5) percent decrease in annual GA aircraft operations from 2008 through 2035. It is unclear from the Report whether the FAA's annual percentage growth factor of 2.08% or some other growth factor was used for purposes of determining the projected number of aircraft operations by airport in the Basin. Please confirm whether the FAA annual percentage growth factor was used for purposes of calculating the projected future aircraft operations.

In addition, it is important to note that the Airport has a currently authorized million annual passenger (MAP) capacity of 10.8 MAP. Any assumptions regarding a capacity increase at JWA beyond our currently authorized 10.8 MAP would be speculative in nature.

D. Aircraft Emissions by Airport (2035)

Table 2.4 provides the aircraft emissions by airport for the Basin. This Table indicates that the emissions for total organic gases (TOG) and volatile organic compounds (VOC) will more than double, the emissions for PM2.5 will almost double and the emissions for PM10 will increase by about 45%. In addition, the Table indicates that the emissions for nitrogen oxides (NOx) will decrease slightly (by approximately 12%). This pattern of large emissions increases is not the emission pattern that we would expect to see for JWA given that the Airport has a currently authorized MAP capacity of 10.8 MAP and given that the Airport anticipates that the fleet mix at the Airport will be converting to an aircraft fleet with more efficient, cleaner burning engines; thereby resulting in fewer emissions.

E. CO2 Emissions for Airports with Commercial Air Carrier Operations

Tables 2.7 and 2.8 provide the 2008 and 2035 CO2 emissions for airports in the Basin with Air Carrier operations. Based on our review of the emissions provided, it is difficult, if not impossible, to discern how the emissions calculations were performed and what data was utilized in connection with the analysis. Could you please provide us with additional information regarding the emissions inventories' data inputs that were utilized in connection with the greenhouse gas emissions calculations? We will not be able to provide additional comments on the assumptions utilized in preparing the 2012 AQMP's greenhouse gas emissions inventories until additional and more complete documentation is provided in connection with this analysis.

RR - 3

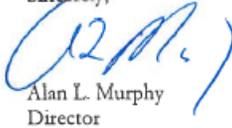
RR - 4

RR - 5

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In closing, JWA thanks the District again for providing the aircraft data specific to JWA that was utilized in preparing the emission inventories presented in the 2012 AQMP. We look forward to continuing to work with the District to ensure that the data utilized in connection with the 2012 AQMP is accurate. If you have any questions regarding the comments set forth in this letter and the additional data provided, please do not hesitate to contact me at your convenience.

Sincerely,



Alan L. Murphy
Director

cc: Vice Chair, Shawn Nelson, Orange County Board of Supervisors
Michael Krause, South Coast Air Quality Management District

Responses to Comment Letter RR
John Wayne Airport

Response to Comment RR-1:

AQMD staff has revised the Integra Report to reflect the updated information provided by the airport authority.

Response to Comment RR-2:

The projected 2035 fleet mix was provided by Southern California Association of Governments (SCAG) and is included in their recently adopted Regional Transportation Plan. The estimates were generated by the Regional Airport Demand Allocation Model (RADAM) an approved model used by SCAG staff since 1994 to project growth in aircraft activity in the region. While staff recognizes that operations at the airport do not include some aircraft types today, there is nothing limiting the use of these types in the future and we believe it is appropriate to use information that is consistent with SCAG's 2012 RTP and other growth assumptions used in the AQMP. (The one exception would be a physical characteristic that would not allow operation of an aircraft type at the airport such as the B737-900 craft referenced as too long to operate at John Wayne Airport. However we note that the engine type is the same as the other B737 classes that would likely be used in lieu of the 900 series and we would expect the estimated emissions would be similar).

Response to Comment RR-3:

SCAG's growth information was used to estimate the future airport activity listed in Table 3.3 of the Integra Report and is further described in their Aviation and Ground Access Appendix of the 2012 Regional Transportation Plan – (http://rtpscs.scag.ca.gov/Documents/2012/final/SR/2012fRTP_Aviation.pdf).

Response to Comment RR-4:

The emission estimates for 2035 listed in Table 2.4 of the Integra Report were generated using the airport activity as estimated by SCAG's RADAM model and FAA's Emissions and Dispersion Modeling System (EDMS) airport model. For JWA the activity was capped at the authorized limit of 10.8 MAP. The emission estimates for JWA are not inconsistent with the expected improvement in engine technology and growth in airport activity in that increased activity resulted in increased emissions with the exception of NOx, which has been and will continue to be the main focus of emissions improvements from aircraft engines.

Response to Comment RR-5:

The CO2 emissions listed in Tables 2-7 and 2-8 are generated using the airport specific data either provided by the airports or estimated from SCAG's RADAM model as inputs for FAA's EDMS model. The default CO2 emission rates in the EDMS model by aircraft type were used. More information about FAA's EDMS model can be found at:

www.faa.gov/about/office_org/headquarters_offices/apl/research/models/edms_model/.

SS. The Consumer Specialty Products Association (CSPA), October 9, 2012



October 9, 2012

via e-mail

Philip Fine, Ph.D.
 Planning and Rules Manager
 Planning, Rule Development, and area Sources
 South Coast Air Quality Management District
 21865 Copley Drive
 Diamond Bar, CA 91765-4182
2012aqmpcomments@aqmd.gov

Subject: Revised Draft 2012 Air Quality Management Plan (AQMP)¹

Dear Dr. Fine:

The Consumer Specialty Products Association (CSPA)² appreciates the opportunity to offer additional comments on the South Coast Air Quality Management District's (South Coast's or AQMD's) draft 2012 Air Quality Management Plan (AQMP). CSPA filed initial comments on the AQMD's draft Program Environmental Impact Report (Program EIR) for the 2012 AQMP on July 19, 2012. See Attachment 1. This document is hereby incorporated by express reference in comments that CSPA files today.

CSPA reiterates our strong objection to the inclusion of the proposed Stationary Source Control Measures for Coatings and Solvents numbered CTS-01, CTS-02, CTS-03, and CTS-04 and urges the AQMD to withdraw these four measures when it issues the final 2012 AQMP³ that will be included in further revisions to the California State Implementation Plan (SIP). CSPA remains extremely concerned to see that the AQMD is proposing to include further reductions in volatile organic compounds (VOCs) in the 2012 AQMP that are neither necessary nor cost effective. The AQMD's own data and overwhelming weight of credible scientific evidence demonstrates the South Coast Air Basin is NOx-limited and that further VOC reductions are not effective in reducing ground-level ozone.

SS-1

¹ The AQMD's revised draft 2012 AQMP was issued on September 7, 2012. The initial draft 2012 AQMP was issued on July 18, 2012. Both the initial and revised draft 2012 AQMPs are posted on the AQMD's website at: <http://www.aqmd.gov/aqmp/2012aqmp/RevisedDraft/index.html>.

² CSPA is a voluntary, non-profit national trade association representing approximately 230 companies engaged in the manufacture, formulation, distribution, and sale of products for household, institutional, commercial and industrial use. CSPA member companies' wide range of products includes home, lawn and garden pesticides, antimicrobial products, air care products, automotive specialty products, detergents and cleaning products, polishes and floor maintenance products, and various types of aerosol products. Through its product stewardship program Product Care[®], and scientific and business-to-business endeavors, CSPA provides its members a platform to effectively address issues regarding the health, safety, sustainability and environmental impacts of their products.

³ CTS-01 Further VOC Reductions from Architectural Coatings (Rule 1113); CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants; CTS-03 Further VOC Reductions from Mold Release Products; and CTS-04 Further VOC Reductions from Consumer Products. See Revised Draft 2012 AQMP at pp. 4-24 and 4-25 and Appendix IV-A at pp. 49-59.

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CSPA Comments on the Revised Draft 2012 AQMP
October 9, 2012
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In particular, CSPA strongly objects to the proposed CTS-04 measure that targets low vapor pressure compounds (LVPs), since scientific data indicate that these substances are likely to have insignificant contributions to ozone formation. Since CTS-04 is neither technologically and commercially feasible nor necessary as required by applicable California law,⁴ it should not be included in the final 2012 AQMP and any future revisions to the California SIP.

In the following sections, we will outline our major concerns regarding the draft AQMP and strongly urge that various changes be made to this AQMP before it is adopted by the AQMD Board of Governors and considered by the ARB for adoption as the 2012 update to the California State Implementation Plan (SIP).

1. The Consumer Product VOC Control Measures are Unnecessary for Ozone Attainment and Therefore Are Not Required by EPA to Be Included in This or Any Future AQMP and SIP Updates.

As discussed more fully in CSPA's initial comments on the draft Program EIR, Sierra Research, Inc., conducted a modeling study demonstrating that the ozone attainment status of the region would be unchanged if the portion of the VOC reductions in the Section 182(e)(5)⁵ "black box" were foregone.⁶ This re-modeling of AQMD's ozone attainment study showed that the region remained in ozone attainment even if the low-reactivity VOCs from consumer products were added back into the emissions inventory. This clearly shows that these VOC reductions for consumer products are not necessary for ozone attainment, and therefore not required to be included in either the 2012 AQMP or future SIP revisions. A copy of the Sierra Research study report is attached. See Attachment 2.

SS - 1

Applicable California law requires that state implementation plan for the air basin "...shall only include those provisions necessary to meet the requirements of the [federal] Clean Air Act (42 U.S.C. Sec. 7401 et seq.)."⁷ Since consumer product VOC control measures would not materially impact ozone formation, they are not necessary for demonstrating compliance with the federal ozone in the South Coast Air Basin, these measures should not be included in the final 2012 AQMP.

2. In Addition to Being Unnecessary, the Proposed Consumer Product LVP Measure Is Counterproductive.

As articulated in our initial comments on the draft Program EIR, scientific data studies demonstrate that the LVP compounds used in consumer products have minimal impacts on ozone formation, and have been part of the solution to lowering the impacts of consumer products on ozone formation for nearly 25 years. Since Control Measure CTS-04 is unwarranted and counterproductive, it should be removed from the 2012 AQMP and any future AQMPs. As support for the need for Control Measure CTS-04, a draft paper has been released by two South Coast AQMD scientists that showed that some LVP compounds could evaporate and concluded that therefore these LVP compounds contribute to ambient tropospheric ozone

SS - 2

⁴ Cal. Health & Safety Code § 41712(b)(2).

⁵ 42 U.S.C. § 7511a(e)(5).

⁶ Sierra Research Report No. SR2007-09-03 (Sept. 12, 2007).

⁷ Cal. Health & Safety Code § 40460(d).

CSPA Comments on the Revised Draft 2012 AQMP
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formation.⁸ CSPA strongly disagrees with this conclusion. A broad coalition of industry scientists was brought together to assess this draft paper. Those scientists, who include numerous experts in chemistry and environmental science, developed a Scientific Critique of that draft paper that is attached to these comments. (See Attachment 3)

This consumer products industry Scientific Critique provides scientific evidence that the LVP compounds evaluated by SCAQMD do not contribute significantly to VOC emissions, and do not contribute significantly to tropospheric ozone formation. The exemption of LVPs in the ARB Consumer Product Regulation therefore contributes to VOC emission reductions and ozone attainment. Factors causing LVP use to contribute to lower potential ozone impact include:

- LVP compounds are predominantly partitioned into other environmental media (soil, water, etc.) where they are biodegraded.
- LVP compounds have limited vapor-phase availability which limits their atmospheric concentrations and limits their potential ability to be involved in tropospheric photochemistry.
- LVP compounds in consumer products used indoors are often not emitted into the ambient air due to alternative fates indoors (water, solid waste, etc.).
- Lower volatility is an effective tool in reducing emissions in various product uses due to the lower rate of evaporation that allows lower volume of product use.

Indeed, the data developed as part of the Scientific Critique shows that many compounds regulated as VOCs in consumer products may also have alternative environmental fates that limit their actual contribution to the VOC emissions that can contribute to ozone formation. For instance, the environmental fate modeling for isopropyl alcohol (isopropanol) shows that only a small percent of that compound introduced into ambient air can be expected to remain in the ambient air where it can contribute to tropospheric photochemistry, with the balance partitioned into water and soil where it readily biodegrades. This finding has broad ramifications, since isopropanol is typical of the types of VOCs that represent the majority of the "VOC emissions inventory" for consumer products.

This result strongly suggests that much of the current VOC emissions inventory for consumer products should be reevaluated, since they are not actually available for involvement in tropospheric ozone formation. The statements made throughout this South Coast AQMP that consumer products are becoming the largest source of VOC emissions in the South Coast may therefore not be accurate, and should be further evaluated in light of environmental fate and partitioning data. CSPA believes that environmental fate modeling results must be taken into account in determining the VOC inventory used for ozone attainment modeling, and the control measures proposed for ozone attainment. We believe this is a compelling reason why VOCs and ozone should not be included in the final 2012 AQMP, and work on ozone attainment should be deferred.

⁸ Uyên- Uyên T. Võ and Michael P. Morris, "Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds," August 31, 2012.

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CSPA Comments on the Revised Draft 2012 AQMP
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3. It Is Neither Reasonable Nor Necessary for CARB and South Coast to Consider Additional Ozone Emission Reduction Measures Until the Parameters of EPA's Final SIP Call Are Known. Therefore, the AQMP Should Withdraw All Proposed Ozone Measures in the Final 2012 AQMP and the SIP Revision for Fine Particulate Matter (PM 2.5).

On September 19, 2012, the U.S. Environmental Protection Agency's (EPA or Agency) issued a proposed rule finding that the California SIP for the South Coast Air Basin is substantially inadequate to comply with the one-hour ozone standard.⁹ In summary, "EPA is proposing to issue a SIP call under [the federal Clean Air Act] section 110(k)(5) to require California to submit a new attainment demonstration for the 1-hour ozone standard in the South Coast."¹⁰ At the end of the 30-day comment period, EPA will need to consider and respond to comments filed on the proposed SIP call before the Agency can issue a final (*i.e.*, enforceable) rule. California will then have 12 months to comply by submitting a SIP revision for ozone.¹¹

SS - 3

Since the parameters of EPA's final rule are not know, it would be premature for the AQMD to anticipate future requirements by including ozone reduction measures in the SIP revision for fine particulate matter (PM 2.5). Therefore, CSPA urges the AQMD to defer consideration of any proposed ozone emission reduction measures until EPA promulgates its final rule on the recently proposed SIP call.

4. Further VOC Control Measures for Consumer Products are Not Necessary Even If EPA's SIP Call Is Finalized as Proposed.

The AQMD's own modeling data for the AQMP demonstrates that the South Coast Air Basin is NOx-limited and insensitive to additional VOC reductions.¹² The numerous ozone isopleth graphs plainly show which combinations of nitrogen oxides (NOx) and VOC reductions are needed to attain various ozone standards, throughout the area and in various locations in the South Coast air basin. In every sector, the isopleths for attaining a 75 ppb ozone standard were "flatlined" and show essentially the same NOx reduction being needed for attainment no matter what reductions are made in VOCs. The isopleths are consistently flat at further VOC reduction levels between 0% and 50%. For all lower ozone isopleths, the "flatline" extends all the way to 100% VOC reduction; in other words, no amount of VOC reductions will have any significant impact on ozone levels. Thus, additional VOC reduction measures are unlikely to be needed for demonstrating ozone attainment of the federal one-hour ozone standard.

SS - 4

It is extremely important that SCAQMD take appropriate time to consider these factors, and not move ahead with VOC reduction measures for consumer products in this 2012 AQMP. Even if EPA includes the provisions of the proposed SIP call in the Agency's final rule, the AQMD's own data points to a conclusion that it is not necessary to include VOC control measures for consumer products in any required SIP revision. In conjunction with the evidence that we have

⁹ 77 Fed. Reg. 58072-76 (Sept. 19, 2012).

¹⁰ *Id.* at 58074, col. 3.

¹¹ *Id.* at 58075, col. 2.

¹² South Coast Scientific, Technical & Modeling Peer Review Advisory Group Meeting #8 for 2012 AQMP (June 14, 2012). See Agenda Item #3 "Update on Technical Analysis and 2008 Ozone Modeling Performance/Carrying Capacity" by Joe Cassmassi, and Sang Mi Lee. The document is posted on South Coast's website at: http://www.aqmd.gov/gb_comit/stmpradvgrp/2012AQMP/meetings/2012/jun14/Item3.pdf.

CSPA Comments on the Revised Draft 2012 AQMP
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provided that shows that question the accuracy and relevancy of emissions sought to be controlled from consumer products, we believe that it would be inappropriate for AQMD to move ahead with any modifications to the ozone portions included in this AQMP. In addition, as we noted in our July comments, any new control measures should be evaluated for effectiveness through sensitivity modeling to assure that they would actually contribute to ozone attainment.

SS - 4

SUMMARY AND CONCLUSIONS

CSPA has presented in these comments a compelling case that the control measures relating to consumer product VOCs and LVPs should not be included in this AQMP, and that no modifications to the AQMP relating to ozone attainment should be made until EPA finalizes its proposed SIP Call, and SCAQMD and ARB can fully consider the accuracy and relevance of the current VOC inventory and its need to be corrected to account for alternative fates and availability.

If you have any questions, please contact us at (202) 872-8110.

Respectfully submitted,



D. Douglas Fratz
Vice President, Scientific & Technical Affairs



Joseph T. Yost
Senior Director, Strategic Issues Advocacy



Kristin Power
Director, State Affairs – West Region

Attachments (3)

cc: James N. Goldstene, Air Resources Board
Linda C. Murchison, Ph.D., Air Resources Board
Kurt Karperos, P.E., Air Resources Board
Carla D. Takemoto, Air Resources Board
Stanley Tong, U.S. Environmental Protection Agency, Region 9
CSPA Air Quality Committee and Task Forces
Laurie E. Nelson, Randlett Nelson Madden Associates

Responses to Comment Letter SS
CSPA

Response to Comment SS-1:

The long term strategy achieves attainment of the ozone standards at all the air quality monitoring stations throughout the Basin by 2023. Modeling analysis shows that significant NO_x emissions reductions are the only viable path to attain the 8-hour ozone standards in the Basin. Therefore, the ozone strategy focuses primarily on NO_x reductions. However, VOC emissions reductions can also be cost-effective in progressing towards attainment of the ozone standards, especially in the western portions of the Basin. Furthermore, there is a significant health benefit to meeting the ozone standards as soon as possible in as many areas of the Basin as possible. While the current 8-hour ozone design value site is at Crestline in the San Bernardino Mountains, projections in 2023 show that the design value site will be at Glendora in the San Gabriel Valley to the west. As shown in the 2023 baseline 8-hour ozone NO_x/VOC isopleths for Glendora and other western sites presented in the attachment to Appendix V, VOC reductions will help to lower ozone concentrations in the San Gabriel Valley and Western portions of the Basin. This is true near the level of the 8-hour ozone standards, but is even more significant along the path to attainment. This is due to the higher VOC/NO_x ratios projected to occur in future years, especially in the western Basin.

To this end, short-term VOC controls (through 2020) will help offset the impact of the increased VOC/NO_x ratio in the impacted areas of the Basin, such as the San Gabriel Valley, that are immediately downwind of the primary emissions source areas. As such, a nominal amount of VOC reductions are proposed in the Draft 2012 AQMP. The proposed VOC control measures in the Plan are based on implementing all feasible control measures through the application of available technologies and best management practices, while seeking a fair share reduction from both mobile and stationary sources. As zero and near-zero technologies are implemented for mobile sources to reduce NO_x emissions, concurrent VOC reductions from mobile sources are expected. Thus, stationary sources must continue to achieve their fair share of VOC reductions in the future. This plan proposes a modest 6 tpd of VOC emissions reductions out of a total 21 tpd of VOC reductions needed for basin-wide attainment in 2023.

Current U.S. EPA, CARB and AQMD emissions inventory and photochemical air quality models include speciation profiles that account for total organic gases (TOGs), including reactive compounds, unreactive and exempt compounds, as well as LVP-VOC compounds. Staff reviewed the Sierra Research Report cited in the comment letter and found that LVP-VOCs were purposely excluded when determining relative photochemical reactivity and the overall inventory of consumer product VOC emissions (Assessment of the Need for Long-Term Reduction in Consumer Product Emissions in

the Basin, Sierra Research Report SR2007-09-03, September 2007 and Impact of Consumer Products on California's Air Quality, Sierra Research Report SR97-07-01, July 1997). Model results for ozone non-attainment areas have demonstrated that even compounds with low photochemical reactivity or LVP-VOCs contribute to photochemical ozone formation and not including these would compromise the ozone attainment demonstrations. Staff recognizes that some multi-media models that incorporate partitioning concepts such as "Atmospheric Availability" or "Environmental Fate" may have been recently developed; however, current peer-reviewed ambient ozone models used by CARB and AQMD do not include such partitioning concepts. District staff will continue to work with U.S. EPA and CARB staff on ozone model improvements, especially if additional peer-reviewed environmental fate and atmospheric availability studies justify incorporation into these predictive models.

Because substitution of traditional VOC containing materials indicates an increasing use of LVP-VOCs, a review of the extent of LVP-VOCs utilized and the associated applications is required to ensure that VOC emission reductions and ozone reduction benefits are maintained as originally intended. Please note that CTS-04 does not include an emission reduction commitment nor does it necessarily require complete elimination of the LVP exemption. Rather, it advocates the re-evaluation of the necessity, scope of the existing exemption LVP-VOCs are currently enjoying, and the efficacy of such an exemption, starting first with the consumer product categories where use of LVP-VOCs is registering high penetration rates and proceeding in subsequent phases with other product categories. Following a study, "Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds", U. Vö and M. Morris, August 2012

(<http://www.aqmd.gov/prdas/Coatings/VOCs/RedefiningVOCs.pdf>) that indicates that some LVP-VOCs can evaporate nearly as rapidly as other VOC materials, District staff believes that additional review of specific materials and applications and the associated LVP-VOC qualification criteria may help identify air quality improvement opportunities. The table below illustrates the contribution of LVP-VOC solvents from traditional (non-environmentally preferable) institutional and industrial (I&I) products. The average LVP-VOC contribution is greater than 50% of the overall VOC content with many products (41% in the products tested below), having more than 70% of the VOC coming from LVP-VOC solvents.

LVP Contribution to VOC Content

Product Category	VOC (undiluted) g/l	LVP (undiluted) g/l	% VOC Attributable to LVP
Household Dishwashing Soap	36.58	24.76	67.7%
Household General Purpose Cleaner	4.83	3.81	78.9%
Household Laundry Detergent	14.77	10.87	73.6%
I&I Bathroom Cleaner	19.81	1.62	8.2%
I&I Bathroom Cleaner	113.77	112.41	98.8%
I&I Bathroom Cleaner	49.83	17.70	35.5%
I&I Carpet Cleaner	30.26	0.47	1.6%
I&I General Purpose Cleaner	3.00	2.41	80.3%
I&I General Purpose Cleaner	8.79	8.11	92.3%
I&I General Purpose Cleaner	67.66	16.84	24.9%
I&I General Purpose Cleaner	20.69	17.79	86.0%
I&I General Purpose Cleaner	31.17	0.02	0.1%
I&I Glass and General Purpose Cleaner	13.54	3.76	27.8%
I&I Glass and General Purpose Cleaner	33.70	10.17	30.2%
I&I Glass and General Purpose Cleaner	0.45	0.30	66.7%
I&I Glass Cleaner	1.06	0.44	41.5%
I&I Glass Cleaner	4.14	3.58	86.5%
Total VOC Attributable to LVP			51.8%

Source: SCAQMD test results from selected I&I products

The proposed control measure is intended to study the air quality improvement potential for replacing LVP-VOC containing compositions with alternative low VOC formulations. The District, through the implementation of the Certified Clean Air Cleaners Program and Rule 1143 – Consumer Paint Thinners and Multi-Purpose Solvents, has identified alternative low-VOC, cost-effective technologies that are currently commercially available and used that do not rely upon the LVP-VOC exemption. The proposed control measure may involve eliminating or amending the CARB LVP-VOC criteria based on scientific data which may include MIR and similar photochemical reactivity parameters. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the rule development process to ensure overall efforts are feasible, productive and cost-effective. Further, the control measure includes requirements for CARB to collect speciated LVP-VOC data by category as a part of future surveys. This information will assist CARB and AQMD, as well as industry, in identifying additional categories that have the types and greatest LVP-VOC penetration, and result in more focused changes to the LVP-VOC exemption.

The Certified Clean Air Choices Cleaner program has nearly 50 institutional and industrial (I&I) cleaners that do not rely upon the LVP-VOC exemption. These products consist of full I&I product lines to cover nearly all cleaning and maintenance needs. Other certification programs have several hundred I&I cleaners, most of which do not rely upon the LVP-VOC exemption. As indicated, except for very few niche applications where efficacy of certain products may be impacted from a complete exclusion of a LVP-VOC, for the great majority of operations, environmentally preferable cleaners have equal or superior performance at equal or lower costs. Many cities and school districts have completely switched to environmentally preferable janitorial products and have found no degradation in performance at no extra cost. In some cases, lower overall costs have been seen and included in the cost-effectiveness section of the control measure. The City of Santa Monica reported spending 5% less on its cleaning products costs when it switched from conventional cleaners to less-toxic brands a decade ago. An article entitled, “The Benefits of Green Cleaning” by Dr. Robert W. Powitz on the ISSA website (November 2008), states, “We’ve heard the excuses, most of which can be grouped into one sentence: Eco-friendly products do not work and are more expensive. But this is simply not so.” The Green Seal and EcoLogo certification programs include efficacy performance standards to address claims in deterioration of performance. Again, Green Seal and EcoLogo have certified hundreds of I&I products most of which do not rely upon the LVP-VOC exemption.

Response to Comment SS-2:

Staff appreciates the efforts by CSPA to bring together a broad coalition of industry scientists to review the AQMD Paper “Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds”, U. Vö and M. Morris, August 2012. The proposed control measure seeks to reevaluate the criteria established for LVP-VOCs by relying on scientific data and therefore the information provided in the critique supplements the scientific data available for consideration.

Staff agrees that lower volatility compounds have limited vapor-phase availability. The study cited indicates that many LVP-VOC compounds are indeed non-volatile or semi-volatile limiting their ability to contribute to ozone formation. However, the paper also demonstrates that many compounds that qualify as LVP-VOC under the existing criteria are volatile and available to participate in ozone formation.

Current USEPA, CARB and AQMD emissions inventory and photochemical air quality models include speciation profiles that account for total organic gases (TOGs), including reactive compounds, unreactive and exempt compounds, as well as LVP-VOC compounds. Model results for ozone non-attainment areas have demonstrated that even compounds with low photochemical reactivity or LVP-VOCs contribute to photochemical ozone formation and not including these would compromise the ozone attainment demonstrations. Staff recognizes that some multi-media models that

incorporate partitioning concepts such as “Atmospheric Availability” or “Environmental Fate” may have been recently developed; however, current peer-reviewed ambient ozone models used by CARB and AQMD do not include such partitioning concepts. District staff will continue to work with USEPA and CARB staff on ozone model improvements, especially if additional peer-reviewed environmental fate and atmospheric availability studies justify incorporation into these predictive models.

The commenter attempts to justify the LVP-VOC exemption by noting that LVP-VOC compounds are predominantly partitioned into other environmental media (soil, water, etc.). The conclusion being that these products do not go into the air but instead are biodegraded. Yet this observation is true for nearly every chemical (LVP-VOC and non-LVP-VOC). Despite this partitioning, some fraction of the chemical enters the atmosphere and contributes to ozone formation. Contrary to the assertions made by the commenter, the critique does not provide evidence that LVP-VOC compounds are any different than traditional VOC compounds with respect to environmental partitioning. In fact, of the compounds studied (LVP-VOC and non-LVP-VOC) the highest predicted partitioning ratios into air are for some LVP-VOCs (22% for Light Distillate). It appears that there is no correlation between partitioning to air and LVP-VOC status. Furthermore, it is concerning that the current regulatory methodology may be requiring the transition from traditional VOC compounds (such as isopropanol) to LVP-VOCs (such as Light Distillate) with similar evaporation profiles, higher MIR values and more than four times higher predicted air partitioning factors.

Staff concurs that the current VOC emissions inventory for consumer products should be reevaluated to more accurately and precisely determine their contribution to ozone formation using the best available scientific data and methodologies, including environmental chamber studies and evaporation studies using fully formulated products. However, because consumer products represent the largest single source of VOC emissions (under current methodologies), uncertainty about the inventory because of the LVP-VOC exemption, and the current regulatory structure may be limiting the environmental benefits sought after in the regulation, staff believes that it is imperative that CTS-04 be included in the 2012 AQMP. Furthermore, draft CTS-04 has been revised to include the commenter’s suggestions pertaining to additional studies and refined emissions inventory.

Response to Comment SS-3:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the

development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond.

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “black box” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NO_x and VOC emission reduction commitments contained in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA’s recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs will need to further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment SS-4:

The set of isopleths provided in the June 2012 STMPR meeting was based on the initial 2023 baseline inventory and preliminary modeling. Subsequent modeling sensitivity simulations that varied the VOC emissions by approximately 12 TPD (across the board reductions) resulted in a 1 ppb movement in the 8-hour future design projection with lower VOC resulting in lower ozone. The current draft 2012 update to the 2007 AQMP 8-hour ozone projected 2023 future year design value placed several Basin sites within 1-2 ppb of the U.S. EPA threshold for demonstrating attainment. (EPA's threshold was set at 84.4 ppb with rounding). Far from being insignificant, a 1ppb change in the 8-hour ozone would jeopardize attainment demonstration.

SS-1. American Cleaning Institute, August 31, 2012



August 31, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

The American Cleaning Institute® (ACI®) appreciates the opportunity to offer initial comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. ACI strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, ACI supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

ACI is the trade association representing the \$30 billion U.S. cleaning products market. ACI members include the formulators of soaps, detergents, and general cleaning products used in household, commercial, industrial and institutional settings; companies that supply ingredients and finished packaging for these products; and oleochemical producers. ACI and its members are dedicated to improving health and the quality of life through sustainable cleaning products and practices. ACI's mission is to support the sustainability of the cleaning product and oleochemical industries through research, education, outreach and science-based advocacy.

ACI is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. As

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NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation.

ACI is particularly concerned with the removal of the LVP exemption. The loss of this exemption for any consumer product category conflicts with the California Air Resources Board's (ARB) Consumer Product Regulation. The exemption exists because, in addition to allowing industries to innovate technically and commercially feasible consumer products for Californians, elimination of the exemption would not result in VOC emission reductions.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

Summary and Conclusions

ACI appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Sincerely,

Kathleen Stanton
Director, Technical & Regulatory Affairs
American Cleaning Institute
1331 L Street, NW, Suite 650, Washington, DC, 20005

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

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Responses to Comment Letter SS-1
American Cleaning Institute

Response to Comment SS-1-1:

Staff appreciates the ACI and its members' dedication to improving health and the quality of life through sustainable cleaning practices and products. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-2. Shield Packaging of CA, September 28, 2012



Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Subject: 212 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Shield Packaging of California appreciates the opportunity to offer comments on the South Coast Air Quality Management District's Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-2, CTS-3, and CTS-4. Shield Packaging of California strongly objects to the inclusion of these measures in the draft AQMP and is requesting that these measures are not included in the final 2012 AQMP. Shield Packaging of California supports comments submitted by the Consumer Specialty Products and American Coatings Association on the AQMP.

Shield Packaging of California is a custom formulator and packager of consumer products. We have been in business in Southern California for over forty years. We have been supportive of consumer products regulations and development of more environmentally responsible products. It has been an ongoing challenge for us to provide both "compliant" and "efficacious" products for our customers. But, like others, we have persisted and our business has survived despite losing some customer to competitors outside of California.

The SCAQMD's proposal to eliminate an exemption for Low Vapor Pressure Solvents (LVP's) as part of the AQMP present unique problems to us because we do not see formulation options. Reformulation of some consumer categories may not be attainable, economical, effective, or all of the above. Elimination of some or all of the LVP chemicals will be hugely detrimental to our business.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Roger R. Vanderlaan', is written over a horizontal line.

Roger R. Vanderlaan

Shield Packaging of California, Inc.
Chino, CA 91710

5165 'G' Street, Chino, California 91710-5143 (909) 628-4707 Fax (909) 591-8916
Affiliated Corporations at Dudley, MA & Canton, MA

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Responses to Comment Letter SS-2
Shield Packaging of CA

Response to Comment SS-2-1:

Staff appreciates the Shield Packaging's support of consumer products regulations and development of more environmentally responsible products. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-3. Betco Innovative Cleaning Technologies, September 12, 2012



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September 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov
Re: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:
Betco Corporation appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. Betco Corporation strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. Betco Corporation supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Betco Corporation is a small business that promotes "green low VOC" products. We continue to stand with AQMD in providing these quality products at a reasonable cost. The proposed control measures will increase the cost of these products significantly, reduce their effectiveness, and raise other costs beyond that of the product itself. Some products will have to be eliminated.

For example, we sell a prewash laundry product for the institutional/commercial laundry sector. The product contains LVP-VOC solvents. The solvents are the agents that break down stains such as lipstick, grease, and fat to be lifted away by surfactant. If LVP-VOC solvents are counted as VOC, the product will not meet the current VOC regulation. Without the LVP-VOC solvents in the formula, the cleaning efficacy is reduced by 75%. The cost of replacement is high. Costs to reformulate include the price of the replacement, raw material identification, chemical product development, product suitability testing, health testing, and field testing of the product.

Without the solvents the product will not work as well. Substitutes for the solvents such as enzymes and bacteria take longer, are temperature sensitive and cost significantly more. Chemical additives such as sodium hydroxide are hazardous to handle, affect color in fabric, and damage fabric over time, creating indirect cost to the user. Having to soak laundry increases the time to complete one load and the man-hours to operate or oversee the process.

There will be additional costs and a reduction in number of "green" third party (Green Seal, DFE, Ecologo) certified products because we will have to recertify them after the formulas are changed. If LVP-VOCs are now to be counted as VOC, the number of certified products will be reduced because some cannot achieve the required cleaning efficacy in the timeframe required.

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Betco Corporation is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

Institutional products meant for the public sector, schools, government buildings and health care facilities must perform well and within a short time frame. An extended timeframe for cleaning translates into extended man-hours for crews to be working in buildings. These sectors (governmental agencies, schools and public health care facilities) are the least able to absorb additional costs.

Betco Corporation appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Sincerely,

Lynn Morsch
Regulatory Affairs
Betco Corporation LTD
1001 Brown Avenue
Toledo, Ohio 43558

SS-3 - 1

Responses to Comment Letter SS-3
Betco Innovative Cleaning Technologies

Response to Comment SS-3-1:

Staff appreciates Betco Corporations efforts to reformulate its products to reduce VOCs and the promotion of “green low VOC” products. It is possible that some of Betco’s products, such as the prewash laundry product provided in the letter as an example, may be impacted by the proposed control measure because the LVP-VOC solvents used may be contributing to ozone formation. There may be other solvents that break down stains and do not readily evaporate that could be true low-VOC replacements. The proposed control measure may involve eliminating or amending the CARB LVP-VOC criteria based on scientific data which may include MIR and similar photochemical reactivity parameters. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the rule development process to ensure overall efforts are feasible, productive and cost-effective. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-4. Air-Scent International, October 1, 2012



October 1, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Air-Scent International appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. Association/company name strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP.

As such, Air-Scent International supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Our company has been forced to re-formulate and discontinue many of its core products to conform with CARB/EPA regulations which has greatly impacted our business and caused a loss of its valued products. Another mandatory change can be devastating to us and thus create loss of employees, etc.

Air-Scent International is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC]) are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

SS-4 - 1

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective. These product categories have been unfairly targeted – especially when CARB has been unable to reduce the daily pollution caused by automotive exhausts. The so-called improvement to the environmental, in regulating these products – is negligible!

Summary and Conclusions

Air-Scent International appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: “We are committed to protecting the health of residents, while remaining sensitive to businesses” when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

SS-4 - 1

Sincerely,



Raymond Czapko, Chief Operating Officer
Air-Scent International
292 Alpha Drive
Fox Chapel, PA 15238

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

Responses to Comment Letter SS-4
Air-Scent International

Response to Comment SS-4-1:

Staff appreciates Air-Scent International's efforts to reformulate to conform to CARB/EPA regulations. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-5. Alpha Aromatics, October 1, 2012



October 1, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Alpha Aromatics appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. Association/company name strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP.

As such, Alpha Aromatics supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Our firm has been burdened with the task of trying to create effective formulations for our customers -- based upon the limited available options; since regulations have been imposed. New changes forcing re-formulations with even more stringent regulations and less options for compliant alternatives will affect our company as well as our customers -- thus severely impacting employment -- when many current products are once again affected -- and a major loss is created; including employee reduction!

Alpha Aromatics is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce

SS-5 - 1

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website: www.alphaaromatics.com



ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective. These product categories have been unfairly targeted – especially when CARB has been unable to reduce the daily pollution caused by automotive exhausts. The so-called improvement to the environmental, in regulating these products – is negligible!

Summary and Conclusions

Alpha Aromatics appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: “We are committed to protecting the health of residents, while remaining sensitive to businesses” when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Sincerely,



Roger Howell, General Manager
Alpha Aromatics
294 Alpha Drive
Fox Chapel, PA 15238

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

SS-5 - 1

Responses to Comment Letter SS-5
Alpha Aromatics

Response to Comment SS-5-1:

Staff appreciates Alpha Aromatics efforts to reformulate to conform to CARB/EPA regulations. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-6. SurcoTech, October 1, 2012



October 1, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Surco Products appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. Association/company name strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP.

As such, Surco Products supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Our company has been forced to re-formulate and discontinue some of its core products to conform with CARB/EPA regulations which has greatly impacted our business and caused a loss of its valued products. Another mandatory change can devastating to us and thus create loss of employees, etc.

Surco Products is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

SS-6 - 1

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective. These product categories have been unfairly targeted – especially when CARB has been unable to reduce the daily pollution caused by automotive exhausts. The so-called improvement to the environmental, in regulating these products – is negligible!

Summary and Conclusions

Surco Products appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: “We are committed to protecting the health of residents, while remaining sensitive to businesses” when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

SS-6 - 1

Sincerely,



Lisa Vasko, Sales Manager
Surco Products
P.O. Box 6
Glenshaw, PA 15116

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

Responses to Comment Letter SS-6
SurcoTech

Response to Comment SS-6-1:

Staff appreciates Surco Products efforts to reformulate to conform to CARB/EPA regulations. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-7. Pestco Inc., October 1, 2012



October 1, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Pestco, Inc. appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. Association/company name strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP.

As such, Pestco, Inc. supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Our company has been forced to re-formulate and discontinue some of its core products to conform with CARB/EPA regulations which has greatly impacted our business and caused a loss of its valued products. Another mandatory change can devastating to us and thus create loss of employees, etc.

Pestco, Inc. is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

SS-7 - 1

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective. These product categories have been unfairly targeted – especially when CARB has been unable to reduce the daily pollution caused by automotive exhausts. The so-called improvement to the environmental, in regulating these products – is negligible!

Summary and Conclusions

Pestco, Inc. appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: “We are committed to protecting the health of residents, while remaining sensitive to businesses” when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

SS-7 - 1

Sincerely,



Arnold Zlotnik, President
Pestco, Inc.
290 Alpha Dr.
Pittsburgh, PA 15238

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

Responses to Comment Letter SS-7
Pestco Inc

Response to Comment SS-7-1:

Staff appreciates Pestco efforts to reformulate to conform to CARB/EPA regulations. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-8. Simple Green, October 4, 2012



Simple Green – USA
World Headquarters
15922 Pacific Coast Hwy.
Huntington Beach, CA 92649
562-795-6000 • 800-228-0709
Facsimile: 562-592-3034
www.simplegreen.com

October 4, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Sunshine Makers, Inc. appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. Sunshine Makers, Inc. strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, Sunshine Makers, Inc. supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Sunshine Makers, Inc. is the maker of Simple Green brand products. We are located in Southern California and employ 46 California residents, as well as conduct significant multi-million-dollar business with other California businesses. We have undergone no less than four General Purpose Cleaner formula and label modifications to meet California's Consumer Product Regulation since its inception. The combined cost of doing this has been in the multiple millions of dollars in man-hours, materials costs, inventory component loss, and testing fees. We have worked extremely hard to comply with California's VOC regulations.

Sunshine Makers, Inc. is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

- MIDWEST
Chicago, IL
- EAST
North Wales, PA
- NORTH CAROLINA
Charlotte, NC
- ATLANTA
Cumming, GA
- ARKANSAS
Bentonville, AR
- FRANCE
Choisy-Le-Roi
- NEW ZEALAND
Auckland
- MEXICO
Guadalajara – Jalisco

SS-8 - 1

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective. Our latest work has been a 3.5-year search for replacement chemistry for our general purpose cleaners, the category of which drops from 4% to 0.5% maximum VOC level at the end of 2012. This project could not be successful without the lawful use of LVP-VOCs. Further, we would not be able to continue marketing greener chemistry without the use of LVP-VOC chemistry, as the alternatives to LVP-VOCs in cleaning products are certainly less preferable in many other aspects such as mammalian and aquatic toxicity, acute dermal and ocular toxicity, etc. Our company has invested over one million dollars in the cost of man-hours, materials, and testing fees for this latest reformulation in order to reach a formulation that will enable our company to continue offering products that the retail, industrial and institutional consumers will purchase and appreciate, while meeting our commitment to safer, greener chemistry. Without the LVP-VOC exemption, our company would lose virtually all of its current product line and likely not survive such a regulation.

SS-8 - 1

Summary and Conclusions

Sunshine Makers, Inc. appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Sincerely,



Carol Chapin
Vice President, Research & Development
Sunshine Makers, Inc. / SIMPLE GREEN
15922 Pacific Coast Highway
Huntington Beach, CA 92649

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

Responses to Comment Letter SS-8
Simple Green, Carol Chapin

Response to Comment SS-8-1:

Staff appreciates the efforts made by Sunshine Makers to comply with CARB's Consumer Product Regulations. Undoubtedly CARB considered the costs and benefits associated with changes to the General Purpose Cleaner VOC limits over the past two decades. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-9. Eastern Aerosol Association, October 4, 2012



October 4, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

The Eastern Aerosol Association (EAA) appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. The EAA strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, the EAA supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

The EAA is a proactive organization that influences action affecting the aerosol industry within our region. Although our region is the eastern United States, many of the regulations imposed in other parts of the country, and the world, eventually make their way to our region. This issue, therefore, is extremely important to this association and to our members.

The EAA is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment.

SS-9 - 1

Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution, not part of the problem.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

Summary and Conclusions

The EAA appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

SS-9 - 1

Sincerely,



Chris Nyarady
President
Eastern Aerosol Association

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

Responses to Comment Letter SS-9
Eastern Aerosol Association

Response to Comment SS-9-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-10. Losorea, October 5, 2012



10/5/2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via email - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Losorea Packaging Inc. appreciates the opportunity to offer comments on the South Coast Air Quality management District's Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. Losorea Packaging Inc. strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, Losorea Packaging Inc. supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Losorea Packaging Inc. is an aerosol contract packager, we are located in Woodstock, GA. We are a small family owned business with 26 employees. We have products that are sold into California indirectly through our customers. The cost to reformulate would be devastating to a small company like ourselves.

Losorea Packaging Inc. is principally concerned with the proposal to include further reductions in VOC's for consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially having an impact on consumer products: (CTS-01 Further VOC Reductions from Miscellaneous Coating, Adhesives, Solvents and Lubricants [VOC]; CTS -03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impact on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

SS-10 - 1



The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

Summary and Conclusions

Losorea Packaging Inc. appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to business" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures affecting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Sincerely,

Ryan Dailey
President

Losorea Packaging Inc.
313 Bell Park Drive
Woodstock, GA 30188

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@abr.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

SS-10 - 1

Responses to Comment Letter SS-10

Losorea

Response to Comment SS-10-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-11. WAiB, October 5, 2012



Western Aerosol Information Bureau

October 5th, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

The Western Aerosol Information Bureau (WAIB) appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. Our concerns focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-01, CTS-02, CTS-03, and CTS-04. WAIB strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, WAIB supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

The Western Aerosol Information Bureau is a regional association of companies involved with the production or marketing of aerosol products. The membership consists of approximately 55 companies, some small and independently owned, others nationally and internationally recognized. A fundamental component of our organizational charter is providing objective information predicated upon scientific data to the public, our members, the media, regulatory and government bodies regarding aerosol products.

The WAIB represents industry in California and the rest of the western United States, and we are here to be part of a solution. WAIB members frequently attend and speak at meetings of the California Air Resources Board, Air Quality Management Districts, and Federal Environmental Protection Agency. Our volunteer 12-member board of directors represents all segments of the aerosol products industry: fillers, marketers, component and chemical suppliers.

The Western Aerosol Information Bureau is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are not technologically and commercially feasible. The control measures-potentially impacting consumer products include:

CTS-04 proposes the elimination or modification of the LVP provision in the CARB Consumer Product Regulation. This measure is particularly troublesome given that the SCAQMD does not have authority over Consumer Products. CARB has sole authority over Consumer Products in California. WAIB has participated in the CARB process for two decades. CARB has encouraged the use of LVP's in Consumer

Products. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

The consumer products industry has invested heavily in reducing VOC through product reformulation. Continued reformulation of these products will lead to minimal if any realized reductions in reducing ozone. Reformulation will negatively change the performance and consumer experience with these products.

The Western Aerosol Information Bureau appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP is not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

SS-11-1

Sincerely,



**Roger Vanderlaan,
WAIB President**

The Western Aerosol Information Bureau - Board of Directors

President	Roger Vanderlaan	Shield Packaging of CA
Vice President	Steve Sanchez	Aeropres Corporation
Treasurer	Mike Thaete	Aptar B&H
Secretary	Ellen Melnitzke	Rackow Polymers

Directors

Randy Barry	WD-40 Company
Ian Fishman	220 Laboratories
Paul Gardner	Blaster Corporation
Ben Heimann	PLZ Aeroscience Corp.
Kent Houser	Cobra Plastics
Jim Johnson	Sherwin Williams
Chad Moline	Spray Products
Charlie Ortmann	Diversified CPC Intl.

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

Responses to Comment Letter SS-11
WaiB

Response to Comment SS-11-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-12. IAN GECKER & ASSOCIATES, LLC, October 5, 2012



October 5, 2012

Dr. Elaine Chang
Deputy Executive Officer,
Planning Rules & Area Sources
South Coast Air quality Management District
21865 Copley Dr.
Diamond Bar, CA 91765

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

I am a consultant to the Aerosol Industry with 50 years of involvement in product development, executive management and company ownerships. As such I have spent the past 20 some years reformulating hundreds of aerosol products for Fortune 1000 companies in order to meet the ever tightening VOC standards for consumer products.

I strongly disagree with the SCAQMD's plan to change the status of LVP's currently used in a variety of products that currently meet the CARB VOC standards. Further reductions in VOC content through the removal of LVPs will devastate entire categories of consumer products in that there are no suitable non-voc replacements that would yield the same quality, efficacy and safety in these products and still allow them to meet the standards.

The consumer products industry, and in particular the aerosol industry, have spent tens of millions of dollars through research, product development and manufacturing changes in order to meet current and future VOC standards. Further reductions of VOC content in aerosol consumer products are not technologically feasible and will result in these products being commercially inadequate for their intended purposes. At a time of economic stress, job losses and business bankruptcies in California, as well as the rest of the country, these proposals are not only technologically infeasible but will further add to our economic problems via job losses and lost business opportunities. When I arrived in California in 1971 there were over 12 aerosol manufacturing companies in the state. Today there are 4! The loss of these businesses, jobs and income to the state was due in large part to their strangulation by continuous and expanding regulations.

One final point is that current air modeling shows that further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are reduced VOC regulations become less effective in reducing ozone. Indeed, LVPs have minimal impacts on VOC emission's and ozone formation and their change in exempt status will reverse the aerosol industries achievements in VOC reductions.

The aerosol industry has been a partner with CARB and SCAQMD in its commitment to protecting the health and safety of the populace and we remain committed to this endeavor but do not believe this

Mailing Address: 10300 W. Charleston Blvd., 13-183, Las Vegas, NV 89135
Office & Laboratory: 2475 Chandler Ave., #7, Las Vegas, NV 89120
Phone (702) 325-0855 Fax (702) 640-0082

latest proposal to de-qualify LVPs is the right approach and ultimately will do more commercial harm than environmental good aside from the changes being technologically feasible.

Thank you for the opportunity to comment and respond to the proposals in the draft 2012 AQMP.

Sincerely,

Ian R. Gecker,
President and Owner

cc: James Goldstein, Executive Officer, CARB
Carla Takemoto, PTSD, CARB

100512.scaqmd

SS-12 - 1

Responses to Comment Letter SS-12
IAN GECKER & ASSOCIATES, LLC.

Response to Comment SS-12-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-13. RCMA, October 5, 2012



October 5, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

The Roof Coatings Manufacturers Association (RCMA) appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. RCMA strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, RCMA supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

RCMA is the national trade association representing the manufacturers of bituminous and non-bituminous roof coatings and the suppliers to the roof coatings industry. Our association and its member companies have collaborated with the SCAQMD for many years to help establish the rules that are currently in place for stationary sources and do not believe that further VOC emission reductions from this category are neither cost effective nor necessary. Specifically, we object to the inclusion of the aforementioned Stationary Source Control Measures for Coatings and Solvents in the AQMP for the following reasons:

- Changing formulation may decrease product's performance, resulting in worsened air quality
- Further VOC reductions might result in loss of products, meaning fewer product choices available to the California consumer
- Costs associated with reformulating products
- Further VOC reductions from Coatings and Solvents are not likely to result in significant air quality improvements

RCMA is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products, CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC], are particularly troublesome given the proposals are neither effective nor necessary for ozone

SS-13 - 1

attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution, not part of the problem.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

Summary and Conclusions

RCMA appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary, or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Sincerely,



John Ferraro
General Manager
Roof Coatings Manufacturers Association

750 National Press Building
529 14th St. NW
Washington, DC 20045

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

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Responses to Comment Letter SS-13
RCMA

Response to Comment SS-13-1:

Staff appreciates the efforts of the RCMA to collaborate with the AQMD to help establish architectural coating rules. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-14. Dow Chemical Company, October 5, 2012



The Dow Chemical Company
901 Lowenridge Road
Pittsburg, CA 94565
U.S.A.

October 5, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

The Dow Chemical Company (Dow) appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-01, CTS-02, CTS-03, and CTS-04. Dow strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, Dow supports comments submitted by the American Coatings Association and the Consumer Specialty Products Association on the AQMP.

Raw material suppliers, such as Dow, provide a diverse array of innovative products of significant commercial and economic value to California. The innovation of greener solvents to consumer products will be greatly impacted by the proposal. Specifically, the Dow Chemical Company has committed substantial resources in implementing a multi-generational program to develop VOC-free solvents – reflecting the considerable technical, practical and commercial challenges and realities posed by this objective. A repeal or significant modification of the LVP exemption will cause substantial delays in the marketing of new, biobased solvents with an overall improved environmental profile. More explicitly, the proposal represents a departure from the broader trend toward the marketing of consumer products that are more sustainable across the entire product lifecycle. The proposal is also not compatible with the global trend toward harmonization in chemicals regulations; this is likely to have important competitive impacts, including the higher costs of complying with technical requirements of the proposal.

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Dow is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment.

SS-14 - 2

Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution, not part of the problem.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

Summary and Conclusions

Dow appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

About Dow

Dow has four manufacturing facilities in California with over 600 employees and contractors. Globally, Dow's more than 5,000 products are manufactured at 197 sites in 36 countries. The Company connects chemistry and innovation with the principles of sustainability to help address many of the world's most challenging problems such as the need for clean water, renewable energy generation and conservation, and increasing agricultural productivity. Dow's diversified industry-leading portfolio of specialty chemical, advanced materials, agrosiences and plastics businesses delivers a broad range of technology-based products and solutions to customers in approximately 160 countries and in high growth sectors such as electronics, water, energy, coatings and agriculture. In 2011, Dow had annual sales of \$60 billion and employed approximately 52,000 people worldwide.

Sincerely,



Don Fontaine
Toxicology and Environmental Research &
Consulting
Midland, MI 48674
(989) 636-2179 Office
ddfontaine@dow.com

Randy Fischback
Gov't Affairs & Public Policy Director
Pittsburg, California
925-432-5122 Office
fischback@dow.com

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

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Responses to Comment Letter SS-14
Dow Chemical Company

Response to Comment SS-14-1:

The proposed control measure seeks to reconsider the exemption for LVP-VOC solvents that readily evaporate under ambient conditions. These types of products tend to be less sustainable because of their loss into the air through evaporation. Studies have demonstrated that bio-based solvents do not readily evaporate. Any reevaluation of the LVP-VOC criteria would retain the exemption for products that are clearly non-volatile. The global harmonization in consumer product regulations is inconsistent with chemical regulations. Coating and solvent regulations utilize much more stringent criteria than consumer products when determining VOC exemption status. Determination of VOC contribution to ozone formation should be based on scientific criteria.

Response to Comment SS-14-2:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-15. Nexreg Compliance Inc, October 5, 2012



100512

Dear Dr. Chang:

Nexreg Compliance Inc. appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04.

Nexreg Compliance, Inc. represents roughly 400 companies in the chemical industry in the United States and Canada. After discussing this issue with dozens of our clients, we have very serious concerns about these measures. Nexreg strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such we support comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Nexreg and their clients are principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

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Nexreg appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Sincerely,

Mike P. Moffatt
CEO, Nexreg Compliance Inc.

Responses to Comment Letter SS-15
Nexreg Compliance Inc.

Response to Comment SS-15-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-16. American Coatings Association, October 5, 2012



October 5, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Re: The South Coast Air Quality Management District's Draft 2012 Air Quality Management Plan

Dear Dr. Chang:

The American Coatings Association¹ (ACA) appreciates the opportunity to offer additional comments on the revised South Coast Air Quality Management District's (South Coast or AQMD) Draft 2012 Air Quality Management Plan (AQMP), which the District released in September. These comments supplement ACA's previous comments on the draft 2012 AQMP, focusing on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. ACA continues to strongly object to the inclusion of these measures in the draft AQMP. As such, ACA also supports comments submitted by the Consumer Specialty Products Association on the AQMP, including the attached Scientific Critique of South Coast Air Quality Management District Paper entitled "Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds".

ACA is principally concerned with the proposal to include further reductions in VOCs from coatings and solvents products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting architectural coatings, solvents, and consumer products are CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC]. These control measures are particularly troublesome given that the proposals are neither effective nor necessary for ozone attainment. The District's air modeling and explanation in the draft 2012 AQMP demonstrates that further VOC reductions from coatings and solvents will not significantly reduce ozone. As NOx levels and ozone levels are

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¹ The American Coatings Association (ACA) is a voluntary, nonprofit trade association working to advance the needs of the paint and coatings industry and the professionals who work in it. The organization represents paint and coatings manufacturers, raw materials suppliers, distributors, and technical professionals. ACA serves as an advocate and ally for members on legislative, regulatory and judicial issues, and provides forums for the advancement and promotion of the industry through educational and professional development services.

ACA Comments – South Coast Draft 2012 AQMP

October 5, 2012

further reduced by the District, VOC reductions become less and less effective in reducing ozone. In particular, LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high cost and low effectiveness makes further VOC reductions from coatings, solvents, and consumer products prohibitively expensive.

In sum, ACA appreciates the opportunity to comment on the 2012 Air Quality Management Plan. We point to the SCAQMD's stated goal – "We are committed to protecting the health of residents, while remaining sensitive to businesses" – when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting coatings and solvents included in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP. ACA will submit additional comments upon receiving individual responses to our August 31, 2012 comments.

Thank you, and please do not hesitate to contact us know if you have any questions regarding these comments.

Sincerely,

/s/

David Darling, P.E.
Director, Environmental Affairs

/s/

Tim Serie, Esq.
Counsel, Government Affairs

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

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Responses to Comment Letter SS-16
American Coatings Association

Response to Comment SS-16-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-17. American Chemistry Council, October 5, 2012



October 5, 2012

Sent Via Email

Philip Fine, Ph.D.
Planning and Rules Manager
Planning, Rule Development, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182
2012aqmpcomments@aqmd.gov

RE: 2012 South Coast Air Quality Management District Consumer Air Quality Management Plan (AQMP)

Dear Dr. Fine:

The Solvents Industry Group ("SIG")¹ and the Glycol Ethers Panel² of the American Chemistry Council appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-01, CTS-02, CTS-03, and CTS-04. We strongly object to the inclusion of these measures in the draft AQMP, and urge that the measures not be included in the final 2012 AQMP. As such, we support comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

We are principally concerned with the proposal to include further reductions in volatile organic compounds (VOCs) from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01) Further VOC Reductions from Architectural Coatings (R1113) [VOC]; (CTS-02) Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; (CTS-03) Further VOC Reductions from Mold Release Products [VOC]; and (CTS-04) Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Furthermore, air modeling projects that further VOC

¹ SIG members are Eastman Chemical Company, The Dow Chemical Company, ExxonMobil Chemical Company, and Shell Chemical LP.

² Glycol Ethers Panel members are Eastman Chemical Company, LyondellBasell Industries and The Dow Chemical Company.

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SIG Comments on SCAQMD 2012 AQMP
Page 2 of 2

reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. The low vapor pressure solvents (LVP-VOCs) exemption is scientifically sound and should be maintained. LVP-VOCs have minimal impacts on VOC emissions and ozone formation, and offer formulators flexibility to meet the strict VOC limits currently in place.

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SIG and the Glycol Ethers Panel appreciate the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP. If you have any questions, please contact me at 202.249.6717 or Leslie_Berry@americanchemistry.com.

Sincerely,

Leslie Berry

Leslie Berry
Chemical Products & Technology Division
American Chemistry Council



Responses to Comment Letter SS-17
American Chemistry Council

Response to Comment SS-17-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-18. Armored AutoGroup, October 10, 2012



[Via Email \(echang@aqmd.gov\)](mailto:echang@aqmd.gov)

October 10, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Armored AutoGroup Inc. appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. Armored AutoGroup Inc. strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, Armored AutoGroup supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Armored AutoGroup Inc., headquartered in Danbury, Conn., and a Global Research and Development Center in Northern California is engaged in development, manufacture and sale of ARMOR ALL®, STP® and other brands of consumer car care products. The current ARMOR ALL product line of protectants, wipes, tire and wheel care products, glass cleaners, leather care products and washes is designed to clean, shine and protect interior and exterior automobile surfaces. The STP product line of oil and fuel additives, functional fluids and automotive appearance products has a broad customer base ranging from professional racers to car enthusiasts and "Do-it-Yourselfers". Our company has a diversified geographic footprint with operations in the United States, Canada, Mexico, the United Kingdom, Australia and China and distributors in more than 50 countries.

The proposed measures, if included in the final 2012 AQMP, would have a direct and negative impact on our business in terms of costs, resources required and complexity of reformulation of our products. In addition, it is not at all clear there will be acceptable substitute chemicals available for new formulations. There may be some products where chemical substitutes are not available and the result would be discontinuation of car care products that consumers demand.

Armored AutoGroup Inc. is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures

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203-205-2900

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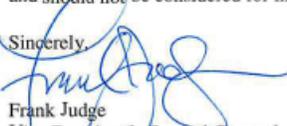
SS-18 - 1

potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC]) are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

The consumer products industry has already spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

Armored AutoGroup appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Sincerely,



Frank Judge
Vice President & General Counsel
Armored AutoGroup Inc.

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov
Elaine Schley, Armored AutoGroup Inc., Vice President, Research & Development
Valerie Gillis, Armored AutoGroup Inc., Regulatory Specialist

SS-18 - 1

Armored AutoGroup Inc.
44 Old Ridgebury Road, Suite 300
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203-205-2900

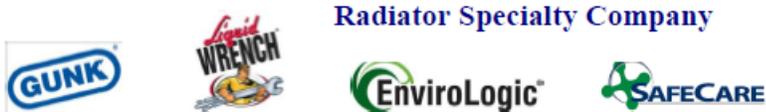
www.armoredautogroup.com

Responses to Comment Letter SS-18
Armored AutoGroup

Response to Comment SS-18-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-19. Radiator Specialty Company, October 10, 2012



Dr. Larry Beaver
Vice President – Technology
Lbeaver@rscbrands.com

Direct Number:
704.684.1802

October 10, 2012

Dr. Elaine Chang
Deputy Executive Officer of Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan

Dear Dr. Chang:

Radiator Specialty Company appreciates the opportunity to offer comments on the South Coast Air Quality Management District's (SCAQMD) draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25th of this year. We have reviewed the proposed Stationary Source Control Measures numbered CTS-01, CTS-02, CTS-03, and CTS-04. Radiator Specialty Company strongly objects to the inclusion of these four measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. Radiator Specialty Company supports comments submitted by the American Coatings Association, the Alliance for Responsible Regulation, and the Consumer Specialty Products Association (CSPA) regarding these control measures in the AQMP.

Radiator Specialty Company is a family-owned, North Carolina manufacturer and marketer of household, industrial, and automotive specialty chemical products sold both in the USA and worldwide. Through our division, RSC Chemical Solutions, and our affiliated company, RSC Bio Solutions, we manufacture and market a variety of consumer and industrial products under the GUNK[®], Liquid Wrench[®], Motormedic[®], SAFE CARE[®], and Envirologic[®] brands. Our products range from SAFE CARE[®] cleaners and GUNK[®] degreasers to Liquid Wrench[®] lubricants, Envirologic[®] hydraulic fluids, and Motormedic[®] fuel and oil additives. We currently offer both conventional chemistries and next-generation, readily biodegradable, sustainable alternatives to our customers in both the cleaner/degreaser and lubricant/hydraulic fluid product categories. Our products are sold through distributors as well as national chains such as Walmart[®], O' Reilly, Autozone[®], Advance Auto, Pep Boys, Lowe's[®], and Home Depot[®], to name just a few.

Radiator Specialty Company has a long history of not only meeting, but exceeding the environmental, health, and safety needs of our customers. We are, however, gravely concerned that the proposed Stationary Source Control Measures will drive industry toward ineffective product chemistries or will force some products out of the California market entirely. Radiator Specialty Company and its affiliates are principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures impacting consumer products (CTS-01, CTS-02, CTS-03, and CTS-04) are neither effective nor necessary for ozone attainment. Air modeling shows

RADIATOR SPECIALTY COMPANY • 600 Radiator Road • Indian Trail, NC 28079 • (704) 684-1802 • FAX (704) 684-1865

SS-19 - 1

further VOC reductions from consumer products will not significantly reduce ozone. As NO_x levels and ozone levels are lowered, VOC reductions become practically ineffective in reducing ozone. The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

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I will be focusing the remainder of our comments on CTS-04, which concerns the role of LVPs and the potential modification or elimination of the LVP-VOC exclusion currently included in the California Consumer Products Regulations. We strongly oppose CTS-04. We fully support the conclusions of the Scientific Critique of South Coast Air Quality Management District Paper "Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds" October 2012 prepared by the Alliance for Responsible Regulation and CSPA (see attached). LVPs, and particularly those defined as "LVP-VOC" in the regulations, have minimal impact on VOC emissions and ozone formation. Simply put, LVP-VOCs have been, and should continue to be, part of the solution and NOT part of the problem.

Radiator Specialty Company's single most effective tool to meet current VOC limits has been by the use of LVP-VOC technologies. Modifications to, or elimination of, the current regulatory definition of "LVP-VOC" would have far-reaching consequences not originally intended by the staff at SCAQMD:

- **Increase in apparent emissions:** Products currently VOC-compliant with California law would become non-compliant, resulting in an apparent (although inaccurate) calculated increase in emissions within their particular category. We have evaluated our products and found that, of our top-ten VOC-regulated consumer products, over half would become non-compliant. Some would move from only a few percent VOC up to over 90% "apparent VOC" were the LVP-VOC components to be considered 100% VOC. An unintended consequence would be the resulting non-compliance of clean solvent technologies already reviewed and approved by SCAQMD. Many of these products rely upon butyl cellosolve replacements that would not pass muster as zero-VOC when subjected to the test conditions of EPA Method 24.
- **Cost of reformulation:** Reformulating impacted products would be at significant cost, tying up research resources that would be better used to identify more sustainable ingredients and evaluating other "green" chemistries. Cost to recreate and re-label each product would be substantial, potentially costing Radiator Specialty Company hundreds of thousands of dollars.
- **Potential loss of products:** In some cases, non-LVP options may not be either cost effective or the resulting loss of performance would be so substantial that products would be removed from the marketplace.
- **Environmental and exposure impact:** Many of our aerosol products (9 of our top 10, in fact) rely upon low viscosity LVP-VOCs to ensure correct evacuation and proper atomization of the product. Our experience with the solvents considered zero-VOC by EPA Method 24 is that they are not acceptable alternatives to LVP-VOCs in that they create a thick, not atomizing stream that actually increases product use to cover a specified area. This leads to overuse of the product with resulting waste with the potential for causing more environmental and human exposure.
- **Impact to California industry:** Impact to industry and agriculture in California should be considered, particularly in light of our concerns regarding overuse cited above. California agriculture and vintners who use our products to clean, lubricate, and otherwise maintain their equipment would be faced with using poorly-performing alternatives that would require more of each product to be used per application and would be expected to result in overuse, waste, and increased potential for soil and water contamination resulting from that overuse.

SS-19 - 2

RADIATOR SPECIALTY COMPANY • 600 Radiator Road • Indian Trail, NC 28079 • (704) 684-1802 • FAX (704) 684-1865

MANUFACTURERS OF AUTOMOTIVE, INDUSTRIAL, AND SPECIALTY CHEMICAL PRODUCTS

Radiator Specialty Company appreciates the opportunity to comment on the 2012 Air Quality Management Plan. We have kept in mind the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on our company's ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary, or cost-effective, and should not even be considered for inclusion in the final 2012 AQMP. We would also point out that the responsibility for regulating consumer product VOCs and the definition of "LVP-VOC" is the sole responsibility of the California Air Resources Board. The attempt to change the role of LVP-VOCs in consumer products falls outside the authority of SCAQMD.

Sincerely,



Larry G. Beaver, Ph.D.
Vice President, Technology
Radiator Specialty Company

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

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MANUFACTURERS OF AUTOMOTIVE, INDUSTRIAL, AND SPECIALTY CHEMICAL PRODUCTS

Responses to Comment Letter SS-19
Radiator Specialty Company

Response to Comment SS-19-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

Response to Comment SS-19-2:

From a limited review of consumer product formulations, it appears that a significant portion of traditional solvent replacement utilized LVP-VOC technology. The paper cited by the commenter indicates that some LVP-VOCs do not evaporate and should remain exempt. On the other hand, some LVP-VOCs readily evaporate and are available to participate in ozone formation. While the commenter describes any modification as an “apparent” increase in emissions, it should be more accurately described as an acknowledgement of a decrease in emission reductions. Products that reformulate away from traditional solvents (such as butyl cellosolve) to LVP-VOCs (such as Light Distillate) with similar evaporation rates may not have the anticipated emission reduction benefits, especially for ozone. As the commenter notes, Radiator Specialty Company has reformulated products with up to 90% LVP-VOCs in some of their products. Depending on what specific LVP-VOCs used with consideration for their volatility characteristic and maximum incremental reactivity (MIR), the 90% replacement may not have ozone benefits or may further exacerbate the ozone formation from the reformulated product. This very trend truly justifies the need for the draft control measure, which calls for CARB to collect additional data on the types and quantity of LVP-VOC usage by category to truly understand the potential benefits or drawbacks of such an approach.

Furthermore, the paper cited recognizes the issues with respect to the results from EPA Method 24 and does not recommend that method as a replacement for CARB Method 310. EPA Method 24 has limitations for products with high water content and/or semi-volatile compounds, especially certain mineral oils used for metal working fluids and lubricant. Instead, staff is recommending only that the LVP-VOC criteria be reevaluated by relying on scientific data. Products certified by the AQMD as Clean Air Solvents or Clean Air Choices Cleaners do not rely on fast-evaporating LVP-VOC solvents and VOC content is measured using AQMD Method 313 with a methyl palmitate endpoint. This is consistent with measuring VOC content of architectural paints and coatings that use similar solvents (i.e. ethylene glycol, propylene glycol, 2,2,4-trimethylpentanediol diisobutyrate, and 2,2,4-trimethyl-1,3-pentanediol monoisobutyrate). It is not clear why switching from butyl cellosolve to propylene glycol in a consumer product designed to remain on a surface for an indefinite period of

time would “reduce” emissions, while the same reformulation in an architectural coating would have no emission impact whatsoever. The inconsistency between the two VOC determination methodologies makes it apparent that the consumer product regulation is not achieving the environmental benefits anticipated.

SS-20. Automotive Specialty Products Alliance, October 12, 2012

October 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

The Automotive Specialty Products Alliance (ASPA) appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. ASPA strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures be withdrawn when the final 2012 AQMP is issued. As such, ASPA supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

ASPA is an alliance of three non-profit, national trade associations representing companies engaged in the manufacture, formulation, distribution, and sale of automotive specialty products. This alliance combines the efforts of Automotive Aftermarket Industry Association (AAIA), the Consumer Specialty Products Association (CSPA), and the Motor & Equipment Manufacturers Association (MEMA) to form a unified industry voice for their members engaged in the automotive chemical and vehicle appearance products markets. ASPA's members market products on a national and regional basis.

ASPA is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]; CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and

SS-20-1

less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. Additionally, it is not known whether acceptable alternative ingredients would be available – and commercially feasible – if the aforementioned measures are adopted. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

The Automotive Specialty Products Alliance appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the AQMD goal statement: “We are committed to protecting the health of residents, while remaining sensitive to businesses” when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

SS-20-1

Respectfully,



Sean R. Moore

On behalf of the ASPA Operating Committee and Board of Directors

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov

Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

Responses to Comment Letter SS-20
Automotive Specialty Products Alliance

Response to Comment SS-20-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-21. Mothers Inc., October 15, 2012



October 15, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Mothers® appreciates the opportunity to offer comments on the South Coast Air Quality Management District's Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. Mothers® strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, Mothers® supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

VOC reductions in both existing and new formulations are a continual focus. We understand the trend of reducing VOC limits in Consumer Products and have been proactive in working to identify new raw materials and options that further reduce its use. Reducing limits continue to be a concern and while LVPs do not provide an adequate drop-in replacement in formulations, they do provide some characteristics that help to reduce the overall VOC content. The objective is to reduce the presence of these compounds to meet federal requirements; to eliminate the use of LVPs hinders the primary goal while compromising product quality and eventual business stability.

Mothers® is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]); CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly

SS-21 - 1

5456 Industrial Drive • Huntington Beach, California 92649-1519
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info@mothers.com • www.mothers.com



troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem. The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

Summary and Conclusions

Mothers® appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: “We are committed to protecting the health of residents, while remaining sensitive to businesses” when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

SS-21 - 1

Sincerely,

Neisan Marquez
Mothers® Polishes Waxes Cleaners
5456 Industrial Drive
Huntington Beach, CA 92649

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov
Craig Burnett, Mothers®, via email: craig@mothers.com

5456 Industrial Drive • Huntington Beach, California 92649-1519
Tel: (714) 891-3364 • (800) 221-8257 • Fax: (714) 893-1827
info@mothers.com • www.mothers.com

Responses to Comment Letter SS-21
Mothers Incorporated

Response to Comment SS-21-1:

Staff appreciates the efforts of Mothers' proactive efforts to reduce VOC. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-22. Quality Car Care, Inc., October 25, 2012



QUALITY CAR CARE, INC.

2734 Huntington Dr., Duarte, CA 91010 / (626) 359-9174

October 25, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Quality Car Care, Inc. appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. Quality Car Care, Inc. strongly objects to the inclusion of these measures in the draft AQMP, and urges that the measures not be included in the final 2012 AQMP. As such, Quality Car Care, Inc. supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Quality Car Care, Inc. manufactures a complete line of automotive car care products sold worldwide under the brand name Justice Brothers. We have spent, and continue to spend a lot of time, effort, and money reformulating our products to make them more "green". Your proposed control measures will result in our taking a giant step backwards by forcing us to reverse our formulations to make them less "green" again. This will have a negative effect on our customers, the environment, and our reputation in the industry. In addition, there are substantial research and development costs associated with reformulating our product line.

Quality Car Care, Inc. is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]) CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products

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[VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

Summary and Conclusions

Quality Car Care, Inc. appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Sincerely,



Monica Orgad
Technical Director

MO:clj

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

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Responses to Comment Letter SS-22
Quality Car Care

Response to Comment SS-22-1:

Staff appreciates Quality Car Care's efforts reformulating their products to make them more "green". The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-23. American Jetway Corp., November 6, 2012



November 6, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

American Jetway Corporation appreciates the opportunity to comment on the South Coast Air Quality Management Plan. Our comments focus on the CTS-02 further emission reduction from miscellaneous adhesives, solvents, and lubricants, and CTS-04 further VOC reduction from Consumer Products.

Both of the above categories have a major impact on our business. We have spent tens of thousands of dollars over the past twenty years developing products to meet the provisions of the CARB regulations. Changing this long standing rule will have a serious adverse impact on our industry and American Jetway Corporation specifically.

The LVP exempt solvents found in CARB inventory are less likely to create ozone and their substitution into formulations has been an important part of the effective ozone reduction strategy implemented by CARB.

SCAQMD does not have the jurisdiction on consumer products specifically. CARB has the authority over consumer products.

LVP's have been a part of the solution to VOC emissions and not part of the problem. Removing the LVP's will be a huge step backward to our industry and American Jetway specifically. The products being submitted to our customers are more costly and less effective.

We appreciate the opportunity to comment on the 2012 Air Quality Management Plan.

Sincerely,

A handwritten signature in blue ink that reads 'Gordon Jones'.

Gordon Jones
President/CEO
American Jetway
34136 Myrtle Street
Wayne, MI 48184

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

SS-23 - 1

Responses to Comment Letter SS-23
American Jetway Corp.

Response to Comment SS-23-1:

Staff appreciates American Jetway's efforts developing products to meet the provisions of CARB regulations. The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-24. COBRA, November 6, 2012



1244 East Highland Road
Macedonia, OH 44056

Telephone (330) 425-4260
Fax (330) 425-7338

November 6, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Cobra Plastics Inc. appreciates the opportunity to offer comments on the AQMD Draft 2012, which was issued for comment on July 25, 2012. Our comments on this draft focus on CTS-1, CTS-02, CTS-03, and CTS-04. Cobra Plastics Inc. strongly urges that these measures NOT be included in the final 2012 AQMP. Our Company, Cobra Plastics Inc., strongly supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP.

Cobra Plastics Inc., a small Ohio company, is the second largest supplier of aerosol over caps in the United States. This is the only product that we manufacture and these measures would negatively impact our company of 85 loyal, dedicated employees. Our customer base includes several California companies that utilize our product in their manufacturing process. If these measures were included in the AQMP, then we would have to downsize our operation and eliminate employees by the mere fact that our demand for our products would be significantly reduced. A worse scenario of going out of business is not unfathomable. This not the direction that this company wants or the US economy can afford.

Our concern that further reductions in VOCs from consumer products will yield a poor performing product at a cost that is prohibitive. We do not feel that this AQMP is technologically and commercially feasible and, more importantly, it is unnecessary. Air modeling shows further VOC reductions from consumer products will NOT significantly reduce ozone. LVPs have minimal impact on VOC emissions and ozone formation, and have been part of the solution and not part of the problem.

Cobra Plastics Inc. appreciates the opportunity to comment on the Draft 2012 Air Quality Management Plan. While we look at the goal of SCAQMD of "We are committed to protecting the health of residents, while remaining sensitive to businesses", we must understand the purpose for this 2012 AQMP. It does not significantly improve the protection of health of residents, but it does negatively impact businesses. Therefore, we strongly urge that these specific measures NOT be included in the final 21012 AQMP.

Best Regards,

A handwritten signature in black ink that reads "Kent A. Houser".

Kent A. Houser
President
Cobra Plastics Inc.
1244 E. Highland Rd.
Macedonia, Oh. 44056

www.cobraplastics.com

SS-24 - 1

Responses to Comment Letter SS-24
COBRA

Response to Comment SS-24-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-25. Blaster Chemical Company, November 8, 2012

November 8, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email – echang@aqmd.gov

“BLASTER”



Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Blaster Chemical Company appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD's) Draft 2012 Air Quality Management Plan (AQMP). Our comments focus on the Stationary Source Control Measure for Coatings and Solvents, in particular CTS-04.

For over 50 years, Blaster Corporation has manufactured penetrants, lubricants, rust inhibitors and a full line of specialty, highly concentrated formulas for the automotive, industrial and hardware industries. Blaster has a full-line of specialty lubricant, performance enhancement and cleaning products to serve professionals and DIYers.

The Blaster Company strongly opposes the inclusion of CTS-04 in the AQMP for the following reasons:

- 1) The California Air Resources Board (CARB) is required to ensure that the Consumer Products regulations are technologically and commercially feasible. CARB has used the LVP-VOC option for reformulation to justify the stringent new VOC levels adopted. For our Penetrant product PB, there are no other options for reformulation for our product other than LVP's for the 12/31/2013 future effective limit. In addition, several of our other products have been reformulated using LVP-VOC. Without the option of LVP-VOC, our products would be ineffective. If the LVP-VOC option is removed, then CARB will need to re-review these categories and propose different limits to ensure technological and commercial feasibility.
- 2) Our Company is a small business. Continually reformulating our products is expensive and time consuming. In addition, as stated above, there are no known commercially viable alternatives for our product to utilize, except LVP-VOC. Blaster in good faith is reformulating our products to meet the stringent VOC limits. Imposing CTS-04 would be fundamentally unfair to our company. Use of LVP-VOC has reduced our use of more reactive VOC compounds and has benefited the states air quality.
- 3) CARB has sole jurisdiction over Consumer Products in California. SCAQMD should remove CTS-04 from the AQMP.

8500 Sweet Valley Drive
Valley View, Ohio 44125

216.901.5800

800.858.6605

FAX 216.901.5801

www.blastercorporation.com

SS-25 - 1

SS-25 - 2

In closing, SCAQMD should remove CTS-04 from the AQMP for the reasons stated above. CARB has sole authority of Consumer Products in California. Statewide consistency is needed for our company to compete in California.

} SS-25 - 2

Thank you for your consideration to these comments. Any questions or comments feel free to call at 216-901-5800.

Very Truly Yours,



William D Matthews, President/CEO

Cc: James Goldstene, Air Resources Board
Carla Takemoto, Air Resources Board
Laurie Nelson, Randlett Nelson Madden Associates
Doug Raymond, Raymond Regulatory Resources (3R), LLC

Responses to Comment Letter SS-25
Blaster Chemical Company

Response to Comment SS-25-1:

The commenter provides similar comments to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

Response to Comment SS-25-2:

The proposed control measure is intended to study the air quality improvement potential for replacing LVP-VOC containing compositions with alternative low VOC formulations. Staff recognizes that changing the LVP-VOC provisions of existing CARB rules is with the authority of CARB but has provided this measure as a recommendation to CARB. The proposed control measure may involve amending the CARB LVP-VOC criteria based on scientific data which may include MIR and similar photochemical reactivity parameters. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the CARB rule development process to ensure overall efforts are feasible, productive and cost-effective. The control approach would revise the LVP-VOC exemption if speciated LVP-VOC survey data and research results show an opportunity to further reduce ozone from use of consumer products. Any proposed amendments to the Consumer Products Regulations to revise the LVP-VOC exemption would be vetted through a full public process.

SS-26. PLZ Aeroscience Corp., October 30, 2012



October 30, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via e-mail - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

PLZ Aeroscience appreciates the opportunity to offer comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft 2012 Air Quality Management Plan (AQMP), which was issued for comment on July 25, 2012. The comments focus on the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04. PLZ Aeroscience strongly objects to the inclusion of these measures in the draft AQMP, and urges that these measures not be included in the final 2012 AQMP. As such, PLZ Aeroscience supports comments submitted by the American Coatings Association and the Consumer Specialty Products Association on the AQMP.

PLZ Aeroscience is comprised of seven companies (Assured, Camie, Claire, CPC, K-G-Spraypak, Plaze, & Sprayway) and employs approximately 800 people throughout North America. PLZ Aeroscience is a co-packer, formulator, manufacturer, marketer and distributor of products (primarily aerosol) in a wide variety of sectors of the retail and industrial/institutional markets.

In particular PLZ Aeroscience strongly objects to the proposed CTS-04 measure that would eliminate the LVP-VOC exemption in consumer products. For more than a decade, most Research and Development resources have been allocated to reformulating products to comply with ever more stringent VOC regulations. This has inhibited organic growth by limiting resources that could have been allocated to developing new, innovative products. Elimination of the LVP-VOC exemption will invalidate over a decade's worth of reformulation work because in many cases, LVP-VOC's were the only viable option to meet new VOC limits. The elimination of the LVP-VOC exemption will be devastating to the business because at best, hundreds of thousands of dollars will be required to reformulate approximately 900 products or product lines, and at worst, will cause these same products to be eliminated due to technical infeasibility.

PLZ Aeroscience is principally concerned with the proposal to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. The four control measures potentially impacting consumer products: (CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]1 CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and

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www.plzaeroscience.com

SS-26-1



Lubricants [VOC]; CTS-03 Further VOC Reductions from Mold Release Products [VOC]; and CTS-04 Further VOC Reductions from Consumer Products [VOC] are particularly troublesome given the proposals are neither effective nor necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. As NOx levels and ozone levels are lower and lower, VOC reductions become less and less effective in reducing ozone. LVPs have minimal impacts on VOC emissions and ozone formation, and have been part of the solution not part of the problem.

The consumer products industry has spent hundreds of millions of dollars to reformulate its products to reduce VOCs, and further reductions come at even higher costs. This combination of high costs and low effectiveness makes further VOC reductions from consumer products not cost effective.

Summary and Conclusions

PLZ Aeroscience appreciates the opportunity to comment on the 2012 Air Quality Management Plan (AQMP). We point to the SCAQMD goal statement: "We are committed to protecting the health of residents, while remaining sensitive to businesses" when analyzing the impact of these control measures on the consumer products industry and our ability to develop and market commercially and technologically feasible products. The control measures impacting consumer products noted in the draft 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

Sincerely,

Benjamin Heimann
VP, Technical Services
PLZ Aeroscience
1000 Integram Drive
Pacific, MO 63069

cc: James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

SS-26-1

Responses to Comment Letter SS-26
PLZ Aeroscience

Response to Comment SS-26-1:

The commenter supports, and provides similar comments, to comments submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-27. AEROPRES Corporation, November 12, 2012



November 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email – echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Aeropres Corporation appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD's) Draft 2012 Air Quality Management Plan (AQMP). Our comments focus on the Stationary Source Control Measure for Coatings and Solvents, in particular CTS-04.

Aeropres Corporation is a major supplier to the Consumer Products Industry and distributes many products helping formulators achieve current regulations. Aeropres has been in business since 1973 and has a facility in the South Coast Air Quality Management District. Aeropres Corporation strongly opposes the inclusion of CTS-04 in the AQMP for the following reasons:

- Aeropres has been actively involved with the California Air Resources Board (CARB) since the inception of Consumer Product Regulation. Members of our company actively worked with CARB to develop the current VOC category limits. CARB is required to ensure that the category VOC limits are technologically and commercially feasible. Modification to the LVP-VOC provision in the CARB Consumer Product regulation will negate the current VOC category limits, because for the last decade LVP-VOC compounds are one of the options for reformulations. In addition, LVP-VOC compounds are the main justification for setting the limits. Without the use of LVP-VOC compounds, numerous product categories will cease to exist or have significantly inferior products.
- SCAQMD by their own data show that the basin is NO_x limited. Thus, further reductions in VOC's will have little to no effect on ozone levels. LVP-VOC compound do not produce any measurable amount of ozone. Especially in a NO_x limited environment.
- Using LVP-VOC compounds to replace higher reactive VOC compounds is a sound science approach to reducing VOC emissions. This approach has been utilized by CARB

SS-27-1

for over a decade. A significant amount of VOC emissions reduction has been achieved from Consumer Products using CARB's approach.

} SS-27-1

In closing, SCAQMD should remove CTS-04 from the AQMP for the reasons stated above.

Thank you for your consideration to these comments. Any questions or comments feel free to call at 318-213-1206 or email at mrivers@aeropres.com.

Sincerely,

Mark Rivers
Vice President of Technical Services

Cc: James Goldstene, Air Resources Board
Carla Takemoto, Air Resources Board
Laurie Nelson, Randlett Nelson Madden Associates
Doug Raymond, Raymond Regulatory Resources (3R), LLC

Responses to Comment Letter SS-27
AEROPRES Corporation

Response to Comment SS-27-1:

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS). Staff supports the commenter's suggestion to use sound science in its approach to reducing VOC emissions. The proposed control measure seeks to use the best available science to review and potentially revise the LVP-VOC exemption criteria.

The commenter asserts that numerous product categories will cease to exist or have significantly inferior products. The commenter should provide all data or studies demonstrating the infeasibility of products that do not rely upon the LVP-VOC exemption. To the contrary, significant evidence exists that there are numerous product categories that already have competitive products that do not rely on the LVP-VOC exemption. A number of major companies now provide multi-purpose lubricants utilizing low-VOC bio-based technologies. The Certified Clean Air Choices Cleaner program has nearly 50 institutional and industrial (I&I) cleaners that do not rely upon the LVP-VOC exemption. These products consist of full I&I product lines to cover nearly all cleaning and maintenance needs. Other certification programs have several hundred I&I cleaners, most of which do not rely upon the LVP-VOC exemption. As indicated, except for very few niche applications where efficacy of certain products may be impacted from a complete exclusion of a LVP-VOC, for the great majority of operations, environmentally preferable cleaners have equal or superior performance at equal or lower costs. Many cities and school districts have completely switched to environmentally preferable janitorial products and have found no degradation in performance at no extra cost. In some cases, lower overall costs have been seen and included in the cost-effectiveness section of the control measure. The City of Santa Monica reported spending 5% less on its cleaning products costs when it switched from conventional cleaners to less-toxic brands a decade ago. An article entitled, "The Benefits of Green Cleaning" by Dr. Robert W. Powitz on the ISSA website (November 2008), states, "We've heard the excuses, most of which can be grouped into one sentence: Eco-friendly products do not work and are more expensive. But this is simply not so." The Green Seal and EcoLogo certification programs include efficacy performance standards to address claims in deterioration of performance. Again, Green Seal and EcoLogo have certified hundreds of I&I products most of which do not rely upon the LVP-VOC exemption.

SS-28. Chicago Aerosol, November 12, 2012



CHICAGO AEROSOL™

BRIDGEVIEW FACILITY

8407 S. 77th Avenue
Bridgeview, IL 60455

708-598-7100

November 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email – echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Chicago Aerosol, a private label aerosol formulator and packager, appreciates the opportunity to offer comments on the South Coast Air Quality Management District's Draft 2012 Air Quality Management Plan (AQMP). Our comments focus on the Stationary Source Control Measures for Coatings and Solvents.

We believe that Provision CTS-04, Further VOC Reductions from Consumer Products by modifying or removing the LVP exemption, is unfair, counter-productive to VOC reduction strategies, and unscientific.

Chicago Aerosol also supports comments submitted by the American Coating Association and the Consumer Specialty Products Association on the AQMP which have included the following points:

- This provision has served as a model for air quality management regulatory policy for nearly twenty years.
- The LVP exempt solvents found in the CARB inventory are even less likely to create ozone and their substitution for more volatile analogs has been an important part of the effective ozone reduction strategy implemented by CARB.
- The consumer products industry has in good faith spent hundreds of millions of dollars in complying with the CARB Consumer Products Rule. Changing this long-standing rule will have a serious adverse impact on industry, especially small and medium sized companies, with no justifying benefit.

SS-28-1

- Science reviews demonstrate that these materials are very unlikely to exhaust to air and very likely to deposit on water, vegetation or other surfaces where they degrade without air quality impact.
- SCAQMD does not have jurisdiction of consumer products, only CARB does.
- LVP's have minimal impacts on VOC emission and ozone formation and have been part of the solution not the problem.

SS-28-1

In closing, we definitely appreciate having the opportunity to comment on this proposed control measure. However, it is our belief that it is not feasible or cost effective thus SCAQMD should remove CTS-04 from the AQMP.

Sincerely,



Edward S. Piszyski
Vice President
Laboratory Services

Cc:

James Goldstene, Executive Officer, CARB, via email: jgoldste@arb.ca.gov

Carla Takemoto, PTSD, CARB, via email: ctakemot@arb.ca.gov

Doug Fratz, CSPA, via email: dfratz@cspa.org

Doug Raymond, NAA/Raymond Regulatory Resources, via email: djraymond@reg-resources.com

Responses to Comment Letter SS-28
Chicago Aerosol

Response to Comment SS-28-1:

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS). Staff supports the commenter's conclusion that The California Air Resources Board's Consumer Products Regulation is the model for air quality management policy for the past twenty years. While there are partitioning effects for all chemicals, LVP-VOCs, as currently defined, are not by nature any more or less likely to degrade without any air impact. The control measure seeks to utilize the best scientific data available in the review of the LVP-VOC exemption criteria.

SS-29. CRC Industries, Inc., November 12, 2012



AMERICAS GROUP

November 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email – echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

CRC Industries Inc. appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD's) Draft 2012 Air Quality Management Plan (AQMP). Our comments focus on the Stationary Source Control Measure for Coatings and Solvents, in particular CTS-04.

CRC Industries Inc. is a manufacturer and marketer of a full line of automotive and commercial products.

CRC strongly opposes the inclusion of CTS-04 in the AQMP for the following reasons:

- CRC Industries has been an active participant in the development of the California Air Resources Board (CARB) Consumer Products Regulation. CARB is required to ensure that VOC category limits are technologically and commercially feasible. CARB has used the LVP-VOC provision as a way to achieve this feasibility. If CTS-04 is implemented and the LVP-VOC provision is in anyway modified, then the existing VOC category limits would be rendered infeasible and CARB would need to develop new VOC category limits for the majority of Consumer Product categories in the regulation.
- Removal of the LVP-VOC provision would have significant adverse effect on our product line. We have used LVP-VOC compounds to replace more reactive VOC compounds, thus benefiting the Air Quality in California.

SS-29-1

885 Louis Drive • Warminster, PA 18974-0586 • (215) 674-4300 • FAX (215) 674-2196





AMERICAS GROUP

- Without LVP-VOC compounds, we could not formulate viable products in some categories. LVP-VOC compounds provide the only known substitutes for certain categories, such as lubricants. Our lubricant line is highly dependent on LVP-VOC compounds.
- CARB has sole authority over Consumer Product regulations, not SCAQMD. The LVP-VOC provision is in the CARB regulation.

SS-29-1

In closing, SCAQMD should remove CTS-04 from the AQMP for the reasons stated above. CARB has sole authority of Consumer Products in California. Statewide consistency is needed for our company to compete in California.

Thank you for your consideration to these comments. Any questions or comments feel free to call at (215) 442-6223 or email at aselisker@crcindustries.com

Sincerely,

Adam M. Selisker
Vice President-Technology

Cc: James Goldstene, Air Resources Board
Carla Takemoto, Air Resources Board
Laurie Nelson, Randlett Nelson Madden Associates
Doug Raymond, Raymond Regulatory Resources (3R), LLC

885 Louis Drive • Warminster, PA 18974-0586 • (215) 674-4300 • FAX (215) 674-2196

CERTIFIED
ISO 9001



Responses to Comment Letter SS-29
CRC Industries

Response to Comment SS-29-1:

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS). The proposed control measure is intended to study the appropriateness of the LVP-VOC exemption in its current form, in an effort to ensure that the ozone reduction benefit of the Consumer Products Regulation is fully materialized. Alternative lubricant technology, such as bio-based products that do not volatilize compared to other LVP-VOCs, are already in the marketplace and may be considered in future amendments to the CARB Consumer Products Regulation. The proposed control measure may involve eliminating or amending the CARB LVP-VOC criteria based on scientific data which may include MIR and similar photochemical reactivity parameters. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the CARB rule development process to ensure overall efforts are feasible, productive and cost-effective. The control approach would revise the LVP-VOC exemption if speciated LVP-VOC survey data and research results show an opportunity to further reduce emissions from consumer products. Any proposed amendments to the Consumer Products Regulations to revise the LVP-VOC exemption would be vetted through a full public process.

SS-30. Diversified CPC International, Inc., November 12, 2012

Diversified CPC International, Incorporated



24338 West Durkee Road | Channahon, IL 60410 | 815-424-2000

November 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Diversified CPC International, Inc. appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD's) Draft 2012 Air Quality Management Plan (AQMP). Our comments focus on the Stationary Source Control Measure for Coatings and Solvents, in particular CTS-04.

Diversified CPC International, Inc. is a supplier to the Consumer Products Industry. Our company operates an aerosol propellant purification facility in the South Coast Air Quality Management District. This facility, located in Anaheim, CA purifies natural gas liquids in the manufacture of low relative reactivity liquefied gas propellants and also distributes VOC exempt propellants such as R-152a. We have worked (and continue to work) closely with Kennard Ellis of SCAQMD with the draft review process and implementation of the new Rule 1177 for LPG facilities.

Diversified CPC International, Inc. strongly opposes the inclusion of CTS-04 in the AQMP for the following reasons:

- 1) The Provision CTS-04 proposes to modify the LVP-VOC definition in The California Air Resources Board (CARB) Consumer Product Regulation. The South Coast Air Quality Management District (SCAQMD) has no authority over the CARB Consumer Product Regulation, or over Consumer Products that are currently regulated by CARB. State law provides that CARB has sole authority over currently regulated Consumer Products. Thus, SCAQMD cannot force CARB to change the LVP-VOC definition. The provision CTS-04 should be eliminated from the AQMP.
- 2) CARB is required by state law to adopt Consumer Product VOC regulations that are technically and commercially feasible. CARB has used the LVP-VOC provision as an option for reformulation and justification to adopt the VOC limits. If the LVP-VOC definition is modified, then the justification for adopting the VOC limits is removed. CARB would need to review all the category VOC limits.

SS-30-1

Diversified CPC International, Incorporated

24338 West Durkee Road | Channahon, IL 60410 | 815-424-2000



- 3) Using LVP-VOC compounds to replace more reactive VOC solvents is a VOC emission reduction strategy that CARB has been utilizing for over two decades. Through this strategy CARB has produced significant VOC reductions from Consumer Products.

In closing, SCAQMD should remove CTS-04 from the AQMP for the reasons stated above. CARB has sole authority of Consumer Products in California.

Thank you for your consideration to these comments. Any questions or comments feel free to call at 815-424-2003 or by email to bfrauenheim@diversifiedcpc.com.

SS-30-1

Sincerely,

Bill Frauenheim
Vice President, Operations
Diversified CPC International, Inc.

Cc: James Goldstene, Air Resources Board
Carla Takemoto, Air Resources Board
Laurie Nelson, Randlett Nelson Madden Associates
Doug Raymond, Raymond Regulatory Resources (3R), LLC

Responses to Comment Letter SS-30
Diversified CPC International

Response to Comment SS-30-1:

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS). The proposed control measure may involve eliminating or amending the CARB LVP-VOC criteria based on scientific data which may include MIR and similar photochemical reactivity parameters. Notably, the MIR value for natural gas (methane) and propane is higher than ethane. Alternative non-VOC propellants, including carbon dioxide and exempt solvents with MIR values below ethane are available and in use. However, the key focus of the proposed control measure is the use of ingredients in the product formulation and not necessarily the composition of the propellant. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the CARB rule development process to ensure overall efforts are feasible, productive and cost-effective. The control approach would revise the LVP-VOC exemption if speciated LVP-VOC survey data and research results show an opportunity to further reduce emissions from consumer products. Any proposed amendments to the Consumer Products Regulations to revise the LVP-VOC exemption would be vetted through a full public process.

SS-31. IKI Manufacturing, November 8, 2012



MANUFACTURING CO., Inc.

116 N. SWIFT STREET • EDGERTON, WISCONSIN 53534
PHONE: 608/884-3411 FAX 608/884-4712

SPECIALIZED CONTRACT
AEROSOL PACKAGING

November 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email – echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

IKI Manufacturing appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD's) Draft 2012 Air Quality Management Plan (AQMP). Our comments focus on the Stationary Source Control Measure for Coatings and Solvents, in particular CTS-04.

IKI Manufacturing is a manufacturer of Consumer Products many of which include sales in California.

IKI strongly opposes the inclusion of CTS-04 in the AQMP for the following reasons:

- LVP-VOC compounds are the only viable substitutes for more reactive VOC compounds used in Consumer Products. Our reformulation efforts have removed the more reactive VOC's and substituted LVP-VOC compounds. With this reformulation effort and by removing the more reactive compounds, it has reduced the ozone being produced. LVP-VOC compounds are part of California Air Resources Board (CARB) strategy to reduce ozone from Consumer Products. LVP-VOC's are some of the only substitutes to VOC's in some categories where water or exempt compounds will not work.
- CARB LVP-VOC provisions has been adopted in the Ozone Transport Commission (OTC), the Lake Michigan Air Directors Coalition (LADCO) and the U.S. Environmental Protection Agency (EPA) as sound science for strategy to reduce ozone produced by Consumer Products.
- CARB has sole jurisdiction over Consumer Products. SCAQMD does not have authority over the Consumer Products regulation that includes the LVP-VOC provision.

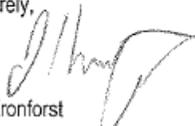
SS-31-1

In closing, SCAQMD should remove CTS-04 from the AQMP for the reasons stated above. CARB has sole authority of Consumer Products in California. Statewide consistency is needed for our company to compete in California.

SS-31-1

Thank you for your consideration to these comments. Any questions or comments feel free to call me.

Sincerely,



Jeff Kronforst
Technical Director
IKI Mfg. Co., Inc.
116 North Swift Street
Edgerton, WI 53534
608-884-3411

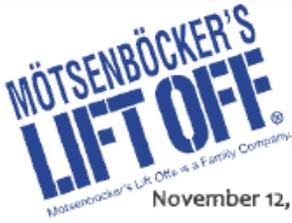
Cc: James Goldstene, Air Resources Board
Carla Takemoto, Air Resources Board
Laurie Nelson, Randlett Nelson Madden Associates
Doug Raymond, Raymond Regulatory Resources (3R), LLC

Responses to Comment Letter SS-31
IKI Manufacturing

Response to Comment SS-31-1:

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS). Staff agrees with the commenter's conclusion that The California Air Resources Board's Consumer Products Regulation is the model for the Ozone Transport Commission, the Lake Michigan Air Directors Coalition and the U.S. EPA consumer product regulations. The control measure seeks to utilize the best scientific data available in the review of the LVP-VOC exemption criteria. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the CARB rule development process to ensure overall efforts are feasible, productive and cost-effective. Any proposed amendments to the Consumer Products Regulations to revise the LVP-VOC exemption would be vetted through a full public process.

SS-32. MONTSENBOCKER'S Lift Off, November 12, 2012



November 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email – echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Mötsenböcker's Lift Off appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD's) Draft 2012 Air Quality Management Plan (AQMP). Our comments focus on the Stationary Source Control Measure for Coatings and Solvents, in particular CTS-04.

Mötsenböcker's Lift Off is a California company that markets consumer products. The products are patented using unique formulas. These formulas utilize LVP-VOC compounds.

Mötsenböcker's Lift Off urges SCAQMD to remove CTS-04 in the AQMP for the following reasons:

- A. Industry has utilized the LVP-VOC provision for decades to reduce the use of higher reactive compounds and to formulate effective products. Mötsenböcker's Lift Off products provide effective products for Consumers to perform every day tasks. Our products utilize the LVP-VOC provision and have significantly reduced the use of reactive VOC's.
- B. As a California company, Mötsenböcker's Lift Off has been in the forefront of reformulating Consumer Products. These reformulations have cost a significant amount of time and resources to perfect. The loss of LVP-VOC's would severely effect our reformulations to date and provide little in way of substitutions in the future to provide unique and effective products.
- C. Last, our company is a small business. Loss of the LVP-VOC provision would significantly affect my product line and my company's financial future. The economical repercussion of this provision would devastate my company.



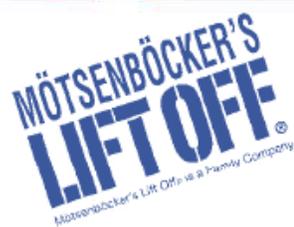
SS-32-1



MOTSENBOCKER ADVANCED DEVELOPMENTS, INC.
MANUFACTURERS OF MÖTSENBOCKER'S LIFT OFF®
P.O. BOX 90947, San Diego, CA 92169 • (858) 581-0222 • (800) 346-1633 • FAX: (858) 483-6965
liftoffinc.com



GRAFFITI • PAINT • STAIN • REMOVAL MADE EASY®



In closing, as a California company concerned with the future of my company, I strongly oppose this inclusion into the AQMP and ask that SCAQMD remove CTS-04 from the AQMP for the reasons stated above.

SS-32-1

Thank you for your consideration to these comments. Any questions or comments feel free to call at (800) 346-1633 x 111 or by email to gmotsenbocker@liftoffinc.com.

Sincerely,

Gregg A. Motsenbocker
President/Chemist

Cc: James Goldstene, Air Resources Board
Carla Takemoto, Air Resources Board
Laurie Nelson, Randlett Nelson Madden Associates
Doug Raymond, Raymond Regulatory Resources (3R), LLC



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Responses to Comment Letter SS-32
MONTSENBOCKER'S

Response to Comment SS-32-1:

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-33. NAA, November 12, 2012



November 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email – echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

The National Aerosol Association (NAA) appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD's) Draft 2012 Air Quality Management Plan (AQMP). Our comments focus on the Stationary Source Control Measure for Coatings and Solvents, in particular CTS-04.

The NAA is an association that represents the suppliers, fillers, manufacturers and marketers of aerosol products and their components. The NAA has been an active participant in the California Air Resources Board (CARB) Consumer Products regulations since the beginning of these regulations.

NAA strongly opposes the inclusion of CTS-04 into the AQMP for the following reasons.

Authority for Consumer Products

The California Air Resources Board (CARB) has sole jurisdiction over Consumer Product regulation. The LVP-VOC definition is incorporated into the Consumer Product Regulation, thus changing this definition is not under the SCAQMD authority. CTS-04 should be removed from the AQMP.

LVP-VOC reformulation

For decades, the Consumer Products Industry has reformulated products to remove reactive VOC's. LVP-VOC has been used as the replacement. This reformulation has been to the benefit of California for cleaner air. Science reviews on LVP-VOC demonstrate that these compounds have ultimate fates where the compound degrades without air quality impacts. LVP-VOC has been part of the solution not part of the problem with air quality.

SS-33-1

Economical Reasons

The Consumer Products Industry in good faith has spent significant resources in time and money to reformulate their products to meet CARB regulation stringent limits using LVP-VOC's. Changing this long-standing provision will have serious adverse economical impact on the Industry, especially small and medium sized companies with no justifying benefits.

LVP-VOC basis for regulation

The LVP-VOC provision has been incorporated into the CARB Consumer Products Regulation since the first regulation was adopted. CARB is bound by state law to develop regulation on Consumer Products, which are Technically and Commercially feasible. For the last decade and a half CARB has used the availability of LVP-VOC as the main option for reformulation of the majority of the Consumer Product categories. In addition, CARB has used the LVP-VOC provision to justify setting the strict limits in its regulation. Any modification to the LVP-VOC definition could negate the Technical and Commercial feasibility of the current limits. The Consumer Product categories affected will need to go through a complete review to ensure that the VOC limits are Technologically and Commercially feasible per state law.

CARB Regulation Model for other Jurisdictions

The CARB Consumer Products regulation has been the model regulation for other jurisdictions. Including the national EPA consumer products regulation. All the other jurisdictions have adopted the regulations with the inclusion of the LVP definition. The LVP-VOC definition is scientifically sound and an important part of the Consumer Products VOC emission reduction process.

Summary

For the reasons explained in detail above, CARB Authority, Reformulation, Economical Reasons, LVP-VOC basis for Reformulation and Model regulation, we respectfully request that the SCAQMD remove CTS-04 from the AQMP.

Thank you for your consideration to this issue and we look forward to working with you. Any comments or questions feel free to contact me at djraymond@reg-resources.com or by phone at 440-474-4999.

On behalf of the NAA,



Douglas Raymond

Cc: James Goldstene, Air Resources Board
Carla Takemoto, Air Resources Board
Laurie Nelson, Randlett Nelson Madden Associates

SS-33-1

Responses to Comment Letter SS-33
NAA

Response to Comment SS-33-1:

The proposed control measure is intended to study the appropriateness of the LVP-VOC exemption in its current form, in an effort to ensure that the ozone reduction benefit of the Consumer Products Regulation is fully materialized. The proposed control measure may involve eliminating or amending the CARB LVP-VOC criteria based on scientific data which may include MIR and similar photochemical reactivity parameters. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the CARB rule development process to ensure overall efforts are feasible, productive and cost-effective. The control approach would revise the LVP-VOC exemption if speciated LVP-VOC survey data and research results show an opportunity to further reduce emissions from consumer products. Any proposed amendments to the Consumer Products Regulations to revise the LVP-VOC exemption would be vetted through a full public process. Staff supports the commenter's conclusion that The California Air Resources Board's Consumer Products Regulation is the model for air quality management policy nationwide.

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

SS-34. Stoner, November 12, 2012



November 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email - echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Stoner Incorporated appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD's) Draft 2012 Air Quality Management Plan (AQMP). Stoner manufactures specialized cleaners including car care products, lubricants, and coatings for industrial, commercial, and consumer applications. For over 70 years, Stoner has been committed to manufacturing and marketing safe and effective products to our customers. We operate two facilities in Lancaster County, Pennsylvania. Stoner is a 2003 recipient of the Malcolm Baldrige National Quality Award. Stoner is continually improving our manufacturing processes and our products to better serve the consumer. Included in these improvements are the protection of human health and the environment. Stoner pursues a mission of helping our customers save time, increase their productivity, and improve the quality of their work. Our comments focus on the Stationary Source Control Measure for Coatings and Solvents, in particular CTS-03 and CTS-04.

Stoner Incorporated opposes the inclusion of CTS-03 and CTS-04 into the AQMP for the reasons below.

- Recent Science data from SCAQMD shows that the South Coast Basin is NO_x limited. Thus any new VOC emissions will not have an impact on ozone reduction.

SS-34-1



- SCAQMD should remove CTS-04 from the AQMP because CARB has sole authority over Consumer Products in California. The LVP-VOC definition is in the CARB regulation thus SCAQMD has no authority over its removal or modification.
- CARB is required to ensure any limits imposed on Consumer Products are technically and commercially feasible. The majority of the limits imposed on our products were adopted using the justification that LVP-VOC's were an option for reformulation. Modification or removal of the LVP-VOC option would render the Consumer Products regulation technically infeasible. For the majority of our products the use of LVP-VOC is the only substitute to ensuring that our products remain effective for the Consumer to use. Our reformulations to LVP-VOC have replaced more reactive VOC compounds, for the improvement of Air Quality in California.
- Stoner is a small company with limited resources. Reformulation is expensive and requires valuable use of our technical departments time. In good faith Stoner either reformulated or are in the process of reformulating products using LVP-VOC compounds. To impose the CTS-04 provision now would be unfair to our company.

SS-34-1

In conclusion, for the reasons set forth above, the SCAQMD should remove CTS-03 and CTS-04 from the AQMP.

Stoner Incorporated has worked with CARB to ensure the technical and commercial feasibility on the Consumer Products regulation. The provision CTS-04 would significantly impact this regulation.

Thank you for your consideration to this issue.

Any questions feel free to contact me.

Sincerely,



Robert W. Sweger, Ph.D.

Cc: James Goldstene, Air Resources Board
Carla Takemoto, Air Resources Board
Laurie Nelson, Randlett Nelson Madden Associates
Doug Raymond, Raymond Regulatory Resources (3R), LLC

Responses to Comment Letter SS-34
Stoner

Response to Comment SS-34-1:

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

The proposed control measure is intended to study the appropriateness of the LVP-VOC exemption in its current form, in an effort to ensure that the ozone reduction benefit of the Consumer Products Regulation is fully materialized. The proposed control measure may involve eliminating or amending the CARB LVP-VOC criteria based on scientific data which may include MIR and similar photochemical reactivity parameters. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the CARB rule development process to ensure overall efforts are feasible, productive and cost-effective. The control approach would revise the LVP-VOC exemption if speciated LVP-VOC survey data and research results show an opportunity to further reduce emissions from consumer products. Any proposed amendments to the Consumer Products Regulations to revise the LVP-VOC exemption would be vetted through a full public process.

SS-35. Spray Products, November 12, 2012



November 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email – echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Spray Products Corporation appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD's) Draft 2012 Air Quality Management Plan (AQMP). Our comments focus on the Stationary Source Control Measure for Coatings and Solvents, in particular CTS-04.

Spray Products Corporation is a custom filler and marketer of Aerosol Consumer products. We fill for marketers that do business around the globe including California. The inclusion of CTS-04 will significantly affect the Consumer Product market.

Spray Products strongly opposes the inclusion of CTS-04 in the AQMP for the following reasons:

- The California Air Resources Board (CARB) has sole authority over Consumer Products in the state of California. SCAQMD does not have authority to change the CARB Consumer Products regulation. The LVP-VOC provision is in the CARB regulation. The AQMP and CTS-04 cannot force CARB to change the Consumer Product regulations, thus the CTS-04 provision should be removed.
- Reformulation of Consumer Products without the use of LVP-VOC's will render a majority of Consumer Product ineffective. Currently there are no suitable substitute compounds for the LVP-VOC's.
- LVP-VOC's have replaced more reactive VOC compounds and are part of the solution to reducing ozone in California.

In closing, SCAQMD should remove CTS-04 from the AQMP for the reasons stated above. CARB has sole authority of Consumer Products in California.

SS-35-1



Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email – echang@aqmd.gov

Page 2

Thank you for your consideration to these comments. Any questions or comments feel free to call me at 484 690 0253 or email me at johnd@sprayproducts.com.

Sincerely,

John Davis
Vice President, Technical Services

Cc: James Goldstene, Air Resources Board
Carla Takemoto, Air Resources Board
Laurie Nelson, Randlett Nelson Madden Associates
Bart Bastian, Spray Products
Doug Raymond, Raymond Regulatory Resources (3R), LLC

Responses to Comment Letter SS-35
Spray Products

Response to Comment SS-35-1:

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

The proposed control measure is intended to study the appropriateness of the LVP-VOC exemption in its current form, in an effort to ensure that the ozone reduction benefit of the Consumer Products Regulation is fully materialized. The proposed control measure may involve eliminating or amending the CARB LVP-VOC criteria based on scientific data which may include MIR and similar photochemical reactivity parameters. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the CARB rule development process to ensure overall efforts are feasible, productive and cost-effective. The control approach would revise the LVP-VOC exemption if speciated LVP-VOC survey data and research results show an opportunity to further reduce emissions from consumer products. Any proposed amendments to the Consumer Products Regulations to revise the LVP-VOC exemption would be vetted through a full public process.

SS-36. Turtle Wax, November 9, 2012



November 9, 2012

Dr. Elaine Chang
Deputy Executive Officer,
Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Via e-mail: echang@agmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Turtle Wax, Inc. appreciates the opportunity to offer comments on the South Coast Air Quality Management District's Provision CTS-04 for Further VOC Reductions from Consumer Products. Removing the LVP exemption is based on unscientific test methods and offers no correlation to air quality improvements. The consumer products industry has spent hundreds of millions of dollars in complying with the CARB Consumer Products Rule. Science reviews demonstrate that LVP materials are very unlikely to exhaust into the air and very likely to deposit on water, vegetation or other surfaces where they degrade without air quality impact. LVP's have minimal impacts on VOC emission and ozone formation and have been part of the solution not the problem.

Changing this long-standing rule will have a serious adverse impact on industry, especially small and medium sized companies such as Turtle Wax, Inc. with no justifying benefit. We are very concerned that additional limits and controls will result in poor "product performance" as well as lost consumer sales, production, revenue and LOST JOBS within the industry.

Turtle Wax, Inc. appreciates the opportunity to comment. This control measure is not feasible or cost effective, thus SCAQMD should remove CTS-04 from the AQMP.

Sincerely,

Turtle Wax, Inc.

Michael A. Schultz
Senior Vice President
Product Development

MAS:tn

cc: James Goldstene, Executive Officer CARB – jgoldste@arb.ca.gov
Carla Takemoto, PTSD, CARB – ctakemot@arb.ca.gov

SS-36-1

Responses to Comment Letter SS-36
Turtle Wax

Response to Comment SS-36-1:

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

The commenter asserts that numerous product categories will have poor performing products. The commenter should provide all data or studies demonstrating the infeasibility of products that do not rely upon the LVP-VOC exemption. To the contrary, significant evidence exists that there are numerous product categories that already have competitive products that do not rely on the LVP-VOC exemption. A number of major companies now provide multi-purpose lubricants utilizing low-VOC bio-based technologies. The Certified Clean Air Choices Cleaner program has nearly 50 institutional and industrial (I&I) cleaners that do not rely upon the LVP-VOC exemption. These products consist of full I&I product lines to cover nearly all cleaning and maintenance needs. Other certification programs have several hundred I&I cleaners, most of which do not rely upon the LVP-VOC exemption. As indicated, except for very few niche applications where efficacy of certain products may be impacted from a complete exclusion of a LVP-VOC, for the great majority of operations, environmentally preferable cleaners have equal or superior performance at equal or lower costs. Many cities and school districts have completely switched to environmentally preferable janitorial products and have found no degradation in performance at no extra cost. In some cases, lower overall costs have been seen and included in the cost-effectiveness section of the control measure. The City of Santa Monica reported spending 5% less on its cleaning products costs when it switched from conventional cleaners to less-toxic brands a decade ago. An article entitled, "The Benefits of Green Cleaning" by Dr. Robert W. Powitz on the ISSA website (November 2008), states, "We've heard the excuses, most of which can be grouped into one sentence: Eco-friendly products do not work and are more expensive. But this is simply not so." The Green Seal and EcoLogo certification programs include efficacy performance standards to address claims in deterioration of performance. Again, Green Seal and EcoLogo have certified hundreds of I&I products most of which do not rely upon the LVP-VOC exemption.

SS-37. Four Star Chemical, November 12, 2012



FOUR STAR CHEMICAL

"We Have The Solution"

November 12, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via email – echang@aqmd.gov

Subject: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

Four Star Chemical appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD's) Draft 2012 Air Quality Management Plan (AQMP). Our comments focus on the Stationary Source Control Measure for Coatings and Solvents, in particular CTS-04.

Four Star Chemical is a Private Label Filler of commercial products in the state of California. We provide our customers with a wide variety of products for the specialty consumer market place.

Four Star strongly opposes the inclusion of CTS-04 in the AQMP for the following reasons:

- 1) The California Air Resources Board (CARB) has sole authority over Consumer Products in the state of California. Four Star has worked to maintain compliance with the CARB regulation through reformulation. Four Star products use LVP-VOC to maintain compliance with the stringent limits imposed by CARB on Consumer Products. If CTS-04 is implemented then our product reformulations will have been a waste of time and money.
- 2) As a small California business we cannot afford to constantly reformulate products. Also, SCAQMD does not have authority over Consumer Products thus CTS-04 should be removed from the AQMP.
- 3) Lastly, the SCAQMD's own data shows that the basin is NO_x limited. Future VOC reductions will have a little to no effect on ozone levels.

SS-37-1

3137 East 26th Street • Los Angeles, California 90023-4206
(323) 266-7111 • (800) 243-6264 • Fax: (323) 526-3969

In closing, as a California company we respectfully request SCAQMD to remove CTS-04 from the AQMP for the reasons stated above.

Thank you for your consideration to these comments. Any questions or comments feel to contact me at julrich@fourstarchemical.com or reach me at 323-266-7111.

Sincerely,



Jerry Ulrich
Four Star Chemical
President

Cc: James Goldstene, Air Resources Board
Carla Takemoto, Air Resources Board
Laurie Nelson, Randlett Nelson Madden Associates
Doug Raymond, Raymond Regulatory Resources (3R), LLC

Responses to Comment Letter SS-37
Four Star Chemical

Response to Comment SS-37-1:

The commenter provides similar comments to those submitted by the Consumer Specialty Products Association. Please refer to the responses to comments for the Consumer Specialty Products Association (Comment Letter SS).

The proposed control measure is intended to study the appropriateness of the LVP-VOC exemption in its current form, in an effort to ensure that the ozone reduction benefit of the Consumer Products Regulation is fully materialized. The proposed control measure may involve eliminating or amending the CARB LVP-VOC criteria based on scientific data which may include MIR and similar photochemical reactivity parameters. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the CARB rule development process to ensure overall efforts are feasible, productive and cost-effective. The control approach would revise the LVP-VOC exemption if speciated LVP-VOC survey data and research results show an opportunity to further reduce emissions from consumer products. Any proposed amendments to the Consumer Products Regulations to revise the LVP-VOC exemption would be vetted through a full public process.

TT. Bear Valley Electric Service, October 9, 2012



October 9, 2012

Dr. Elaine Chang
Deputy Executive Officer
Planning, Rule Development, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

SUBJECT: Bear Valley Electric Service Comments on AQMD Revised Draft 2012 Air Quality Management Plan

Dear Dr. Chang:

Bear Valley Electric Service (BVES) appreciates the opportunity to submit the below comment on the South Coast Air Quality Management District (AQMD) Revised Draft Air Quality Management Plan (AQMP) that was released in September 2012.

BVES is a division of Golden State Water Company (GSWC), an investor owned utility (IOU). BVES provides electric distribution service to approximately 23,000 residential customers in a resort community with a mix of approximately 40 percent full-time and 60 percent part-time residents. Its service area also includes about 2,500 commercial, industrial and public-authority customers, including two ski resorts.

BVES purchases wholesale power to meet the majority of its energy requirements. To aid in meeting peak demand for electric energy, BVES installed and now operates the Bear Valley Power Plant (BVPP), a natural gas-fired, 8.4 MW generation plant in its service area. The BVPP became commercially operational on January 1, 2005.

BVES has only one comment on the September 2012 Revised Draft AQMP. We previously submitted this comment on the Draft AQMP in a letter dated August 31, 2012. We are re-submitting it as it was not addressed in the September 2012 Revised Draft AQMP. Below are the chapter and section relevant to the comment, as well as background information and the comment itself.

Chapter 4, Reductions from District's Stationary Source Control Measures (page 4-41)

Background: Appendix A-IV includes proposed measures for the reduction of pollutants from stationary sources that contribute to ozone, including VOC, NOx, and PM. In reviewing the appendix, it appears (Table IV-A-2) that measure MCS-03 applies to all stationary sources that involve start-up, shutdown, and related operations where emissions are not currently well understood. However, the corresponding discussion section for MCS-03 later in the appendix seems to apply only to refinery flares and similar operations.

Page 1 of 2 P.O. Box 1547, 42020 Garstin Drive, Big Bear Lake, California 92315
Tel: (909) 866-4678 Fax: (909) 866-5056

Comment: BVES requests that the AQMD clarify that measure MCS-03 applies only to refinery and similar processes, and does not more generally apply to all stationary sources that have start-up and shutdown operations. BVES' Bear Valley Power Plant is a natural gas-fired peaking plant, and energy generation from its operations is not similar to refinery operations. BVES believes it is possible that the AQMD did not intend to include all stationary sources as part of MCS-03. If the AQMD did intend to include all stationary sources, then BVES requests that it become a member of the working group(s) that inventory, assess, and develop recommended control measures for start-up and shutdown operations.

TT-1

If you have any questions or comments regarding the above, please feel free to contact me at (909) 866-4678.

Sincerely,



Karuna Warren
Operations and Planning Manager

cc: Dennis Yates, South Coast AQMD Shawn Nelson, South Coast AQMD
Ronald O. Loveridge, South Coast AQMD Dr. Joseph K. Lyou, South Coast AQMD
Judith Mitchell, South Coast AQMD Rick Lind, EN2 Resources, Inc.

Responses to Comment Letter TT
Bear Valley Electric Services

Response to Comment TT-1:

Control measure MCS-03 is carried over from the 2007 AQMP. Although the initial scope of review for startup, shutdown and turnaround activities is likely to focus on the minimization of potential flaring emissions at refineries, staff believes that it is possible to develop procedures that can lead to optimization, operational efficiency and emission minimization opportunities applicable to other industries.

The District approach under MCS-03 would be to initially focus on better quantifying emission impacts from startup, shutdown and turnaround activities at refineries, as well as analyzing emission reduction potential. Should the results of these analyses and emission assessments warrant further investigation, a review of potential emission reduction efforts would follow, including a determination of the applicability to other industries. Any subsequent rulemaking efforts would include technical feasibility, socioeconomic impact, and environmental impact assessments, including safety considerations, and certainly involve outreach to affected stakeholders.

UU. WD-40 Company, October 11, 2012



P.O. Box 80607, San Diego, CA 92138-0607

October 11, 2012

Dr. Elaine Chang
Deputy Executive Officer, Planning, Rules & Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Dear Dr. Chang,

The purpose of this letter is to reiterate points we have made verbally in recent meetings with SCAQMD leadership and staff regarding SCAQMD's Draft 2012 Air Quality Management Plan (AQMP). Our comments are focused primarily on the Stationary Source Control Measure for Coating and Solvents numbered:

- CTS-03 Further VOC Reductions From Mold Release Products.
- CTS-04 Further VOC Reductions from Consumer Products.

We appreciate this opportunity and look forward to finding win/win situations for all of us to achieve California and SCAQMD's clean air goals.

WD-40 Company is a California born company located in San Diego that does business in over 180 countries around the world. We have spent millions of dollars over the past 15 years or so developing and launching products that meet or beat CARB VOC regulatory standards. Historically, we have taken these same products to all 50 of the United States at a higher cost due to our belief of doing all we can to achieve clean air everywhere.

We do not meet CARB's definition of an "industrial product" which are "products used exclusively in the manufacture or construction of goods," We do meet CARB Consumer Products definition which includes household and Industrial & Institutional (I&I) products. I & I products include products used in factories. This means that 100% of all WD-40 made and sold in California has been under CARB regulations for about a decade.

Unfortunately, Rule 1144 passed a few years ago by SCAQMD prevents WD-40 from being used on metal working fluid type uses (but it is allowed on other type uses in same location). We think this is regulatory overlap between CARB and SCAQMD since the same formula and product is hitting two sets of regulations in the same place that have different VOC measurement methods and success criteria and are administered in completely different ways. SCAQMD does not currently agree with our view and we are working together to resolve as you witnessed in our last meeting with Barry Wallerstein. We fully support Rule 1144 for all other products regulated since none of them have been under CARB VOC regulations, are sold at retail and are only available through industrial distribution. They do meet CARB's "industrial product" definition.

Our USA marketing research shows WD-40 is in over 90% of households and 85% of workplaces and used in over 2,000 ways. All this done with the one brand, the same formula, a handful of package sizes across numerous trade channels including retail and industrial. This broad reach and strength of WD-40

UU - 1

UU - 2

UU - 3

can result in getting entangled in various type regulations from different agencies. Our concern is that CST-03 dealing with mold releases will impact WD-40 like Rule 1144 has with metal working fluids and we seek to avoid that.

UU - 3

Regarding CTS -04, WD-40 Company strongly objects to any modification or elimination of existing regulations allowing WD-40 Company and other consumer product companies to use Low Vapor Pressure (LVP) compounds as part of our current and future regulatory compliance efforts.

Our concern with any changes to existing CARB LVP definitions, test methods or regulations is that they could compromise the work and progress we achieved so far towards clean air. All of our impacted company products in several categories use LVP technology and solutions to achieve current regulatory compliance. That includes WD-40, WD-40 Specialist, 3-In-One, Spot Shot, Carpet Fresh and X-14 brands. We plan on doing the same for upcoming CARB VOC regulations. Any changes to LVP use in these efforts; whether in our existing categories or adjacent ones, is not supported by our company. We do not see the scientific basis for it, the regulatory need or benefit.

UU - 4

We do not believe that any of the four control measures (CTS-01 through CTS-04) are effective or necessary for ozone attainment. Air modeling shows further VOC reductions from consumer products will not significantly reduce ozone. LVP's have minimal impacts on VOC emissions and ozone formation and have been part of the solution and not the problem.

As an active member of the Consumer Specialty Products Association (CSPA), we fully support their comments and positions. To save paper and respect everyone's time, talent and treasure, we refer to their more detailed comments which we believe are solid and fact based recommendations and insights. We also fully support the California state requirement that all product regulations adopted be technologically and commercially feasible and not eliminate any product forms.

Thank you for your consideration.

Sincerely,



Michael L. Freeman
Division President - The Americas

Cc: Barry Wallerstein, SCAQMD
Mike Morris, SCAQMD
Carla Takemoto, CARB

Responses to Comment Letter UU
WD-40 Company

Response to Comment UU-1:

Staff appreciates WD-40's efforts to meet or beat CARB VOC regulatory standards and wishes to continue working with WD-40 to achieve California and AQMD's clean air goals.

Response to Comment UU-2:

Staff agrees that WD-40 is primarily a consumer product and Rule 1144 includes provisions limiting the applicability to only industrial uses. Repair and maintenance operations, the primary uses of WD-40 at industrial facilities, are not subject to Rule 1144. However, any product used by an industrial facility during the manufacture of goods is subject to the limits of Rule 1144, regardless if it is an "industrial" product or a "consumer" product. CARB and AQMD agree that the purpose of the Consumer Product Regulations is not "to deprive the districts of their long-standing authority to regulate pollution-generating activities occurring at stationary sources, just because these activities may involve the use of consumer products." (Letter from Kathleen Walsh, CARB General Counsel to William Wong, AQMD Senior Deputy District Council 2/20/01). Further, as discussed in the August 8, 2012 meeting with WD-40, AQMD and CARB, WD-40 should only report and pay CARB fees on volume of sales that fall under the Consumer Products Regulation, which does not include volume sold for "manufacturing" use at stationary sources.

Response to Comment UU-3:

The proposed control measure CTS-03 seeks to limit VOC emissions from mold release fluids used in industrial applications. Assuming that cost-effective, low-VOC alternatives are available, it would not be sensible to avoid establishing lower VOC limits just because some shops may be using consumer products as mold release agents. Nor would it be prudent to exempt consumer products, creating an incentive to use higher-VOC consumer products and diminishing the potential emission reductions realized from the control measure.

Response to Comment UU-4:

While some WD-40 products may use fast-evaporating LVP-VOC solvents potentially impacted by the proposed control measure, the Blue Works All Purpose Lubricant made by WD-40 is an excellent example of a product that truly maximizes ozone benefits and reduces VOC well beyond current requirements. The product utilizes carbon dioxide propellant technology and methyl soyate lubricants that have been shown in evaporation studies (Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds, U. Vö and M. Morris, August 2012) and

ASTM E 1868-10 to be non-volatile. Clearly WD-40 has the vision and technical capability to formulate technologically and commercially feasible products that do not rely on the LVP-VOC exemption as currently defined.

The commenter supports comments submitted by The Consumer Products Association. Please refer to the responses to comments for The Consumer Products Association (comment letter SS).

VV. John R. Froines, October 26, 2012

To: Jean Ospital

From: John R. Froines, Ph.D.

Date: October 26, 2012

Subject: Chapter 9, Near roadway exposure and ultrafine particles

The purpose of this memorandum is to offer brief comments on afore named section of the AQMP.

At the outset I want to compliment AQMD for its efforts at addressing the ultrafine particle issue. I believe the document is thorough and thoughtful. This is a difficult topic because the literature is limited and that raises a number of issues which are difficult to address. I think your efforts help clarify the issues that must be addressed in considering the policy and scientific issues raised by ultrafines.

My remarks will be brief, but the three papers I sent earlier contain up-to-date information that should prove helpful.

Comments:

1. This first comment derives from an AQMD funded application which we are now working on. It illustrates our mechanistic understanding of the pathway leading to illness and disease from air pollutants and while not directly related to ultrafines we believe the key particulate matter responsible for adverse health effects is ultrafines. See attachment to this document.
2. Humic acids: we believe that humic acids may be important PM constituents. Their chemical structure creates the possibility for prooxidant and electrophilic activity and they are likely water soluble which suggests they may dissolve off the ultrafine PM and exert toxicity in the cell. See attached paper.

} VV - 1
}

} VV - 2
}

- 3. This section of the report emphasizes ultrafine particles to the exclusion of consideration of vapors. In the Los Angeles basin the most prevalent PAH is naphthalene and it is between 1,000 and 10,000 times greater in concentration than benzo(a)pyrene which is particle bound. Naphthalene is in the vapor state. It has been identified as a carcinogen by NTP albeit with lower potency. We have demonstrated quite clearly that naphthalene is oxidized to naphthoquinone via atmospheric chemistry as we go from east to west in the LAB. Naphthoquinone is capable of both prooxidant and electrophilic activity. The same is true for other PAHs. Greater attention needs to be given to vapors and especially their oxidation products. Acrolein is another example of a highly toxic vapor. There are a very large number of compounds that fit these categories. VV - 3
- 4. It was very important to identify the relative organic compound load in different particles. Ultrafines have organics that are in the 60% range and this is considerably greater than PM2.5. Over time we believe the organic load may be a basis for regulatory activity. VV - 4
- 5. There should be discussion of nasopharyngeal deposition of ultrafines since that is the route for translocation to the central nervous system. Dr. Kleinman and others have published in this area and it is apparent from in vivo studies that there are persistent inflammatory responses. VV - 5
- 6. There should be discussion of inflammatory responses to deposition of ultrafines in the lung. This deposition activates immunological responses and the products may translocate to other sites namely the heart. See the papers by Jesus Arujo and Andre Nel on cardiovascular issues. At least one is cited, but Jesus could be contacted at UCLA for additional references. His work is VV - 6

outstanding. I don't have the references as I write this and your follow up is needed.

VV - 6

7. A key issue that must be addressed over time is the nucleation/condensation of vapors as they cool following emission from vehicles. This source of PM is not addressed by filters and while I did not focus my reading on controls want to emphasize this as an important source of PM.

VV - 7

8. Our Caldecott study demonstrated that as PM 2.5 decreased particle number increases and we confirmed this with an ARB study on new technology, that is, new diesel engines. The issue of the increase in particle number as mass declines is a continuing problem as we consider controls. I thought the conclusion in the document could have been more extensively addressed. It seemed to simplify the issue and was basically one sentence on page 9.2. More work needs to be done on the organic content in the context of this issue.

VV - 8

Since time is limited I will stop here and hope these brief comments are useful. I will be pleased to discuss the paper further over time.

Thank you.

Responses to Comment Letter VV
John Froines

We would like to thank you for your valuable comments to Chapter 9 and Appendix 1 of the AQMP. The work conducted by the Southern California Particle Center (SCPS) in past 10 years contributed to improve our understanding of the mechanisms responsible for the health effects associated with exposure to ultrafine particles (UFPs). Several of the key scientific papers resulting from the research activities of the SCPC have been referenced in Chapter 9 to emphasize the fact that UFPs and some of their chemical components may promote allergic inflammation in the lungs, the progression of atherosclerosis, and other adverse health effects.

Response to Comment VV-1:

AQMD staff believes it is possible that UFP may be the main PM fraction responsible for the adverse health effects caused by particle exposure. As noted in Chapter 9 (page 9-8 through 9-22), this is in line with the results of several research studies conducted by the SCPC and research groups in other parts of the world.

Response to Comment VV-2:

Although this is an important issue, the contribution of Humic Acids to the overall UFP toxicity has not been discussed in Chapter 9 because this topic is too specific for the scope of this document.

Response to Comment VV-3:

As stated on page 9-19 of Chapter 9, work conducted by the SCPC has demonstrated that because of their high organic carbon (OC) and polycyclic aromatic hydrocarbon (PAH) content, UFPs have the highest potential to induce oxidative stress in macrophages and epithelial cells (Li et al., 2003). We also noted that this, in turn, may promote allergic inflammation in the lungs, the progression of atherosclerosis, and precipitation of acute cardiovascular responses ranging from increased blood pressure to myocardial infarction (Delfino et al., 2005; Araujo et al., 2008). The semi-volatile component of quasi-ultrafine urban aerosols (mostly OC and PAHs) seems to be responsible for most of the oxidative potential of PM (Verma et al., 2011).

Response to Comment VV-4:

On Page 9-8 of Chapter 9 we stated that the UFPs collected in urban environments across the United States are mostly comprised of organic matter (up to around 70% by weight). Research conducted as part of the SCPC (also referenced on page 9-8) clearly demonstrated that the organic content of UFPs is larger in the summer, when photochemical formation of organic aerosol is higher (Kuhn et al., 2005; Sardar et al., 2005).

Response to Comment VV-5:

We thank the commenter for his input on this topic, but we think that a detailed discussion on the nasopharyngeal deposition of UFPs as a route for translocation to the central nervous system is beyond the scope of this document

Response to Comment VV-6:

This important issue has been mentioned on page 9-19, where we noted that the potential of UFPs to generate ROS and to induce oxidative stress in macrophages and epithelial cells and may promote allergic inflammation in the lungs and the occurrence of various cardiovascular problems (Delfino et al., 2005; Araujo et al., 2008).

Response to Comment VV-7:

On page 9-22 of Chapter 9 we have noted that more work is needed to better characterize the mechanisms that lead to UFP formation right after emission and in the atmosphere. Developing a clearer picture of particle formation dynamics in different environments, including those which are influenced by traffic, would greatly assist control measures to regulate emissions of UFPs.

Response to Comment VV-8:

This issue has been described in detail in the “Emission Control Technologies” section of Chapter 9 (see pages 9-28 and 9-29).

WW. Einstein, Dr. Geoffrey Kabat, October 30, 2012



Science at the heart of medicine

GEOFFREY KABAT, Ph.D.
Senior Epidemiologist
Department of Epidemiology and
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October 30, 2012

Dr. William A. Burke, Chairman and
Other Members of the Governing Board
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
2012aqmpcomments@aqmd.gov

Dear Board Members:

I am writing to convey my emphatic support a 2012 Air Quality Management Plan (AQMP) Appendix I Health Effects that focuses on "the health impacts of particulate matter air pollution in the South Coast Air Basin," in accord with California Health and Safety Code Section 40471(b). In addition, I urge you to hold a Board hearing on the health impacts report and its peer review, in accord with this Code Section.

In particular, please address the September 25 public comments of Jonathan M. Samet, M.D., and the August 30 and September 20 public comments of James E. Enstrom, Ph.D. I have been a cancer epidemiologist for over 30 years, and I have been aware of the important research of these outstanding epidemiologists during this entire period. In addition, I have personally worked with Dr. Enstrom on environmental epidemiology issues. You need to take their criticism of Appendix I very seriously.

My own examination of the PM2.5 epidemiologic findings of Dr. Samet, Dr. Enstrom, and two dozen other highly qualified scientists, convincingly shows that there is no relationship between PM2.5 and total mortality in California and that the current US EPA National Ambient Air Quality Standard (NAAQS) for PM2.5 is not applicable to California or the South Coast Air Basin (SCAB). Therefore, the AQMP should request a waiver from this NAAQS, rather than proposing stricter emission controls.

In conclusion, the final 2012 AQMP must be based on the actual health impacts of particulate matter in the SCAB. Otherwise, I believe that it can be vigorously challenged on scientific, economic, and legal grounds. I am following this issue from New York because the PM2.5 NAAQS has national epidemiologic and regulatory significance and because the exaggeration of PM2.5 risks fits the pattern of examples described in my 2008 book "Hyping Health Risks."

Thank you for your attention to my comments.

Sincerely yours,

Geoffrey C. Kabat, Ph.D.
Department of Epidemiology and Population Health
Albert Einstein College of Medicine
Bronx, NY 10461
Tel. 718-430-3038

CC: Executive Officer Barry Wallerstein <bwallerstein@aqmd.gov>
Health Effects Officer Jean Ospital <jospital@aqmd.gov>
General Counsel Kurt Wiese <kwiese@aqmd.gov>
District Counsel Barbara Baird <bbaird@aqmd.gov>

WW - 1

Responses to Comment Letter WW
Dr. Geoffrey Kabat

Response to Comment WW-1:

The Draft AQMP is designed to provide a pathway to attain the National Ambient Air Quality Standard for Particulate Matter, which is required to be timely attained under the Clean Air Act. This standard was established by the US EPA Administrator, as set forth in the Clean Air Act, to protect public health based on a substantial body of health studies. The EPA has concluded that there are serious adverse health effects associated with exposure to PM_{2.5}, including an increased risk for mortality.

There is no provision in the Clean Air Act that would allow a local district to receive a waiver from meeting the NAAQS by the statutory deadline. Indeed, there are significant penalties for not adopting a plan timely for attaining the standard, which could include restrictions on transportation and highway funds to the region, increases in required emissions offset ratios, and imposition of a Federal Implementation Plan to attain the standard.

The Governing Board will hold an adoption hearing on the 2012 AQMP and Appendix I before it takes action to approve the 2012 AQMP. In the meantime, there will also be regional public hearings to obtain public comment on the 2012 AQMP and Appendix I.

XX. Gatzke Dillon & Ballance LLP, October 30, 2012



October 30, 2012

By Electronic Mail

Mr. Phillip Fine, Planning and Rules Manager
Planning, Rule Development, and Area Sources
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, California 91765-4182
pmfine@aqmd.gov

Re: Comments on Revised Draft 2012 Air Quality Management Plan

Dear Mr. Fine:

This letter is submitted on behalf of the County of Orange ("County") in its capacity as the owner and operator of John Wayne Airport, Orange County ("JWA"). This letter contains the County's written comments on the Proposed Modifications to the Draft 2012 Air Quality Management Plan ("Revised AQMP"), issued by the South Coast Air Quality Management District ("SCAQMD" or "District") in September, 2012. The County appreciates the opportunity to provide these additional comments on the Revised Draft AQMP.¹

XX - 1

Our comments on the Revised AQMP are intended to serve the following principal objectives:

- 1. First, we appreciate the opportunity to continue to work constructively and cooperatively with the District in evaluating and developing realistic airport emissions inventories and aviation forecasts for the Revised AQMP.
2. Second, we are concerned with a number of the responses that the District provided to our July 27, 2012, comment letter on the Notice of Preparation and Initial Study ("NOP/IS") for the proposed 2012 AQMP. These responses warrant further comment and discussion because many of our previous comments relate to revisions that are required to the Draft 2012 AQMP, including, but not limited to, revisions to the baseline emissions inventory for JWA. Without careful attention and response to these important issues during the comment/response period for the Revised AQMP, the District will be unable to structure appropriate and effective air quality regulations which might affect the

XX - 2

1 The County has previously submitted comment letters on the Notice of Preparation of a Draft Program EIR, the draft 2012 AQMP, The Integra Report and the Draft Program Environmental Impact Report for the 2012 AQMP. Please see the enclosed comment letters to Mr. Steve Smith from Ms. Lori Ballance, dated July 27, 2012, to SCAQMD from Mr. Alan Murphy, dated August 31, 2012, to SCAQMD from Mr. Alan Murphy, dated September 28, 2012, and to Mr. Jeff Inabinet from Ms. Lori Ballance, dated October 23, 2012.



Mr. Phillip Fine, Planning and Rules Manager
October 30, 2012
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operations of the air carrier airports in the Basin while minimizing the environmental impacts of those regulations.

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- 3. Third, and finally, we continue to have a number of concerns and questions regarding Control Measures MCS-03 and ADV-07 as well as the long term black box measures and the proposed regulation of ultrafine particles that require further comment and discussion at this time.

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GENERAL COMMENTS

EMISSION INVENTORY

The Revised Draft AQMP continues to provide an emission inventory using 2008 as the baseline year and it appears that no revisions have been made to the July draft of the 2012 AQMP to include the airport-specific data provided by JWA. This may be simply a matter of timing with respect to when the District received the additional airport specific data from JWA; nevertheless, and as noted in our previous written comments to the District, JWA remains very concerned about the accuracy of the baseline emissions inventory assumptions utilized in the Revised 2012 AQMP.² By this letter, we would like to request confirmation that staff will include in the Final 2012 AQMP baseline emissions inventory assumptions all of the information provided by JWA to the District with respect to the aircraft activity data and airport specific data for JWA. This data includes, but is not limited to, the recent information the JWA provided after reviewing the Integra Environmental Consulting, Inc. Report which provides the assumptions utilized in preparing the Draft 2012 AQMP's emissions inventories relative to the aviation sector.

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We continue to be particularly concerned with this issue because the baseline year is not only used to determine future year air quality emissions projections, but also appears to be used in the development of AQMP control measures. As we have stated in our previous comments to the District, the District needs to be seriously concerned about both the accuracy and completeness of the existing data that it relied upon for the emission inventory. Revision is required to accurately reflect the baseline and projected future activity levels at JWA. These revisions should be included in the Final 2012 AQMP that is presented to the District's Board for consideration and approval.

² In order to help ensure the accuracy of the baseline emissions inventory assumptions for JWA, JWA provided the District with aircraft activity data and airport specific data for JWA for incorporation into the 2012 AQMP and requested that the baseline emissions inventory be updated and modified to incorporate this new information. In response to the County's request, the District indicated that staff "... will consider the request ... and determine the magnitude of the change from the information provided in the Draft 2012 AQMP."



Mr. Phillip Fine, Planning and Rules Manager
October 30, 2012
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DISTRICT'S LACK OF REGULATORY AUTHORITY RELATIVE TO AIRCRAFT EMISSIONS

In our previous comment letters, we requested that the District clearly inform the public and decision makers of the District's lack of regulatory purview relative to aircraft emissions. Although the District's response to our NOP/IS comment letter acknowledges that "the Clean Air Act expressly preempts state and local agencies from adopting or enforcing any standard respecting emissions of any air pollutant from any aircraft or engine thereof unless such standard is identical to a standard [adopted by EPA and FAA] applicable to aircraft ...", the District's response also indicates that "...the term standard ... does not include in-use or operational requirements [and that] whether any individual measure, which does not constitute a standard preempted under the CAA, would be preempted by any other law would need to be decided on the facts of each case."

As indicated in our comment letter on the Draft EIR for the 2012 AQMP, we continue to have a fundamental disagreement with the District regarding the extent of the District's authority to regulate aircraft emissions. Specifically, we continue to believe that, to the extent the District attempts to regulate aircraft related emissions, directly or indirectly (through in-use or operational requirements), any such regulation would constitute a constitutionally impermissible local intrusion into a federally preempted field of regulation. *People of State of Cal., v. Dept. of Navy* (1977) 431 F.Supp. 1271, 1281; *Washington v. General Motors Corp.* (1972) 405 U.S. 109, 92 S.Ct. 1396, 31 L.Ed.2d 727. The District's attempted indirect regulation of airport related emissions through in-use or operational requirements would be an impermissible and unconstitutional intrusion into an area which is pervasively and exclusively controlled by federal law and federal authority. *City of Burbank v. Lockheed Air Terminal, Inc.* (1973) 411 U.S. 624, 633.

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SPECIFIC COMMENTS ON PROPOSED CONTROL MEASURES

CONTROL MEASURE MCS-03

With respect to Control Measure MCS-03, although we appreciate the District's response to our comment letter on the NOP/IS which acknowledges that "operational, technological and economic variables will be among the key variables to be consider[ed] ..." during the second phase of implementation, there have been no modifications to this proposed Control Measure in the Revised 2012 AQMP that reflect these constraints and that indicate how they will be taken into account when designing the measure's parameters and predicting associated emission reductions. Therefore, we continue to find it difficult, if not impossible, to assess the measure itself without further information on its proposed parameters. The Revised 2012 AQMP should be modified to include a discussion relative to the fact that controlling emissions during start-up

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Mr. Phillip Fine, Planning and Rules Manager
October 30, 2012
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and shutdown is constrained by operational, technological and economic limitations and provide an analysis of how these limitations may impact the projected emission reductions for this Measure.

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CONTROL MEASURE ADV-07

Relative to Control Measure ADV-07, again, there appears to have been no modifications to this proposed Control Measure in the Revised 2012 AQMP. Rather, this Control Measure is identical to the Measure provided in the July draft of the 2012 AQMP. Therefore, as indicated in our previous comments, we continue to be concerned about the extent to which ADV-07 is intended to impose affirmative obligations on the District or local airport authorities to regulate the aircraft fleet mix serving the South Coast Air Basin. Although we continue to have no immediate objection to the District providing support for FAA's Continuous Lower Energy, Emissions and Noise ("CLEEN") Program, JWA objects to any measure that requires local airport authorities to regulate the aircraft fleet mix serving the South Coast Air Basin on the grounds that such affirmative obligation would be incompatible with the jurisdictional authorities and powers of airport owners/operators. The 2012 AQMP should be revised to provide additional information on the ultimate intent of ADV-07 before it is presented to the District's Board later this year.

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The proposed Control Measure also includes working with the airlines and local airport authorities to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin. As we have discussed with the District on many occasions in the past, and in our most recent comment letter to the District on the Draft EIR for the 2012 AQMP, neither the District nor airport operators can ensure that only the "cleanest aircraft" operated by commercial airlines serve the Basin; such a requirement would trigger federal preemption and interstate commerce implications. In addition, we have serious doubt, particularly after adoption of the Airport Noise and Capacity Act of 1990 (49 USCA 2151, et seq.), as to whether airport proprietors generally have sufficient residual authority to act effectively as the agencies working with the District and the airlines in developing, implementing and enforcing a program that requires the cleanest aircraft to serve the Basin. At a minimum, the District should receive adequate assurances from the Federal Aviation Administration, the Department of Transportation, and any other relevant federal authorities that airport proprietors do, in fact, have sufficient regulatory authority to allow them to make meaningful implementation choices which would allow them to enforce local regulations to achieve whatever mandates are imposed on them by the District.

LONG-TERM (BLACK BOX) CONTROL MEASURES

Table 6-2 in the Draft Program EIR for the 2012 AQMP shows the black box measure strategies from the 2007 AQMP and also shows the proposed control measures from the 2012 AQMP that affect the same emissions sources. It is unclear from this Table and the discussion provided

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Mr. Phillip Fine, Planning and Rules Manager
October 30, 2012
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whether the methods of emissions control from the 2007 AQMP are still being considered for implementation in connection with the 2012 AQMP. Specifically, the method of emissions control for aircraft from the 2007 AQMP is as follows: "More stringent emission standards for jet aircraft (engine standards, clean fuels, retrofit controls); Airport bubble."

Is the District still considering implementation of an "airport bubble" concept in connection with the proposed 2012 AQMP control measures? The 2012 AQMP must be revised to clarify whether this method of emission control is still being considered and whether this concept will be translated into specific control measures for the airport and airline industry.

We have discussed at length with the District our concern regarding the role of the airport proprietor relative to the administration of air quality emission strategies at airports in the Basin. As you know, we have expressed strong opposition to the "airport bubble" concept previously proposed by the District and will continue to oppose any measure that requires an airport to become the air quality "enforcer" for airport users.

REGULATION OF ULTRAFINE PARTICLES

According to the District's response to the JWA's comment letter on the NOP/IS for the 2012 AQMP, we understand that the District is continuing to include a discussion of the evaluation of ultrafine particles as a "subset of PM2.5." This is neither necessary nor appropriate for the following reasons. First, while the federal Clean Air Act requires submittal of a plan by December 14, 2012 outlining how the District will achieve the National Ambient Air Quality Standards (NAAQS) for PM2.5 in the South Coast Air Basin, there is no such deadline for ultrafine particles which are not regulated by NAAQS. Second, by including control measures specific to ultrafine particles in connection with their status as a subset of PM2.5, the District is addressing issues beyond the current regulatory framework established by the U.S. Environmental Protection Agency via the NAAQS program. Third, and finally, it is impossible to determine how the PM2.5 control measures may regulate ultrafine particles as a "subset of PM2.5."

As indicated in our comment letter on the Draft 2012 AQMP, the County/JWA continues to support a bifurcated approach to the 2012 AQMP which focuses attention on NAAQS achievement; other air quality related issues relating to ultrafine particles can, and should, be addressed via a separate and subsequent process.

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G | D | B Gatzke Dillon & Ballance LLP
LAWYERS

Mr. Phillip Fine, Planning and Rules Manager
October 30, 2012
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CONCLUSION

In closing, the County/JWA thanks the District again for this opportunity to comment on the Revised 2012 AQMP. We look forward to continuing to engage in an open, thorough and responsive public process on the 2012 AQMP and assisting the District with its efforts to improve air quality in the South Coast Air Basin. If you have any questions regarding the issues addressed in this letter, please do not hesitate to contact us at your convenience.



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Very truly yours,

Lori D. Ballance
of
Gatzke Dillon & Ballance LLP

LDB/rif

- cc: Supervisor Shawn Nelson, Vice Chair, 4th District
- Michael Krause, South Coast Air Quality Management District
- Robert J. Franz, Interim County Executive Officer
- Alan Murphy, Airport Director, John Wayne Airport

Responses to Comment Letter XX
Gatzke Dillon & Ballance LLP

Response to Comment XX-1:

The comment requests that past comments, current comments, and continued cooperation in this process will allow the County to continue contributing to complex airport regulatory issues associated with air quality in the Basin. The AQMD welcomes participation in AQMP development from all stakeholders including, but not limited to, public agencies, affected industries, environmental organizations, and other interested parties. To the extent that AQMP control measures affect a specific stakeholder group, it is important that the group affected participate in crafting control measures, as well as any resulting rules or regulations. Currently, the 2012 AQMP contains ozone Measure ADV-07 – Actions for the Deployment of Cleaner Aircraft Engines. This control measure describes the actions needed to develop, demonstrate, and commercialize advanced technologies, procedures, and sustainable alternative jet fuels that could be deployed in the 2020 to 2030 timeframe, so no emission reductions are associated with it as part of this AQMP process. The control measure recognizes that state and local aircraft emission standards are preempted by the Clean Air Act, which gives that responsibility to U.S. EPA in consultation with the Federal Aviation Administration (FAA). However, emission reductions are needed from all emissions sources, including those regulated by the federal government. Therefore, it is important that the County participate in any future control measure development relative to emission reductions from aircraft to ensure the most effective and cost-effective measures are identified.

Response to Comment XX-2:

This comment expresses general concern regarding unspecified AQMD responses to unspecified comments regarding the NOP/IS for the 2012 AQMP. While responses to the NOP/IS are not required, the AQMD provided responses to all comments received relative to the NOP/IS. However, it is important to keep in mind that responses to comments made at the NOP/IS stage often results in changes that get incorporated into the Draft Program EIR. Further, at the NOP/IS stage, the environmental analysis is not complete at the time, so detailed responses were not always possible.

Response to Comment XX-3:

See Response to Comment XX-6 regarding a discussion of control measure MCS-03 and see Response to Comment XX-7 regarding a discussion of control measure ADV-07.

Response to Comment XX-4:

The JWA inventory was developed incorporating all information submitted by JWA and further updated as described in our response to comment letter RR (JWA's September 28th comment letter on the 2012 draft AQMP), which is described below.

The John Wayne Airport inventory was developed incorporating all information submitted by John Wayne Airport and AQMD staff has revised the Integra Report to reflect the updated information provided by the airport authority. SCAG's growth information was used to estimate the future airport activity listed in Table 3.3 of the Integra Report and is further described in their Aviation and Ground Access Appendix of the 2012 Regional Transportation Plan – (http://rtpscs.scag.ca.gov/Documents/2012/final/SR/2012fRTP_Aviation.pdf).

The emission estimates for 2035 listed in Table 2.4 of the Integra Report were generated using the airport activity as estimated by SCAG's RADAM model and FAA's Emissions and Dispersion Modeling System (EDMS) airport model. For John Wayne Airport the activity was capped at the authorized limit of 10.8 MAP. The emission estimates for John Wayne Airport are not inconsistent with the expected improvement in engine technology and growth in airport activity in that increased activity resulted in increased emissions with the exception of NO_x, which has been and will continue to be the main focus of emissions improvements from aircraft engines.

The projected 2035 fleet mix was provided by SCAG and is included in their recently adopted 2012 – 2035 RTP/SCS. The estimates were generated by the Regional Airport Demand Allocation Model (RADAM) an approved model used by SCAG staff since 1994 to project growth in aircraft activity in the region. While staff recognizes that operations at the airport do not include some aircraft types today, there is nothing limiting the use of these types in the future and we believe it is appropriate to use information that is consistent with SCAG's 2012 – 2035 RTP/SCS and other growth assumptions used in the AQMP. (The one exception would be a physical characteristic that would not allow operation of an aircraft type at the airport such as the B737-900 craft referenced as too long to operate at John Wayne Airport. However the engine type is the same as the other B737 classes that would likely be used in lieu of the 900 series and we would expect the estimated emissions would be similar).

Response to Comment XX-5:

The comment repeats a concern that an attempt by the AQMD to regulate airport related emissions, even through in-use or operational requirements, would be federally preempted. As identified in NOP/IS response 4-7 (see Appendix B of the Program Environmental Impact Report), the Clean Air Act generally preempts state and local agencies from adopting or enforcing any standard respecting emissions of any air pollutant from any aircraft or engine. 42 U.S.C. §7573. The term "standard", however, does not include in-use or operational requirements. *Engine Manufacturers' Association v. EPA*, 88 F.3d 1075 (D.C. Cir. 1996).

In any event, control measure ADV-07 does not purport to seek regulation of aircraft emissions. The control measure does not take credit for emissions reductions, does not identify cost effectiveness and recognizes that the implementing agencies are the AQMD, U.S. FAA, U.S. EPA, and CARB (see AQMP Appendix IV-B, page IV-B-86). Rather, ADV-07 is intended to develop and demonstrate new technologies for improved

efficiency and reduced emissions through the FAA initiated Continuous Lower Energy, Emissions and Noise (CLEEN) program and through other incentive-based or demonstration-based projects (see AQMP Appendix IV-B, page IV-B-86). If, through the development of these projects, it is determined that feasible regulatory action exists, the AQMD may elect to pursue that path after determining whether such action, while not preempted under the CAA, would be preempted by any other law.

Response to Comment XX-6:

There will be constraints in implementing a proposed control strategy with all the proposed control measures, including MCS-03. Determining those operational, technical and economic constraints will take place during the rule development process when the source category is further evaluated and affected industry and public participation provide valuable insight. Once those constraints are determined, the rule can be best developed to consider necessary relief such as tiered compliance dates, requirement exemptions, and program incentives.

Response to Comment XX-7:

Control measure ADV-07 recognizes the efforts with the CLEEN Program to develop cleaner aircraft engines. However, in order to route cleaner aircraft to region, there is a need to determine if there are mechanisms such as incentives that will bring cleaner aircraft to the region. We recognize that this effort will involve local airport authorities, state and federal agencies and the airlines. It is premature at this point to determine the “performance target” for this measure since specific mechanisms have not been developed. The measure will be further developed as part of the next AQMP development.

The commenter asserts that a control measure which would have the AQMD work with the airports and airlines to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin would necessarily be federally preempted., particularly in light of the Airport Noise and Capacity Act of 1990 (49 U.S.C. §2151 et seq.). We disagree. The measure involves working together with the affected parties. We note that the relevant preemption provision, 49 U.S.C. §41713, preempts regulations that “have the force and effect of law related to a price, route, or service of an air carrier...” Thus, it would not include, for example, incentive programs not having the force and effect of law. Moreover, the statute expressly provides that it does not limit a state or political subdivision of a state “from carrying out its proprietary powers and rights.”49 U.S.C. §41713(b)(3). Thus the airports may be able to exercise their authority as “municipal proprietors” in this area. The Airport Noise and Capacity Act (now reorganized at 49 U.S.C. §47521 et seq.) does not seem to be relevant since it deals with noise restrictions, and should not be interpreted to apply to air pollution issues. But even if it applied, it still allows restrictions on noisier aircraft in certain cases. 49 U.S.C. §47524. The AQMD will work with the airports and other stakeholders to implement this measure to the extent legally feasible and not preempted.

Response to Comment XX-8:

The black box control measures in the 2007 AQMP are concepts that require further development. These concepts will be further developed with input from all affected stakeholders. Concepts included in the 2007 AQMP black box measures but not discussed in ADV-07 should not be interpreted as being removed from further consideration. Ultimately, some concepts may require actions on the federal level to implement, while other actions may potentially be implemented at the local level, such as incentives.

Response to Comment XX-9:

By definition, ultrafine particles are less than 0.1 micron, so are less than 2.5 microns, thus, a subset of “PM2.5.” We agree with the commenter that no national ambient air quality standards have been established for ultrafine particles, so they are not part of demonstration of attainment of the 24-hour PM2.5 standard as analyzed in Chapter 5 and Appendix V of the 2012 AQMP. In addition, ultrafine particulates are not characterized in the emissions inventory data and were not considered in the development of the control strategy. Thus, no commitments to reduce ultrafine particles are submitted in the 2012 AQMP. Finally, the PM2.5 control measures in the 2012 AQMP are not specifically aimed at ultrafine particles, but in some cases could have the effect of reducing ultrafines as they reduce PM2.5. That is what we meant by saying ultrafines could be regulated as a “subset“ of PM2.5. As discussed in Chapter 9 of the 2012 AQMP, in most urban environments, vehicular fossil fuel combustion constitutes the major contributing sources of ultrafine particles. The PM2.5 control strategy in the 2012 AQMP is the curtailment of wood burning, thus targeting PM2.5 emissions and not ultrafine particles.

Response to Comment XX-10:

The comment reiterates the County’s desire to continue working with the AQMD with its efforts to improve air quality in the Basin. No further response is necessary.

YY. Harvey Eder, Public Solar Power Coalition, October 31, 2012

From: [Harvey Eder](#)
To: [Michael Krause](#); [2012 AQMP Comments](#)
Cc: [harveyederpspc@yahoo.com](#)
Subject: Part 1 of Third Comments Harvey Eder & PSPC ITSC 2012 AQMP Etc. 10/30/12
Date: Tuesday, October 30, 2012 9:09:44 PM

Howdy AQMP/D Staff, Mike Krause,

This is Part 1 of Third Comments of Harvey Eder and PSPC the Public Solar Power Coalition (First July 17 &18, 2012, Second October 23,2012) on the DEIR & 2012 AQMP and SocioEconomic Study with 2012 AQMP etc. This has pasted the 3 web links of Robyn Deyoung who has been the point person for EE/RE energy efficiency and solar/renewable energy with Stoneman at Federal EPA all of the information herein on the links (that can be clicked on to herein) are incorporated into the record as comments by Harvey Eder and PSPC the Public Solar Power Coalition sent today Oct 30,2012 with more to follow tomorrow Oct 31 the last day comments for the AQMP are due at the SCDistrict, AQlso note that as part of the record herein are the dozen or so pages on the [Flag this message](#)

Renewable energy and energy efficiency and SCAQMP

Friday, October 26, 2012 5:09 PM

From: "DeYoung.Robyn@epamail.epa.gov" <DeYoung.Robyn@epamail.epa.gov>
[Add sender to Contacts](#)
To: harveyederpspc@yahoo.com
Hi Harvey,

Here are some resources that may help you.

GHG BACT EPA Comment Letters: <http://www.epa.gov/nsr/ghgcomment.html>

Appendix K of EE/RE SIP Roadmap show examples of States that included EE/RE in SIPs.
<http://epa.gov/airquality/eere/pdfs/appendixK.pdf>

Top 50 entities that have participated in EPA's Green Power Program:
<http://www.epa.gov/greenpower/toplists/top50.htm>

Thanks,
Robyn

Robyn (Kenney) DeYoung
U.S. EPA's Office of Atmospheric Programs
State and Local Climate and Energy Program
202-343-9080
www.epa.gov/statelocalclimate

Solar Thermal 1991 AQMP Appendix IV ref 1988 communication of Harvey Eder etc with staff of the SCD started with Dr. Barry Wallerstein in 1985 reducing NOx (and now GHGs etc)of about 5 tons nox per day +by 2010 is also incorporated hereing in comments by reference and as received by M Krause left by Eder at the District 2 weeks ago that were affirmatively put in the record etc. all information connected to these links are also part of the record example solar/ renewable energy and EE as BACT, and for SIP in State Implementation Plans etc.

Thanks ,take care

Harvey Eder And PSPC Public Solar Power Coalition
1218 12th St. #25
Santa Monica, CA 90401
(310)3932589

YY - 1

From: [Harvey Eder](#)
To: [Michael Krause](#); [2012 AQMP Comments](#)
Cc: [harveyederpspc@yahoo.com](#); [earthdayla.org](#); [jim](#)
Subject: Part 2 of Third Comments on AQMP/AQMD Harvey Eder & PSPC 10/31/12
Date: Wednesday, October 31, 2012 1:45:27 PM

Howdy AQMD/P Staff Michael Krause,

This is the Part 2 of the Third submittal of Comments (1st July 17 & 18 2012 , 2nd October 23, 2012 and 3rd yesterday 10/30 & 31/12 by Harvey Eder & PSPC the Public Solar Power Coalition on the 2012 AQMP, DEIR, & SocioEconomic Study.

2. of part 2 Third Comments. The Washington DC Air District used Wind Turbines for .5 ton of Nox reductions a day, this is one of the examples of Solar/Renewable Energy/EE as BACT etc the can and should will be used in CA. /SCAQMD etc.

3. of Part 2 Third Comments. The foundation of starting the first working CCA (Community Choice Aggration in California was funded by the BAAQMD, conversation with Abby Young Principal PLanner Bay Area Air Quality Management District , October 2012. The SCQMD should follow the BAAQMD and do the same or similiarly by funding PSPC to do the same/sim for the counties and citites in the SCD. This is now called the MEA Marin Energy Authority and which is also being followed by San Francisco, and soon to be Sonoma etc., Santa Monica (apart of the cities CAP (Climate Action Plan).

4. of Part 2 Third Comments. The following is an email with links for an article about methane hydrates being released in the Atlantic and the North Country Artic Ocean etc and Tundra of methane ch4 which is over 100 times the GWP Global Warming Potential of co2 plus on a twenty year cycle verses 21 over 100 years used by the SCDistrict and 25 used by CARB and 33 used by NASA James Hanson etc. The climate change point person for the SCD Dr. Aaron Katenstein says that 10 years could be used (his Dr. diseration was on methane released in the western states which could be perhaps as high as 200 times co2 on that scale and this research etc shows that time is of the essence !!!)

[Flag this message](#)

Background: Climate-changing methane 'rapidly destabilizing' off East Coast, study finds

Thursday, October 25, 2012 11:44 PM

From: "Edward Mainland" <emainland@comcast.net>
[View contact details](#)

To: CONS-SPST-GLOBALWARM-FORUM@LISTS.SIERRACLUB.ORG, "Energy Forum" <CONS-SPST-ENERGY-FORUM@LISTS.SIERRACLUB.ORG>, "Chp & Grp Global Warmina Enerav Chairs" <CONS-SPST-GLOBALWARM-

YY - 2

YY - 3

YY - 4

energy@googlegroups.com... [more](#)

First, there was concern that oil/gas exploitation of maritime methane hydrate deposits could dangerously destabilize them. Now, there is reason for concern that warming seas are --already, right now -- causing destabilization that is potentially far worse.

Maybe it is no longer so far-fetched to consider the possibility that humanity's impotence to control and reduce an emerging, self-reinforcing feedback loop of methane emissions and global heating could be -- or already is -- triggering the granddaddy of all planetary extinction events that will spare neither oblivious Republicans nor feckless Democrats nor anyone else?

Coming soon? Guys in long beards and robes wearing sandwich boards outside the California Public Utilities Commission warning: "Repent: the end of the anthropocene era is at hand"!

-- Ed M.

Climate-changing methane 'rapidly destabilizing' off East Coast, study finds

<http://usnews.nbcnews.com/news/2012/10/24/14670511-climate-changing-methane-rapidly-destabilizing-off-east-coast-study-finds?lite%3Focid=twitter>

The SCD should direct staff to use a 10 or 20 year (at the most less than a 40 year time frame with methane ch4 !@#

Thanks, take care (more to follow)

Harvey Eder and PSPC PublicSolar Power Coalition 10/31/12
(310)3932589
harveyederpspc@yahoo.com 1218 12th St. #25 Santa Monica, Ca. 90401

PS This is the warmest year on record beyond 2007 with a 100 year drought in Australia and a 80 year drought in the US and now Sandy that was fed by warmer waters in the Atlantic etc. estimated damage \$30-50 Billion etc (climate change etc.)

YY - 4

From: [Harvey Eder](#)
To: [2012 AQMP Comments](#); [Michael Krause](#)
Cc: [harveyederpspc@yahoo.com](#); [earthdayla.org](#); [jim](#)
Subject: Part 3 of Third Comments AQMP/AQMD OF Harvey Eder & PSPC 10/31/12
Date: Wednesday, October 31, 2012 4:39:34 PM

Howdy Michael Krause et. al.SCAQMP/D, 10/31/12

This is Part 3 of Third Comments on AQMP of Harvey Eder & PSPC Public Solar Power Coalition 10/31/12 (First Comments where authored and sent July 17 &18,2012,

Second Comments were authored and sent October 23, 2012 and this third comments were authored and sent October 30,&31, 2012 on AQMP and DEIR and SocioEconomic Document (Dr. Sue Lue -sp-)

Correction section 3 of Part 3 on funding of Marin CCA MEA was funded by ICLEI (International Council For Local Environmental Initative) but it could and should be funded for the Counties and Cities in the SCAQMD by the SCAQMD. This should be part of the 2012 Plan but funding should happen now as cited in Section 3 of Third Comments and herein. (HE PSPC) as well as funding with SCD and CARB for Statewide SolarCal in 1st Comments July 17&18 etc..

YY - 5

Part 5 of Third Comments AQMP ETC 10/31/12. Solar Renewables was in the Texas SIP

for Solar/ Renewables in 2005 and muct be included in the SCD AQMP and in the SIP (State Implimentation Plan. Etc. Also Connecitute cited solar energy in their documents contact vis Robyn DeYioung document supplied yesterday, etc.

YY - 6

Part 6 of Third Comments AQMP ETC 10/31/12 SCAQMD sstaff like in BAAQMD in CEQA Documents should comment on Climate Action Plans for all Counties and Cities in the SCAQMD as Solar as BACT/RACT/LAER and Best Practicesworking with Local Planners etc and with JPL NAS Lab in the District (Jet Proplusion Labratory). BAAQMD has LBL Lawerence Berkeley Lab and we have ours but should also work wityh LBL and BAAQMD can work with JPL etc and UC CSUs. Up north much of this is voluntary but should be mandatory in SCD to meet or beat 2050 less co2 e 80% reductions from 1990 levels or more sooner ! We must bring back good ole command and control ! ITSCP Now !!!

YY - 7

This covers best practices ie solar conversion nowfor commercial ,industrial, and residential BARACT when installing any new or backup heating system or HVAC. on transfer of title etc or sooner for retrofits. Tone up nortyh to a great degree including the Cities of SF Berkeley, Pleasanton Peadmont and Albany etc.....

Part 7 of Third Comments PACE (Property Assesed Clean Energy should be used to finance ee/solar RE converions including like in Sonoma a new Health Spa Gym withSolar Hot Water) and in new developments in the City of Petaluma etc As cited in July comments interest rates are the lowest they have been ever or since the Great Depression of the 1930s . Putting in energy efficiency/conservation with solar rewneables conversion the total system is more cost effective. The same is true when financing with low interest plus as cited in July the cost of PV has been reduced considerably making solar /ee/ec cost effective now using life cycle cost analysis etc...

YY - 8

Harvey Eder & PSPC Public Solar Power Coalition (310)3932589
1218 12th St. #25
Santa Monica, Ca. 90401
harveyederpspc@yahoo.com

Responses to Comment Letter YY
Harvey Eder

Response to Comment Letter YY-1:

We are familiar with the EPA document *Incorporating EE/RE Policies and Programs into State and Tribal Implementation Plans*. Appreciate the set of comments for the 2012 AQMP and we still have the file containing the comments submitted during the AQMPs in 1988 and 1991.

Response to Comment Letter YY-2:

Could not find this control measure for Washington DC area, appreciate any reference that can be provided to locate. Also see response AAA-1 on achieving reductions from implementing renewable energy sources.

Response to Comment Letter YY-3:

We will look further into the Marin Energy Authority and also speak with BAAQMD on this organization.

Response to Comment Letter YY-4:

Feedback loops are a big concern with climate change. However, they are not directly associated with reducing fine particulate matter.

We recognize the larger GWP potentials of climate forcers with shorter atmospheric lifetimes, such as methane, when looking at a 20 or 10 year time horizon. Referencing these larger GWPs on a shorter timeframe have no impact on the Basin achieving PM2.5 standards. We are working on also working on identifying ways to assess the forcing impacts of other components such as the black carbon emitted within the Basin.

Response to Comment Letter YY-5:

We have received previous comments which are included in previous sections and have taken note of the correction.

Response to Comment Letter YY-6:

The primary purpose of the 2012 AQMP is to develop control strategies that bring the Basin into compliance with the federal fine particulate standard. We are working with the State in helping achieve the goals of S-3-05. The jointly developed document between SCAQMD, San Joaquin APCD, and the ARB “Vision for Clean Air: A Framework for Air Quality and Climate Planning” shows pathways on how we can achieve 2050 GHG reduction levels. As shown in the document there is not a single

pathway that can be taken to meet the GHG goals and further development and implementation of transportation technologies is needed.

Mandating the requirement that no new natural gas powered power plants greater than 50MWs be built might not make the implementation of renewable energy sources possible. The discussion below describes the intermittency that renewable energy sources add into the grid. There is a need to develop technologies at a faster rate that can help provide a more reliable grid with renewables without relying upon fossil generating sources.

Response to Comment Letter YY-7:

We have and will continue to work with local governments in developing their climate action plans. We also frequently collaborate with JPL and LBL.

Response to Comment Letter YY-8:

Chapter 10: Climate and Energy of the AQMP discusses financing programs such as PACE for RE and EE purposes.

ZZ. Pacific Merchant Shipping Association (PMSA), October 31, 2012



October 31, 2012

Executive Officer
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, CA 91765

Subject: Comment Letter – 2012 Air Quality Management Plan for PM 2.5

The Pacific Merchant Shipping Association (PMSA), which represents ocean-carriers and terminal operators at ports throughout the state of California, appreciates this opportunity to comment on the South Coast Air Quality Management District's (SCAQMD) 2012 Air Quality Management Plan (AQMP) for PM 2.5. PMSA and our individual members have proactively worked with the local port authorities to develop a systematic approach to the reduction of air quality emissions through the implementation of the voluntary measures of the San Pedro Bay Ports Clean Air Action Plan (CAAP)". In addition, PMSA members have taken a leadership role in developing and implementing most of the measures included in the CAAP and by supporting the development of international standards and regulations. While PMSA and our members are proud of our contributions to air quality in and around the Ports of Los Angeles and Long Beach (Ports), we cannot support some of the measures of the 2012 Air Quality Management Plan because they are unnecessary, infeasible, and outside the authority of the SCAQMD.

ZZ - 1

First and foremost, we want to congratulate the SCAQMD on demonstrating in the 2012 AQMP that the Annual PM 2.5 National Ambient Air Quality Standard (NAAQS) of $15 \mu\text{g}/\text{m}^3$ will be met by the attainment deadline of 2014. It is because of that success that the proposed Stationary Source Measure, IND-01, "Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources" is unnecessary. Besides the simple fact that the measure applies to both on-road and off-road mobile sources, and therefore it makes no sense to categorize it as a stationary or an area source, it also implies that the Ports somehow have legal authority to impose controls. The measures of the CAAP are by definition voluntary in nature as they must be since the Ports neither own nor operate the equipment.

Further, for either the SCAQMD or the Ports to regulate the equipment under this Port Backstop Measure the United States Environmental Protection Agency (EPA) would have to grant a waiver under the Clean Air Act. Even then it is difficult to envision how EPA could grant such a wide sweeping waiver since the regulation of locomotive equipment is specifically pre-empted under Section 209 of the act rendering the measure infeasible.

ZZ - 2

Even without the federal pre-emption issue the Port Backstop Control measure still fails to demonstrate feasibility since the 2012 AQMP fails to quantify the emissions benefits of the measure

ZZ - 3

Pacific Merchant Shipping Association
300 OceanGate, 12th Floor, Long Beach, CA 90802

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and further fails to disclose the cost of implementing the measure. Without any gauge of the cost or the benefit of the Port Backstop control it is not possible to determine if the measure is feasible and if feasibility cannot be clearly demonstrated then the control measure has no place in the current AQMP. It certainly makes no sense to imply if the region for some reason fails to achieve attainment of the PM 2.5 NAAQS that the Ports are somehow solely responsible for bringing the entire region back into attainment. Clearly, if the 2012 AQMP is wrong about achieving or maintaining attainment of the PM 2.5 NAAQS then the entire region, and all sources with the district must be re-evaluated to demonstrate attainment, not just the port sources.

ZZ - 3

For the same reasons listed above the Off-Road measures, OFFRD-04, "Further Emission Reductions from Ocean-Going Marine Vessels While at Berth" and OFFRD-05, "Emission Reductions from Ocean-Going Marine Vessels" should also be removed from the 2012 AQMP. Since these measures are clearly included under the umbrella of the Ports CAAP their listing here constitutes a double counting of the elements already included in IND-01. That is it would be a double counting if these measures were quantified and the costs of implantation estimated. Just as the measures for IND-01 fail to demonstrate need and feasibility so do these measures and they should be removed from the 2012 AQMP.

ZZ - 4

Regardless of whether these measures are included in the 2012 AQMP they will continue to provide air quality benefits to the regions. The Ports and their industry partners have developed an effect mechanism through the CAAP, that is now backstopped by state, federal, and international regulations that ensures that the fair share goal, and hence, the emission reductions alluded to by this AQMP, will be met. PMSA and our members are committed to the goals of the voluntary CAAP and therefore request that the SCAQMD remove the infeasible and unnecessary measures, IND-01, OFFRD-04, and OFFRD-05, from this AQMP.

Respectfully submitted,



Vice President

Responses to Comment Letter ZZ
PMSA

Response to Comment Letter ZZ-1:

The comment asserts that PMSA has worked with the Ports on the Clean Air Action Plan, but that PMSA believes the Port Backstop Measure (IND-01) is not necessary, and should not be classified as a stationary source measure. Also the Ports lack legal authority over equipment they do not own or operate.

The AQMD staff appreciates the efforts of all parties in implementing the Clean Air Action Plan (CCAP). However, Measure IND-01 is still necessary because it serves to ensure that the emissions from port-related sources for future years will in fact be at or below the emissions included in the future year baseline emission inventories. These reductions are part of the emission reductions used to demonstrate attainment with the PM_{2.5} standard and thus this measure is a necessary part of the PM_{2.5} SIP. This measure is most appropriately categorized as an indirect source measure, rather than a stationary source measure, because it is directed at the ports based on the fact that the ports attract mobile sources of pollution. See 42 U.S.C. 7410(a)(5)(C). Indirect sources are considered a type of “nonvehicular” source, so that is why the measure appears under the stationary source category. 76 Ops. Cal. Atty. Gen. 11, 14 (1993). However, there should not be any confusion on this issue since the measure is entitled “IND-01”, standing for “indirect source.” Finally, it is the nature of many indirect source measures that the source does not own or operate the mobile sources which it attracts. For example, the AQMD’s Rule 2202 applies to employers of 250 or more, but the employer does not own or operate the commuter vehicles.

Response to Comment Letter ZZ-2:

The comment asserts that any regulation of port sources would require a waiver from U.S. EPA, under Clean Air Act Section 209, and that even EPA cannot grant a waiver for locomotive sources.

An indirect source regulation is not preempted by Clean Air Act Section 209 and may be valid even though it affects sources for which the Clean Air Act would require a waiver in order to establish an “emission standard.” *National Ass’n. of Home Builders v. San Joaquin Valley APCD*, 627 F. 3d 730 (9th Cir. 2010). Moreover, if any measures are later determined to require a waiver, AQMD would work with CARB to seek such a waiver. Updates to the AQMP and state SIP routinely include control measures that would require a waiver, even though the waiver has not yet been granted.

Response to Comment Letter ZZ-3:

The comment asserts that the AQMP fails to demonstrate feasibility for IND-01 because it fails to disclose the cost of implementing the measure. Further, the measure

should not imply that the ports are solely responsible for bringing the region into attainment if the region fails to timely attain the PM_{2.5} standard.

IND-01 does not place the entire burden of attaining the standard on port-related sources but will evaluate the feasibility of further emission reductions from these sources using a “fair-share” methodology. This means the AQMD will seek reductions from all types of sources contributing to any nonattainment. This feasibility analysis would include all affected stakeholders. The costs of implementing the measure will depend on the amount of emission reductions needed to reach the targets of the measure, and so cannot be determined now.

Response to Comment Letter ZZ-4:

The comment asserts that the two off-road measures OFFRD-04 “Further Emission Reductions from Ocean-Going Marine Vessels While at Berth” and OFFRD-05, Emission Reductions from Ocean-Going Marine Vessels” should be removed from the AQMP because they are incorporated in measure IND-01, and are “double-counted” with the Port CAAP. Also, the measures fail to demonstrate need and feasibility.

Staff disagrees with this statement. First, OFFRD-04 and OFFRD-05 measures are designed to be implemented after IND-01, ensuring that the reductions are not included with those from measure IND-01. Second, both OFFRD-04 and OFFRD-05 target emission reductions that go beyond what is required in IND-01. In general IND-01 reductions are consistent with reductions expected from the state, federal, and international rules applicable to mobile sources operating at the ports. Reductions from both off-road measures would be realized by achieving compliance rates above those required by the applicable regulations. For example, OFFRD-04 targets emission reductions from vessels that are not subject to CARB’s shorepower regulation such as bulk cargo vessels and tankers, resulting in emission reductions not included in IND-01. Therefore, any emission reduction credit claimed in the SIP for these two measures would only be for reductions going beyond what is already assumed in the future year baseline inventories. Therefore, there would not be double-counting. As explained in Response to Comment ZZ-2, indirect source measures are not preempted by Section 209. Similarly, operational requirements or fuel requirements are not preempted by the Clean Air Act. *Engine Mfr’s Ass’n. v. EPA*, 88 F. 3d 1075 (D.C. Cir. 1996). To the extent the measures would require a waiver from U.S. EPA, the AQMD would work with CARB to obtain a waiver.

AAA. Sierra Club Angeles Chapter, October 31, 2012



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CLUB**
FOUNDED 1892

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Comments by Sierra Club Angeles Chapter on
Draft South Coast Air Quality Management Plan (AQMP)

October 31, 2012, sent to: 2012aqmpcomments@aqmd.gov

Dear South Coast Air Quality Management District,

For over a decade, the top priority of the Sierra Club has been stopping global warming to protect life on this planet. We are pleased with the emphasis placed in both the AQMP and PEIR on analyzing and reducing GHG emissions.

As the PEIR correctly reports, "Executive Order S-3-05, . . . established emission reduction . . . goals to . . . reduce GHG emissions . . . to 80 percent below 1990 levels by 2050." The SCAQMD is legally bound to comply with Executive Order S-3-05. Therefore the AQMP must show how it supports reduction of "GHG emissions . . . to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050."

Since there are many sources of GHG emissions in addition to fossil fuels, such as industrial processes, to achieve 80 percent below 1990 levels by 2050 means that essentially all use of fossil fuels for combustion (such as natural gas for electricity and hot water) must end by 2050. Since most large natural gas power plants have life expectancies of 40 years, it is past time for AQMP to state its policy is not to issue permits for any new large natural gas plants (peakers less than 50 MW to support renewables are acceptable if need is proven). This would support reductions of both NOx and GHG emissions.

A simple straight line extrapolation from 1990 levels by 2020 to 80 percent below 1990 levels by 2050 yields 40% percent below 1990 levels by 2035. Thus this AQMP must show how it is on track to reduce GHG emissions to 40% percent below 1990 levels by 2035, the final target date in this plan (and the SCAG RTP).

Thus it is time for SCAQMD to end support for natural gas, whether it is for large natural gas power plants, hot water heaters, or even some industrial uses, which could be supplied by solar hot water, especially concentrating solar. State goals are zero net energy new buildings (residential by 2020 and commercial by 2030). SCAQMD should support this by all feasible control measures, plus investigate how to require this on sales.

We also call to SCAQMD's attention Sierra Club California's formal opposition to new licensing of all new natural gas-fired electrical generation power plants (larger than 50 MW). The only exceptions are permitting of certain technologies using natural gas fuel (such as cogeneration plants, renewables with natural gas backup, large fuel cell facilities, biogas wheeling) only if they significantly reduce fossil fuel consumption and carbon emissions and protect air quality.

AAA - 1

This discussion has important implications for control measures, especially those that must begin now, because of the extremely slow turnover of residential, commercial, and government buildings. Some examples of such control measures would be as follows:

- Requiring solar PV electricity generation for new, major remodels, and sales of residences, commercial, industrial, and government buildings.
- Requiring solar thermal hot water generation for new and major remodels of residences, commercial, industrial and government buildings.
- Requiring solar thermal hot water generation for new swimming pools.
- Requiring industrial processes to install energy efficiency measures and convert as rapidly as possible to solar thermal hot water generation wherever feasible.
- Requiring all new and major remodels of all large commercial, industrial and government buildings to install additional solar thermal generation to supply heat in the winter and operate absorption chillers for cooling in the summer.
- Requiring district heating and cooling wherever feasible.
- Requiring use of waste heat and co-generation where feasible from fuel cells or other sources of heat in large commercial, industrial and government buildings.
- Requiring fleets to go to zero emission vehicles, such as battery electric vehicles charged by solar panels, or fuel cells fueled by hydrogen produced by solar electricity.
- Requiring electric vehicles charging stations to be installed in all businesses and commercial buildings above a minimum size.

AAA - 2

Mitigations for GHG effects of the use of natural gas need to be expanded. For example, Control Measure INC-01 must be amended to include efficiency and solar thermal for hot water and industrial processes. There also need to be additional control measures mandating implementation of the above requirements.

We oppose any fossil natural gas used in relation to Control measures IND-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-06, and ADV-07, which have the potential to require the use of alternative fuels. If natural gas is involved, it is erroneous to state in PEIR 4.2-47 that: "Alternative fuels generate less GHG emissions when combusted compared to gasoline and diesel and generate less GHG emissions from production when compared to petroleum products. Therefore, no increase in GHG emissions is expected from the use of alternative fuels and no significant impacts are expected."

The reason for the Club's opposition is the latest science: "Using all available information and the latest climate science, we conclude that for most uses, the GHG footprint of shale gas is greater than that of other fossil fuels on time scales of up to 100 years. When used to generate electricity, the shale-gas footprint is still significantly greater than that of coal at decadal time scales but is less at the century scale. We reiterate our conclusion from our April 2011 paper that shale gas is not a suitable bridge fuel for the 21st Century." – from "Venting and leaking of methane from shale gas development," by Robert W. Howarth, Renee Santoro & Anthony Ingraffea, *Climatic Change* (2012) 113:537–549.

In addition, we suggest that the urgency of reducing climate change and GHG emissions be added to: EDU-01: FURTHER CRITERIA POLLUTANT REDUCTIONS FROM EDUCATION, OUTREACH AND INCENTIVES:

AAA - 3

The scientific consensus is that humanity has only a few years to divert from the fossil fuel path before irreversible tipping points are passed and climate change becomes runaway climate chaos. We are grateful AQMD has recognized this challenge and we call for redoubling of GHG reduction efforts.

Thank you for the opportunity to comment.

Jim Stewart, PhD, Chair
Sierra Club Angeles Chapter Global Warming, Energy & Air Quality Committee
213-487-9340 Fax: 310-362-8400 Cell: 213-820-4345

Responses to Comment Letter AAA
Sierra Club Angeles Chapter

Response to Comment Letter AAA-1:

The primary purpose of the 2012 AQMP is to develop control strategies that bring the Basin into compliance with the federal fine particulate standard. We are working with the State in helping achieve the goals of S-3-05. The jointly developed document between SCAQMD, San Joaquin APCD, and the ARB “Vision for Clean Air: A Framework for Air Quality and Climate Planning” shows pathways on how we can achieve 2050 GHG reduction levels. As shown in the document there is not a single pathway that can be taken to meet the GHG goals and further development and implementation of transportation technologies is needed.

Mandating the requirement that no new natural gas powered power plants greater than 50MWs be built might not make the implementation of renewable energy sources possible. In addition, it is proven that natural gas provides cleaner combustion than gasoline and diesel combustion. The discussion below describes the intermittency that renewable energy sources add into the grid. There is a need to develop technologies at a faster rate that can help provide a more reliable grid with renewables without relying upon fossil generating sources.

Response to Comment Letter AAA-2:

The AQMD recognizes the clean air benefits renewable energy provides to both the electric power grid and other services such as hot water heating. Chapter 10 of the AQMP addresses the implementation of the States 33% renewable portfolio standard along with the benefits increased efficiency provides on reducing fuel and energy demands. This chapter shows the total energy consumption in Sothern California was near 2.1 quads in 2008 and is expected to show a slight 0.1 quad increase by 2023. However, the slight increase in projected energy use in Southern California will be met with an increase in energy prices; in 2008 close to \$54 billion was spent on energy and the projected cost of energy consumption in 2023 is \$74 billion. Overall the projected 5% increase in energy consumption is going to be met with a 27% increase in energy prices. As mentioned within this chapter, significant implementation of renewable energy coupled with the transportation system will help lower emissions, reduce impacts from volatile energy prices, help localize dollars spent on energy, and provide some isolation from increasing energy costs.

The AQMD endorses solar power as a clean air solution to help provide emission free electricity to residences and businesses whenever feasible. We have been an early supporter of implementing new solar technologies. At the AQMD headquarters, we currently have over 180kW of solar panels installed that are demonstrating three different solar technologies. Additionally, we are funding and undertaking several

technology demonstration projects that help address the limitations of solar, such as, coupling solar power production with energy storage to help with intermittency. We also promote the benefits electrification technologies provide to clean the air such as electric vehicles, and as mentioned earlier, advocate for the electrical supply to be from clean air sources such as renewables.

The prices of solar panels has come down nearly a third in the past couple of years due to less expensive ways to manufacture polysilicon, an increase in solar manufacturers, and expiring solar incentives in other countries. Resulting price declines have made PV solar very competitive with conventional generating technologies. This decline in prices has helped implement this technology in Southern California as there are now many solar installation companies that employ thousands in this sector. The recent increase in rooftop solar PV installations does not show any indication of slowing down in the near future since financing mechanisms have become available along with local incentives and federal tax credits. Additional incentives for solar installations are also likely in the near future as a portion of the revenues utilities start to receive from the CARB GHG Cap and Trade program under AB 32.

Unfortunately, solar power does not currently provide a standalone solution to providing all the electrical generation needs for Southern California. Until the intermittency problem is addressed, large storage technologies, and increased panel efficiencies become more cost effective, existing natural-gas fired power generating technologies are required to provide base loads, ramp rates, and other ancillary services such as frequency regulation to ensure a stable and reliable grid. Additionally, the clean air benefits renewable energy sources such as solar power provides in Southern California will be best realized as transportation technologies such as electrification are implemented at a faster rate.

In a Vision for Clean Air: A Framework for Air Quality and Climate Planning biofuels was presented as a one component among several to meet the GHG goals of the State. The use of biofuels does not typically provide an advantage in reducing criteria pollutants if they are combusted in standard IC engines such as diesels. Therefore in the document it was stated “In the longer-term, to meet the greenhouse gas targets, any combustion-based heavy-duty trucks would rely predominantly on efficiency and renewable and biofuel solutions. However, to achieve the air quality standards in the South Coast, a technology transition to zero- and near-zero emission trucks (e.g., electric, fuel cell, or hybrid with all electric range) to reduce NOx emissions is also needed.” In summary, staff supports the development and implementation of solar energy technologies to the maximum extent feasible and cost-effective. These technologies are not needed to attain the PM2.5 standards, but staff will continue to support solar technologies for attaining the ozone standards in the future

The primary objective of INC-01 is to develop programs that promote and encourage adoption and installation of cleaner, more-efficient combustion equipment with a focus on zero and near-zero emission technologies. The commenter's request to include "efficiency and solar thermal for hot water and industrial processes" in INC-01 is not necessary as those example are in concert with the goals of INC-01.

Some of the alternative technologies stated included using natural gas in cogeneration, using biogas, and large fuel cells. Currently the AQMD is funding demonstration projects with many of these technologies and alternative sources of fuel. Biogas can provide a good replacement for natural gas and has GHG benefits but currently has limited supply sources with high upfront costs to develop new sources. Generation sources using natural gas for fuel cells have many applications to provide a generation source and waste heat recovery for a building. The AQMD is currently installing a demonstration unit to further investigate these benefits. However, large fuel cells are currently very costly and the efficiency of the system with waste heat recovery is similar to a combined cycle power plant. As the costs of these systems come down they can be more widely implemented and have criteria pollutant emission benefits over large power generating facilities.

Some of the proposed control measures are covered under the Title 24 building standards. Many of the other proposed measures we support. However, as stated earlier many of these measures are costly to implement, some are broadly covered in the control measures, some are covered under the regulations or market programs in AB32, and many listed do not directly help bring the Basin into compliance with PM-2.5.

Response to Comment Letter AAA-3:

Many of the components of this educational control measure will reduce both criteria and GHG pollutants.

BBB. RadTech, October 31, 2012



October 31, 2012

Ms. Elaine Change
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Re: Public comments 2012 Draft Air Quality Management Plan

Dear Elaine:

RadTech International is pleased to comment on the draft AQMP. RadTech supports the district's efforts to improve air quality in the Basin without sacrificing a healthy business climate and believes that the implementation of UV/EB technology can help accomplish both goals.

As you know, I am also a member of the district's AQMP advisory committee and have been making comments during those meetings as well. I would like to encourage the district to consider UV/EB technology as one of the many alternatives to achieve clean air standards. The table below gives a picture of the categories where our technology can play a role. A notation is included to differentiate between areas where the technology is currently being used versus areas where the technology is under development but not necessarily commercially available.

- [Rule 1103](#) Pharmaceuticals and Cosmetics Manufacturing Operations **CURRENT UV MARKET**
(Amended March 12, 1999)
- [Rule 1104](#) Wood Flat Stock Coating Operations **CURRENT UV MARKET**
(Amended August 13, 1999)
- [Rule 1106](#) Marine Coating Operations **Some UV and developing applications for UV**
(Amended January 13, 1995)
- [Rule 1106.1](#) Pleasure Craft Coating Operations **Some UV and developing applications for UV**
(Amended February 12, 1999)
- [Rule 1107](#) Coating of Metal Parts and Products **Current production using UV and new developing applications for UV**
(Amended January 6, 2006)
- [Rule 1113](#) Architectural Coatings **Small amount of field applied coatings. Suppliers looking at long term solutions.**
(Amended June 3, 2011)

BBB - 1

- [Rule 1115](#) Motor Vehicle Assembly Line Coating Operations **Proven and some low intensity UV. Future bright for UV**
(Amended May 12, 1995)
- [Rule 1124](#) Aerospace Assembly and Component Manufacturing Operations **Some UV and developing applications for UV**
(Amended September 21, 2001)
- [Rule 1125](#) Metal Container, Closure, and Coil Coating Operations **Many UV lines and proven technology for 2 piece and 3 piece production lines**

(Amended March 7, 2008)
- [Rule 1126](#) Magnet Wire Coating Operations **Currently UV**
(Amended January 13, 1995)
- [Rule 1128](#) Paper, Fabric, and Film Coating Operations **Currently UV**

(Amended March 8, 1996)
- [Rule 1130](#) Graphic Arts **Currently UV**

(Amended October 8, 1999)
- [Rule 1130.1](#) Screen Printing Operations **Currently UV**
(Amended December 13, 1996)
- [Rule 1131](#) Food Product Manufacturing and Processing Operations **Some UV**
(Adopted June 6, 2003)
- [Rule 1132](#) Further Control of VOC Emissions from High-Emitting Spray Booth Facilities **UV depending on source category**
(Amended May 5, 2006)
- [Rule 1136](#) Wood Products Coatings **Currently UV**
(Amended June 14, 1996)
- [Rule 1142](#) Marine Tank Vessel Operations **No UV but some potential**
(Adopted July 19, 1991)
- [Rule 1145](#) Plastic, Rubber, and Glass Coatings **Currently UV**

(Amended December 4, 2009)
- [Rule 1151](#) Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations **Potential UV**
(Amended December 2, 2005)
- [Rule 1164](#) Semiconductor Manufacturing **Currently UV**

(Amended January 13, 1995)

BBB - 1

[Rule 1168](#) Adhesive and Sealant Applications **Currently UV**
(Amended January 7, 2005)

[Rule 1169](#) Hexavalent Chromium - Chrome Plating and Chromic Acid Anodizing
(Repealed October 9, 1998) **Some UV in the form of replacing the metal with a plastic coatings operation to resemble the look of chrome**

BBB - 1

We commend district staff for proposing incentive programs such as INC-01 and INC-02, that encourage voluntary emission reductions. Unfortunately the current proposal does not make these programs available to stationary sources of VOCs. We urge the district to extend the incentives program to VOC stationary sources.

We have seen voluntary conversions to UV/EB technology, even without regulatory drivers. Typical UV/EB materials have VOC contents of less than 50 grams per liter. In contrast, the typical VOC limits in district rules are in the neighborhood of 300 grams per liter. The sources that have voluntarily converted and are achieving emission reductions above and beyond those required by district rules, get little if any, rewards for going the extra mile. Instead, we see incentive programs focusing on mobile sources while stationary sources are impacted by command and control approaches.

BBB - 2

We urge the staff to investigate an alternative approach that is less reliant on NOx reductions and which, may turn out to be more cost effective for industry.

We appreciate your attention to these issues and look forward to a productive rulemaking effort.

Sincerely

Rita M. Loof
Director, Environmental Affairs

Responses to Comment Letter BBB
RadTech

Response to Comment BBB-1:

The District appreciates the hard work that RadTech has invested in promoting cleaner coating technology and continues to support all companies that manufacture and use zero- and near-zero emission technologies. Control measure CTS-02 will focus on select coating, adhesive, solvent and lubricant categories, such as some of the rules listed by commenter, to further limit the allowable VOC content in formulations. Thus, cleaner coating technologies such as UV/EB technology can assist affected industry to comply.

Response to Comment BBB-2:

To meet the ozone standards, it will be important to achieve both NO_x and VOC emission reductions. Based on the carrying capacity developed in the 2007 AQMP and the 2023 emission inventory developed in the 2012 AQMP, there will be a need to reduce NO_x emissions by 65 percent from baseline and 3 percent VOC emissions from 2023 baseline in order to demonstrate attainment of the ozone standards. Thus, INC-01 was developed to target the stationary combustion sources that generate NO_x emissions to assist in the “NO_x heavy” reduction strategy. INC-02, however, does not focus on a particular pollutant or source type so manufacturers of zero- and near-zero emission technology are encouraged to take advantage of the expedited permitting and CEQA preparation benefits from INC-02. Previous incentive programs that have focused on mobile sources generally have done so because the implementing legislation specifies how the money must be spent.

CCC. CA Council for Environmental and Economic Balance (CCEEB), October 31, 2012



California Council for Environmental and Economic Balance
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415-512-7890 phone, 415-512-7897 fax, www.cceeb.org

October 31, 2012

Elaine Chang, Ph.D.
SCAQMD
21865 Copley Drive
Diamond Bar, CA 91765

RE: Second Comment Letter – 2012 Draft AQMP

Dear Dr. Chang,

The California Council for Environmental and Economic Balance (CCEEB) is a coalition of California business, labor and public leaders that work together to advance strategies to achieve a sound economy and a healthy environment. Founded in 1973, CCEEB is a non-profit and non-partisan organization.

Our members have great interest in the Air Quality Management Plan (AQMP), as it serves as the basis for virtually all decisions made by the District with regard to its control strategy. Collectively, our members spend hundreds of millions of dollars with their operations in the South Coast Air Basin and provide jobs to thousands of South Coast residents. Our goal is to work with the District and its Governing Board to help develop an AQMP that:

- Meets state and federal obligations,
- Provides a clear path forward to allow our members and all stakeholders to make sound investment decisions,
- Reduces emissions fairly across different emissions sources, recognizing limits in regulatory authority, cost effectiveness and technological feasibility, and
- Achieves needed emission reductions while protecting the economic vitality of the region.

This letter is CCEEB's second set of written comments on this plan. In addition, we have met with you, your staff and Dr. Wallerstein on numerous occasions as well as with several members of your Governing Board. Throughout all of this interaction, we have seen great improvement to the plan, yet there remain three areas of significant concern.

CCC - 1

Elaine Chang, Dr. P.H.
October 31, 2012
Page 2

Scope

Since this process has begun, CCEEB has expressed its view that this plan should focus on PM_{2.5}. EPA requires the SCAQMD to submit a 2012 AQMP to show attainment of the 24-hour PM_{2.5} standard by 2014. EPA does not require this plan to address ozone. CCEEB recommends that the 2012 AQMP be limited to PM_{2.5}.

CCC - 1

One-Hour Ozone Attainment Demonstration

CCEEB is well aware of the enormous challenge facing the District with regard to ozone, and staff's desire to begin to identify specific control measures that will reduce the size of the so-called "black box" under Section 182(e)(5). CCEEB is also aware of the proposed action by EPA calling for the submittal of a revised AQMP providing for attainment of the 1-hour ozone standard. The proposed action was published in the Federal Register on September 19, 2012, and the comment deadline was recently extended to November 8, 2012. Following a review period to respond to comments, we expect EPA to finalize the rule in 60 to 90 days. It is our understanding that the District would then have one year to submit the 1-hour attainment plan to EPA.

CCC - 2

Given this time frame, and the fact that we do not even have a final rule, we see no logical reason to include the 1-hour ozone attainment demonstration in the 2012 AQMP. Rather, we see this as an opportunity to gain a full understanding of the technological feasibility and cost effectiveness of measures necessary to meet the 1-hour standard. We recommend submittal of the 1-hour ozone attainment demonstration to EPA at a time much closer to its actual due date.

RECLAIM

CCEEB is highly concerned with the possibility of having multiple rulemakings with multiple shaves in the NOx RECLAIM program over the next few years. We strongly recommend that the District address any shave to the NOx RECLAIM program through one rulemaking based on a control measure in the 1-hour ozone submittal. The Southern California economy is slowly recovering from recession. Particularly in this fragile period, businesses in the RECLAIM program want greater certainty in order to plan for required emission reductions and to assess the market. This District can best address the need for planning certainty through one rulemaking.

CCC - 3

As we understand the current 2012 AQMP proposal, facilities would face a potential 2-3 tpd shave in 2015 as a contingency measure if attainment for PM_{2.5} is not met by end of 2014. In a second phase, staff would determine the amount of the shave through an extensive BARCT analysis to meet the requirements of the proposed SIP call for the 1-hour ozone standard. This shave would include the 2-3 tpd Phase I reductions if PM_{2.5} attainment is met. An additional shave could be included as a control measure in the 2015 AQMP for ozone. Because so little is known about these shaves (e.g., percent reduction, timing, impacted facilities, etc.), a high level of uncertainty results for those in the program, which in turn severely jeopardizes business decisions necessary to establish long-range capital and compliance plans.

Elaine Chang, Dr. P.H.
October 31, 2012
Page 3

With regard to the NOx RECLAIM program, CCEEB recommends the following actions:

- Base any shave on an extensive BARCT analysis.
- Address any shave to the program through one rulemaking.
- Remove RECLAIM as a contingency measure in the 2012 AQMP. The 14 to 1 ratio to achieve credit for PM reductions from NOx makes this control measure cost prohibitive, even as a contingency measure.
- Shift the currently proposed Phase 2 RECLAIM shave from the 2012 AQMP to the 1-hour ozone submittal expected to occur in just over a year. Include a full BARCT analysis to determine the appropriate level of the shave.
- Provide assurance to industry, to the extent possible, that it is the District's intent that the control measure in the 1-hour ozone submittal will satisfy any NOx RECLAIM measure in the 2015 ozone AQMP.

CCC - 3

Thank you for considering our views. We would be pleased to discuss our comments with you and your staff at any time.

Sincerely,



William J. Quinn
Vice President & Chief Operating Officer

cc: Dr. Barry Wallerstein
Dr. Phillip Fine
Mr. Gerald D. Secundy

Responses to Comment Letter CCC
CCEEB

Response to Comment CCC-1:

Staff believes that given the short timeframe and the fact that a significant fraction of the large amount of emission reductions needed to meet the 8-hour ozone standard by 2023 is still from yet to be specified “black box” measures, it is important to identify specific measures to achieve the needed reductions as soon as possible. Comments and potential litigation on U.S. EPA’s approval of the 2007 ozone SIP have called into question the relative size and reliance on “black box” measures to demonstration ozone attainment. Making SIP commitments for reductions when they are identified as feasible demonstrates AQMD’s commitment to reduce reliance on “black box” measures as attainment deadlines approach.

Response to Comment CCC-2:

A requirement for the submittal of an attainment demonstration for the revoked 1-hour ozone standard has been proposed by U.S. EPA, and the submittal will be due by late 2013 or early 2014. As the commenter is aware, the emissions inventory, control strategy and RACT/RACM analysis has already been developed for the 2012 AQMP, and because attainment of the 1-hour standard is based on the same strategy as that proposed for the 8-hour ozone standard (although both Plans rely on “black box” reductions). As such, staff was able to complete an attainment demonstration for the 1-hour ozone standard as an Appendix to the 2012 AQMP. Staff believes that there is no reason to wait until the 1-hour ozone attainment demonstration is due given that no new measures are being proposed and the work has been completed. Utilizing the current 2012 AQMP emissions inventory, modeling framework and public process is the most efficient use of resources and time. Furthermore, there is little current or expected guidance from U.S. EPA on the technical approach to the 1-hour ozone attainment demonstration. Staff believes it has developed the most reasonable approach, and that submitting the 1-hour ozone attainment demonstration with the 2012 AQMP will be the best way to promote and get feedback on this approach from U.S. EPA.

Response to Comment CCC-3:

The NO_x shave (Phase I of CMB-01) will target surplus unused RTC’s currently in the NO_x RECLAIM market as a contingency measure to satisfy CAA requirement to be triggered if the NAAQS is not attained by 2014. This is a necessary contingency measure because the excess of reductions from wood burning curtailment is not enough to meet the EPA requirement of one-year’s worth of emission reductions. The two ton per day target represents approximately 25 percent of the un-used RTC’s in the RECLAIM universe. The two ton per day shave proposed in the 2012 AQMP is expected to have only a minor impact on the program as a whole. As such, staff plans to commence the rule amendment process in late 2012 targeting a midyear 2013

adoption date. While staff acknowledges that the economic turndown post 2008 had an impact on the RECLAIM market. The current RECLAIM market has approximately one third (8 TPD) of the total RTC's not being utilized. Staff recognizes that this is an aggressive timetable; regardless every effort will be made to expedite the rule amendment process. The CAA requires that contingency measures be fully adopted and in place prior to the attainment date. While the contingency measure is targeted for implementation in 2015, U.S. EPA will take into consideration the progress (or completion) of the rule amendment when evaluating the Draft 2012 AQMP for completeness prior to making its recommendation on the plan's approval. Staff believes that as long as the rule making process is well under way with a reasonable date established for the Public Hearing, that U.S. EPA will not consider this as a barrier to the evaluation and approval process.

The two tons per days reduction proposed for the 1st phase of the RECLAIM shave will be incorporated as a contingency emissions reduction measure to satisfy CAA requirement to be triggered if the NAAQS is not attained by 2014. If not triggered, the 2 TPD shave will be rolled into the proposed Phase II BARCT rule amendment process. This process will undergo a full assessment of available technology, costs, affordability, and market impacts to the RECLAIM stakeholder community, as well as a fully transparent public evaluation of the potential for emissions reductions. The BARCT assessment phase of the NOx RECLAIM shave is to be completed in 2015 and fully achieved by 2020.

DDD. The Port of Los Angeles, Port of Long Beach, October 31, 2012



October 31, 2012

Barry Wallerstein, D. Env.
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Re: Supplemental Comments on the Revised Draft 2012 Air Quality Management Plan

Dear Dr. Wallerstein:

The Port of Long Beach and Port of Los Angeles (ports) are submitting this comment letter to add to comments previously submitted on August 30, 2012.

As members of the South Coast Air Quality Management District's (AQMD) 2012 Air Quality Management Plan (AQMP) Advisory Committee, the ports have worked with AQMD staff to provide comments on the draft plan, including the emissions data being used. Included in this effort, ports' staff provided the 2008 base year emissions inventories for the port sources based on the most recent methodologies agreed upon by the Technical Working Group (TWG) in the ports' 2011 air emissions inventories.

As noted in the Draft AQMP, "*An effective AQMP relies on an adequate emission inventory.*" Discrepancies exist between the emissions inventories prepared by the ports and the inventory prepared by the AQMD. The emissions shown in the Draft 2012 AQMP are different from those prepared by the ports in cooperation with the AQMD, California Air Resources Board, and Environmental Protection Agency, during development of the San Pedro Bay Standards. If the AQMD's emissions projections for achieving attainment are incorrect, the concerns expressed in our August 30 comments are greatly increased. The emissions projections drive both the Measure IND-01 analysis and the PM2.5 analysis. The basis for the Draft 2012 AQMP emissions projections is impossible to determine, because the assumptions and methodologies (including control factors and growth factors) are not disclosed.

DDD - 1

Port of Los Angeles • Environmental Management
S. Palos Verdes Street • San Pedro • CA 90731 • 310-732-3675

Port of Long Beach • Environmental Planning
925 Harbor Plaza • Long Beach • CA 90802 • 562-590-4160

The San Pedro Bay Ports Clean Air Action Plan was developed with the participation and cooperation of the staff of the US Environmental Protection Agency.

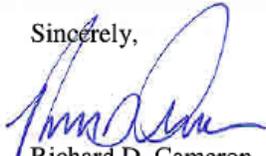
Dr. Wallerstein
October 31, 2012
Page -2-

Additionally, it concerns the ports that the AQMP has made a commitment to Measure IND-01 before AQMD has released details of its intended implementation actions against the ports, or the socioeconomic and other analyses for such actions. Elaine Chang admitted at the AQMD's October 24, 2012, meeting that it is unknown what a port compliance plan would include and that AQMD would develop it during a future rulemaking process. This violates due process, to commit to implement an AQMP measure without disclosing what AQMD's actions against the ports will be under the backstop measure, as it deprives the public and the ports of the opportunity to review and comment to influence the decision, prior to committing to it in the AQMP.

DDD - 2

This further demonstrates that the collaborative process established by the ports and the air quality regulatory agencies remains the most appropriate forum to identify and implement strategies to reduce emissions from port-related sources.

Sincerely,



Richard D. Cameron
Director of Environmental Planning
Port of Long Beach



Christopher Cannon
Director of Environmental Management
Port of Los Angeles

AT:s

cc: Peter Greenwald, South Coast Air Quality Management District
Elaine Chang, South Coast Air Quality Management District
Henry Hogo, South Coast Air Quality Management District
Randall Pasek, South Coast Air Quality Management District
Cynthia Marvin, California Air Resources Board
Roxanne Johnson, Environmental Protection Agency, Region 9
Robert Kanter, Port of Long Beach
Dominic Holzhaus, Deputy City Attorney, City of Long Beach
Joy Crose, Assistant General Counsel, City of Los Angeles

Responses to Comment Letter DDD
The Port of Los Angeles, Port of Long Beach

Response to Comment DDD-1:

The commenter states that the Ports' specific emission inventories prepared by the AQMD are different than those prepared by the Ports and the assumptions and methodologies are not disclosed. AQMD staff disagrees with this statement. The inventory development, including the methodologies and assumptions were shared in a September 5th email to Port staff. In the email we explained that the Ports' 2008 inventory (updated by Port staff using 2011 emission inventory methodologies) was used as received as the baseline inventory. All future year projected inventories were generated from the 2008 baseline inventory and were calculated using growth and control assumptions consistent to those in CARB's approved mobile source inventory models. In summary, the Ports' emission inventory shown in the Draft 2012 AQMP was developed using the Ports' official inventory as the foundation for the baseline and forecasted inventories and is appropriate to use in the PM2.5 and Measure IND-01 analyses.

Response to Comment DDD-2:

The AQMD staff disagrees with the comment that the inclusion of Control Measure IND-01 in the 2012 AQMP violates due process. This measure would establish targets for NO_x, SO_x, and PM_{2.5} for 2014 that are based on current and projected emission inventories resulting from adopted rules and other measures such as railroad MOUs. In addition, assumptions used in the development of emission inventories for port-related sources such as ocean-going vessel speeds also contribute to the emission targets. Based on current and future emission inventory projections these rules and measures will be sufficient to achieve attainment of the 24-hr federal PM_{2.5} ambient air quality standard by 2014. Requirements adopted pursuant to this measure will become effective only if emission levels exceed the established targets. Once triggered, the ports will be required to develop and implement a plan to reduce emissions from port-related sources to meet the emission targets over a specified time period. The time period to achieve emission targets and any requirements to maintain attainment will be established during rulemaking.

Actions required by the ports under IND-01, have been furthered outlined in the revised control measure write-up. Additional clarification has also been provided on emission targets, triggers, cost-effectiveness and feasibility. However, it is beyond the scope of the control measure write-up to completely establish every detail that would normally be covered thorough a rule development process spanning a several month process. Specific rule requirements are best developed using a collaborative process where AQMD staff works with all stakeholders such as affected sources, environmental community, other agencies, and interested public members. Through the rule

development process the AQMD staff will establish a working group, hold a series of working group meetings, and hold public workshops. In addition, the emissions inventory and targets will reviewed and may be refined if necessary.

EEE. California Small Business Alliance, November 12, 2012



November 12, 2012

Elaine C. Chang, Dr. P.H.
Deputy Executive Officer
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, CA 91765

California Autobody Association

California Cleaners Association

California Film Extruders & Converters Association

California Furniture Manufacturers Association

California Independent Petroleum Association

Construction Industry Air Quality Coalition

Korean Drycleaners-Laundry Association of Southern California

Metal Finishing Association of Southern California

Printing Industries of California

Screenprinting & Graphic Imaging Association International

Southern California Rock Products Association

COMMENTS ON THE DRAFT 2012 AQMP

Dear Dr. Chang:

The California Small Business Alliance (Alliance) is a non-partisan coalition of California trade associations committed to providing small businesses with a single constructive voice before air quality management districts and other environmental regulatory agencies. As active participants in the Air Quality Management Plan (AQMP) Advisory Group, Alliance members have been continuously engaged in the development of the plan. Our members were also participants in the review of the report on the health impacts of particulate matter and the effects of other major pollutants in the South Coast Air Basin (SCAB), in conjunction with the preparation of the revised plan. Finally, Alliance members have been actively engaged in the ongoing dialog with other stakeholders representing a broad cross section of business interests, neighborhood community organizations, and local, state and federal agencies. Now, with the last round of public workshops involving the draft plan about to take place, Alliance members want to take this opportunity to offer our comments prior to the plan being presented to the governing board for review and adoption consideration.

A Fair Share Approach to Clean Air

In our comment letter on the 2007 AQMP, we credited the district for their efforts in helping to improve the air quality in the SCAB over the past 30 years. We also noted that these year-over-year improvements were due in large measure to the unwavering commitment by business owners to improve their processes and increase operational efficiency more for competitive reasons than because of increased regulatory burdens. Finally, in our letter we commented on the disturbing inequities in the plan with regard to the inequitable commitments by other agencies - particularly the California Air Resources Board (CARB) and the U. S. Environmental Protection Agency (EPA) - for achieving their portion of future emissions reductions as a condition of meeting targeted air quality standards. Regrettably, we see that these inequities have carried over into the 2012 AQMP.

EEE - 1

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Website: <http://www.calsmallbusinessalliance.org>

Elaine C. Chang, Dr. P.H.
 South Coast Air Quality Management District

Re: COMMENTS ON THE DRAFT 2012 AQMP
 November 12, 2012

With each revision of the AQMP emissions from stationary sources (particularly small businesses) have become less of a factor in solving the overall complex problem of improving air quality in the SCAB. It should be common knowledge that timely attainment of federal standards can be achieved only when all agencies - not just the SCAQMD - assume their fair share of reducing emissions from the sources under their control.

EEE - 1

The 2012 AQMP, whether it is a plan containing specific control measures for only PM_{2.5}, or a plan which also includes explicit control measures for Ozone, is not likely to include similar comprehensive strategies and commitments by state and federal agencies to reduce emissions under their jurisdiction unless action is taken by the staff and governing board to shed light on the reluctance of these two agencies to be more proactive and engaged in reducing emissions. Unless this happens, the plan will contain only CARB's and EPA's *vision for clean air* in future years. And, unfortunately, the vision isn't so clear as to offer businesses, especially small businesses, some idea of how much it will add to the cost of doing business in California.

The Draft Socioeconomic Impact Report, while claiming to be "*...a rigorous application of statistical analysis and computer modeling to assess the potential impacts of the overall suite of control measures*" skillfully sidesteps the basic need for business owners to be able to anticipate the cost of doing business in the foreseeable future. The only explanation which the Staff offers is to write that "*...competitiveness of individual business sectors will be analyzed in detail during ensuing rulemaking processes*" leaving those in the business community questioning just how rigorous, reliable and useful the statistical analysis and computer modeling really is.

EEE - 2

In the Draft Socioeconomic Impact Report, the Staff write, in part, that: "*the total benefit of the Draft Plan is expected to exceed \$10.7 billion annually since not all of the benefits associated with the implementation of the Draft Plan can be quantified.*" Staff asserts that quantified health benefits only account for reduced exposure from PM_{2.5}, while those from decreased exposure to Ozone and nitrogen dioxides are not included. In conclusion, Staff writes that "*further research is needed before these benefits can be quantified.*" Alliance members have maintained in previous AQMPs, as well as in this one, that if agencies are unable or unwilling to quantify the benefits or the costs of the control measures they seek to enforce, it is irresponsible and unconscionable for them to impose such measures on the communities under their jurisdiction.

EEE - 3

The Potential Effects of the AQMP on Employment

In much the same fashion as with the 2007 AQMP, the Draft 2012 AQMP proclaims to be an indispensable ingredient in the recipe for a healthy environment and economy going forward. Then, and now, we believe we have good reason to question the reliability of the data and assumptions used to compile the socioeconomic impact reports of both AQMPs.

Elaine C. Chang, Dr. P.H.
South Coast Air Quality Management District

Re: COMMENTS ON THE DRAFT 2012 AQMP
November 12, 2012

Both AQMPs were proclaimed to be job creators. In fact, the authors of the 2007 AQMP wrote that "... without the 2007 AQMP, jobs in the four-county area are projected to grow at an annual rate of about 0.93 percent between 2007 and 2025, which would be approximately 95,000 jobs per year. Cleaner air from the 2007 AQMP would result in an additional 61,409 jobs created per year." In spite of the optimistic projections of the district's economists, computer modelers and consultants, hindsight and the National Bureau of Economic Research, tells us that December 2007 marked the date of the worst economic downturn in the United States since the Great Depression; a phenomena that was missed completely in the development of the 2007 Socioeconomic Impact Report. Another look back in history tells us that the Great Recession officially ended in June 2009, yet in California the devastation continues with double digit unemployment still existing in all but one of the four counties under the district's jurisdiction. Well over a million people are still unemployed or underemployed in the region. In Southern California, a few small businesses are selectively hiring, but most are still struggling to stay afloat.

EEE - 4

While we were encouraged to read that the district intends to ".... work closely with businesses and industry groups to identify the most cost-effective and efficient path to meeting clean air goals while being sensitive to their economic concerns," history tells us that whenever rulemaking involves a control measure which has been included in a State Implementation Plan (SIP), it is too late because the Staff seems to lose whatever discretion they might have had to be sensitive to business because the approved AQMP and SIP takes precedence over all else.

With the district acknowledging that while job gains from cleaner air would benefit all wage groups, all groups would nevertheless experience jobs forgone from control measures. Despite Staff's good intentions to evaluate possible negative impacts of certain control measures during individual rule development, we remain convinced that this too late in the game to be sensitive to business. Analysis of this type must begin before control measures are put into the SIP and become binding legal commitments to the federal government, regardless of the cost and administrative burden they impose upon struggling small businesses.

EEE - 5

An AQMP for PM2.5 or for PM2.5 and Ozone

We appreciate Staff's forthrightness in alerting us to the fact that the Draft AQMP for both PM2.5 and Ozone would carry a higher cost than the PM Strategy Only Alternative. Apparently, Staff also believes it would produce greater reductions of both pollutants, as well. Since the Alliance is part of a broader coalition of business interests, we will defer any direct comments on this subject to correspondence from the larger coalition.

Health Impacts and Benefits of the 2012 AQMP

Since a representative of the Alliance was seated on the AQMP Advisory Council, for the purpose of reviewing and commenting on Appendix I, and since a letter was submitted earlier reflecting our views on this subject, we believe we have made our views a matter of public record and will refrain from offering any additional comments.

Elaine C. Chang, Dr. P.H.

South Coast Air Quality Management District

Re: COMMENTS ON THE DRAFT 2012 AQMP

November 12, 2012

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Elaine C. Chang, Dr. P.H.
South Coast Air Quality Management District

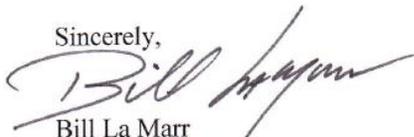
Re: COMMENTS ON THE DRAFT 2012 AQMP
November 12, 2012

Refinements to the Socioeconomic Report

While we appreciate Staff's inference that the Socioeconomic Impact Report in any AQMP is typically a contentious subject. Further, we appreciate that Staff has itemized a number of enhancements that they might consider investigating in future years with a view towards refining future reports. These commitments and good intentions, however, will do nothing for the 2012 AQMP. What is even more disconcerting is that small businesses are hurting TODAY. Sadly, some will not be around for another AQMP because of a variety of factors, including the rulemaking that is certain to result once this AQMP has been approved and incorporated in the new SIP. In past AQMP Advisory Group sessions, the Staff has shown a propensity for acknowledging the concerns expressed by representatives of the business community over cost-effectiveness, affordability, and technical viability of certain control measures, but never really resolving the issues. And this gives us little comfort that things will be different in the future. One recent example of this failing is a recent verbal commitment that was made by a senior staff member at the last public workshop on this very Socioeconomic Impact Report. It was during the proceedings that the staff member committed to involving the U. S. Small Business Administration in the development of the next AQMP. We hope that by not seeing this commitment in the last draft of the AQMP that it is nothing more than an oversight, and not a change of heart.

In closing, I want to express my appreciation, and that of the other members of the Alliance, for inviting us to be represented on the AQMP Advisory Group, and for allowing us to comment.

Sincerely,



Bill La Marr
Executive Officer

cc: Joe Cassmassi, Planning & Rules Manager - SCAQMD

Responses to Comment Letter EEE
California Small Business Alliance

Response to Comment EEE-1:

Fair share is one of the design principles the SCAQMD Governing Board directed the staff to pursue in developing AQMPs. It should also be noted that there are other design principles such as taking the most efficient path to clean air, choosing all feasible measures, and minimizing socioeconomic impacts.

There are also state law requirements to implement all feasible measures. One of the principles is the same as noted by the commenter to promote fair share responsibility. The development of the control measures were guided by a list of criteria located in Chapter 4 of the 2012 AQMP that includes evaluating proposed control measures based on cost effectiveness.

For the PM_{2.5} control strategy, wood burning curtailment was determined to have minimal cost impact (see Chapter 6 of the 2012 AQMP) and is an all feasible measure because wood burning curtailment is successfully implemented elsewhere in California, such as Bay Area and San Joaquin Valley. With wood burning curtailment, the 24-hour PM_{2.5} standard will be achieved by 2014 with an anticipated excess emission reduction that will be applied to contingency requirement compliance. Thus, no other PM_{2.5} reduction from other agencies is necessary. CEQA Alternative 3 also illustrated that if the attainment demonstration relies on mobile source NO_x/PM_{2.5} reductions, the Basin will not meet the PM_{2.5} standard until 2017 and at a much higher cost to the business community, including small business.

With regard to the ozone measures, the 2012 AQMP provides 11 tons per day (tpd) of NO_x emission reductions from stationary (3 tpd) and mobile (8 tpd) sources. This reduction is five percent of the estimated NO_x emission reductions of 200 tpd needed to achieve attainment of the 8-hour ozone standard (80 ppb) by 2023 and the stationary source contribution is less than 30 percent of total proposed reductions. Even more NO_x reductions will be necessary to meet the lower 8-hour ozone standard of 75 ppb by 2032. Therefore, in order to demonstrate attainment of the 8-hour ozone standard, a substantial amount of NO_x emission reductions will be necessary. In any case, since mobile sources contribute 80 percent of the total NO_x emissions, we do agree that it is imperative that reducing NO_x emission from mobile sources thru agencies who have primary authority over regulating mobile source emissions, such as CARB and U.S. EPA, need to do their fair share of reductions.

Response to Comment EEE-2:

Table 3-1 of the Draft socioeconomic report shows the cost that each industry would experience in order to implement control measures in the 2012 AQMP. The entire Chapter 6 is devoted to competitiveness issues in terms of region's share of national

jobs, cost of doing business, delivered prices, imports, and exports. As each measure goes through rulemaking, more detailed data will be developed. Thus, more detailed analyses can be rendered.

Response to Comment EEE-3:

Quantifiable clean air benefits accrued to ozone and nitrogen dioxides are not analyzed in the 2012 AQMP due to resource constraints. Unquantifiable benefits (known, suspected, or unknown effects), as denoted in Figure 3-4, will be the focus of future research.

Response to Comment EEE-4:

Socioeconomic analyses of the AQMPs examine the impact of an AQMP relative to the baseline projection of the underlying economy. The impact reflects changes from the baseline, but is not part of the baseline. Historical events, such as the Great Recession, were considered in constructing the baseline. The AQMD is cognizant of the lingering unemployment due to the Great Recession and wants to make sure that implementation of the 2012 AQMP not render adverse impacts on the local economy, as evidenced in the Socioeconomic Report.

Response to Comment EEE-5:

The benefit of cleaner air exceeds the cost of control measures, as shown in the socioeconomic report. When considering the total impact of cost and benefit on the local economy, the socioeconomic report shows that all wage groups would experience job gains.

FFF. SASOL, November 12, 2012



November 12, 2012, 2012

Dr. Elaine Chang
Air Resource Board
Sacramento, CA 95811

Dear Dr. Elaine Chang,

Subject: Air Resource Board Plan

Sasol North America appreciates the opportunity to comment on the proposed rulemaking considered for the LVP-VOC solvents discussed during the California Air Resource Board workshop on September 12, 2012.

As you know, Sasol North America produces surfactants, surfactant intermediates, long chain alcohols as well as some highly refined hydrocarbon solvents and paraffins. These products are used in many consumer products and as a result we have been actively involved in past California Air Resource Board consumer product workshops. We hope our efforts have proved helpful to CARB staff in crafting mutually acceptable regulations that help reduce air pollution in the state. This letter provides Sasol North America's comments on the proposal to change the consumer product's LVP-VOC exemption.

Sasol North America strongly urges CARB not to remove the LVP-VOC exemption from Consumer Products. We believe that the enforcement concern on multi-purpose solvents and paint thinner products that introduced the LVP-VOC issue can be easily handled by the other proposed solutions presented by CARB during the workshop. These solutions; product definition changes or most restrictive limit provisions changes, are the preferred solution since they clarify the regulation requirements, resolve the issue with the category in question, and have minimal regulatory ramifications for other consumer products. Sasol is in favor of using these approaches rather than changing the LVP-VOC exemption.

The proposal by SCAQMD to change or remove the LVP-VOC exemption is strongly opposed by Sasol North America for the following reasons.

1. Changing the statewide LVP-VOC exemption for the purpose of resolving an issue with one or two consumer product categories is a needlessly severe response with wide ranging repercussions. Changing the LVP-VOC criteria would eventually affect other consumer products and result in a wholesale re-evaluation of all consumer product categories that use LVP-VOCs. The argument that the LVP-VOC change would only affect the multi-purpose solvents and paint thinner products is ultimately untenable in today's environmental and litigious society.
2. One of the comments during the workshop was that the existing vapor pressure requirement for LVP-VOCs is "arbitrary" and thus should be reviewed (and changed). The argument that a regulatory requirement is arbitrary is misleading. SCAQMD's paperⁱ lists differences in VOC regulations between the United States, European Union and

FFF-1

FFF-2

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- Canada, and Green Seal. What was not noted is that these regulatory differences reflect the different requirements and goals put on the regulatory bodies by the individual governments or sponsors. For the California Air Resource Board, there is a requirement for regulations to be both technological and commercially feasible. The LVP-VOC exemption was a result regulatory staff working with industry input. The claim that CARB's LVP-VOC regulations, including the LVP-VOC vapor pressure cut-off, are "arbitrary" unfairly and wrongly dismisses the significant efforts of CARB staff and industry that resulted in these regulations and does not seem to us as a valid argument. FFF-2
3. An associated argument is that the LVP-VOC materials have been demonstrated to be volatile by SCAQMD. This is not new information. The argument that these materials were not known to volatilize is refuted by the material designation in the existing regulations as "low vapor pressure *volatile* organic compounds" (LVP-VOCs). SCAQMD desires that "volatile" be redefined by whether a material evaporates within a six month period in a non-climate controlled area with a significant temperature and humidity range (or by a quicker laboratory test that mimics these results). We disagree with this approach for the following reasons FFF-3
- a. The main issue is whether the "volatile" materials are available for ozone formation. SCAQMD assumes that available means the same as volatile. However, many LVP-VOC materials have been tested for biodegradability and are considered readily biodegradable. This means within 28 days they undergo significant decomposition, converting to CO₂, water, or biomass. This is certainly the case for most materials that go down the drain, but also the case for some products that are used and absorbed into substrates. The 180 day "volatility" period proposed by SCAQMD exceeds this period by a factor of six and appears to be set up to exclude substrate or biodegradability issues. This unfairly assumes LVP-VOC availability to make ozone when it is not.
 - b. In order to obtain reproducible results, the ASTM D-3539 test method for determining evaporation rates specifically sets limits on the liquid amount, surface area of the fluid, temperature, humidity, air flow, and specifies repeat determinations. This was not done in the SCAQMD study or at least was not apparent from the paper. In fact, SCAQMD gives ranges some of the important physical variables. This is not conducive to obtaining reproducible results.
 - c. We note that this approach will raise severe issues for the MIR regulations as well, since MIR testing does not look at availability. For example, it is claimed in the SCAQMD paper that glycerol is "clearly non-volatile" and is "not available to contribute to ozone formation". This is in opposition to the reported MIR value for glycerol of 3.15, a significant discrepancy since an MIR value of 3.15 is considered high and tends to discourage its use by formulators. Thus a change in the LVP-VOC regulations to a volatility range may affect the MIR regulations as well.
4. We note in passing a discrepancy in the proposed VOC method change; to "consider specifying that VOC content is defined as total volatile content as determined using U.S. EPA Method 24..." (see slide 32 of the public workshop slides). EPA method 24 however is described in the SCAQMD paper "unable to yield reproducible VOC content results...". In fact the associated ASTM method D-2369 referenced by EPA method 24 FFF-4



- refers to several other test methods for determining VOCs for different types of materials.
5. It is uncertain whether removing the LVP-VOC exemption would result in significant VOC emission reductions. Re-evaluation of the technological and commercial feasibility of affected products may actually result in higher ozone production potential previously demonstrated as an argument for the MIR regulations. Additionally, there are fewer options and production capability for the less volatile materials, especially hydrocarbon based materials. A review of the various hydrocarbons produced by a barrel of oil show a progressively smaller amount of high molecular weight materials available from a typical refinery. Purposely isolating some of these materials for use in consumer products will increase costs. Price conscious consumers have already demonstrated that they are willing to compound their own products when commercial products are too costly or do not function as well due to reformulations as seen by recipes available on the internet for various consumer product categories.

FFF-4

FFF-5

Sasol North America is particularly concerned with the fact that there is not enough research conducted to justify the proposed changes in the LVP-VOC regulations and we strongly urge the California Air Resource Board not to change these regulations. We look forward to working with CARB to make sure that future regulations and VOC limits are feasible, based on good science, and can improve California's air quality in a meaningful way.

Sincerely,

Wayne Sorensen and Nomihla Valashiya-Mdleleni
Product Steward
Sasol North America, Inc

¹ Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds, Uyen-Uyen T. Vo, Michael P. Morris

Responses to Comment Letter FFF
SASOL

Response to Comment FFF-1:

AQMD recognizes that the California Air Resources Board (CARB) has already initiated regulatory action on paint thinners and multi-purpose solvents and AQMD staff supports CARB's efforts to rectify the situation with respect to paint thinners and multi-purpose solvents through revisions to the definitions and further clarification of the most restrictive limit clause. However, during the investigation of this use of the LVP-VOC exemption, studies have shown that common LVP-VOC solvents used in numerous categories aside from paint thinners and multi-purpose solvents are widely utilized and have evaporation and reactivity profiles similar to the traditional solvent they are meant to replace. The studies further provide a clear indication that additional examination of the LVP-VOC exemption criteria is warranted and necessary to ensure that ozone benefits anticipated by amendments to the CARB Consumer Products are indeed achieved. While the issue has been unmistakably apparent for consumer product categories studied in detail by AQMD, such as paint thinners, multi-purpose solvents, and industrial and institutional cleaners, the same chemicals utilized in those categories are also widely present in many of the other consumer product categories. Many of the comment letters received regarding this proposed control measure, represented by the gamut of consumer products manufacturers, specifically state that much of their reformulation efforts have been to increase the usage of LVP-VOC solvents. Therefore, AQMD staff respectfully disagrees with the commenter and believes it is imperative to assess the LVP-VOC exemption parameters for all consumer products categories. The draft control measure emphasizes, as a first step, additional data collection through CARB surveys for not only the VOCs used in consumer product formulations, but also accurately capture the usage of LVP-VOCs and exempt solvents. AQMD staff believes that a more precise inventory of total organic gases used for ozone modeling purposes will allow a better reflection of ozone impacts from the use of consumer products. Subsequently, depending on the type and quantity of LVP-VOCs in different categories, additional review and modification of the LVP-VOC exemption must be considered.

Response to Comment FFF-2:

Staff agrees that CARB must make a determination that their regulations are both technologically and commercially feasible. Additionally, it is accurate to note that some of the limits in the Consumer Products Regulation are based on the availability of exempt LVP-VOC solvents as they are currently defined. While it should be acknowledged that this is a long standing exemption and that at the time of its adoption CARB used "more than 12 carbon atoms" as a dividing line between evaporative solvents and non-volatile surfactants and resins, recent scientific evidence show that many of the so-called LVP-VOC products exert evaporative and reactivity

characteristics that are similar to those of traditional solvents that are meant to replace. The proposed control measure seeks to utilize available scientific data to review the LVP-VOC exemption and potentially revise certain parameters for those categories where speciated LVP-VOC survey data by category and research results show an opportunity to further reduce emissions from consumer products. Revised LVP-VOC criteria should continue to provide an exemption to products that do not contribute to the photochemical ozone formation. If an opportunity exists, any proposed amendments to the Consumer Products Regulations to revise the LVP-VOC exemption would be vetted through a full public process.

Response to Comment FFF-3:

Staff agrees with the commenter that the main issue is whether the “volatile” materials are available for ozone formation. The reference paper’s purpose is to highlight that the regulatory definitions and test methods used to determine volatility are at variance with real world observations for certain types of products, including LVP-VOC solvents. This is true for both “volatile” and “non-volatile” chemicals. The observation that widely used LVP-VOC solvents completely evaporate in two days is far from the discussion of whether the volatility test should be 28 days, as the commenter suggests, or 180 days, as the paper suggests.

Several alternative concepts of determining volatility have been suggested including environmental chamber studies, partitioning, and as the commenter suggests, biodegradability and controlled evaporation rate tests (ASTM D-3539). These may be reasonable considerations that should be incorporated into future efforts to evaluate revisions to the LVP-VOC exemption. It should be noted that partitioning and biodegradability have little to do with whether the chemical is an LVP-VOC or a non-LVP-VOC. Despite this partitioning and biodegradability, some fraction of the chemical enters the atmosphere and contributes to ozone formation. Of the compounds studied (LVP-VOC and non-LVP-VOC) the highest predicted partitioning ratios into air are for some LVP-VOCs (22% for Light Distillate). It appears that there is no correlation between partitioning to air and LVP-VOC status. Additionally, it is evident that none of these concepts are built into the current criteria for the LVP-VOC definition. It is also inconsistent to point out these alternative methods of determining volatility while requesting that the LVP-VOC exemption remain unchanged.

Response to Comment FFF-4:

U.S. EPA Method 24 is a well established VOC test method for paints and coatings. The description in the paper refers to testing semi-volatile chemicals, such as metalworking fluids and other categories that are not paints and coatings. The paper illustrated that U.S. EPA Method 24 tends to have VOC content measurements higher than what was observed from evaporation data. Staff is not asserting that CARB should adopt U.S. EPA Method 24 for the Consumer Products Regulation, but rather consider

an alternative endpoint for CARB Method 310 or alternative test methods such as gas chromatography approaches included in SCAQMD Test Method 313 or ASTM D6886.

Response to Comment FFF-5:

The proposed control measure is intended to study the appropriateness of the LVP-VOC exemption in its current form, in an effort to ensure that the ozone reduction benefit of the Consumer Products Regulation is fully materialized. The proposed control measure may involve eliminating or amending the CARB LVP-VOC criteria based on scientific data which may include MIR and similar photochemical reactivity parameters. If the re-evaluation indicates that there are niche products that are infeasible, additional considerations would be made. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the CARB rule development process to ensure overall efforts are feasible, productive and cost-effective.

GGG. CIAQC, November 08, 2012



Coalition Members



November 8, 2012

South Coast Air Quality Management District
Barry Wallerstein
21865 Copley Drive
Diamond Bar, CA 91765-4182

via email: bwallerstein@aqmd.gov

Dear Mr. Wallerstein:

The Construction Industry Air Quality Coalition (CIAQC) appreciates for the opportunity to provide these comments on the Revised Draft 2012 Air Quality Management Plan (AQMP). The 2012 AQMP will have a broad impact on the region's residents, businesses, local and state economy. For these reasons CIAQC recognizes that it is vitally important that the 2012 AQMP achieves a balanced strategy to address the federal air quality requirements.

As CIAQC and other leaders in the business community articulate in the November 2012 letter to Chairman Burke on the Draft 2012 AQMP and Socioeconomic Report, this is best achieved by including only those control measures that are actually necessary to meet legal obligations at this time. The South Coast Air Quality Management District must demonstrate achievement of the PM2.5 standards by 2014. A plan to meet the eight-hour ozone and the revoked one-hour ozone standards is not due at this time and should be developed at a later date.

The District has demonstrated in its Revised Draft 2012 AQMP that it can meet its air quality requirements with just two control measures; Reductions from Residential Wood Burning (BCM-01) and Reductions from Open Burning (BCM-02). The estimated costs of these measures is \$123,000 per year. The estimated costs of for the elective ozone portion of the Revised Draft 2012 AQMP is \$40 million per year. Including only the PM2.5 portion of the plan is the best path way forward at this time.

Included in the ozone portion of the Revised Draft 2012 AQMP is control measure OFFRD-01: Extension of the SOON Provisions for Construction/Industrial Equipment. This proposed control measure would promote the faster turnover of older in-use construction diesel engines utilizing annual incentive funding from 2014 to 2023. SCAQMD began implementing the Surplus Off-road Opt-in for NOx (SOON) Program in 2008. CIAQC supports incentive funding to achieve cost-effective emission reductions and continues to maintain that incentive programs should be voluntary, including the SOON. The SOON program however is mandatory for fleets that meet certain thresholds; they must apply for funding that covers some of the total costs to repower or replace a piece of equipment, but not all of it. CIAQC recommends that if the SOON program were to continue beyond 2014 it should be voluntary for equipment owners that want

GGG-1

GGG-2

GGG-3

Mr. Barry Wallerstein
November 8, 2012
Page Two

to participate in the program.

Originally, the SOON Program was conceptualized as a voluntary program that would assist contractors in the long run with their CARB base rule compliance. It was voluntary in 2008 and then became a mandatory program. However, due to the application of the Carl Moyer requirements to the SOON program, contractors are expected to contribute from 15% – 50% of the cost of the repower. This is simply impossible for many equipment owners when added to the cost to comply with the statewide Off-Road Regulation. Making the program voluntary in 2008 was the proper step at that time. CIAQC recommends that the SOON Program be made voluntary and that incentive funding cover 100% of the repower costs, certainly so if it is extended beyond 2014.

GGG-3

Please do not hesitate to contact me if you have any questions or would like additional information.

Sincerely,



Michael W. Lewis,
Senior Vice-President

Responses to Comment Letter GGG
CIAQC

Response to Comment GGG-1:

Consistent with the previous AQMP, the current analysis shows that approximately 65% of additional NOX emissions reductions, beyond already adopted rules and measures, will be needed to meet the existing 1997 8-hour ozone standard of 80 ppb in 2023. The Basin can only demonstrate attainment of the 8-hour standard by using the CAA Section 182(e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than 8 years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are at least 2015 and beyond. While the District will need to adopt another ozone plan in 2015 to attain the 75 ppb standard by 2032, we cannot afford to delay implementation of the large “black box” in the existing 2007 AQMP (241 tpd NOx & 40 tpd VOC).

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “commitments” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The District believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the District’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 8-hour ozone NAAQS. We urge the District to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NOx and VOC emission reduction commitments contained

in the SIP-approved South Coast 2007 8-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA’s recently proposed to require a new 1-hour ozone SIP for the South Coast Air Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Because the emission inventory, control strategy and RACT/RACM analysis has already been developed, the attainment demonstration for the 1-hour ozone standard has been completed (see Appendix VII). It was decided to submit the 1-hour attainment demonstration in the 2012 AQMP because it is a most efficient use of resources and early action will establish a technical approach since there is no formal technical guidance yet developed. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the District is dedicated to realizing the emission reductions necessary to achieve the 8-hour and 1-hour ozone standards. Future AQMPs will need to further identify specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2019 for the 1-hour ozone or 2020 for the 8-hour ozone.

Response to Comment GGG-2:

Staff agrees with the commenter that wood burning curtailment and its corresponding costs is the “best path way forward” in complying with the 24-hour PM2.5 standards. However, the ozone portion of the 2012 AQMP, as discussed in response to comment GGG-1, is intended to update the previous 8-hour ozone plan with new emission reduction commitments from a set of new control measures, which further implement the 2007 AQMP commitments. Chapter 4 of the 2012 AQMP provides thresholds for cost effectiveness (dollars per ton reduced) for VOC and NOx emissions.

Response to Comment GGG-3:

The SOON program is part of the approved 8-hour SIP for the South Coast (*Federal Register, Vol. 77, No. 41, March 1, 2012*), however affected operators have been provided flexibility in the past and despite mandatory requirements, staff will continue to evaluate the implementation of the program.

HHH. Gatzke Dillon & Balance (GDB) LLP, November 09, 2012



November 9, 2012

By E-Mail

Dr. Sue Lieu
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, California 91765-4182
slieu@aqmd.gov

Re: *Comments on the Socioeconomic Report for the Draft 2012 AQMP*

Dear Dr. Lieu:

This letter is submitted on behalf of the County of Orange (“County”) in its capacity as the owner and operator of John Wayne Airport, Orange County (“JWA”). This letter contains the County’s written comments on the Socioeconomic Report (“Report”) for the Draft 2012 Air Quality Management Plan (“AQMP”), issued by the South Coast Air Quality Management District (“SCAQMD” or “District”) in September 2012. The County appreciates the opportunity to provide its comments.¹

GENERAL COMMENTS

We are very concerned with the District’s statements in the first Chapter of the Report which indicate that socioeconomic impacts are somehow not required to be considered in connection with the preparation and adoption of the 2012 AQMP. Specifically, at Page 1-2, the Report indicates that the District is not required to “actively consider any socioeconomic impacts” in connection with the preparation and adoption of the 2012 AQMP.

HHH - 1

We respectfully disagree with this legal position for the following reasons. The California Clean Air Act specifically requires the District Governing Board to determine that the 2012 AQMP is a cost-effective strategy that will achieve attainment of the state standards by the earliest practicable date. CAL.HEALTH & SAFETY CODE §§40440(e), 40703, and 40913(b). In addition, the AQMP must include an assessment of the cost-effectiveness of available and proposed measures and a list of the measures ranked from the least cost-effective to the most cost-effective. *Id.* at §40922. Specifically, Section 40922 provides: “[i]n developing an adoption and implementation schedule for a specific control measure, the District shall consider the relative cost effectiveness of the measure, as determined under subdivision (a), as well as other factors

HHH - 2

¹ The County has previously submitted comment letters on the Notice of Preparation of a Draft Program EIR, the Draft 2012 AQMP, The Integra Report, the Draft EIR, and the Revised 2012 AQMP. Please see enclosed comment letters to Mr. Steve Smith from Ms. Lori Ballance, dated July 27, 2012, to SCAQMD from Mr. Alan Murphy, dated August 31, 2012, to SCAQMD from Mr. Alan Murphy, dated September 28, 2012, to Mr. Inabinet from Ms. Lori Ballance, dated October 23, 2012, and to Mr. Fine from Ms. Lori Ballance, dated October 30, 2012.



Dr. Sue Lieu
South Coast Air Quality Management District
November 9, 2012
Page 2

including, but not limited to, technological feasibility, total emission reduction potential, the rate of reduction, public acceptability, and enforceability.”

Consistent with these requirements, by this letter, we request that the Socioeconomic Report be significantly revised, prior to being issued in its final form, to include consideration of the full costs of any possible regulatory program and/or proposed control measures that may have an impact on the airports and airline industry. We also request that the cost effectiveness analysis take into account the effect any emission reduction strategies may have on existing and new entrant air carriers in the Basin (particularly proposed Control Measure ADV-07), and the importance of maintaining a competitive airline environment in the Basin. A regulatory scheme that would inhibit competition would most likely result in significantly higher airfares to and from the Basin than other parts of the Country, which could in turn have a seriously negative effect on the local economy.



HHH - 3

Careful attention and response to these issues is critical in order to ensure that the District will be able to structure appropriate and effective air quality regulations which might affect the operations of the air carrier airports in the Basin while minimizing the environmental impacts of those regulations.

SPECIFIC COMMENTS

EXPANSION OF REGULATORY AUTHORITY AND COST EFFECTIVE ANALYSIS

The Draft Socioeconomic Report states, “[a]s with the previous AQMPs, the District has proposed to expand its control program for mobile sources by proposing additional mobile source control strategies to supplement CARB’s existing mobile source regulations.” Report, pg. 1-1. The Report defines off-road mobile sources to include: “[m]obile sources of air pollution (vehicles) which are not authorized to operate on streets and highways. Examples include trains, boats, aircraft, farm equipment, and earthmoving equipment.” Report, pg. G-4. The proposed 2012 AQMP off-road mobile source measures include Control Measure ADV-07 that calls for the District to work with the airlines and local airport authorities to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin. 2012 AQMP, p. 4-40.

We continue to have a fundamental disagreement with the District regarding the extent of the District’s authority to regulate airports and aircraft. Specifically, we continue to believe that, to the extent the District attempts to regulate aircraft related emissions, directly or indirectly, any such regulation would constitute a constitutionally impermissible local intrusion into a federally preempted field of regulation. *People of State of Cal., v. Dept. of Navy* (1977) 431 F.Supp. 1271, 1281; *Washington v. General Motors Corp.* (1972) 405 U.S. 109, 92 S.Ct. 1396, 31 L.Ed.2d 727. The District’s attempted indirect regulation of airport related emissions is an impermissible and unconstitutional intrusion into an area which is pervasively and exclusively controlled by federal law and federal authority. *City of Burbank v. Lockheed Air Terminal, Inc.* (1973) 411 U.S. 624, 633.



Dr. Sue Lieu
South Coast Air Quality Management District
November 9, 2012
Page 3

In addition to this fundamental legal disagreement with the District regarding the District's regulatory authority over airports and aircraft, the cost-effectiveness of proposed Control Measures MCS-03 and ADV-07 have not been quantified at this time. In fact, it appears that the District has simply deferred quantifying the costs until a later date. The District has also acknowledged the following: "[a]s with any complex analysis, some uncertainty is inherent in the methodology employed. . . . The key areas of uncertainty and caveats in this socioeconomic assessment are in estimating emission reductions, costs, air quality changes, and health benefits, among others." Report, p. 8-2. Unless or until information is obtained and provided relating to the cost-effectiveness of Control Measures MCS-03 and ADV-07, discussion of these proposed Measures should not be considered further.

CONCLUSION

In summary, before any further analysis is conducted regarding any of the measures provided in the 2012 AQMP directed toward airports and airlines, the District must complete appropriate and complete analyses of the cost-effectiveness of all of the proposed measures as mandated by California law. It is important for the District to take a "hard look" at these issues and to provide airports in the Basin with information which measures the full costs of any and all possible regulatory programs in terms of the increase in emission reduction costs versus program and improvement costs.

We look forward to continuing to work closely with the District on the draft 2012 AQMP and related documents. If you have any questions regarding the issues addressed in this letter, please do not hesitate to contact us at your convenience.

Very truly yours,

A handwritten signature in cursive script that reads 'Lori D. Ballance'.

Lori D. Ballance
of
Gatzke Dillon & Ballance LLP

LDB/rlf

cc: Supervisor Shawn Nelson, Vice Chair, 4th District
Robert J. Franz, Interim County Executive Officer
Alan Murphy, Airport Director, John Wayne Airport

Responses to Comment Letter HHH
Gatzke Dillon & Balance

Response to Comment HHH-1:

Information presented in the Socioeconomic Report is designed to help the District's Governing Board in its deliberation process of the 2012 AQMP. Details of legal requirements for socioeconomic impact assessments are provided in Chapter 1 of the Draft Socioeconomic Report.

Response to Comment HHH-2:

The District has calculated cost-effectiveness of all control measures with SIP commitments except for one. Cost effectiveness values for each control measures can be found in Appendix IV to the 2012 AQMP. Cost effectiveness of other control measures cannot be quantified due to the following reasons: the nature of the control measure (e.g., educational or incentive program); emission inventory or control approach needs to be identified; or further studies such as a technical assessment needs to take place. Tables 6-3, 6-4, and 6-5 in Chapter 6 of the Final Draft 2012 AQMP rank proposed control measures by cost-effectiveness

Response to Comment HHH-3:

There are no control measures in the 2012 AQMP that directly affect airports or the airline industry except for Phase I RECLAIM and Control Measure CMB-03 (Reductions from Commercial Space Heating). For impacts of the 2012 AQMP on airports or the airline industry, please see Table 3-1 in Chapter 3 for cost impact, Tables 4-2, 4-3, and 4-4 in chapter 4 for job impact, and Tables 6-2 and 6-3 in Chapter 6 for competitiveness impact.

III. Leroy Mills, October 29, 2012

-----Original Message-----
From: Leroy Mills [mailto:leroymills-64@ca.rr.com]
Sent: Monday, October 29, 2012 10:30 AM
To: Elaine Chang
Subject: Question from Workshop

Ms Chang,

I attended the Socioeconomic Workshop this past Wednesday. Please confirm for me that I heard correctly that the Socioeconomic Analysis and Report is not legally required but was accomplished under your Board's direction.

III - 1

Thank you very much for clarification.

Respectfully,

Leroy Mills

Responses to Comment Letter III
Leroy Mills

Response to Comment III-1:

Legal requirements that are for socioeconomic analyses during rulemaking are not applicable to the preparation of the AQMP. Please see the discussion on page 1 in Chapter 1 of the Draft Socioeconomic Report.

JJJ. Harvey Eder, November 10, 2012

From: Harvey Eder [mailto:harveyederpspc@yahoo.com]
Sent: Saturday, November 10, 2012 3:10 PM
To: 2012 AQMP Comments; Michael Krause
Cc: harveyederpspc@yahoo.com; earthdayla.org, jim
Subject: C9omments & QuestionsS/Econ ,DEIR/Nov 2012 AQMP/ Harvey Eder &PSPC 11/10/12

Howdy Folks,SCAQMD etc.

apx 3:10 PM November 10, 2012

First questions how do I get the comments submitted of the AQMP and tge DEIR to date as of November 2012 ? Please send a hard copy of everything asap. Mike...

To Sue Lue sp sorry on Socio Economic Study for comments due on Monday Nov 12, 2012. comments are submitted herein by Harvey Eder and PSPC Public Solar Power Coalition, and for AQMP and DEIR since your still accepting comments.

Part 1

#1 There is nothing about the submitted comments timely submitted now being answered this is illegal for the AQMP and the DEIR ! There is nothing in the Public Participation section about this at all. This must be remedied at once !@&

#2 As published in Forbes this month "Solar: America's Fastest Growing Job-creation Engine ? SOLAR JOBS GREW OVER 13 % THIS YEAR in the nation usa which is most probably from 50-100% in the South Coast District ! since much of the growth is in california the report of The Solar Foundation will be out on Nov 14,2012 and info for SCD will be sent in then.

#3 With \$50 plus Billion spent in the district on energy (Chapter 10 AQMP there should be a graph breaking this down and over \$70 billion to be stent in 10 or 20 years (this is a low number with whats happened and is on deck for the middle east IE Iran firing on the US's military property this past week etc. and the Straights of Hormuse under threat to be mined by Iran and the Isreali Iranian tensions etc ie threat of Irna that will soon have the nuc bomb etc and 4 years ago oil hitting \$147 a barrel etc.

And the Soc/Economic Plan air pollutioin costing over \$50 billion per year in the district on mobidity and mortality Ie as District Chair says 10 people die from air pollution each day in the district comment at a board meeting over the past year or so.

The cost to the district for the dirty fossel fueled energy systme that exists in the SCDistrict is from \$100 to \$200 billion dollars per year in cost to the people of the district or from \$1 to \$2 trillion dollars over the next ten years or from \$2 to \$4 trillion dollars over the next 20 years which this plan is mistakenly limited to to 2032, when we must use the 2050 green house as well as other emissions (including ultrafine espacially in natural gas being pushed like a dealer on the District for Transportation of our kids to school ie the Moyers Program using natural gas as cited in previous testimony comments on this AQMP/DEIR/ Soc/Econ Study etc ... or the correct but very conservative figure of from \$5 to \$10 trillion dollars being spent by people inb thedistrict/cost.. over the next 40 yearsfor dirty fossel fuel aqnd health and death costs in the district etcccc...

The obvious solution is convert to total solar clean renewable energy sources at once... The savings to the community is \$trillios of dollars.

#4 And the jobs that will be created are tens 10's to 100's of thousands or more in the district. And they will be spent on the low income now or the poor saving billions to trillions on unemployment and subsidies food stamps etc and contributing to tax paying jobs and people instead to the 20-40 plus percent unemployed small businesses employed people now in construction in the SC District.

#5 This will mean environmental justice which was cited in last months Socio Economic Study meeting at the District that was attended by me . Harvey Eder and PSPC the Public Solar Power Coalition and cited as necessary that a study of this be done and at least on of the economic consultants cited environmental justice as needing to be empathized by SCDistrict Soc/Econ study and the District Plan this is all on take which is herein incorporated into the record in these proceedings and a transcript of and the tape is entered into the record as well as meetings of the board where testimony on the immediate total solar conversion plan etc was cited by me Eder and for PSPC etc

JJJ - 1

#6 Millions and billions and trillions of dollars will be saved in the district by implementing the immediate total solar conversion plan cited in testimony/ comments on the record before the SCD in these proceedings ...

#7 as well as doing the right thing !!! Environmental Justice because the low middle income that will be put to work on the Immediate Total Solar Conversion Plan being implemented at once by the end of 5 years in 2016-17 not only will the federal government pay for half of it in tax credits and right offs (remember this was put on the record during the conversation that the Board had a month or so ago when they were talking about Solar... and public solar solves the problem of companies going out of business - local cities many go belly up ie in the inland empire but the regional gov /state gov will endure

In the last economic giant problem we had in the 1930s some localities even had their own money/script etc..

Thanks for the opportunity to put his all on the record in these proceedings etc

Harvey Eder and PSPC the Public Solar Power Coalition

1218 12th Street #25

Santa Monica, Ca 90401

(310)392589

harveyederpspc@yahoo.com

PS More will follow including incorporating by reference the submittal of the Sierra Club in the coming days...

From: Harvey Eder [mailto:harveyederpspc@yahoo.com]

Sent: Saturday, November 10, 2012 4:19 PM

To: 2012 AQMP Comments; Michael Krause

Cc: harveyederpspc@yahoo.com; earthdayla.org, jim

Subject: Part 2 Comments/Questions To AQMP Nov 2012 DRAFT/ DEIR/Soc Ecom Plan ETC Nov 10/12 H Eder & PSPC

Howdy Again Folks @ SCDist Etc. ET Al.

after 3:20 pm Nov 10,2012

Part 2 of Comments/ Testimony/ On The Record in AQMP DRAFT/DEIR/ Soc/Economic Study etc Independent and or part of the DEIR EIS Etc and submitted to CARB California Air Resources Board (also cited before the Board both .. on the record in the past) and to both State EPA and Federal EPA and the Governor, his Office Of Planning and Research, the the State of California SGC Strategic Growth Council (and AB/SB 375 and AB?SB 32 Scoping Plan for 2012 review at CARB including lcls low carbon fuel standards etc SB1x 33% by 2020 plan now 100% by 2020 or before by 2016/7

etc and CEC/CPUC, and Cal ISO etc everything submitted in the record in this these proceedings submitted hereing and before on the record (Resources Agency and Dept of Conservation and to Doggr (Division-Department of Oil Gas and Geothermal Resources) in record all submittals made in the past to all of those cited in this proceeding and in the past record to those cited past present future on in the record (example OII 42 on Solar Finance Models before the CPUC on public solar in late 1970's early 80s etc and record on deregulation in the early 90 etc

All covered in July 17/18 2012 etc all in the past and since in on the record SCD.

Part 2 12/10/12

#8 kThe Socio economic study with the AQMP and DEIR ETC cited "Green Jobs" and is incorporated herein by reference and the solar and energy efficiency and energy conservation jobs referred to today and otherwise in the record are reference into the record

etc including Nov 8 1 pm 2012 " Solar Among the Fastest Growing Job Markets in America /Department of

Energy (US Federal Government DOE Office of Energy Efficiency and Renewable Energy)

"LI-currently the largest solar photovoltaic power plant in the Eastern United States ISF generated enough renewable energy to power approximately 4,500 homes . LISF is located at Brookhaven National Lab." etc Long Island Solar Farm "

#9 Solar as BACT Best available control technology / RACT reasonably available control technology and or LAER lowest achievable emissions reductions cited and incorporates by reference EPA information on the 200 acre solar concentrating apx 50 MW of apx 500 MW of combined cycle gas turbine to bottom cycle steam turbine electric generation plant approved by region 9 EPA in Palmdale California PDPP Palm dale Power pLANT owned by the city of Palmdale in the desert about 50 miles from los angeles ca, using line focus concentrated collectors like the 354 mw SOLAR POWER PLANTS WITHIN 50 TO 100 MILES OF THE PLANNED hybrid solar power plant in the SC District. All existing power plants in the District if land is available should be retrofit with solar at gas plants and when gas is outlawed it will be a solar only power plant. Solar is not only BACT/RACT/LAER it saves money and has no cost per ton or pound of emission but rather saves money per ton or pound etc of emissions reduced. This is especially true now as cited in these proceedings since interest on a

10 year bond is as low as 1.6% now and bonds are being proposed at 30 years which as also at or near record lows vs what happened 30 years ago after the Iranian revolution when interest rates were as high as 10-20% or higher. There is considerable activity to have a solar infrastructure bank /entity set up for the US especially since Obama won the elections and global warming /climate change is now much more accepted because of tens to hundreds of thousands of users without power still on the east coast after the hurricane Sandy etc a couple of weeks ago (people are still buying gas for vehicles on odd and even days like during the 73/74 opec oil embargo following the yom kippur war in the middle east and oil tripling /quadrupling in cost at once (now to mention the thought of nucs being used then)

I first saw solar in Israel in 1968 visiting my family there who had it on their roofs who were survivors...over 44years ago... and it started over 100 years ago solar thermal and electric right here in the South Coast District where in 1910 30% of the new homes in 1910 had solar hot water (looking at old building permits)

Thanks for taking and responding quickly to these comments

Harvey Eder and PSpC the pUBLIC sOLAR pOWER Coalition
1218 12th St #25
Santa Monica , Ca. 90401
(310)3932589
harveyederpspc@yahoo.com

PS This also incorporated comments made in the next days weeks by the Sierra Club
11/10/12 4:15 pm

From: Harvey Eder [mailto:harveyederpspc@yahoo.com]
Sent: Sunday, November 11, 2012 3:11 PM
To: 2012 AQMP Comments; Michael Krause
Cc: harveyederpspc@yahoo.com; earthdayla.org, jim
Subject: One For The Road FIFO Writ of Mand.Before Nov HE/PSPC S/Econ, DEIR,AQMP

Howdy Mike Krause scaqmd folks et. al., Nov 11,2012 2:20 PM

Comments timely submitted for Soc/Econ study and if accepted for DEIR & AQMP after others have been answered including those made yesterday but it is on time for Soc/Econ to Dr. Sue Lu. Nov 11.2012 Part 2

1. Soc/Economic Chicago has passed and is forming a CCA see earlier comments public solar power etc he. But they will use dirty fossil fuels unless solar renewables are included and with 1 million people they may have to have more than one company serving them Marin went with Shell etc and may use RECs Renewable Energy Credits vs Solar Buildout etc renewables

2. Solar average pre incentive cost of going solar decreased 17% in 2010 alone plus before , the most significant annual reductions since the data has been tracked. Costs declined another 11%

in the first half of 2011 (Source Lawrence Berkeley National Lab's Tracking the Sun IV. and has continued to go down etc now source For PV solar Energy USA

3. State Ca. Plan for the District is illegal because it's due ever 3 years cited my comments to the Board SCD on the record at least once or more over the past 3 years, and now it's been 5 yerars for the Fed EPA Plan. Answer the comments that were timely submitted first then deal with late comments later. Board member Lyou commented on this ...

4. I fell like T.S. Elliost poem the Wasteland We are the thin men the hollow men head piece filled with straw allas like rats feet over broken glass in an empty field... We are in the 5th or 6th great extinction on earth the most significant since like was taken to oxygen emitting life forms eons ago. And we can't get an answer to timely legally filed comments now 1` responce for 4 or 5 months

5. We should also look at direct hydrogen storage even on an individual or more practical level neighborhood and or community block level from solar electric pv or thermal with district heating and cooling combined cycle with absorption chillers etc

6. Hydro Power sho9uld be used for storage with pumped storage in the Sierras , Cascades in Ore and Washington and BC during peak in the day or when solar best matches the use to serve peaks that don't match solar perk like the early evening or early am off peak base line etc

7. Ground storage has proven itself and as of 2010 is law for Wind Turbines in Kansas using st. domes etc which have been intregated into the system s of Germany and in Alabama. Using high pressure airturbine generators stored in the off beak and off off peaaak base load time when it's windeist to serve peak and other loads. Fracking will contaminate the air in these areas with toxins and cancerigians etc. The District as well as CARB etc CE#C CPUC should weigh in on this with Fed EPA Gov Office of Planning and Reserch and SGC Strategic Growth Coincuil etc fopr all issues and comments cited and Fed DOE and Health and Housing state and Fed as well as CSA Community Service3s agencys etd and are herein by incor[pporated to such in the record . Much of this natural gas stuff 100times co2 e over 20 years Howarth etal was brought with the DOE NREL NG study in the Scoping Plan for AB32 which is being re done now and is hereby herein submitted to them as well.

8. In answer to Dr. Phil Fines comments to my comments last mionth on the meeting on the soc econ submittal studythat soplar won't help get us in complianc with the mandated fed etc by 2014for PM it depends. and probably an extention is needed and will be asked for for 5 years more to 2019 think the plan says. Solar will eliminated with other co benefits pm 10 , pm 2.5 to 10 and pm 2.5 and under pm.1 or the ultra fines which natural gas has plenty of and must be copunted in this plan etc. According to the Nov 7 draft of the Plan the District doesn;t test for this and the only data is from Europe . Lets get with it now. and get the date for mortality and morbidity etc off paint etc.

9. This and all comments from June - NOv etc is submitted for AQMP, DEIR and Soc/Economic Study required for the state eir as well etc and fed and should be expanded to socio economic

JJJ - 2

political , or political socio econ study as well cause Mike Krause (draft was written before see about 40 min agon MKrause3 email to me us that on the NOv7 he had recieved comments on that day or the day before the 6th of Nov and was waiting to answerthem . this issue has already been addressed herein FIFO first in first out is not timely submitted ??? it's more important to provide responce to timely filed comments to fit the scheduled hearings next 13,14,15,16 as well as the 27th deading to get copies to the Board for their Dec 7 Hearing/ Board meeting so these comments/ reso[ponses could be addressed or what the hexck is the purpose of the comment and responce process anyway ...The Process is the Product . sorry these submittals have been so casual... and the Advisory groups meeting on Nov 29th. Its the substance that cvcounts !!!

JJJ - 2

Thanks, take care

Harvey Eder and PSPC Public Solar Power Coalition
1218 12th st. 325
Santa Monica, ca, 90401
(310)3932589
harveyederpspc@yahoo.com

PS Sierra Clubs

From: Harvey Eder [mailto:harveyederpspc@yahoo.com]
Sent: Sunday, November 11, 2012 4:49 PM
To: 2012 AQMP Comments; Michael Krause
Cc: harveyederpspc@yahoo.com; earthdayla.org, jim
Subject: Two (Part 2) For The Road, DEIR +AQMP/ H.Eder &PSPC Nov 11,2012 4:16 PM

Howdy Mike Krause and folks SCD ET. EL., Nov 11,2012 4:18 PM

This is part 2 of Nov 11 One for the road comments on Soc/Econ Study plus anything that can get in for DEIR and AQMP ref previous comments today One For The Road conditional etc..Cont

10. Israel fired in Syria today in return of mortar fire .. Syria is an ally to Iran that we US had fired on last few days. Middle east is a hot spot --theyre threatening to mine the straights of Hormutz where about 1/5 of the porlds oil + passes each day (to our allys etc Europe which is an Economic Hot Spot with financial problems in Greece, and Spain and Italy etc and the US facing the Fiscal Cliff in about 50 days of cutting trillions of dollars from our budget etc. If the US had adopted an ITSCP 5 -10 years ago we wouldn't be in this shape and the world etc. But the SCAQMD can once again lead the way visa vie air quality and the economic multiplier and externalities herein hereby Oh ya Iran threatened to "wipe Israel off the map. Never Again.

11. I first saw solar on the roofs of my relatives , who are survivors, in 1969 at 18 in Israel. and haven't been the same since, over 44 years ago. Israelis also built the worlds first solar

thermal electric power plants in the 1980s. many said it couldn't be done... 354 MW operating within less than 100 miles of the District head quarters in Dimond Bar.

12 Soc Political Economics if we go over the fiscal maybe nothing will happen like Nobel L Krugman suggests. Or maybe unemployment will go to 9%plus and start a another world wide recession with China Choppy and Europe and the Middle east and all. or...maaaaaybe well buytime to implement the ITSCP the Immediate Total Solar Conversion Plan for the District or the District and S. J. District like the Vision with CARB could suggest or the hole State of CA and trhen the Nation and the World like comments submitted in July 17&18 2012 stated visa vie Jacobson and Delucci 2009 Nov cover Sci Am converting the world to solar renewables in 29 yrs by 2030, also Dec 2001 Energy Ploicy...Which would take an effort like we did in WW2 which got us out of the last RE/Depression in the 1930s???

13. Which brings us to Green jobs and Environmental Justice of which well have plenty if we ithe ITSCP for Sout Coast District Now.

14. The district had all agencies of the state and fed energfy environmental and economic equity muct lobby state and federal gov and powers that be to do it now ITSC

15. Bloom berg gave the Sierra Club \$50 million dollars toi fight coal and some of that money is being spent right here in LA River City County SCD to convert to Solar and Energy Eff/ Con. with staff on the ground working.. etc Not the district needs to implement the green jobs cited in the S/Econ Study and hiring low income and middle income workers (this costs much less and is more procuctive then 99 weeks of unemployment fed state payments etc... Which brings us to

16 Environmental Justice and Solar Equity Green Solar Conversion Jobs will help the Econ and EJ and Solar Equity.

17 the solar tax credits must (the wright offs acrs) must be refundable progressively etc. and made avialable to other than the upper income

18 30 plus year ago we did a K withthe CPUC and Mayors off on this

Thanks take caree H., Eddeer Pspc sonver (Part 2) For The Roa

Responses to Comment Letter JJJ
Harvey Eder

Response to Comment JJJ-1:

Figure 5-1 in Chapter 5 shows the impact of 2014 PM2.5 concentration changes on Environmental Justice Areas. This is also one of the subject areas that the District is considering expanding in the future, as shown in Chapter 8.

Response to Comment JJJ-2:

The commentor needs to define what the Political economy issues are. Specific suggestions on how to further expand contents of the report are welcome and will be reviewed by staff for inclusion in the analysis of future AQMPs.

**DRAFT FINAL
2012 AQMP**

**ADDENDUM TO
RESPONSES TO COMMENTS
TO THE 2012 AQMP**

DECEMBER 2012

COMMENT LETTER LOCATOR

AGENCY/ COMPANY	DATE	Comment Letter Locator
Association of California Cities Orange County (ACCOC)	11/10/12	NNN
BizFed	11/9/12	MMM
Dillard, Joyce	11/12/12	RRR
Port of Los Angeles/Long Beach	11/8/12	KKK
Riverside County Waste Management Department	11/9/12	LLL
Sierra Club Angeles Chapter	11/12/12	QQQ
Western States Petroleum Association (WSPA) - <i>Socioeconomic</i>	11/12/12	OOO
Western States Petroleum Association (WSPA) – <i>2012 AQMP</i>	11/12/12	PPP

PREFACE

Numerous comments have been received during the Plan development. Specific responses to 99 written comment letters on the 2012 AQMP are addressed in “Draft Final 2012 AQMP Responses to Comments to the 2012 AQMP” publicly released on November 21, 2012 (Attachment C of the Board Letter). Additional responses to comment letters not included in the “Draft Final 2012 AQMP Responses to Comments to the 2012 AQMP” are included in this Addendum to Attachment C.

For some comments similar remarks have been previously made in previous comment letters so the response indicates where the reader can locate the appropriate response in Attachment C (Draft Final 2012 AQMP Responses to Comments to the 2012 AQMP). Other comments have been addressed in the Board Letter or Resolution (Attachment A to the Board Letter) and the response notes if that is the case. Finally, there are some comments that have not been provided specifically in the past so a written response is provided.

AQMP Response to Comments

KKK. Port of Los Angeles / Port of Long Beach, November 8, 2012



RECEIVED

12 NOV 13 AIO :44

November 8, 2012

Barry Wallerstein, D. Env.
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Dear Dr. Wallerstein:

SUBJECT: COMMENTS ON THE DRAFT SOCIOECONOMIC REPORT FOR THE DRAFT 2012 AIR QUALITY MANAGEMENT PLAN

The ports of Los Angeles and Long Beach (Ports) appreciate the opportunity to comment on the South Coast Air Quality Management District's (AQMD) Draft Socioeconomic Report for the Draft 2012 Air Quality Management Plan (AQMP).

The Draft Socioeconomic Report states that "District staff performs a socioeconomic analysis of the Draft Plan in order to further inform public discussions and the decision making process of the Draft Plan." However, the Draft Socioeconomic Report shows that no cost data have been developed for Measure IND-01 – Backstop Measures for Indirect Sources of Emissions from the Ports and Port-Related Sources, despite the fact that there are real and significant costs to the Port industry to implement the emission controls that could result from the proposed Backstop Measure. Presentation of this measure to AQMD's Board, as well as the public, is incomplete without an associated socioeconomic analysis. Potential regulation of the Port could have a very significant economic effect on the region that AQMD does not address, and therefore the Ports believe that it is inappropriate to move forward with inclusion of this measure in the Draft AQMP without a full socioeconomic analysis.

By not including a socioeconomic analysis of Measure IND-01, the AQMD is completely ignoring the economic importance of the Ports. The Ports are a major economic engine for the region and nation, and port-related industry generates \$5.1 billion and \$21.5 billion in state and federal tax revenue, respectively. The Ports account for over 1.1 million jobs in California and 3.3 million jobs in the United States. Additionally, for every one job created by a Port customer, nearly 1.7 additional jobs are created elsewhere in the region.

Even just the potential of additional regulation of the Ports brings with it a significant uncertainty for the Port industry that may result in the diversion of goods to other ports outside of this region. There are more environmental requirements on the Port industry operating in this region than anywhere else in the world. The threat of additional regulatory requirements, especially when no details have been provided as to what those requirements would be, results in significant concerns for these operators and a significant potential for loss of regional economic benefits due to diversion. The Draft Socioeconomic Report fails to analyze this potential impact.

KKK-1

Port of Los Angeles • Environmental Management
425 S. Palos Verdes Street • San Pedro • CA 90731 • 310-732-3675

Port of Long Beach • Environmental Planning
925 Harbor Plaza • Long Beach • CA 90802 • 562-590-4160

The San Pedro Bay Ports Clean Air Action Plan was developed with the participation and cooperation of the staff of the US Environmental Protection Agency, California Air Resources Board and the South Coast Air Quality Management District.

Dr. Wallerstein

Page 2

Additionally, AQMD has indicated that Measure IND-01 does not have a socioeconomic analysis associated with it because there are no emission reductions associated/committed with this measure. As noted in our comment letter on the Draft AQMP dated August 30, 2012, Section 39602 of the California Health and Safety Code states that, the State Implementation Plan (SIP) shall only include those provisions necessary to meet the requirements of the Clean Air Act. Hence, there is no identified need or legal basis for implementing Measure IND-01. AQMD's proposed measure will not result in any additional benefit for the region beyond what is currently being achieved and expected to be achieved in the near future, and is therefore unnecessary.

KKK-2

Finally, as stated in our letter dated October 31, 2012, Measure IND-01 should not move forward because the AQMP makes a commitment to implement it before AQMD has developed or released details of its intended compliance actions against the Ports, or the socioeconomic and other analyses for such actions. Failing to disclose the AQMD's intended actions against the Ports violates due process, depriving the public and the Ports of the opportunity to adequately review and comment on this measure prior to finalizing the AQMP.

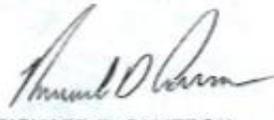
KKK-3

For the reasons listed above and those presented in our previous letters, the Ports reiterate our consistent position that Measure IND-01 should be eliminated from the AQMP. Further, we continue to believe that the successful, collaborative approach established by the Ports and the regulatory agencies remains the best mechanism for identifying and implementing strategies to reduce emissions from Port-related sources.

Sincerely,



CHRISTOPHER CANNON
Director of Environmental Management
Port of Los Angeles



RICHARD D. CAMERON
Director of Environmental Planning
Port of Long Beach

CC:CLP:KMLW:myd
ADP No.: 061024-605

- cc: Peter Greenwald, South Coast Air Quality Management District
- Elaine Chang, South Coast Air Quality Management District
- Henry Hogo, South Coast Air Quality Management District
- Cynthia Marvin, California Air Resources Board
- Roxanne Johnson, Environmental Protection Agency, Region 9
- Robert Kanter, Port of Long Beach
- Mike Christensen, City of Los Angeles Harbor Department, Deputy Executive Director
- Dominic Holzhaus, City of Long Beach, Deputy City Attorney
- Joy Crose, City of Los Angeles Harbor Department, General Counsel

Responses to Comment Letter KKK
Port of Los Angeles / Port of Long Beach

Response to Comment KKK-1:

Please refer to Response to comments C-1, M-1, KK-5, and EEE-2.

Response to Comment KKK-2:

Please refer to Response to comments HH-2, HH-5, JJ-1, JJ-2, Board letter and Attachment F.

Response to Comment KKK-3:

Please refer to Response to comments HH-6, and HH-7.

LLL. Riverside County Waste Management Department, November 9, 2012



November 9, 2012

Dr. Elaine Chang
Deputy Executive Office
Planning, Rule Development, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Chang:

The Riverside County Waste Management Department (RCWMD) operates all public landfills in Riverside County. The RCWMD is also responsible for implementation of the Countywide Integrated Waste Management Plan ensuring that the County will continue to meet the 50% waste diversion mandate of AB 939 via various source reduction, recycling, and composting programs. The RCWMD is familiar with the air quality and climate change issues associated with solid waste management in the South Coast Air Basin (SCAB) and is particularly concerned about how new air quality regulations might impact our landfills, as well as our ability to meet current and anticipated waste diversion mandates of the State. In this light, the RCWMD offers the following comments on the draft 2012 AQMP:

Emission Inventory:

- The baseline emissions from landfill source category in the 2012 AQMP has drastically increased as compared with the 2002 baseline used in the 2007 AQMP. It is stated in the 2012 AQMP that this was due to erroneous activity data reported by the point sources in 2002, as well as to the revision of landfill emission estimation methodology incorporating CARB's greenhouse gas (GHG) emission inventory data. However, the 2012 AQMP falls short of explaining what exactly the erred data was, the relevance of using point source data for landfill emissions, which are an area source, and how the 2008 baseline emissions data reflects the true landfill emissions. The new landfill source emission numbers make landfills a greater contributor to regional air pollution than they were assessed in the 2007 AQMP. We are concerned that the actual landfill contribution to the region's air quality problem is overestimated. We have contacted your planning managers for clarification but to no avail. Given the compressed schedule of the 2012 AQMP and last minute release of the complete emission inventory data, there is not enough time for the stakeholders to fully review, analyze, and provide thoughtful inputs on the CARB input and the 2012 AQMP emissions inventory.

LLL-1

Implementation Measures for Ozone:

- While the 2012 AQMP is supposed to demonstrate the attainment of the PM2.5 standard, it also attempts to further Clean Air Act §182(e)(5) implementation measures for ozone. We acknowledge the difficulty of attaining the ozone standards in 2023 and 2032 that the SCAQMD faces. However, as indicated above, the 2012 AQMP process has not provided stakeholders sufficient time to fully study the proposed ozone measures and their implications. We believe more research and technical and feasibility

LLL-2

Dr. Elaine Chang
November 9, 2012
Page 2

studies are necessary before committing to these reductions with new rules and regulations. The RCWMD is in agreement with the view of many other stakeholders that the ozone reduction commitments are better left for the 2015 AQMP. This will give the SCAQMD and stakeholders more time to develop a comprehensive and realistic ozone attainment plan.

LLL-2

- **CMB-02, NOx Reductions from Biogas Flares:** This Section 182(e)(5) implementation measure proposes that all biogas flares, including older flares, meet current BACT and/or implement flaring minimization strategies. As proposed, the SCAQMD is committed to rule adoption by 2015 and implementation in 2017. The RCWMD is concerned that many of its closed small landfills don't generate enough LFG to sustain the current flares, let alone contribute significant NO_x emissions. Since the landfill gas quality and quantity is steadily declining naturally, the already small amount of NO_x from these flares is also declining. Annual emissions source tests from most of the existing flares at our eight older landfills show that they are at or near the BACT limit of 0.025 lb/MM Btu. Most of the closed landfills' gas production cycle will cease before the AQMP end date of 2035.

In addition, the 2012 AQMP estimates that the average cost effectiveness for meeting the BACT emission limit of 0.025 lb/MM Btu of biogas is less than \$20,000 per ton of NO_x reduced. The RCWMD is concerned that the cost effectiveness estimate of \$20,000 per ton of NO_x is too low because of the low LFG generation and quality at old landfills. As an example, the closed Corona Landfill flare 2012 Source Test emissions was 0.028 lb/MM Btu. The flare operates at a heat input of 4.4 MMBtu/hr. If an ULE flare was installed to replace the existing flare to reduce NO_x by 0.003 (0.028-0.025) lb/MM BTU, the tons of NO_x reduced per year would be 0.058. We estimate the ULE flare to cost \$600,000 to be installed and cost an additional \$10,000 per year to operate when compared to the existing flare. Over the 22 year duration of the AQMP (2013-2035) the overall cost of the ULE BACT flare would be \$820,000. The reduction of NO_x during this duration would be 1.28 tons (22 years x .058 tons/yr). The cost to reduce 1 ton of NO_x would be \$640,625 (\$820,000/1.28), hardly "cost effective".

LLL-3

This cost estimate is conservative since we believe the landfill gas generation phase of this landfill that closed in 1988 will end within 15 years. Also, the heat input rate which is now 4.4 MMBtu/hr, is also declining. A more accurate cost to reduce one ton of NO_x emissions by installing the ULE flare at this closed site is \$942,000, based on an estimated remaining 15 year gas generation cycle, to \$1,271,000 based on an estimate remaining 15 years gas generation cycle and a 50% heat input rate drop. It is not cost-effective to install ULE BACT flares at old closed landfills. Also, as shown in the example above, the NO_x emission reduction potential from the replacement of existing flares with ULE flares at older closed landfills is diminutive, **only 1.28 tons of NO_x removed over a twenty-two year span.** In order to avoid high capital expenditures for extremely small NO_x emission reductions as described above, we recommend that the AQMP include exemption protocol for inactive landfills.

Furthermore, there has been no proof to date that ULE BACT flares can be designed and built for closed landfills with low gas generation and declining methane content. Some of the RCWMD's older landfills have gas generation heat rates at or below one MM Btu/hr. The technological feasibility for the design and operation of low flow, low Btu

Dr. Elaine Chang
November 9, 2012
Page 3

ULE BACT flares still needs to be proven. CMB-02 states, "Strategies that minimize flaring and associated emissions can also be considered as alternative control options". There are very limited opportunities for landfill gas-to-energy or landfill gas to pipeline projects available for small closed landfills with poor declining gas quality and quantity. The RCWMD has volunteered our landfills at no cost for various demonstration projects such as a zero emission micro-turbine and a gas separation project. Neither project, to date, has developed beyond the pilot stage. The landfill operators should not be penalized for flaring the LFG, particularly when that is the only viable option.

LLL-3

As demonstrated, this measure will have significant financial implications to the RCWMD, as we may have to replace eight old flares at closed landfills and/or implement flaring minimization strategies at flares at active landfills, both of which would be costly and perhaps even technically challenging. It is recommended that implementation of the expedited ozone measure be accompanied with financial incentives for small landfill operators as well as public agencies.

- **MCS-02, Further Emission Reductions from Greenwaste Processing (Chipping and Grinding not Associated with Composting):** This Section 182(e)(5) implementation measure would seek to establish additional BMPs for handling processed or unprocessed greenwaste material by greenwaste processors, haulers, and operators who inappropriately stockpile material or directly apply the material to land. The 2012 AQMP proposes that the primary control method would be by covering chipped and ground greenwaste material by an impermeable tarp or a layer of finished compost: (1) as early as operationally possible after chipping and grinding; and (2) until the processed greenwaste material is removed from the site within 48 hours. It is also anticipated that seasonal covering of chipped and ground greenwaste may be considered for the summer months, when ozone and secondary particulate formation potential is greatest. It is unclear as to how physical covering of the processed greenwaste by an impermeable tarp could reduce VOC emissions; the most it could do is to delay the fugitive emissions of VOC from the covered piles to the time when the cover is removed. Covering by finished compost is via a different mechanism, whereby VOCs are subject to microbial actions within the compost that break down the pollutants into non-polluting elementary gases, such as H₂O and CO₂. The option of a compost cover will be too costly for most greenwaste processors and unpractical for mobile operators and haulers.

LLL-4

Existing Rule 1133.1 already established maximum stockpile holding time at chipping and grinding facilities, and when actively enforced, the rule should be able to prevent or reduce VOC emissions from inadvertent anaerobic decomposition of chipped and ground greenwaste. As proposed, the SCAQMD is committed to rule adoption by 2015 and implementation in 2016. The imminence of this control measure could adversely impact the volatile greenwaste recycling industry and market in today's economic climate and run counter to recycling efforts underway at CalRecycle.

Dr. Elaine Chang
November 9, 2012
Page 4

Thank you for the opportunity to review the draft 2012 AQMP. If you have any questions, please contact Sung Key Ma or Mark Hunt of my staff at 951-486-3200.

Sincerely,



Hans Kernkamp
General Manager-Chief Engineer

PD #128621v2

cc: Mark Hunt, RCWMD
Sung Key Ma, RCWMD

Responses to Comment Letter LLL
Riverside County Waste Management Department

Response to Comment LLL-1:

Please refer to Response to comment M-16.

Response to Comment LLL-2:

Please refer to Response to comments R-1, S-1, T-2, W-1, Z-2, BB-1, DD-8, KK-3, LL-3, CCC-1, and GGG-1.

Response to Comment LLL-3:

The intent of the control measure is not to eliminate all flaring at landfill facilities, but rather to minimize flaring emissions through equipment upgrades and flare minimization techniques when feasible. During the rule development phase, staff will focus on identifying the emission reduction opportunities that are feasible and cost effective. Staff is fully aware that as landfills enter their inactive phase, landfill gas production rates and gas quality diminish. These issues will be considered during the rulemaking process. Also, please refer to Response to comment M-10.

Response to Comment LLL-4:

The use of impermeable tarps upon freshly chipped or ground green waste material will retain the moisture released by the material. This allow the VOCs (generally of a light alcohol nature) to be retained by the water vapor, thus allowing for further decomposition of the VOCs by microbes in the first 48 hours.

MMM. BizFed, November 9, 2012



November 9, 2012

Dr. William A. Burke, Chairman
Members of the SCAQMD Governing Board
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: Draft 2012 Air Quality Management Plan and Socioeconomic Report

Dear Chairman Burke and Governing Board Members:

As representatives of Southern California's broader business community, we appreciate the opportunity to provide these comments on the Revised Draft 2012 Air Quality Management Plan (AQMP)¹.

Our group is comprised of leaders from many of Southern California's largest regional business entities and associations. The Final 2012 AQMP, and the rule making that will eventually stem from it, will directly affect these businesses. Consequently, our highest priority is to work with the District to develop a balanced strategy that addresses federal requirements through an economically feasible compliance program. To that end, we offer the following comments on the Revised Draft AQMP:

The Final AQMP as adopted by the Board should include only those control measures that are actually necessary to meet current legal requirements.

The District is required by law to submit a Plan demonstrating that the PM2.5 standards will be attained by 2014. However, there are no current requirements whatsoever regarding attainment of the ozone standards - either for the (revoked) one-hour standard or for the eight-hour standard. Attainment of the eight-hour ozone standard will be addressed in the 2015 AQMP update, which, of course, is only three years away (we offer our comments on the [revoked] one-hour standard below).

An attainment demonstration for the PM-2.5 standards would require, literally, just two control measures - Reductions from Residential Wood Burning and Reductions from Open Burning, BCM-01 and -02, respectively. The estimated average annual cost attributable to these two measures is a relatively modest \$123,000². In other words, attainment of the PM-2.5 standards can be achieved at a total estimated cost of \$123,000, per year.

MMM-1

¹ Revised Draft AQMP released on September 8, 2012. These comments do not reflect any changes that might be made for the Final Draft AQMP which is expected to be released between November 4th and 7th.

² Draft Socioeconomic Report for the Draft 2012 AQMP (Socioeconomic report), September 2012, Table A-1, Appendix A.

- Ambient levels of PM-2.5 have been steadily decreasing.
- Both the annual and 24-hour standards for PM-2.5 were exceeded at only one monitoring site (Mira Loma) in the entire basin in 2011.
- Ambient PM-2.5 levels at Mira Loma are only marginally above the air quality standards, and it would not be unreasonable to assume that, given the trend, attainment of the standards would occur by 2014 even without further regulatory action.
- The fact that slightly over one-half of the emission reductions from BCM-01 and -02 are now specified as contingencies means that only half of the reductions are actually needed for the attainment demonstration.
- The District's air quality model over-predicts ambient levels of PM based on projected emissions inventories; this is another reason why there would be an adequate contingency built into an attainment demonstration consisting of just two measures.
- Notwithstanding the fact that no control measures beyond BCM-01 and -02 are truly necessary for this SIP submittal, the Revised AQMP includes a total of forty-one proposed control measures having an estimated annual cost of \$40 million³.

Now is not the time to propose costly elective control measures, which, regrettably, is exactly what the Revised AQMP would do.

This economy is not a healthy one. The Federal Reserve, in reporting on the October meeting of its Federal Open Market Committee, stated its concerns that, "... without sufficient policy accommodation, economic growth might not be strong enough to generate sustained improvement in labor market conditions", and that "... strains in global financial markets continue to pose significant downside risks to the economy"⁴. Thus, it is inappropriate and, frankly, incomprehensible that the District would seek to impose compliance costs estimated at \$40 million annually on the business community when such requirements have no legal support or justification, and when attainment can be demonstrated with just two control measures at a cost of \$123,000 annually.

We appreciate the fact that, in response to our request, the District included a PM2.5-only alternative, "Alternative 4", in its CEQA evaluation. We want to highlight several conclusions regarding Alternative 4 in the Draft Program Environmental Impact Report (DPEIR). These are findings that our group strongly supports:

- A PM2.5-only Plan was not among the alternatives that were rejected as infeasible⁵.
- A PM2.5-only Plan "... is considered to be a legally viable alternative ..." because, with this 2012 Plan submission, the District is only required to demonstrate attainment of the 24-hour PM-2.5 standard⁶.
- A PM2.5-only Plan - would generate fewer adverse environmental impacts or less severe impacts than the Project (i.e., the draft AQMP)⁷.

³ Socioeconomic Report, page ES-2. "The projected cost for all the ozone measures is approximately \$122 million annually, of which \$40 million is attributable to stationary source controls."

⁴ Federal Reserve press release, October 24, 2012.

⁵ Draft Program Environmental Impact Report (DPEIR), Section 6.3.

⁶ DPEIR Section 6.4.4.

⁷ DPEIR Section 6.8.

MMM-1

District staff might suggest that the proposed control measures related to ozone attainment are necessary to fulfill EPA's SIP-call regarding the (revoked) one-hour ozone standard. However, as a practical matter, there is no SIP-call; one has not yet been issued. When a SIP-call is formally made, possibly by late-January 2013, the District will have twelve months to respond. Then, the required Plan will only have to show attainment of the (revoked) one-hour standard by 2022-23, which is both a full decade away and approximately coincident with the 2023 attainment demonstration date for the 8-hour ozone standard.

There is simply no valid reason for including a one-hour ozone attainment demonstration as part of this AQMP. There are, however, a number of valid reasons for taking the full twelve months, after a SIP-call is made, to prepare a Plan in response:

- Including ozone measures in the current AQMP risks "piece-mealing" the requirements and creating significant inefficiencies with respect to the capital intensive compliance effort that will ultimately be required.
- The 2015 AQMP for ozone is expected to be a very challenging endeavor, and it should be built from the ground up. It should constitute a complete, internally consistent, and economically efficient approach to attainment of the 8-hour ozone standard.
- The closer the timing of the one-hour Plan is to the timing of the 2015 AQMP, the greater the opportunity for coordinating the two Plans and, thus, minimize conflicting or overlapping requirements.
- Mention has been made of the need to identify CAA Section 182(e)(5) measures (i.e., the so-called "black box"). However, this AQMP has only to demonstrate attainment for PM-2.5, while the black box is related solely to ozone. Furthermore, there is a risk that including some Section 182(e)(5) measures in this PM-2.5 SIP may create an unintended commitment. At the very least, the black box measures would defeat the legislative intent of adopting a Plan for which all of the impacts can be fully analyzed.

MMM-2

Our group strongly urges the Board to adopt a PM2.5-only Plan consisting of two control measures, BCM-01 and -02, inclusive, which would be legally viable and fully adequate.

The Draft Socioeconomic Report presents an unrealistically optimistic assessment.

As described in the Executive Summary, the theory behind the Socioeconomic Report is that it is supposed to assist decision-makers, "... arrive at a clean air blueprint that lays out a strong path toward reduced public health damages (sic) while at the same time maintaining economic strength, social fairness, and long-term sustainability."⁸ Although the theory behind the report may be all well and good, the report itself is a misleading attempt to justify the proposed AQMP, which, as explained in the discussion above, goes far beyond what is required at this time. At least two of the stated goals of the Socioeconomic Report need to be discussed here:

MMM-3

⁸ Socioeconomic Report, page ES-1.

- Reduced public health damage. Public health is not a trivial issue. However, given the current state of PM air quality within the Basin (i.e., already very close to attainment, as discussed above), the health benefits attributable to the proposed AQMP are truly minimal.

MMM-3

The Socioeconomic Report recognizes that the draft AQMP has a higher cost than a PM-2.5 only strategy but claims, for example, "... higher PM-2.5 air quality benefits due to the co-benefit from ozone measures."⁹ We strongly disagree. The goal is to demonstrate attainment of the standards, and a two-measure, PM-2.5 only AQMP will do that. Attainment is attainment. Any so-called "co-benefits" from the proposed ozone measures (or, from measures beyond just BCM-01 and -02) are superfluous.

A minor portion (21 percent) of the \$10.7 B in estimated benefits, which the District claims is attributable to the Revised AQMP, is due to health related benefits. However, we note that approximately ninety percent of the total claimed average annual health benefits are in sub-regions¹⁰ that are already in attainment of the PM-2.5 standards. Once the standards are achieved, it is unreasonable to take any credit for any possible further improvements. Thus, the true health benefits, if any (again, current ambient air quality is already very close to the standards), are a small fraction of what is being claimed.

MMM-4

Chapter 2 of the Revised AQMP discusses the public health effects of ambient pollution levels. However, recognition also needs to be given to the adverse public health and environmental justice impacts of unemployment, and to regulatory requirements that negatively affect key job sectors.

MMM-5

- Maintaining economic strength. As noted above, the current US economic situation cannot reasonably be considered either strong or healthy. Unfortunately, the Socioeconomic Report is insensitive to the poor state of the economy, and presents outdated and/or unreliable cost estimates.

MMM-6

Although the socioeconomic report suggests that the "clean air benefits are projected to result in a gain of 42,174 jobs annually over the period of 2014-2035"¹¹, a careful reading of the report confirms that this number (and even the estimated *net* jobs of 37,043 jobs annually) is very misleading. The report itself offers numerous caveats. Among them are the following three: First, the jobs are not necessarily permanent, and there is no indication that the jobs created or forgone will be sustained from year to year¹². Second, the bulk of the predicted new jobs (32,986) result from decreased congestion attributable to SCAG's transportation measures, and not the District's proposed control measures¹³. Third, the report notes that because the values being presented are extremely small, "... neither the quantified benefits nor the quantified measures are expected to result in discernible differences ..."¹⁴

MMM-7

⁹ Socioeconomic Report, page ES-5.

¹⁰ Socioeconomic Report, Appendix G, Table 5-2.

¹¹ Socioeconomic Report, page ES-3.

¹² Socioeconomic Report, page 4-2.

¹³ Socioeconomic Report, page 4-3.

¹⁴ Socioeconomic Report, page 6-2.

- The District has estimated annual compliance costs for the control measures in the Revised AQMP, but also notes that actual costs could be higher than projected costs. Costs greater than those that were projected are circumstances that the District's stakeholders have found to be true on a great many occasions.

- Projected costs are not accurate, and appear to have little, if any, basis in fact. For example, a number of proposed control measures have an evaluation step as Phase I. Clearly, none of these evaluations have been conducted; therefore, it is impossible to predict what a Phase II implementation step might require. In spite of the fact that none of the necessary information for developing cost estimates is available, Table A-1 in Appendix A purports to show average annual costs and presents them with three and four significant figures of accuracy. These costs should, at the very minimum, be shown as a range and we would guess that such a range is plus/minus fifty or one hundred percent.

- Control costs, on a year-by-year basis from 2013 through 2035, are presented in Figure 3-2 in the Report, but there are at least two significant problems with the information. First, although the calculation can be done mathematically, it is misleading to develop an average cost for projected expenditures that vary by a factor as great as nine to one (from approximately \$200 million per year to as high as approximately \$1.8 billion). Second, the chart purports to depict the cost of the ozone strategy but the chart is misleading because it fails to comprehend the significant costs that are expected to be incurred with the 2015 AQMP for ozone.

- Lastly, we note that much of the report relies on studies of one sort or another that were performed decades ago and which are of doubtful relevance today. For example, an audit by Massachusetts Institute of Technology of the District's socioeconomic analysis program goes back to 1992. The visibility aesthetic benefit is based on a study conducted in 2001 and which obviously does not reflect the effect of the subprime real estate crisis that began in roughly 2008. Similarly, the avoided-damage materials benefit is based on a study in 1985 when very different paints and architectural coatings were being used.

MMM-8

MMM-9

Thus, the Socioeconomic report appears to have serious weaknesses that are quite apparent from nothing more than a reading from a common-sense perspective.

In summary, there is no justification for including proposed control measures in this Plan that go beyond the two that are actually required to demonstrate attainment of the PM-2.5 standards by 2014. This is particularly true given the fragile state of the economic recovery and the fact that the 2015 AQMP will fully address ozone attainment in just three years. We urge the Board to adopt a PM-2.5 only plan consisting of control measures BCM-0-1 and -02, which it is free to do because such an alternative was adequately considered by the Draft Program EIR.

As the AQMP process moves forward, we look forward to our continued partnership with SCAQMD. Please know that the business community remains committed to helping develop a balanced, workable 2012 AQMP that provides for both environmental and economic success. Further, we are committed to working with the District on developing the 2015 AQMP for ozone, which, we believe, will be a significant undertaking.

We welcome further discussion of these comments; please contact Tracy Rafter, CEO of BizFed (Tracy.rafter@bizfed.org) or Matt Petteruto, Vice President of Economic Development for the Orange County Business Council (mpetteruto@ocbc.org).

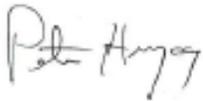
Sincerely,



Tracy Rafter
BizFed, Los Angeles County Business Federation



Matt Petteruto
Orange County Business Council



Peter Herzog
NAIOP SoCal Chapter



Eric Sauer
California Trucking Association



Rob Evans
NAIOP Inland Empire Chapter



Gary Toebben
Los Angeles Chamber of Commerce



Gary W. Hambly
CalCIMA



Jay McKeeman
CA Service Station & Auto Repair Association/
CA Independent Oil Marketers Association



John Kelsall
Greater Lakewood Chamber of Commerce



Randy Gordon
Long Beach Chamber of Commerce



Stuart Waldman
Valley Industry & Commerce Association



Jim Clarke
Apartment Association of Greater Los Angeles



Deborah Robinson Barmack
Inland Action Inc.



Carol Schatz
Central City Association



Ron Wood
Valley Economic Alliance



Sandy Cajas
Regional Hispanic Chamber of Commerce



Cynthia Kurtz
San Gabriel Valley Economic Partnership



Bob Amano,
Hotel Association of Los Angeles



Bill LaMarr
California Small Business Alliance



Michael Lewis
Construction Industry Air Quality Coalition



Don Sachs
Industry Manufacturers Council



Steven Schuyler
BIA of Southern California, Inc.



Joeann Valle
Harbor City/Harbor Gateway Chamber of Commerce



Donna Duperron
Torrance Area Chamber of Commerce



Paul C. Granillo
Inland Empire Economic Partnership



Terri K. Crain
Santa Clarita Valley Chamber of Commerce



Rich Lambros
Southern California Leadership Council

Responses to Comment Letter MMM
BizFed

Response to Comment MMM-1:

Please refer to Response to comments R-1, S-1, T-2, W-1, Z-2, BB-1, DD-8, KK-3, LL-3, CCC-1, and GGG-1.

Response to Comment MMM-2:

Please refer to Response to comments W-9, and CCC-2.

Response to Comment MMM-3:

NO_x and VOC reductions from ozone measures will lower PM_{2.5} because NO_x and VOC are also precursors to PM_{2.5}.

Response to Comment MMM-4:

There is no clear PM_{2.5} exposure threshold below which no adverse health effects are observed. In fact, California has lower PM_{2.5} standards than the federal standards. Furthermore, the U.S. EPA is in the process of proposing a more stringent annual PM_{2.5} standard based on several health studies (See Appendix I to the Draft Final 2012 AQMP for more details).

Response to Comment MMM-5:

The local economy is projected to experience a net modest positive job impact of clean air benefits and control measures. As our economy transitions to a new phase of better air quality, there will be new job opportunities and some sectors may decline due to the overall efficiency gain in our economy. This phenomenon is consistent with any other transition in our economy. The sectors that are forecasted to decline due to the Plan were truck transportation and auto repair which result from less demand for their services due to improvements in traffic. The rise in job opportunities in other sectors will help offset the negative impacts in these two sectors.

Response to Comment MMM-6:

Chapter 2 of the Report presents the current state of the economy and the analysis in the Report shows deviations from the current state of the economy. The commentor needs to elaborate on why cost estimates are outdated and/or unreliable and staff has solicited comments on cost assumptions for the measures since July 2012 and will continue to incorporate new information as the AQMD further studies the measures of begins the rulemaking process.

Response to Comment MMM-7:

The Socioeconomic Report clarifies that no job in our economy is permanent. Therefore, any job statistics for any given year reflects a count of jobs and does not address the length of employment. Even without TCMs, the positive job impact of clean air benefits outweighs the negative job impact of control measures by a 5 to 1 margin. Compared to the total number of jobs in the four-county area, job impacts in the Socioeconomic Report represent less than 0.4 percent of the total jobs in our economy. Based on comments on TCMs, staff has included an additional cost benefit scenario without TCMs.

Response to Comment MMM-8:

Detail cost assumptions and data for each measure has been posted online (http://www.aqmd.gov/gb_comit/aqmpadvgrp/2012AQMP/meetings/2012/july26/agenda.html) since late July per the commentor's request. Typically, a two-phase control measure requires additional technology assessment to refine the technology and control potential. Therefore, Phase II is contingent upon the findings from Phase I. In those cases, no SIP reductions are committed. Wherever appropriate, the AQMD has also provided costs for Phase I requirements. Appendix IV to the AQMP shows a range of cost effectiveness estimates for measures, when applicable. Differences in costs from year to year reflect variations in implementation dates of measures. The cost for the 2015 AQMP cannot be calculated at this time since the attainment strategy has yet to be developed.

Response to Comment MMM-9:

One of the future enhancements as indicated in Chapter 8 of the Report is to update methods, underlying technical studies, and approaches, as appropriate.

NNN. Association of California Cities Orange County (ACCOC), November 10, 2012



November 10, 2012

Dr. Barry Wallerstein
Executive Officer
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar CA 91765

RE: Comments to the draft Socioeconomic Report for the 2012 AQMP

Dr. Wallerstein -

Thank you for the opportunity to review and comment on the draft Socioeconomic Report (Report) for the 2012 Air Quality Management Plan (AQMP). As the Hub for Good Public Policy in Orange County, the Association of California Cities – Orange County (ACC-OC) takes extraordinary interest in the costs associated with regional public policy. Thus, we reviewed this Report through the lens of how local governments and taxpayers would be impacted and how it can be improved to mitigate these impacts, now and in the future.

After careful and thorough review of the Report, as well as a November 1 meeting with AQMD staff, we remain concerned with several elements of the Report, including its timing, “cost benefit” assumptions and the science used to arrive at its conclusions. These concerns are outlined below:

AQMD Must Prioritize Economic Impacts as Part of its Plan

The ACC-OC is very concerned that this Report was not prioritized as part of the public comment period of the AQMP. In fact, the Report was issued nearly one full month *after the proposed comment period deadline for the draft AQMP*.

This de-prioritization is both concerning and confusing. We understand that the Report is shaped by the Plan’s control measures.

But to review the AQMP without any economic impact study is to review incomplete and inaccurate policy. Therefore, AQMD staff should prepare economic alternatives that account for the various alternatives of the Plan itself. Studying alternative scenarios is common in environmental analysis – in fact, it is required by the California Environmental Quality Act. The local government community is concerned that AQMD staff does not place equal emphasis on economic impacts.

Thus, we request that the following be added to ES-6 of the Report:



NNN-1

ASSOCIATION OF CALIFORNIA CITIES ORANGE COUNTY
600 S. MAIN ST. SUITE 940, ORANGE, CA 92868 | (714) 953-1300

AQMP Socioeconomic Report Comments
November 10, 2012

- *The Socioeconomic Report is a critical document to the draft AQMP and shall be included in the initial release of the Plan itself, either as an Appendix or Chapter, to ensure that stakeholders can review a comprehensive Plan and comment on the entirety of its economic and environmental impacts.*

NNN-1

Transportation Control Measures are “Double Counted” as Benefits

Composing more than 70 percent of the overall “cost benefit,” the Report states that TCMs would provide nearly \$8 billion in benefits. Yet the vast majority – if not the entire amount – is calculated from projects already identified in the Federal Transportation Implementation Plan – a document prepared by SCAG, regional transportation authorities and cities.

The ACC-OC realizes and appreciates that Appendix H later revised the total amount downward to \$519 million, accounting only for TCMs through 2014. *However, this does not address the issue of TCMs already being independently designed, approved and funded by local agencies and taxpayers.*

NNN-2

In fact, costs associated with the development of TCMs – engineering, design, construction, etc. – are included in both the “expense” and “benefit” calculations. It therefore is “double-counting” the economic benefits that are already being put forward by local agencies. Therefore we request the AQMD calculate the costs and benefits associated with the specific Control Measures proposed in the AQMP, rather than assign the benefits of infrastructure projects that have already been designed, approved and funded by other agencies to the implementation of the AQMP.

Visual Aesthetic Benefits - \$700 million

The Report’s attribution of nearly three-quarters of a billion dollars of increased property values to the implementation of this plan seems to over-estimate the benefits of the plan’s implementation. In fact, the leading study on this issue – the University of Chicago’s 2005 *Does Air Quality Matter? Evidence from the Housing Market* – concludes that:

“After over 30 years of research, the cross-sectional correlation between housing prices and particulates pollution appears weak. ... As a result, many conclude that either individuals place a small value on air quality or the hedonic approach cannot produce reliable estimates of the marginal willingness-to-pay (MWTP) for environmental amenities¹.”

NNN-3

Clarification on how AQMD staff arrived at this conclusion that is counter to leading studies is necessary to more fully understand the impacts of the AQMP on local real estate prices.

Additionally, the California Environmental Protection Agency (Cal/EPA) is currently processing a draft environmental health screening tool that is not included in this Report’s analysis. The health screening tool would “rate” a region’s air quality (by ZIP) as either healthy or unhealthy. The significance of this tool cannot be understated. A negative rating by this tool would decimate local property values and therefore property tax revenue, effectively wiping out any perceived Visual Aesthetic Benefit accounted for in this plan.

NNN-4

The ACC-OC requests that the AQMD address Cal/EPA’s health screening tool in its final Socioeconomic Report.

¹ Chay, Kenneth and Greenstone, Allan. *Journal of Political Economy*. “Does Air Quality Matter? Evidence from the Housing Market. University of Chicago, 2005.

AQMP Socioeconomic Report Comments
November 10, 2012

Summary of Requests

The following summarizes the ACC-OC's requested revisions and additions to the Report:

Timing: Add the following to the suggested refinements currently listed on ES-6 of the Report: *"The Socioeconomic Report is a critical document to the draft AQMP and shall be included in the initial release of the Plan itself, either as an Appendix or Chapter, to ensure that stakeholders can review a comprehensive Plan and comment on the entirety of its economic and environmental impacts."*

Control Measure Cost Benefit Analysis: The Report should calculate costs associated with each Control Measure proposed in the AQMP, rather than calculate the costs and benefits of infrastructure projects that have been designed, approved and funded by other agencies and that are outside of AQMP's discretionary authority.

Visual Aesthetic Benefits: AQMD staff should study the potential impacts of Cal/EPA's proposed Health Screening Tool. This policy has a direct impact on the AQMP, its Socioeconomic Report and its conclusions. Studying these impacts are necessary to have a complete picture of the proposed Visual Aesthetic Benefits.

Again we appreciate the opportunity to review this Report and provide our recommendations. These requests are intended to provide greater credibility to this process and protect local taxpayers. We appreciate your sincere consideration.

Please do not hesitate to contact me or my staff at (714) 953-1300.

Sincerely,



Lacy Kelly
Chief Executive Officer
Association of California Cities – Orange County

Responses to Comment Letter NNN
ACCOC

Response to Comment NNN-1:

Staff strives to release information as it becomes available so as to engage stakeholders early and throughout the process. In addition, upon the release of the Socioeconomic Report, a public review period of 45 days was provided. Also, please refer to Response to comments T-1, W-11, W-12, Z-1, and LL-2.

Response to Comment NNN-2:

Appendix G to the Socioeconomic Report has results derived from excluding TCMs. Exclusion of TCMs from the analysis does not change the conclusion of the analysis.

Response to Comment NNN-3:

The AQMD will examine this study as part of future enhancements. Also, please refer to the 2012 AQMP Board Letter and the Resolution.

Response to Comment NNN-4:

Cal/EPA's environmental health screening tool is still under development. Zip code level data was used by Cal/EPA for illustration in the draft screening tool document. In the Socioeconomic Report air quality data is based on a 4 by 4 kilometer grid and economic data is modeled at the census tract level, both of which are finer than zip code level data. The Cal/EPA's screening tool is a qualitative tool that ranks environmental exposure data (e.g., pesticide use, air quality, toxic release, and traffic congestion), community health data (e.g., asthma, cancer, heart disease, and birth weight), and demographic data (e.g., population age profile, educational attainment, and income) in a snapshot of time to construct a weighted score for various communities. The Socioeconomic Report links air quality, epidemiological, and economic models to produce quantitative results across time and space. While the screening tool is useful for some other purposes, it provides less information than the framework that the Socioeconomic Report uses for the AQMP analysis. Also, please refer to the 2012 AQMP Board Letter and the Resolution.

OOO. Western States Petroleum Association (WSPA), November 12, 2012



Western States Petroleum Association
Credible Solutions • Responsive Service • Since 1907

Patty Senecal
Manager, Southern California Region and Infrastructure Issues

VIA ELECTRONIC MAIL

November 12, 2012

Dr. Barry Wallerstein
Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

**Re: Comments on the Draft Socioeconomic Report for the
Revised Draft 2012 Air Quality Management Plan (AQMP)**

Dear Dr. Wallerstein:

The Western States Petroleum Association (WSPA) is a non-profit trade association that represents twenty-seven companies that explore, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California and five other western states. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA member companies operate petroleum refineries and other facilities in the South Coast Air Basin and thus have a major stake in the Air Quality Management Plan (AQMP) being prepared by the South Coast Air Quality Management District (SCAQMD or District), and any rule developments that might stem from the final AQMP as adopted by the District's Governing Board.

WSPA appreciates the opportunity to submit these comments on the Draft Socioeconomic Report for the Revised Draft 2012 AQMP. We have also delivered comments on Revised Draft AQMP under separate cover.

WSPA believes the 2012 AQMP must be scientifically-based and technically accurate and the District's Governing Board needs to have a thorough assessment of the air quality benefits, environmental impacts, and economic costs associated with that plan. To be successful, the AQMP must be both technically and economically viable because "economic growth is needed

Page 1

970 W. 190th Street, Suite 770, Torrance, California 90502
PHONE: (310) 678-7782 • FAX: (310) 324-9063 • PSenecal@wspa.org • www.wspa.org

to support investment in cleaning the air.”¹ For this reason, decision makers need access to the best possible estimates of the economic impacts of the control measures contained in the proposed AQMP.

According to the Socioeconomic Report, the socioeconomic impact assessment was “designed to help decision-makers and stakeholders arrive at a clean air blueprint that lays out a strong path toward reduced public health damages while at the same time maintaining economic strength, social fairness, and long-term sustainability.”² The design of the assessment is advertised as “a rigorous application of statistical analysis and computer modeling” to assess the aggregate potential impacts of the overall suite of control measures. But while the methodology may reflect the state-of-the-art, this Socioeconomic Report falls short of delivering a meaningful assessment for decision-makers and stakeholders for several reasons.

1. The cost inputs and public health benefits for the control measures proposed in the 2012 Draft AQMP are too often lacking. Where estimated costs are presented, they often do not appear to have a basis in fact. These shortcomings seriously compromise the quality of the assessment output and findings.

The Revised Draft AQMP proposes eight control measures for the 24-hour PM_{2.5} attainment demonstration, twenty-six control measures as an update to the 8-hour ozone strategy, and seven advanced technology measures. For the PM_{2.5} strategy, the District reports costs for four of the proposed measures as \$0, and reports “No Cost Data” available for another three measures. So only BCM-01 has any costs assigned to it. In the case of the proposed update to the 8-hour ozone strategy (i.e., the 182(e)(5) measures), no cost data was reported for eight of the measures.³

In some cases where cost estimates are provided, they lack a factual basis. Several proposed control measures involve a Phase I effort that is an evaluation phase. These evaluations have not been conducted and, as a result, there are no proposals for rule development or for compliance with any regulatory requirement. Without this information, it is impossible to develop realistic assessments of the potential cost of compliance. Nevertheless, the District manages to present cost estimates with an implied accuracy.

The net result is that about half of these AQMP measures have no estimated expense, and nearly the entire reported cost for this AQMP is actually the cost of Transportation Control Measures which came from the Regional Transportation Plan (RTP).⁴ Often the AQMP and the Socioeconomic Report simply defer the development of control measure cost estimates to some future rulemaking. So while the socioeconomic assessment has a very complicated modeling

OOO-1

¹ SCAQMD, Draft Socioeconomic Report for the Draft 2012 AQMP, September 2012, p. 2-10.

² Ibid, p. ES-1.

³ In some cases the Revised Draft AQMP actually presents representations about control measure costs which conflict with values reported in the socioeconomic report.

⁴ Ibid, Table A-1.

methodology, its conclusions are suspect because it is based on materially incomplete cost inputs.

If SCAG can provide planning-level costs for each of the transit projects and TCMs in the RTP, surely the District can at least provide planning-level cost estimates for thirty or forty emission control measures. These estimates should include all potential cost items, and not omit major line items (e.g., stationary source construction costs) simply because they are uncertain. The District can confer with industry representatives where needed to help develop the estimates and in many cases they may best be reported as cost ranges to reflect uncertainty in the estimates. These estimates will be subject to further refinement (as with all forecasts), but they will at least provide a starting point for technical analysis and decision making.

OOO-1

Socioeconomic analysis should include at least planning-level cost estimates for all proposed measures.

2. The socioeconomic assessment contains mismatched costs and benefits, which could mislead decision makers and other stakeholders.

In the case of control costs, the socioeconomic assessment includes costs for both PM_{2.5} and ozone control measures in the Revised Draft AQMP (to the extent it reports any costs). But the plan only includes health benefits for PM_{2.5} measures and explicitly excludes health benefits associated with NO₂ and ozone.

OOO-2

“The proposed PM_{2.5} strategy is also projected to result in co-benefits from reductions in exposure to NO₂, which is not included in the analysis due to resource constraints. Nor are co-benefits from ozone reductions because the ozone strategy in the Draft Plan represents a partial implementation of the Black Box whose full implementation is needed for the ozone attainment.”⁵

Thus, all the available costs are purported to have been considered but only some of the benefits are analyzed. This type of mismatching of costs and benefits is confusing, and makes it difficult for decision makers and stakeholders to relate program benefits to costs.

3. The estimated control costs for measures CMB-01 Phase I and Phase II are fundamentally flawed; the District should complete a comprehensive market analysis that considers the potential impacts to the regional economy of reducing RECLAIM market supplies (i.e., RTCs).

OOO-3

As explained in our comments on the Revised Draft AQMP, the various representations for cost effectiveness of proposed measures CMB-01 Phase I and Phase II are fundamentally flawed in their assumptions and derivation. The potential costs for these control measures are likely much higher than suggested in the socioeconomic assessment or the Draft AQMP.

⁵ Ibid, p. 3-6.

Any remaining discussion of CMB-01 Phase I or Phase II and associated cost effectiveness needs to be based on a comprehensive market analysis that considers the potential impacts to the regional economy of reducing RECLAIM market supplies (i.e., RTCs). Such analysis needs to consider economic growth factors and use an appropriate forecasting methodology as was done for the broader regional emissions inventory.

OOO-3

4. Cumulative costs for regional air quality policy should be presented in the socioeconomic assessment.

As the District knows well, air quality attainment planning in Southern California is an ongoing process that is not limited to any single air quality management plan. For Southern Californians, this planning effort has now been underway for over sixty years. Yet the Socioeconomic Report considers the 2012 AQMP as though it is a stand-alone planning event. The assessment of the AQMP costs and benefits should not be piecemealed.

OOO-4

WSPA recognizes and wishes to emphasize the importance of the socioeconomic impact assessment in helping inform decision-makers and stakeholders as we work to meet the region's clean air challenges while maintaining economic strength. Southern Californians recognize that clean air is not going to be achieved without cost, but the many missing cost inputs to this socioeconomic analysis render the Draft Socioeconomic Report less than useful.

WSPA appreciates the opportunity to submit these comments. Please contact me with any questions at (310) 678-7782 or psenecal@wspa.org.

Sincerely,



Patty Senecal
Manager, Southern California Region and Infrastructure Issues
Western States Petroleum Association

Responses to Comment Letter 000
WSPA

Response to Comment 000-1:

Detail cost assumptions and data for each measure has been posted online (http://www.aqmd.gov/gb_comit/aqmpadvgrp/2012AQMP/meetings/2012/july26/agenda.html) since late July. Except Control Measure ONRD-05 (Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards), no emission reductions are claimed for control measures without costs. Table 6-4 in the 2012 AQMP and respective measures in Appendices IV (A) and IV (B) to the 2012 AQMP has additional information on measures without cost data. Construction costs associated with the re-design of a facility vary by facility and will be assessed during rulemaking when specific requirements are laid out. Also, please refer to Response to comments C-1, M-1, KK-5, EEE-2, and HHH-2.

Response to Comment 000-2:

Please refer to Response to comment EEE-3.

Response to Comment 000-3:

Staff does not agree with the commenter's assumption that available RTC supplies would necessarily be reduced. Currently, there are substantial excess RTCs available in the market and still NOx reduction potential among RECLAIM facilities. Staff believes that CMB-01 Phase I can be implemented through market transactions as there is an excess of RTCs currently. The socioeconomic analysis assumes that the Phase II shave would be achieved through the use of BARCT, which is more conservative than if some facilities elect to purchase RTCs.

Response to Comment 000-4:

All the costs of implemented control measures and their associated air quality benefits of the past AQMPs are reflected in the economic baseline against which the 2012 AQMP is evaluated. Performing a cumulative assessment of all the past and current AQMPs would not be practical as past events have already occurred and become part of the baseline. It would be difficult to isolate air quality regulations out of the entire regional economy. Also, as pointed out by another commenter, many businesses reduce emissions to be more efficient and competitive (please see Response to comment EEE-1). Nevertheless, staff welcomes suggestions on methodologies for such analysis.

PPP. Western States Petroleum Association (WSPA), November 12, 2012



Western States Petroleum Association
Credible Solutions • Responsive Service • Since 1907

[Patty Senecal](#)
Manager, Southern California Region and Infrastructure Issues

VIA ELECTRONIC MAIL

November 12, 2012

Dr. Barry Wallerstein
Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: Comments on the Revised Draft 2012 Air Quality Management Plan (AQMP)

Dear Dr. Wallerstein:

The Western States Petroleum Association (WSPA) is a non-profit trade association that represents twenty-seven companies that explore, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California and five other western states. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA member companies operate petroleum refineries and other facilities in the South Coast Air Basin and thus have a major stake in the Air Quality Management Plan (AQMP) being prepared by the South Coast Air Quality Management District (SCAQMD or District), and any rule developments that might stem from the final AQMP as adopted by the District's Governing Board.

WSPA appreciates the opportunity to submit these comments on the Revised Draft 2012 AQMP. This letter presents WSPA's general comments on the Revised Draft AQMP and builds on our Draft AQMP comment letter dated 31 August 2012. We are also delivering detailed comments on specific AQMP measures which are attached hereto, and will submit a separate comment letter on the Draft Socioeconomic Report for the AQMP.

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1. The State Implementation Plan (SIP) submittal for the 2012 AQMP should be limited to the legally-required 24-hour PM_{2.5} NAAQS attainment demonstration.

The District's Clean Air Act obligation for this 2012 AQMP is to demonstrate attainment with the 24-hour PM_{2.5} National Ambient Air Quality Standard (NAAQS) by 2014. In fact, the Draft Programmatic Environmental Impact Report for the 2012 AQMP (Draft PEIR) considers this option as Alternative 4 and concludes:

"Alternative 4, PM_{2.5} Emissions Reduction Strategies Only: This alternative is considered to be a legally viable alternative because the SCAQMD is only required to submit a PM_{2.5} plan demonstrating attainment of the 2006 24-hour PM_{2.5} National Ambient Air Quality Standard no later than three years from December 14, 2012.... there is no federal requirement to submit an ozone plan by the same date as the PM_{2.5} plan"¹
(Emphasis added)

The District should wait and develop the revised 8-hour ozone attainment strategy when it is required as part of the 2015 AQMP. At that time, we will all have a better understanding of the needed emission reductions and better information on the economic factors and technologies required to meet the region's air quality challenge.

The ozone measures which were proposed in the Draft AQMP, while numerous, are immaterial when compared to the "Black Box" in terms of quantifiable emission reductions. The region needs an ozone strategy that is comprehensive, coordinated and efficient. The ozone measures outlined in the Draft AQMP fail to meet this standard and would only serve to unnecessarily constrain the options available to the District and Southern California businesses when the real ozone planning effort is undertaken for the 2015 AQMP.

The 2012 AQMP control strategy and the associated SIP submittal should be limited exclusively to the PM_{2.5} attainment demonstration consistent with EPA requirements.

2. CMB-01 Phase I is not needed nor appropriate for the PM_{2.5} contingency plan. It should be removed from the 2012 AQMP.

WSPA appreciates the District's recognition that CMB-01 Phase I was unnecessary for attainment of the 24-hour PM_{2.5} standard, and the re-categorization as a contingency measure in the Revised Draft AQMP. However, we submit that CMB-01 Phase I does not represent a reasonable contingency measure and should be completely removed from the PM_{2.5} control measures.

Using the District's "NO_x equivalent" weighting system it is reasonably deduced that CMB-01 Phase I does not meaningfully contribute to the PM_{2.5} contingency plan. BCM-01 and BCM-02 would provide at least 144 tpd of "NO_x equivalent" emission reductions during control

¹ SCAQMD, Draft PEIR for the 2012 AQMP (September 2012), p. 1-34.

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PPP-2

episodes.² By comparison, measure CMB-01 Phase I as proposed would only provide 2 tpd NO_x. The Draft AQMP succeeds in showing that BCM-01 and BCM-02 can provide all of the air quality improvement needed for the District to demonstrate attainment of the 24-hour PM_{2.5} NAAQS by 2014, including the contingency plan. We also question whether the measure even meets the EPA requirements³ for a contingency measure.

CMB-01 Phase I should be completely removed from the PM_{2.5} Control Measures in the 2012 AQMP.

3. CMB-01 Phase II should be removed from the 2012 AQMP and reconsidered in the 2015 AQMP as part of a comprehensive strategy for ozone attainment.

Last year, the Governing Board adopted the *AQMD Air Quality Related Energy Policy* which proposed to “integrate air quality, energy issues, and climate policy in a coordinated holistic manner.”⁴ This is a good objective given that Southern California’s economy and future air quality conditions are inextricably tied to our use of energy. Unfortunately, this AQMP fails to even roughly address the economic, environmental or technology implications of the measures proposed in the plan. For example the AQMP talks at length about zero and near-zero technologies for the transportation sector, but instead of providing even a planning-level discussion of the energy sector implications of such a policy trajectory the plan instead pushes the analysis to the Draft Programmatic Environmental Impact Report (Draft PEIR).

“Energy projections made in this chapter reflect past energy usage in the South Coast Basin and energy projections made from utility and other agencies’ planning documents. These projections reflect existing policies and regulations. This review does not include an analysis of energy implications from the control measures within this AQMP; this analysis is conducted within the EIR review.”⁵ (Emphasis added)

But the Draft PEIR does not provide that analysis. Despite a programmatic scope, the Draft PEIR only considers project-level impacts from the immediately foreseeable deployment of 33,000 zero and near-zero technology vehicles under ONRD-1, ONRD-2, ONRD-4 and ONRD-5 over the next decade (i.e., by 2023).⁶ Not surprisingly, the economic and environmental impact of the measures doesn’t look significant because it isn’t in the region expected to house 12 million motor vehicles by 2023.

Solving the region’s ozone challenge, including the Black Box commitment, requires a comprehensive, coordinated and efficient compliance strategy and any future changes to the RECLAIM program need to be considered in that context. The 2012 AQMP control strategy

² The benefits for BCM-01 and BCM-02 would actually be higher than this because these measures will have NO_x, SO_x and VOC co-benefits which are not accounted in the Revised Draft AQMP.

³ Clean Air Act Section 172(c)(9)

⁴ SCAQMD, Revised Draft AQMP, p. 10-1.

⁵ SCAQMD, Revised Draft AQMP, Section 10, p. 10-1.

⁶ SCAQMD, Draft PEIR for the 2012 AQMP, September 2012, Table 4.3-2.

PPP-2

and SIP submittal should be limited to the PM_{2.5} attainment demonstration. The 2015 AQMP should provide a comprehensive strategy for compliance with the 8-hour ozone standard.

- **The District needs to consider electricity sector impacts associated with a broad-scale electrification initiative for transportation before proposing any new NO_x RECLAIM shave. Failure to plan for such a structural change would challenge the feasibility of the District's zero/near-zero technologies strategy, negatively impact the Southern California economy, and may be contrary to Assembly Bill 1318.**

Broad-scale transportation electrification will mean significant new demand for electricity. As we noted in our 31 August 2012 comment letter, CARB is preparing a much needed evaluation of the long-term electrical system reliability needs of the South Coast Air Basin. This study is being prepared as required under California Assembly Bill (AB) 1318 in consultation with the California Energy Commission (CEC), California Public Utilities Commission (CPUC), California Independent System Operator (CAISO), and the State Water Resources Control Board (SWRCB). That report will include recommendations for meeting those reliability needs while ensuring compliance with state and federal law requirements for emission offsets (i.e., ERCs and RTCs). The release of the draft AB 1318 report is now expected in "early 2013."⁷

The results of the AB 1318 study are critical to understanding the baseline forecast against which the District would consider the additional electricity sector impacts associated with a broad-scale electrification initiative for transportation. That is needed to understand the long-term supply requirements for the NO_x RECLAIM market and it would be premature to consider any new shaves to the NO_x RECLAIM market that could constrain future power loads prior to the completion of that needs analysis. The District should avoid accidentally creating a crisis similar to 2000-2001 when the electricity sector caused a major RECLAIM market disruption that seriously impacted the regional economy and forced the District to temporarily exclude the electricity sector from RECLAIM.

Decisions on the ozone strategy are not legally required at this time, so CMB-01 Phase II should be removed from the 2012 AQMP and excluded from the associated SIP submittal.

- **Any future RECLAIM shave should be limited to those required under BARCT authority.**

Any proposed NO_x RECLAIM shave should be limited to those required under the BARCT authority in the California Health and Safety Code (H&SC). The size of any such shave cannot be specified until the required BARCT evaluation has been completed including an evaluation of the maximum degree of reduction reasonably achievable with advanced control technologies taking into account the environmental, energy, and economic impacts for each class or category of source.

⁷ Michael Tollstrup, California Air Resources Board.

PPP-3

- Any NO_x RECLAIM shave would impose significant costs on the Southern California economy. The AQMP must include a proper cost effectiveness analysis for CMB-01.

RECLAIM is the oldest locally designed and implemented air emissions “cap and trade” program. The cost of RTCs is dictated by both the market’s view of the current supply-demand balance and the market’s view of the future supply-demand balance. Any reduction in market supply (e.g., a shave), will cause the market to reassess the supply-demand relationship and the RTC market price will adjust accordingly. Past market prices cannot be used to forecast future prices when a major structural change is being proposed, such as a nearly 20% supply reduction. And if RECLAIM is unable to support key industrial sectors, the economic consequences could be enormous.

PPP-4

As we noted in our letter dated 31 August 2012, the AQMP makes several conflicting and inappropriate representations concerning the cost effectiveness of Control Measure CMB-01 Phase I and Phase II, and these were carried over into the Draft Socioeconomic Report. Decision makers and stakeholders need to be presented with an economic analysis that is based on appropriate economic principles and information. The Revised Draft 2012 AQMP and the Draft Socioeconomic Report fail to do that for proposed Control Measure CMB-01 Phase I or Phase II.

In summary, proposed measure CMB-01 Phase II is not well considered. Since ozone measures are not legally required at this time, CMB-01 Phase II and the other ozone measures should be removed from the 2012 AQMP and excluded from the associated SIP submittal.

4. **The 1-Hour Ozone Attainment Demonstration should be handled in a stand-alone plan. EPA has not issued a final SIP-call, so action on such a demonstration is procedurally premature.**

On September 19, 2012, EPA published its proposed action calling for a new 1-hour ozone attainment demonstration for the South Coast air basin in the Federal Register. As of this writing, EPA is not expected to issue a final rule until January 2013 or possibly later. Under the Clean Air Act, the District will then have a full year after the final rule is published to submit the 1-hour ozone plan to EPA. Given that the federal agency’s action is not yet final, it would be premature for the Governing Board to consider a new attainment demonstration for the 1-hour ozone NAAQS at this time.

PPP-5

Besides being premature, the draft 1-hour ozone demonstration may be inadequate. EPA has reportedly not released the modeling guidance needed for these 1-hour ozone NAAQS demonstrations, so the District’s initial work is not based on an EPA-approved protocol.

For this reason and others described in our letter dated 31 August 2012, the District should take advantage of the full 12 months allowed under the Clean Air Act to develop a standalone 1-hour ozone plan which we strongly believe should be based on the 2007 AQMP control strategy since the compliance milestones are both circa 2023, and the carrying capacity for the 1-hour ozone

plan is similar to the 8-hour ozone plan. The 1-hour ozone plan would not be due to EPA until early 2014.

In addition to the above comments, we are submitting additional detailed comments on specific control measures proposed in the Revised Draft AQMP as Attachment 1.

WSPA appreciates the opportunity to submit these comments. Please contact me with any questions at (310) 678-7782 or psenecal@wspa.org.

Sincerely,



Patty Senecal
Manager, Southern California Region and Infrastructure Issues
Western States Petroleum Association

Enclosures:

- Attachment 1: Additional WSPA comments on Revised Draft 2102 AQMP

Attachment 1

WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
12 November 2012

Western States Petroleum Association (WSPA) submits these detailed comments on select emission control measures proposed in Appendix IV of the Revised Draft Air Quality Management Plan (AQMP) for the South Coast Air Basin. Our comments below are organized to parallel the order of the proposed measures as presented in Appendix IV.

Appendix IV-A: District's Stationary Source Control Measures
Attachment 1: Short-Term PM_{2.5} Control Measures

1. CMB-01: FURTHER NOX REDUCTIONS FROM RECLAIM - PHASE I [NOX]

Control measure CMB-01 is presented in the Revised Draft AQMP as having two phases. As was done in Appendix IV, our comments here are presented separately for Phase I and Phase II even though WSPA's comments on the two phases have some common points.

CMB-01 Phase I is now proposed as a contingency measure for the 24-hour PM_{2.5} attainment demonstration and would shave 2 tons per day (tpd) of NO_x Reclaim Trading Credits (RTCs) from the RECLAIM market. As noted in our cover letter, it is WSPA's recommendation that CMB-01 Phase I is unnecessary and inappropriate for the PM_{2.5} contingency plan and thus should be completely removed from the PM_{2.5} Control Measures in the 2012 AQMP. With that said, we are providing additional comments on the proposed measure presented in Appendix IV of the Revised Draft AQMP.

The Revised Draft AQMP states that: "currently there are approximately 8 tpd of excess RTCs in the market." This statement is actually not based on "current" conditions but rather is based on a staff conclusion drawn from RECLAIM trading data from the period 2008-2010. WSPA notes that 2008-2010 represented a period of severe economic recession and is not an appropriate basis for characterizing current or future market demand. The document goes on to state: "a shave of 2 tpd of NO_x RTCs should not cause a significant impact to the market." Because the baseline (i.e., 2008-2010 data) is inappropriate, this statement is a conclusion offered by SCAQMD that is lacking valid foundation.

We recommend that the CMB-01 Phase I discussion should be revised to include an analysis of future market demand based on, in part, economic growth factors similar to what was done for the mobile source emissions inventory. It is not clear why the forecasting methodology applied to the broader regional emissions inventory is not applied to stationary sources covered by the RECLAIM market.

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WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
12 November 2012

This shortcoming is particularly problematic for the electricity sector and the impacts that future growth of load demand will have on natural gas-fueled generation in the South Coast Air Basin. Concerns about the availability of emissions reduction credits (ERCs) for needed power generation recently prompted the California Legislature to pass Assembly Bill (AB) 1318. That statute required the California Air Resources Board (CARB) to consult with the California Energy Commission (CEC), California Public Utilities Commission (CPUC), California Independent System Operator (CAISO), and the State Water Resources Control Board (SWRCB) and local utilities to prepare a report for the Governor and Legislature that evaluates the electrical system reliability needs of the South Coast Air Basin with specific recommendations for meeting those reliability needs while ensuring compliance with state and federal air pollution control requirements for emission offsets (i.e., ERCs and RTCs). The results of this study, which is the first of its kind for Southern California, are critical to developing the baseline emission inventory for the electricity sector covered under RECLAIM. WSPA contends it would be premature to consider any new NO_x RECLAIM shave that could constrain future electricity generation prior to the review of this report and additional needs analysis. This is especially important given that much of the District's strategy for reducing transportation sector emissions with zero/near-zero technologies would seem to require the availability of significant new electricity loads.

The document states: "Phase I reductions target a range of 2-3 TPD NO_x" while in other places the document suggests that the measure only targets 2 tpd. Because the size of the proposed shave is entirely arbitrary, it is misleading and inappropriate to state the targeted reductions as a range in some places and suggest it is a definite number in others.

The document also states: "During the rule development phase, staff may refine the emission reductions to include growth and other unforeseen issues." It is unclear what this is intended to mean; the intent should be clarified.

The document states: "Phase I is expected to be adopted in 2013 and the shave will be implemented/triggered for compliance year 2015, if the attainment of 24-hr PM_{2.5} standard is not met by 2014." This is simply not a reasonable or realistic expectation. First, a rulemaking of this type would be difficult to complete in 12 months especially because the proposed measure includes a number of controversial issues. Key among those issues would be the shaving methodology. The Draft AQMP states "staff will work with stakeholders to evaluate various shaving methodology (e.g., sector-specific or across-the-board)."¹ That analysis alone will take time to negotiate. Depending on the outcome of that evaluation, certain stationary sources may need to evaluate installation of new emission controls. But given the uncertainties as to whether

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¹ SCAQMD, Draft 2012 AQMP, Appendix IV, p. IV-A-14.

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WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
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the contingency measure would even be triggered, we expect that most/all sources would not start that process unless/until the measure was actually triggered. So stationary sources would need no less than 2-4 years after trigger to design, construct, and operationalize new emissions controls necessitated by a reduction of NO_x RTC allocations (assuming that control technology options are available). Given these practicalities, the implementation schedule for proposed measure CMB-01 Phase I is simply not reasonable or achievable.

The document states: "It is expected that the cost effectiveness for this control measure would be in the neighborhood of \$7950 per ton for Phase I based on the most recent RTC trading prices." This statement is unfounded because there is little precedent for forecasting future costs for a capped market like RECLAIM. RTC prices are dictated by both the market's view of the current supply-demand balance and the market's view of the future supply-demand balance. Any reduction in market supply (e.g., a shave), will cause the market to reassess the supply-demand relationship with RTC market prices adjusting accordingly. Past market prices cannot be used to forecast future prices when a major structural change is being proposed, such as a nearly 20% supply reduction. Such a shave would certainly cause an escalation in RTC pricing into the future. So the overall economic impact from such a measure would have to include the added capital and operating expenses for sources installing new emission control equipment or basic equipment, as well as higher RTC prices for all RECLAIM market participants. Conversely, if the RECLAIM market was unable to support key industrial sectors, the economic consequences could be much broader and significant to the regional economy.

The District should conduct a comprehensive market analysis to understand the potential impacts on the regional economy of reducing RECLAIM market supplies. Furthermore, any future reductions to the RECLAIM market should be based on technologies which have been demonstrated to be technologically and economically feasible (i.e., BARCT); not haircuts based on arbitrary assumptions.

Recommendations:

1. CMB-01 Phase I should be completely removed from the PM_{2.5} Control Measures in the 2012 AQMP.
2. Any future reductions to the RECLAIM market should be based on technologies which have been demonstrated to be technologically and economically feasible (i.e., BARCT).
3. Any remaining discussion of CMB-01 Phase I and associated cost effectiveness should be based on a comprehensive market analysis that considers the potential impacts to the regional economy of reducing RECLAIM market supplies (i.e., RTCs). Such analysis should consider economic growth factors and use a forecasting methodology as was done for the broader regional emissions inventory. Special consideration should be applied to

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12 November 2012

the electricity sector including consideration of the CARB AB 1318 report on future electricity sector demands for natural gas-fueled generation in the South Coast Air Basin as well as other policy drivers (e.g., zero/near-zero emissions technology).

2. BCM-01: FURTHER REDUCTIONS FROM RESIDENTIAL WOOD BURNING DEVICES [PM2.5]

WSPA supports the proposal for BCM-01. Most of the basin is already in attainment of the PM_{2.5} NAAQS, and the District's modeling forecast suggests that the area around the Mira Loma monitoring station will be very close to achieving the standard by 2014. Based on the information provided in the Draft AQMP, measures BCM-01 and BCM-02 together are clearly sufficient to demonstrate PM_{2.5} attainment in 2014. Similar measures have been successfully implemented in other jurisdictions and are technologically feasible and cost effective.

The Revised Draft AQMP reports that BCM-01 will reduce direct PM_{2.5} emissions, but this control measure will also yield reductions in NO_x, SO_x and VOC emissions during control episodes which are not presented in the plan. NO_x, SO_x and VOC co-benefits should be quantified and credited in the AQMP.

Recommendations:

1. The BCM-01 discussions in the AQMP should be revised to acknowledge the NO_x, SO_x and VOC co-benefits associated with this measure.

3. BCM-02: FURTHER REDUCTIONS FROM OPEN BURNING [PM2.5]

WSPA supports the proposal for BCM-02 for the same reasons stated for BCM-01. BCM-01 and BCM-02 together are clearly sufficient to demonstrate PM_{2.5} attainment in 2014 and represent the most efficient and most cost effective path to attainment of the PM_{2.5} standard by 2014.

As with BCM-01, the Draft AQMP reports that BCM-02 will reduce direct PM_{2.5} emissions but this measure will also yield reductions in NO_x, SO_x and VOC emissions during control episodes which are not presented in the plan. NO_x, SO_x and VOC co-benefits should be quantified and credited in the AQMP.

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Attachment 1

WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
12 November 2012

Recommendations:

1. The BCM-02 discussions in the AQMP should be revised to acknowledge the NO_x, SO_x and VOC co-benefits associated with this measure.

PPP-6

4. **EDU-01: FURTHER CRITERIA POLLUTANT REDUCTIONS FROM EDUCATION, OUTREACH, AND INCENTIVES [ALL POLLUTANTS]**

The Revised Draft AQMP notes that “this control measure is carried over from the 2007 AQMP/SIP.” We note that EDU-01 was formerly covered (in part) by 2007 AQMP measure MCS-03 which is distinct and different from the current MCS-03 measure. We request that such clarification be added to the AQMP.

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Recommendations:

1. Discussion of EDU-01 should include a comment that, while this measure was formerly covered (in part) by 2007 AQMP measure MCS-03, EDU-01 is distinct and different from the 2007 AQMP MCS-03 measure.

Appendix IV-A: District’s Stationary Source Control Measures
Attachment 2: Section 182(e)(5) Implementation Measures for Ozone

1. **CMB-01: FURTHER NOX REDUCTIONS FROM RECLAIM – PHASE II [NOX]**

Control measure CMB-01 is presented in the Revised Draft AQMP as having two phases. As was done in Appendix IV, our comments here are presented separately for Phase I and Phase II even though WSPA’s comments on the two phases have some common points.

PPP-2

CMB-01 Phase II focuses on: “periodic BARCT evaluation as required under state law. As noted in our cover letter, it is WSPA’s recommendation that CMB-01 Phase II should be removed from the 2012 AQMP and reconsidered in the 2015 AQMP as part of a comprehensive strategy for ozone attainment. With that said, we are providing additional comments on the proposed measure presented in Appendix IV of the Revised Draft AQMP.

The Revised Draft AQMP states: “A review of recently adopted control measures and air regulations in other air pollution control districts, as well as command-and-control rules adopted

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WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
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for non-RECLAIM facilities in the District, show that advancements in control technologies are available and can be applied to the top emitting sources. Such control technologies include but are not limited to selective catalytic reduction, low NO_x burners, NO_x reducing catalysts, oxy-fuel furnaces, and non-selective catalytic reduction. Several BARCT levels assessed at the inception of the program in 1993 for top emitting sources such as cement kilns, glass furnaces, and gas turbines were not subject to reduction in the 2005 RECLAIM rule amendment. These sources will be examined for further reductions in this control measure and potential rule making.”²

However, the emission control technologies identified by the District are hardly new; any proposal under the BARCT evaluation authority should be based on demonstrated technologies which have been shown to be both technologically and economically feasible, and that have emerged since the last District BARCT evaluation. The emission reductions justifiable by a BARCT evaluation may be markedly different than proposed under CMB-01 Phase II.

The document goes on to state: “During the rulemaking process, staff may also incorporate the concepts of facility modernization, as well as include other feasible control measures such as increased energy efficiency and zero and near-zero emission technologies.” We believe such concepts are contrary to the RECLAIM market design and may not be supported by current legal authority.

The document states: “Staff’s initial analysis shows that approximately 1-2 tpd additional NO_x RTC reductions are feasible for the second phase from the RECLAIM universe (from the overall 3-5 tpd NO_x RTC reductions discussed in the first phase).” As discussed in our comments on CMB-01 Phase I, this is a conclusion offered by SCAQMD that is wholly lacking valid foundation because the baseline (i.e., 2008-2010 data) is inappropriate. We recommend that the discussion for CMB-01 Phase II needs to be revised to include an comprehensive analysis of future market demand which considers economic growth factors similar to what is done for the mobile source emissions inventory. It is not clear why the forecasting methodology applied to the broader regional emission inventory was not applied to stationary sources covered by the RECLAIM market.

The document also states: “During the rule development phase, staff may refine the emission reductions to include growth and other unforeseen issues at this stage.” It is unclear what this means; the intent should be clarified.

² SCAQMD, Revised Draft AQMP, Appendix IV, p. IV-A-61.

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12 November 2012

The document states: "It is expected that the cost effectiveness for this control measure would be in the neighborhood of \$16,000 per ton NO_x reduced. It is based on the cost effectiveness developed for non-RECLAIM facilities or other command-and-control rules in other air pollution control districts. It should be noted that since RECLAIM facilities have the ability to trade RTCs, it tends to lower the actual cost of compliance. Staff will refine the cost effectiveness during the rule development phase."³

This discussion is fundamentally flawed for a capped market like RECLAIM. RTC prices are dictated by both the market's view of the current supply-demand balance and the market's view of the future supply-demand balance. Any reduction in market supply (e.g., a shave), will cause the market to reassess the supply-demand relationship and the RTC market prices will adjust accordingly. Past market prices cannot be used to forecast future prices when a major structural change is being proposed, such as a nearly 20% supply reduction. Such a shave would certainly cause an escalation in RTC pricing into the future. The economic impact from such a measure would have to include capital and operating expenses for sources installing new emission control equipment or basic equipment, as well as higher RTC prices for all RECLAIM market participants. Conversely, the economic consequences could be broader and more significant for the regional economy if the RECLAIM market was unable to support key industrial sectors.

The District should conduct a comprehensive market analysis to understand the potential impacts of reducing RTC supplies on the regional economy. Furthermore, any future reductions to the RECLAIM market should be based on technologies which have been demonstrated to be technologically and economically feasible (i.e., BARCT).

Recommendations:

1. CMB-01 Phase II should be completely removed from the 2012 AQMP and reconsidered in the 2015 AQMP as part of a comprehensive strategy for ozone attainment.
2. Any future reductions to the RECLAIM market should be based on technologies which have been demonstrated to be technologically and economically feasible (i.e., BARCT).
3. Any remaining discussion of CMB-01 Phase II and associated cost effectiveness should be based on a comprehensive market analysis that considers the potential impacts to the regional economy of reducing RECLAIM market supplies (i.e., RTCs). Such analysis should consider economic growth factors and use a forecasting methodology as was done for the broader regional emissions inventory. Special consideration should be applied to the electricity sector including consideration of the CARB AB 1318 report on future electricity sector demands for natural gas-fueled generation in the South Coast Air Basin.

³ SCAQMD, Revised Draft AQMP, Appendix IV, p. IV-A-62.

PPP-2

Attachment 1

WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
12 November 2012

2. FUG-01: VOC REDUCTIONS FROM VACUUM TRUCKS [VOC]

This control measure would target emission reductions from vacuum trucks through the use of traditional control devices and technologies, including carbon adsorption systems, positive displacement pumps, internal combustion engines, thermal oxidizers, refrigerated condensers and liquid scrubbers.

The proposed control measure does not provide enough specifics to understand all the potential implications but some areas of potential concern would include:

- **Compatibility of vacuum trucks to control equipment:** Not all vacuum trucks can be connected to control equipment for various reasons which can include: (a) lack of connection point on the vacuum truck; or (b) some vacuum trucks are too powerful to be connected to a control device (e.g., carbon canister); the high discharge pressure exerted on the hoses, connectors and control equipment is too high (e.g., gap vacuum trucks). Currently, we know of no control equipment compatible with gap vacuum trucks.
- **Permitting:** Portable carbon canisters are typically permitted for odor control and not for emissions control. The District needs to provide a phase-in period to allow the industry to re-permit their existing control equipment for appropriate use. There may not be ample permitted control equipment available for rental if the vacuum truck control requirements become effective immediately after the rule is promulgated.
- **Training:** Training of vacuum truck operators on Method 21 would take time to accomplish.
- **Costs:** The costs of the monitoring equipment and setup for control equipment will impact maintenance budgets and needs to be fully considered.
- **Emissions Reductions:** WSPA questions the realism of the potential emission reductions cited in the proposed control measure. Those estimates will need to be refined during rule development.

Recommendations:

1. The District staff should continue to work with industry to develop the rules contemplated under FUG-01 to ensure that all engineering, costs and safety considerations are fully understood before proposing any new/modified rule(s).

PPP-8

Attachment 1

WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
12 November 2012

3. FUG-02: EMISSION REDUCTIONS FROM LPG TRANSFER AND DISPENSING [VOC]

The purported purpose of this control measure is to reduce VOC emissions associated with the transfer and dispensing of Liquefied Petroleum Gas (LPG). WSPA recognizes that District Rule 1177 (adopted June 1, 2012) provides an exemption for facilities that are under the purview of Rule 1173 (Fugitive Emissions). The control measure identifies refineries, marine terminals, natural gas processing plants and pipeline transfer stations as being among the types of facilities covered by Rule 1173.

WSPA also recognizes the District's interest in evaluating the potential for further VOC emission reductions from those facilities that are currently exempt from Rule 1177 per 1177(j)(2). We assume that any decision to commence further rule development will be based on the outcome of the evaluations of potential emission reductions and associated cost-effectiveness. However, the language of the proposed control measure states that, "... the proposed control measure will evaluate the potential for further reductions in VOC emissions and expand the applicability of Rule 1177 ... to include ... previously exempted facilities." (Emphasis added)

Recommendations:

1. Revise FUG-02 discussion to clarify that an expansion of Rule 1177 applicability will not be automatic, but rather will be based on the results of the not-yet-conducted evaluations.

4. FUG-03: FURTHER REDUCTIONS OF FUGITIVE VOC EMISSIONS [VOC]

The control measure describes a broad-brush approach to potentially further reducing VOC emissions from fugitive emission components at petroleum industry facilities and chemical plants. The control measure focuses on the potential use of optical gas imaging technology, as did 2007 AQMP control measure FUG-01.

Optical gas imaging (OGI) technology was borne out of a desire to conduct fugitive emission LDAR programs in a more efficient manner (thus, the term "Smart-LDAR"). 2007 AQMP Control Measure FUG-01 specifically recognized the inefficient and labor-intensive effort associated with conventional LDAR programs; however, this concept is not included in FUG-03. The control measure should recognize the problem with inefficiency of existing LDAR programs.

PPP-8

PPP-9

Attachment 1

WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
12 November 2012

The control measure lists seven existing District rules for which it is suggested that the requirements could be enhanced - but the nature of the potential enhancements to the individual rules is not explained. Thus, the overall proposed approach remains vague. The control measure needs to be more specific.

Mention is made of an OGI pilot program, but there is little to suggest what the District might be thinking in this regard. The control measure needs to provide more information and greater clarity, or, in the alternative, there should be a description of a potential stakeholder process through which a pilot program might be developed.

The control measure states that, for example, requirements for "work practices" might be upgraded to "self-inspection programs", and that some of these programs might be upgraded to "LDAR programs". These terms are poorly defined, and are not easily understood.

Facilities subject to Rule 463 and 1178 (Storage of Organic Liquids) utilize a "self-inspection program" but those self-inspection programs are applicable primarily to seals on floating roof tanks. We believe that the District does not intend to suggest utilizing OGI technology for tank seals, and the control measure should clarify this point.

FUG-03 suggests that OGI might be used to "supplement" existing programs. However, clearly the highest and best potential use of the OGI is as a substitute for conventional inspections of components with an organic vapor analyzer.

WSPA's overriding concern is that adding OGI to existing requirements would not be cost-effective. Replacing LDAR with OGI is more attractive, and there are various possibilities that could be explored (e.g., using OGI for difficult-to-monitor components). Using the EPA Alternative Work Practice (AWP) verbatim is not useful, because the final AWP requires conventional LDAR at least annually, and the calibration requirements for OGI are onerous.

The control measure summary table identifies potential VOC reductions of between one and two tons per day by 2019 from an inventory of 3.8 tons per day. WSPA believes that the estimated emissions reductions (roughly 25-50%) are overly optimistic. We would like to understand the source of the 3.8 tons/day emissions inventory as well as the basis for the estimated reductions. We note that the discussion of "Emissions Reduction" states that the emission reductions have not been determined.

PPP-9

Attachment 1

WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
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The cost effectiveness has been estimated to be \$11,000 per ton of emissions reduced. There is simply no basis for the estimated cost effectiveness given that: (1) the emission reductions have not been determined; and (2) there is no specific proposal for rule making. This figure should be removed from the document.

The control measure refers to work by EPA that began in the "early 1970s". WSPA questions the accuracy of this statement; we submit that the time period might be the "early 1990's."

The correlation equations were developed initially by WSPA and API; EPA ultimately approved them.

Recommendations:

1. FUG-03 should be revised to consider the use of optical gas imaging (OGI) technology as a suitable substitute for, not an addition to, conventional LDAR component inspections. This was the intended purpose of "Smart-LDAR" and would help to resolve the inefficient and labor-intensive effort associated with conventional LDAR programs.

5. MCS-03: IMPROVED START-UP, SHUTDOWN AND TURNAROUND PROCEDURES [ALL POLLUTANTS]

This control measure, which is a carryover from 2007 AQMP Control Measure MCS-06, is proposed as a means of reducing all pollutants from activities associated with Start-ups, Shut-downs and Turn-Arounds (S/S/TAs) of process units at various facilities. Although chemical plants and "other types of industries" are mentioned in the control measure, the principal focus has always been on petroleum refineries.

As noted in our comment letter dated 31 August 2012, WSPA believes this measure is should be removed from the 2012 AQMP since the District has already commenced rule development activities on the basis of the 2007 AQMP authority. With that said, we are providing additional comments on the proposed measure presented in Appendix IV of the Revised Draft AQMP.

In the "Background" section there are statements that there are higher emissions associated with process equipment S/S/TAs, that these higher emission rates have been observed, and that the higher emission rates are due to higher equipment loadings during so-called transient operating conditions. Aside from potential flare emissions, WSPA questions the whether equipment loadings and equipment emissions are higher during S/S/TAs. In fact, WSPA has already embarked on a study with the District to answer that very question. It is premature to conclude at this time that equipment loadings and emissions are higher during S/S/TA.

PPP-9

PPP-10

Attachment 1

WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
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With regards to potential flare emissions, the Regulatory History discussion correctly notes that the District's 2005 amendments to Rule 1118 (Control of Emissions from Refinery Flares) enhanced the flare emission reductions that had begun several years earlier. Emissions from refinery flares, which include emissions associated with S/S/TAs have been reduced by ninety percent, or more, since Rule 1118 was adopted in 1998. However, the Regulatory History discussion fails to mention the most recent related development. In Spring 2012, the District and the refineries developed a new enforceable permit condition (S56.1) for the refinery Title V operating permits. That permit condition requires refinery operators to adhere to their respective options for reducing flaring, and to update the lists annually to reflect any revisions. This should reduce flare emission even further.

The Method of Control discussion presents an approach consisting of two phases:

- Phase I, a "technical assessment", will have a target completion in the 2012/2013 timeframe. The discussion in the control measure states that, "Under Phase I, effort (sic) will include establishing procedures that better quantify emission impacts from start-up, shutdown, or turnarounds." WSPA believes that this description misstates the goal of Phase I. Phase I will involve a review of current emission reporting practices (so that the District can better understand current emissions reports), and potential revisions to the District's Annual Emission Report (AER) program, if warranted.

Further, Phase I has been underway since early 2012 as a result of 2007 AQMP CM MCS-06. This is one example of how proposed control measure MCS-03 is redundant.

- Phase II will potentially involve analyses to, (1) "... identify improved operating procedures that minimize emissions..."; (2) "... develop rule amendments that could seek implementation of best management practices ... "; and (3) potentially require additional hardware.

As noted above, refineries are already required (e.g., Rule 1118 and Title V permit condition S56.1) to identify and follow options that minimize flare emissions associated with S/S/TAs. Further, existing Rule 1123 has very effectively regulated VOC emissions due to vessel depressuring, and Rule 1176 effectively regulates liquids drained from equipment into refinery sewer systems.

PPP-10

Attachment 1

WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
12 November 2012

With respect to the potential identification and implementation of Best Management Practices (BMPs), these are already included in the flare minimization requirements of Rule 1118 and the S56.1 permit condition. Further, requirements within the Federal NESHAPs for Start-up, Shut-down, Malfunction Plans (SSMPs) create the same duty for all affected facilities through a mandatory requirement to utilize "Good Air Pollution Practices" - essentially BMPs - during all periods of start-up, shut-down and turnarounds. A facility's SSMPs must be reviewed after each covered activity, and fine-tuned to continually enhance good air pollution control practices. This is another example of how the proposed control measure MCS-03 is redundant.

PPP-10

Recommendations:

1. Proposed measure MCS-03 should be removed from the 2012 AQMP.
6. **EDU-01: FURTHER CRITERIA POLLUTANT REDUCTIONS FROM EDUCATION, OUTREACH, AND INCENTIVES [ALL POLLUTANTS]**

Please see our above comment on proposed measure EDU-01.

Appendix IV-B: District's Mobile Source Control Measures
Proposed Section 182(e)(5) Implementation Measures
Group 2: Off-Road Mobile Sources

1. **OFFRD-04: FURTHER EMISSION REDUCTIONS FROM OCEAN-GOING MARINE VESSELS WHILE AT BERTH [ALL POLLUTANTS]**

The stated purpose of this control measure is to incentivize additional controls on auxiliary engines and boilers on ocean-going marine vessels while at berth. The Revised Draft AQMP notes: "Due to technical and operational (i.e., frequency of calls) reasons, however, cold ironing may not be a viable option for all types of ships. Also, ships require steam for hotelling operations. If all the electrical power for hotelling is supplied by cold ironing, steam must be provided from the ship's boilers or the shore to the ships. Based on energy consumption, steam can account for as much as 30 percent of all energy used during hotelling."

PPP-11

Attachment 1

WSPA Comments on Revised Draft 2012 South Coast Air Quality Management Plan
12 November 2012

These conditions are particularly relevant for crude oil tankers and other bulk liquids marine vessels which call at San Pedro Bay. These tankers are generally not owned or operated by U.S. companies and often suffer from the technical and operational limitations described in the AQMP. Some of these vessels will not be able to comply with shorepower/cold-ironing provisions.

PPP-11

Recommendations:

1. Proposed measure OFFRD-04 should be revised to discuss the technical and operational limitations associated with crude oil tankers and other bulk liquids marine vessels.

2. OFFRD-05: EMISSION REDUCTIONS FROM OCEAN-GOING MARINE VESSELS [NOX, PM]

The stated purpose of this measure is to “incentivize the newest Tier 2 and Tier 3 vessels to call at the Ports of Los Angeles and Long Beach.” The measure goes on to state: “This measure seeks to enhance the Ports’ programs as necessary to maximize the number of Tier 3 vessels calling at the Ports. In addition, other mechanisms that could complement the Port program will be explored. Examples include discussions on the state and federal level of mechanisms to incentivize Tier 2 and Tier 3 vessel calls through the North American ECA and programs to retrofit or repower existing vessels to meet Tier 3 standards.”

PPP-12

It is not clear that the District has the authority to impose this measure, yet the Revised Draft AQMP goes on to suggest “this measure could achieve, at a minimum, NO_x, PM₁₀, and PM_{2.5} reductions of 2.8 tpd, 0.1 tpd, and 0.09 tpd, respectively by 2023. The AQMP should be revised to clarify the legal authority for this measure, details on the method(s) of control, and more details on the basis of the suggested “minimum” emission reductions.

Recommendations:

1. Proposed measure OFFRD-05 should be revised to clarify the legal authority for this measure, details on the method(s) of control, and more details on the basis of the suggested “minimum” emission reductions.

Responses to Comment Letter PPP
WSPA

Response to Comment PPP-1:

Please refer to Response to comments R-1, S-1, T-2, W-1, Z-2, BB-1, DD-8, KK-3, LL-3, CCC-1, and GGG-1.

Response to Comment PPP-2:

Please refer to Response to comments S-6, T-3, W-3, W-4, and CCC-3.

Response to Comment PPP-3:

Please refer to Response to comments S-6, T-3, W-4, W-5, BB-2, and CCC-3.

Response to Comment PPP-4:

Please refer to Response to comment W-7.

Response to Comment PPP-5:

Please refer to Response to comments W-9, and CCC-2.

Response to Comment PPP-6:

Please refer to Response to comments W-2, and EEE-1.

Response to Comment PPP-7:

It is correct that the elements of the 2007 AQMP control measures MCS-03 are carried over and included in the broader scope of the 2012 AQMP control measure EDU-01.

Response to Comment PPP-8:

Any expansion of Rule 1177 applicability will necessarily follow the traditional rulemaking process that will include the thorough evaluation of the feasibility and cost effectiveness of achieving further reductions from the new sources proposed for inclusion. The evaluation will include a full socio-economic and environmental assessment of the impacts of the Rule's expanded applicability.

Response to Comment PPP-9:

The purpose of this control measure is not to replace current traditional LDAR programs, which have produced significant fugitive VOC reductions in the Basin. Rather, it seeks to take advantage of new imaging technologies to institute fugitive emission reductions programs in source categories not currently subject to current LDAR requirement, but in a more efficient and cost-effective manner using

advanced techniques. Staff will explore opportunities that would further enhance the effectiveness of traditional LDAR programs through the use of OGI techniques. Note that the \$11,000 per ton cost effectiveness is based on traditional LDAR programs, and reflects an upper bound considering the lower expected cost of OGI techniques.

Response to Comment PPP-10:

Please refer to Response to comment W-10.

Response to Comment PPP-11:

This measure is a voluntary incentive program targeting potential emissions reductions not regulated by the current CARB regulation. The participation is voluntary based on technically feasible and cost-effective technologies.

Response to Comment PPP-12:

As stated in the comment, this measure seeks to *incentivize* cleaner vessels to call on the Ports of Los Angeles and Long Beach. It builds upon and complements other programs already being implemented. As it does not seek SIP-committed emissions reductions through imposing regulations, there is no need for the legal authority to implement such voluntary incentive programs. The emission reductions referenced are for discussion purposes.

QQQ. Sierra Club Angeles Chapter, November 12, 2012



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Comments by Sierra Club Angeles Chapter on
Draft Socioeconomic Report of the South Coast Air Quality Management Plan (AQMP)

November 12, 2012, sent to: 2012aqmpcomments@aqmd.gov

Dear South Coast Air Quality Management District,

The Sierra Club has long been concerned about environmental justice issues and promoting green jobs. We are impressed with the chart on page 1-3 showing the "Evolution of Socioeconomic Analysis." However, it is disappointing that so many key enhancements will have to wait for future AQMPs: especially expanding sub-regional analyses to include environmental justice (EJ) areas. The map on page 5-4 does show big improvements in many EJ areas. However, these are mainly the areas where the pollution has been the worst and causing huge health impacts. We request that future Socioeconomic Reports quantify the current costs of health impacts on EJ areas, along with the reductions in health impacts resulting from the Plan.

The section on Green Jobs (p. 2-5) is quite perfunctory and does not address the following key issues:

1. Where are the green jobs located? The District should stress in all its lobbying efforts to support green jobs going to the EJ areas, which are defined on p. 5-3 as high poverty and high impacts: "An important element of the socioeconomic analysis is to identify how the proposed control strategy will impact the sensitive portions of the population, in particular, the segment of the community identified by the District's existing environment justice (EJ) guidance, which is an area that exceeds 10 percent of poverty rate with a cancer risk greater than 850 in a million or a PM_{2.5} concentration greater than 19.02 µg/m³."
2. The differentials in jobs per dollar created by money invested in renewables and efficiency, compared to using fossil fuels. We are concerned that the fossil fuel industry touts the large number of jobs involved in the mining, refining, and distribution of the dangerously polluting fossil fuels. But many studies have shown many more jobs per dollar are created by money invested in renewables and efficiency, compared to using fossil fuels.
3. We request an analysis of how money invested in clean fuels (solar, wind, and geothermal) has a much bigger economic benefit than money invested in fossil fuels, because the fossil fuels create such a huge economic drain on Southern California by all the work and school days lost because of air pollution.

Thank you for the opportunity to comment.

Jim Stewart, PhD, Chair
Sierra Club Angeles Chapter Global Warming, Energy & Air Quality Committee
213-487-9340 Fax: 310-362-8400 Cell: 213-820-4345

QQQ-1

Responses to Comment Letter QQQ
Sierra Club Angeles Chapter

Response to Comment QQQ-1:

Staff will study costs of health impacts on EJ areas in future enhancements. For the detailed locations of green jobs, please see the 2010 EDD report of “California’s Green Economy—Summary of Survey Results.” Staff will examine data availability on the differential impacts of investments on clean fuels versus fossil fuels as part of its future endeavors.

RRR. Joyce Dillard, November 12, 2012

From: Joyce Dillard [mailto:dillardjoyce@yahoo.com]
Sent: Monday, November 12, 2012 11:17 AM
To: 2012 AQMP Comments
Subject: Comments to AQMP Air Quality Management Plan due 11.12.2012

You changed the due date. LA Times Classified Ad read:

NOTICE IS FURTHER GIVEN that the 2012 AQMP is designed to meet federal Clean Air Act requirements and addresses the attainment demonstration requirements of the federal Clean Air Act for the South Coast Air Basin (Los Angeles County, Orange County, San Bernardino County and Riverside County). NOTICE IS FURTHER GIVEN that the 2012 AQMP will be submitted to the California Air Resources Board (CARB) and the Environmental Protection Agency for inclusion into the State Implementation Plan (SIP). NOTICE IS FURTHER GIVEN that the Plan addresses air quality standards for 24-hour PM2.5 and 1-hour ozone, as well as updates provisions relevant to the 8-hour ozone standard. This revision to the AQMP updates transportation emission budgets based on the latest motor vehicle emissions model and planning assumptions. The Plan also incorporates significant new scientific data, emissions inventories, ambient measurements, and air quality models. The 2012 AQMP is jointly prepared by the District, CARB, and Southern California Association of Governments (SCAG). NOTICE IS FURTHER GIVEN that the 2012 AQMP includes new information on key elements such as: Current air quality; Improved emission inventories An overall control strategy comprised of: Stationary and Mobile Source Control Measures; An attainment demonstrations for the 24-hour PM2.5 standard; Updated attainment demonstration for the revoked 1-hour ozone standard; Further specifications of certain commitments to provide emission reductions for the 1-hour and 8-hour ozone standards; Motor vehicle emission budgets for transportation conformity purposes. NOTICE IS FURTHER GIVEN that the Revised Draft 2012 AQMP was released for public comment and review on September 7, 2012 following the release of the initial Draft 2012 AQMP on July 18, 2012. Six regional workshops were held from July 10 through August 9, 2012 to discuss the Plan and solicit public input. Four public hearings were held from September 11 through September 13, 2012 to discuss the modifications to the Draft 2012 AQMP based on the comments received on the Draft 2012 AQMP. Comments on the Revised Draft 2012 AQMP are encouraged to be submitted by November 12, 2012 in order to provide time to respond and incorporated changes to the Plan where appropriate.

In the Overall Attainment Strategy, you indicate

The control measures were chosen based on technical and economic feasibility, as well as other factors such as promoting fair share responsibility and maximizing private/public partnerships. Table 4-1 provides an overview of the criteria used in evaluating and selecting feasible control measures, in no particular order.

We do not understand how you have come to the conclusion for this list without some back-up of analysis and how you determined that private/public partnerships as a strategy

RRR-1

for attainment; and, in Table 4-1 Criteria for Evaluating 2012 AQMP Control Measures when you do not even a rank by priority.

Those Criteria are:

1. Cost-Effectiveness
2. Emission Reduction Potential
3. Enforceability
4. Legal Authority
5. Public Acceptability
6. Rate of Emission Reduction
7. Technological Feasibility

RRR-1

You are creating a market, not addressing the real issue.

You fail to address those out gassing of methane in areas of the South Coast Basin with oil wells, either current or past. There is a study underway by a university professor and non-profit organization that is finding high levels of emission affecting ozone.

RRR-2

You have not sufficiently demanded or enforced mitigation measures over the Metrolink Maintenance Yard issues that affect an Environmental Justice community.

RRR-3

You are understating the health assessment risks.

RECLAIM or any other type mechanism does not address the issue.

Complete Streets and Circulation Element of the General Plan would need to be addressed as the issues from the Department of Transportation Pipeline and Hazardous Materials Safety Administration Docket No. PHMSA-2011-0023-0001 Pipeline Safety: Safety of Gas Transmission Pipelines. The condition of infrastructure and the operations and maintenance of that infrastructure cannot be offset by credits.

RRR-4

The Railroad Safety System should be addressed.

You have not done due diligence and may continue substantial inadequacy.

Joyce Dillard

P.O. Box 31377

Los Angeles, CA 90031

From: Joyce Dillard [mailto:dillardjoyce@yahoo.com]
Sent: Monday, November 12, 2012 11:21 AM
To: 2012 AQMP Comments
Subject: Comments to 2012 AQMP Draft Socioeconomic Report due 11.12.2012

Oil wells and the related methane issues tend to be in the Inner City of Downtown Los Angeles.

Other areas in the South Coast Basin have now become populated, though not as dense with oil wells and related methane issues.

You are underplaying this aspect of the basin. You have not addressed those health issues around the poor air quality. You have not even tested these sensitive areas and have never considered this issue in your implementation strategies while you base compliance on unrealistic expectations and disregard to the continuing deterioration of quality of life including health.

You do not address the true costs.

You need to test these areas of special concern. They are unique in the country.

A university professor and a non-profit organization is studying this out gassing of methane in the Los Angeles region and are alarmed at their preliminary findings.

Deteriorating infrastructure is common and (Federal) agencies are aware of the problem as is the Governor's Office of Planning and Research. OPR requires guides local governments in implementation of Elements to the General Plans.

The absence of operations and maintenance funding and/or capital improvements will affect the socio-economic analysis. The cost of living in the South Coast Basin may rise far beyond other communities.

RRR-5

We do not know the cost.

You have no patterns specifying jobs to the air quality reductions measures due to implementation strategies. You are underestimating control costs.

We do not know the cost.

RRR-6

You have not addressed the continuing air quality problem with the railroads and their maintenance yards. There is not an existing Department of Transportation FRA Federal Railroad Administration System Safety Program to cover these problems.

We do not know the cost.

You cannot say there is any quantifiable benefit unless you address and correct the inadequacies of the presumptions.

There is environmental injustice.

Joyce Dillard

P.O. Box 31377

Los Angeles, CA 90031

RRR-7

Responses to Comment Letter RRR
Joyce Dillard

Response to Comment RRR-1:

Please refer to Response to comment M-2.

Response to Comment RRR-2:

The 2012 AQMP is primarily designed to address the air quality of criteria pollutants, namely PM_{2.5} and ozone. It does not propose measure to address methane emissions and their impact on climate. There is no current evidence that methane significantly affects ozone formation. It is therefore considered inert and not an ozone precursor. There may be co-emitted VOCs from oil operations that do affect ozone formation, and those are accounted for in the AQMP analysis.

Response to Comment RRR-3:

The 2012 AQMP is designed to address the regional air quality of criteria pollutants, namely PM_{2.5} and ozone. Localized toxic impacts and environmental justice issues are addressed through other programs, such as our Clean Communities Plan, diesel emission reduction efforts, air toxic assessment studies, CEQA review, and risk reduction strategies. However, some of the measures designed for regional air quality improvement will have commensurate exposure reduction benefits for local communities

Response to Comment RRR-4:

The NO_x RECLAIM market only applies to the largest stationary sources in the Basin, and does not apply to construction or maintenance of distributed infrastructure.

Response to Comment RRR-5:

Emissions from oil wells in the Basin and their impact on ozone and PM_{2.5} are included in the analysis. Localized impacts are addressed through other programs, such as permitting, CEQA review and AB2588 risk reduction strategies. AQMD staff has recently held a technology symposium on hydraulic fracturing, and is initiating a rulemaking on reporting and public notification.

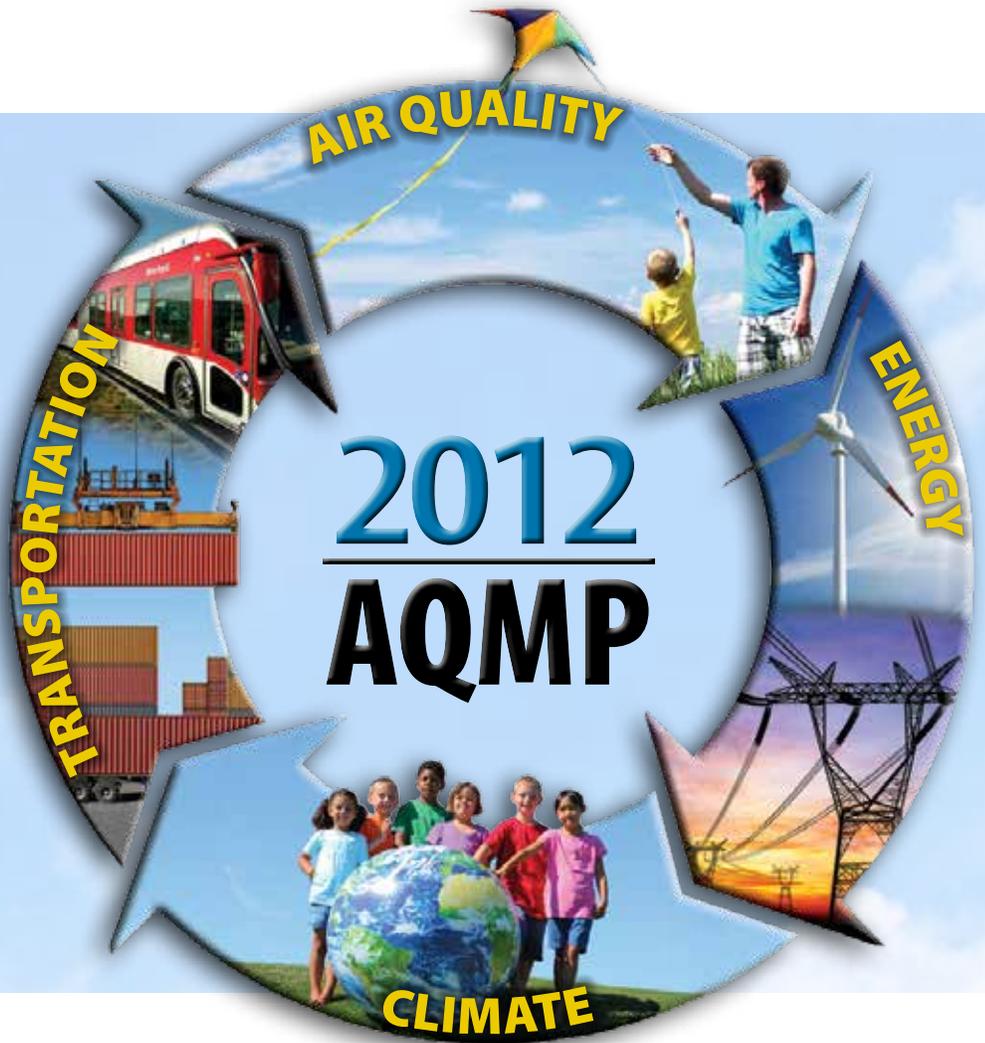
Response to Comment RRR-6:

Please refer to Response to comments C-1, M-1, KK-5, EEE-2, and HHH-2.

Response to Comment RRR-7:

Please refer to Response to comment RRR-03.

Final Program Environmental Impact Report for the 2012 Air Quality Management Plan



Volume 1:
Final Program EIR

SCH #2012061093

November 2012

South Coast Air Quality Management District

Cleaning the air that we breathe...



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The following individuals contributed to the preparation of the main document. Many members of the South Coast Air Quality Management District staff as well as staff from the California Air Resources Board were involved in various aspects of the development of the Final Program Environmental Impact Report for the 2012 Air Quality Management Plan.

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PREFACE

This document constitutes the Final Program Environmental Impact Report (EIR) for the 2012 Air Quality Management Plan (AQMP). The Draft Program EIR was released for a 45-day public review and comment period from September 7, 2012 to October 23, 2012. It was concluded in the Draft Program EIR that the 2012 AQMP has the potential to generate significant adverse environmental impacts to the following environmental topic areas: construction air quality, energy (increased electricity and natural gas demand), hazards and hazardous materials, water demand, construction noise, and transportation and traffic. Measures were identified to mitigate to the maximum extent feasible potentially significant adverse impacts to all environmental topics identified above. In spite of implementing all feasible mitigation measures, impacts to all environmental topics remained significant. In addition, the Draft Program EIR included analyses of potentially significant adverse cumulative environmental impacts and identified and evaluated the relative merits of four project alternatives, including a No Project Alternative, and compared impacts from the project alternatives to the potential impacts from the 2012 AQMP. Thirteen comment letters were received from the public during the public comment period regarding the environmental analyses in the Draft Program EIR. These comment letters and the responses to individual comments are included in Appendix G of this document. No comments in these letters identified other potentially significant adverse environmental impacts from the proposed project not already analyzed in the Draft Program EIR.

In anticipation that the U.S. EPA would likely request that the SCAQMD prepare a federal one-hour ozone SIP, the 2012 AQMP contains ozone control measures that address the federal one-hour ozone standard (revoked) and contributes to making expeditious progress to attain the federal eight-hour ozone standard by 2023. All ozone control measures in the 2012 AQMP were evaluated in the Draft Program EIR. On September 19, 2012, the U.S. EPA published in the Federal Register a proposed "SIP call" which, if finalized, would require the SCAQMD to prepare a demonstration of attainment of the one-hour ozone standard, with attainment required ten years from the date the SIP call is finalized. The same day, the U.S. EPA published in the Federal Register a proposal to withdraw its approval of, and then to disapprove, the transportation control measure (TCM) demonstrations, also referred to as VMT emissions offset demonstrations, in the 2003 one-hour ozone plan and the 2007 eight-hour ozone plan. In response to the two U.S. EPA actions above and in anticipation that they will be finalized, SCAQMD staff has prepared the *One-hour Ozone Attainment Demonstration*, which demonstrates attainment of the federal one-hour ozone standard (revoked) by the year 2022 (2012 AQMP Appendix VII) and the *VMT Offset Requirement Demonstration* (2012 AQMP Appendix VIII). These documents and other minor modification to the proposed project made after circulation of the Draft Program EIR were evaluated by staff and it was concluded that they did not change in any way any conclusions regarding the significance of environmental impacts in the Draft Program EIR.

To facilitate identifying changes in this Final Program EIR, modifications to the document are included as underlined text and text removed from the document is indicated by ~~strikethrough~~. To avoid confusion, minor formatting changes are not shown in underline or strikethrough mode. Staff has reviewed the modifications to the proposed project, including the documentation in new Appendices VII and VIII, and concluded that none of the modifications alter any conclusions reached in the Draft SEA nor provide new information of substantial importance relative to the draft document. As a result, none of the revisions to the Program EIR reflected in this document require recirculation of the document pursuant to CEQA Guidelines §15088.5. Therefore, this document is now constitutes the Final Program EIR for the 2012 AQMP.

CHAPTER 1

INTRODUCTION AND EXECUTIVE SUMMARY

Introduction

California Environmental Quality Act

[Areas of Controversy](#)

Executive Summary: Chapter 2 - Project Description

Executive Summary: Chapter 3 - Environmental Setting

**Executive Summary: Chapter 4 - Environmental Impacts and
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Executive Summary: Chapter 5 - Cumulative Impacts

Executive Summary: Chapter 6 - Alternatives

1.1 INTRODUCTION

The California Legislature adopted the Lewis Air Quality Act in 1976, creating the South Coast Air Quality Management District (SCAQMD) from a voluntary association of air pollution control districts in Los Angeles, Orange, Riverside, and San Bernardino counties. The new agency was charged with developing uniform plans and programs for the South Coast Air Basin (Basin) to attain federal air quality standards by the dates specified in federal law. While the Basin has one of the worst air quality problems in the nation, there have been significant improvements in air quality in the Basin over the last two decades, although some air quality standards are still exceeded relatively frequently, and by a wide margin. The agency was also required to meet state standards by the earliest date achievable through the use of reasonably available control measures.

The Lewis Air Quality Act (now known as the Lewis-Presley Air Quality Management Act) requires that the SCAQMD prepare an Air Quality Management Plan (AQMP) consistent with federal planning requirements. In 1977, amendments to the federal Clean Air Act (CAA) included requirements for submitting State Implementation Plans (SIPs) for non-attainment areas that fail to meet all federal ambient air quality standards (Health & Safety Code §40462). The federal CAA was amended in 1990 to specify attainment dates and SIP requirements for ozone, carbon monoxide (CO), nitrogen dioxide (NO₂) and particulate matter less than 10 microns in diameter (PM₁₀). The California Clean Air Act (CCAA), adopted in 1988, requires the SCAQMD to endeavor to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide (SO₂), and NO₂ by the earliest practicable date (Health & Safety Code §40910), and establishing requirements to update the plan periodically.

The first AQMP was prepared and approved by the SCAQMD in 1979 and has been updated and revised a number of times. The CCAA requires a three-year plan review and update to the AQMP. The following bullet items summarize the main components of those updates and revisions.

- In 1982, the AQMP was revised to reflect better data and modeling tools.
- In 1987, a federal court ordered the United States Environmental Protection Agency (U.S. EPA) to disapprove the 1982 AQMP because it did not demonstrate attainment of all national ambient air quality standards (NAAQS) by 1987 as required by CAA. This, in part, led to the preparation of the 1989 AQMP.
- The 1989 AQMP was adopted on March 17, 1989, and was specifically designed to attain all NAAQS. This plan called for three “tiers” of measures as needed to attain all standards and relied on significant future technology advancement to attain these standards.
- In 1991, the SCAQMD prepared and adopted the 1991 AQMP to comply with the CCAA.

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- In 1992, the 1991 AQMP was amended to add a control measure containing market incentive programs.
 - In 1994, the SCAQMD prepared and adopted the 1994 AQMP to comply with the CCAA three-year update requirement and to meet the federal CAA requirement for an ozone SIP. The AQMP, as adopted in 1994, included the following.
 - All geographical areas under the jurisdiction of the SCAQMD (referred to herein as the district), as opposed to the Basin.
 - The basic control strategies remained the same although the three-tiered structure of control measures was replaced. Measures previously referred to as Tier I, II, or III were replaced with short-/intermediate-term or long-term control measures;
 - Updated and refined control measures carried over from 1991;
 - The federal post-1996 rate of progress demonstration;
 - Best Available Control Measure (BACM) PM10 Plan;
 - The ozone attainment demonstration plan;
 - Amendments to the federal Reactive Organic Compound (ROC) Rate-of-Progress plan also referred to as the VOC Rate-of Progress Plan;
 - Attainment Demonstration Plans for the federal PM10, nitrogen dioxide, carbon monoxide air quality standards;
 - Expanded use of market incentives;
 - New public outreach and education programs; and
 - Manufacturer-certified products and equipment.
 - The 1997 AQMP was designed to comply with the three-year update requirements specified in the CCAA as well as to include an attainment demonstration for PM10 as required by the federal CAA. Relative to ozone, the 1997 AQMP contained the following changes to the control strategies compared to the 1994 AQMP:
 - Less reliance on transportation control measures (TCMs);
 - Less reliance on long-term control measures that rely on future technologies as allowed under §182 (e)(5) of the CAA; and
 - Removal of other infeasible control measures and indirect source measures.

- In 1999, the ozone plan portion of the 1997 AQMP was amended to address U.S.EPA concerns with the 1997 AQMP plan to provide the following:
 - Greater emission reductions in the near-term than would occur under the 1997 AQMP;
 - Early adoption of the measures that would otherwise be contained in the next three-year update of the AQMP; and
 - Additional flexibility relative to substituting new measures for infeasible measures and recognition of the relevance of cost effectiveness in determining feasibility.
- In April 2000, U.S. EPA approved the 1999 ozone SIP Amendment to the 1997 plan. The 1999 Amendment in part addressed the State's requirements for a triennial plan update.
- The 1997 PM10 SIP, as updated in 2002, was deemed complete by U.S. EPA in November 2002 and approved on April 18, 2003.
- The 2003 AQMP was adopted by the SCAQMD in August 2003. The 2003 AQMP has not yet been approved by the U.S. EPA as part of the SIP. The 2003 AQMP addressed the following control strategies:
 - Attaining the federal PM10 ambient air quality standard for the South Coast Air Basin and Coachella Valley – these portions were approved by the U.S. EPA; in both areas, the attainment demonstration was disapproved by the California Air Resources Board (CARB) withdrew its measures;
 - Attaining the federal one-hour ozone standard;
 - 1997/1999 control measures not yet implemented;
 - Discussion regarding credit/incentive programs and their role in achieving overall emission reduction targets;
 - Revisions to the Post-1996 VOC Rate-of-Progress Plan and SIP for CO;
 - Initial analysis of emission reductions necessary to attain the particulate matter less than 2.5 microns in diameter (PM2.5) and eight-hour ozone standards;
 - The 2003 AQMP was partially approved and partially disapproved.
- The SCAQMD Governing Board approved the 2007 AQMP on June 1, 2007. On September 27, 2007, CARB adopted the State Strategy for the 2007 SIP and the 2007 AQMP as part of the SIP. The following summarizes the major components of the 2007 AQMP:

- ❑ The most current air quality setting (e.g., 2005 data);
- ❑ Updated emission inventories using 2002 as the base year, which also incorporate measures adopted since adopting the 2003 AQMP;
- ❑ Updated emission inventories of stationary and mobile on-road and off-road sources;
- ❑ 2003 AQMP control measures not yet implemented (eight of the control measures originally contained in the 2003 AQMP have been updated or revised for inclusion into the Draft 2007 AQMP);
- ❑ 24 new measures are incorporated into the 2007 AQMP based on replacing the SCAQMD's long-term control measures from the 2003 AQMP with more defined or new control measures and control measure adoption and implementation schedules;
- ❑ SCAQMD's recommended control measures aimed at reducing emissions from sources that are primarily under State and federal jurisdiction, including on-road and off-road mobile sources, and consumer products;
- ❑ SCAG's regional transportation strategy and control measures; and
- ❑ Analysis of emission reduction necessary and attainment demonstration to achieve the federal eight-hour ozone and PM_{2.5} air quality standards.

On November 22, 2010, U.S. EPA issued a notice of proposed partial approval and partial disapproval of the 2007 South Coast SIP for the 1997 Fine Particulate Matter Standards and the corresponding 2007 State Strategy. Specifically, U.S. EPA proposed approving the SIP's inventory and regional modeling analyses, but it also proposed disapproving the attainment demonstration because it relied too extensively on commitments to emission reductions in lieu of fully adopted, submitted, and SIP-approved rules. The notice also cited deficiencies in the SIP's contingency measures.

- In response the U.S. EPA's proposed partial disapproval of the 2007 SIP, on March 4, 2011, the SCAQMD Governing Board approved Revisions to the 2007 PM_{2.5} and Ozone State Implementation Plan for the South Coast Air Basin and Coachella Valley. The revisions to the 2007 PM_{2.5} and Ozone SIP consist of the following:
 - ❑ Updated implementation status of SCAQMD control measures necessary to meet the 2015 PM_{2.5} attainment date;
 - ❑ Revisions to the control measure adoption schedule;
 - ❑ Changes made to the emission inventory resulting from CARB's December 2010 revisions to the on-road truck and off-road equipment rules; and

- An SCAQMD commitment to its “fair share” of additional NO_x emission reductions, if needed, in the event U.S. EPA does not voluntarily accept the “federal assignment.”
- In response to the July 14, 2011 U.S. EPA notice of proposed partial approval and partial disapproval of the 2007 South Coast IP for the 1997 Fine Particulate Matter Standards, at the October 7, 2011 public hearing, the SCAQMD Governing Board approved Further Revisions to PM_{2.5} and Ozone State Implementation Plan for South Coast Air Basin and Coachella Valley. Revisions to the PM_{2.5} SIP included a three-prong approach for identifying contingency measures needed to address U.S. EPA’s partial disapproval:
 - Equivalent emission reductions achieved through improvements in air quality;
 - Relying on committed emission reductions for the 2007 ozone plan;
 - Quantifying excess emission reductions achieved by existing rules and programs that were not originally included in the 2007 PM_{2.5} SIP;
 - U.S. EPA approved the PM_{2.5} SIP except for contingency measures on November 9, 2011. Action is pending on the contingency measures; and
 - U.S. EPA approved the 2007 SIP for the 8-hour ozone standard on March 1, 2012.
- The 2012 AQMP outlines a comprehensive control strategy that meets the requirement for expeditious progress towards attainment with the 24-hour PM_{2.5} federal ambient air quality standard with all feasible control measures and demonstrates attainment of the standard by 2014. The 2012 AQMP is also an update to the 8-hour ozone control plan with new emission reduction commitments from a set of new control measures, which implement the 2007 AQMP’s Section 182 (e)(5) commitments.

1.2 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Pursuant to the California Environmental Quality Act (CEQA), this [Final](#) Program Environmental Impact Report ([PEIR](#)) has been prepared to address the potential environmental impacts associated with the South Coast Air Quality Management District’s [Draft](#)-2012 Air Quality Management Plan (AQMP). The 2012 AQMP is the planning document that sets forth policies and measures to achieve federal and state air quality standards in the region. CEQA Public Resources Code Section 21000 et seq., requires that the potential environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impact from these projects be identified.

To fulfill the purpose and intent of CEQA, the SCAQMD staff has prepared this [Final](#) Program Environmental Impact Report ([PEIR](#)) to address the potential

environmental impacts associated with the 2012 AQMP. Prior to making a decision on the [Draft](#) 2012 AQMP, the lead agency decision makers must review and certify the [Final Program](#) EIR as providing adequate information on the potential adverse environmental impacts of the AQMP.

1.2.1 Notice of Preparation/Initial Study

The original Notice of Preparation and Initial Study (NOP/IS) were distributed to responsible agencies and interested parties for a 30-day review and comment period on June 28, 2012 [and 11 comment letters were received](#). A revised NOP/IS (included as Appendix A of this [Final](#) Program EIR) was recirculated on August ~~24~~, 2012 for a 30-day comment period ending August 31, 2012, because changes were made to the 2012 AQMP project description during the comment period on the 6/28/12 NOP/IS. The recirculated Initial Study, [referred to herein as the 8/2/12 NOP/IS](#), identified potential adverse impacts in the following environmental topics: aesthetics, air quality and greenhouse gas emissions; energy; hazards and hazardous materials; hydrology and water quality; solid/hazardous waste; and transportation and traffic. Based on public comments [made relative to the 6/28/12 NOP/IS](#), the topics of land use and noise were also added to the [Program](#) EIR. The [Program](#) EIR also includes detailed responses to all [119](#) comment letters received on the [6/28/12 NOP/IS Initial Study](#) (see Appendix B). As indicated in Appendix C, no comment letters were received on the [8/24/12 NOP/IS](#).

1.2.2 [Program](#) EIR Format

The overall format of the [Program](#) EIR is as follows:

- Executive Summary
- Chapter 1: Introduction
- Chapter 2: Project Description
- Chapter 3: Environmental Setting
- Chapter 4: Environmental Impacts and Mitigation Measures
- Chapter 5: Cumulative Impacts
- Chapter 6: Alternatives
- Chapter 7: References
- Chapter 8: Acronyms

1.3 AREAS OF CONTROVERSY

[CEQA Guidelines §15123 \(b\)\(2\) requires a public agency to identify the areas of controversy in the CEQA document, including issues raised by agencies and the public. Over the course of developing the 2012 AQMP, no areas of controversy were identified at the time of release of the NOP/IS relative to the environmental analysis. Further, SCAQMD had not been made aware of any areas of controversy relative to the environmental analysis in any of the comment letters received regarding the NOP/IS.](#)

One comment letter received on the Draft Program EIR identified the following potential area of controversy. Concern was raised regarding the accuracy of the air quality inventory baseline, used as the basis for identifying potential air quality impacts, because it may not have included inventory information provided by the John Wayne Airport operators. However, as noted in response to comment #3-7 in Appendix G of this Final Program EIR, the 2012 AQMP baseline inventory was developed incorporating all information submitted by John Wayne Airport and SCAQMD staff will revise the Integra Report to reflect the updated information provided by the airport authority. Consequently, because the baseline inventory incorporates the data provided by the John Wayne Airport, this issue does not constitute an area of controversy.

Other comment letters were received on the Draft Program EIR, but none identified new issues relative to the environmental analysis or potential areas of controversy that could not be responded to in Appendix G. Since no areas of controversy were identified by SCAQMD or the public during the review and comment periods for both the NOP/IS and the Draft Program EIR, it is concluded that the proposed project does not contain any areas of controversy as defined by CEQA.

1.43 EXECUTIVE SUMMARY: CHAPTER 2 - PROJECT DESCRIPTION

Implementation of the ~~Draft~~ 2012 AQMP control strategies requires a cooperative partnership of governmental agencies at the federal, state, regional and local level. At the federal level, the U.S. EPA is charged with regulation of on-road motor vehicle standards; trains, airplanes, and ships; certain non-road engines; and off-shore oil development. CARB also oversees on-road emission standards, fuel specifications, some off-road sources and consumer product standards. At the regional level, the SCAQMD is responsible for stationary sources and some mobile sources. In addition, the SCAQMD has lead responsibility for the development of the AQMP. Furthermore, at the local level, the Southern California Association of Governments (SCAG) has a dual role of leader and coordinator. In their leadership role, they, in cooperation with local jurisdictions and sub-regional associations, develop strategies for these jurisdictions to implement. As a coordinator, they facilitate the implementation of these strategies (e.g., transportation control measures).

Chapter 2 describes existing air quality regulations and details the proposed approach for the 2012 ~~revision to the~~ AQMP.

1.43.1 Current Control Strategy

The SCAQMD has fulfilled the majority of its emissions reductions commitments specified in the 2007 State Implementation Plan (SIP). Through January 31, 2011, the SCAQMD Governing Board has amended and adopted 12 rules. The majority of these rules have been submitted to U.S. EPA and approved as part of the SIP. Several recently adopted SCAQMD rules have been submitted to CARB and have

been or are expected to be submitted to and subsequently evaluated by U.S. EPA. By 2014, the control measures adopted by the SCAQMD over this period will have achieved 22.5 tons per day of VOC reductions, 7.6 tons per day of NO_x reductions, 4.0 tons per day of SO_x reductions, and 1.0 ton per day of PM_{2.5} reductions. Additional reductions from these adopted rules will be achieved by 2023.

Since the 2007 AQMP was adopted, CARB has adopted (either entirely or partially) many of the 2007 AQMP's control measure commitments. In combination with the regulatory activity and revised inventory forecast, CARB has achieved the emission targets for both 2014 and 2023.

1.43.2 2012 AQMP Control Strategy

The overall control strategy for the ~~Draft~~ 2012 AQMP is designed to meet applicable federal and state requirements. The focus of the AQMP is to demonstrate attainment of the federal 24-hour PM_{2.5} ambient air quality standard by 2014, while making expeditious progress toward attainment of state PM standards. In addition, to further implement the existing 8-hour ozone plan, the ~~Draft~~ 2012 AQMP includes Section 182 (e)(5) implementation measures designed to assist in future attainment of the 8-hour ozone standard. The proposed control measures in the ~~Draft~~ 2012 AQMP are based on implementing all feasible control measures through the application of available technologies and management practices as well as development and deployment of advanced technologies and control methods. In addition, SCAQMD retains certain obligations relative to the (revoked) one-hour ozone standard. For purposes of the environmental analysis, it is expected that full implementation of the attainment strategy for the one-hour ozone standard would have the same environmental effects as implementing all the measures in the ~~Draft~~ 2012 AQMP and the Section 182 (e)(5) measures for the eight-hour standard that were already analyzed in the EIR for the 2007 AQMP. These measures rely on proposed actions to be taken by several agencies that currently have the statutory authority to implement such measures. Similar to the approaches taken in previous AQMPs, the SIP commitment includes an adoption and implementation schedule for each control measure. Each agency is also committed to achieving a total emission reduction target with the ability to substitute specified control measures for control measures deemed infeasible, as long as equivalent reductions are met by other means. These measures are also designed to satisfy the federal Clean Air Act requirement of reasonably available control technologies [§172 (c)], and the California requirement of Best Available Retrofit Control Technologies (BARCT) [Health and Safety Code §40440 (b)(1)].

To ultimately achieve the ozone ambient air quality standards and demonstrate attainment, significant NO_x emissions reductions will be necessary, not only from non-vehicular sources under the jurisdiction of the SCAQMD, but substantial reductions will be necessary from sources primarily under the jurisdiction of CARB (e.g., on-road motor vehicles, off-road equipment, and consumer products) and U.S. EPA (e.g., aircraft, ships, trains, and pre-empted off-road equipment). Without an adequate and fair-share level of reductions from all sources, the emissions reduction

burden would unfairly be shifted to stationary sources that are already stringently regulated. The SCAQMD will continue to work closely with CARB to further control mobile source emissions where federal or State actions do not meet regional needs.

The ~~Draft~~ 2012 AQMP control measures consist of three components: 1) the SCAQMD's stationary and mobile source control measures; 2) suggested State mobile source control measures; and 3) Regional Transportation Strategy and control measures provided by SCAG. These measures rely on not only the traditional command-and-control approach, but also public incentive programs, as well as advanced technologies expected to be developed and deployed in the next several years.

1.54 EXECUTIVE SUMMARY: CHAPTER 3 - ENVIRONMENTAL SETTING

Chapter 3 provides a detailed description of the existing setting of environmental resources identified as having potential significant impacts from the proposed project.

1.54.1 Aesthetics

Aesthetic resources on federal lands are managed by the federal government using various visual resource management programs, such as the Visual Resource Management System utilized by the Federal Bureau of Land Management (BLM) and the Visual Management System utilized by the United States Forest Service (USFS).

The California Coastal Commission (CCC) regulates development projects within the coastal zone for jurisdictions that do not have a local coastal program (LCP) or land use plan (LUP). California's Scenic Highway Program helps to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of land adjacent to those highways. The nearest officially designated Scenic Highway to either the Ports and downtown Los Angeles would be Route 2 (Angeles Crest Scenic Byway) near La Canada/Flintridge, in the northeastern portion of Los Angeles County.

General plans, the primary document that establishes local land use policies and goals, are prepared by the counties and incorporated cities within the district. These general plans establish local policies related to aesthetics and the preservation of scenic resources within their communities or subplanning areas, and may include local scenic highway programs.

1.54.2 Air Quality

It is the responsibility of the SCAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, (CO), nitrogen dioxide (NO₂), PM10, PM2.5, sulfur dioxide (SO₂), and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM10 and SO₂, far more stringent. California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride.

SCAQMD also has a general responsibility pursuant to HSC §41700 to control emissions of air contaminants and prevent endangerment to public health. Additionally, state law requires the SCAQMD to implement airborne toxic control measures (ATCM) adopted by CARB, and to implement the Air Toxics “Hot Spots” Act. As a result, the SCAQMD has regulated pollutants other than criteria pollutants such as TACs, greenhouse gases and stratospheric ozone depleting compounds. The SCAQMD has developed a number of rules to control non-criteria pollutants from both new and existing sources. These rules originated through state directives, CAA requirements, or the SCAQMD rulemaking process.

Two inventories are prepared for the ~~Draft~~ 2012 AQMP for the purpose of regulatory and SIP performance tracking and transportation conformity: an annual average inventory, and a summer planning inventory. The ~~Draft~~ 2012 AQMP uses annual average day emissions to estimate the cost-effectiveness of control measures, to rank control measure implementation, and to perform PM2.5 modeling and analysis. The summer planning inventory emissions are developed to capture the emission levels during a poor ozone air quality season, and are used to report emission reduction progress as required by the federal and California Clean Air Acts.

Stationary sources can be divided into two major subcategories: point and area sources. Point sources are large emitters with one or more emission sources at a permitted facility with an identified location (e.g., power plants, refineries). Area sources consist of many small emission sources (e.g., residential water heaters, architectural coatings, consumer products, as well as permitted smaller sources), which are distributed across the region. The emissions from these sources are estimated using activity information and emission factors.

Mobile sources consist of two subcategories: on-road and off-road sources. On-road sources are from vehicles that are licensed to drive on public roads. Off-road sources are typically registered with the state and cannot be typically driven on public roads (construction and mining equipment, lawn and gardening equipment, ground support equipment, agricultural equipment).

In the 2008 base year model of the ~~Draft~~ 2012 AQMP, total mobile source emissions account for 60 percent of the VOC and 88 percent of the NO_x emissions based on the summer planning inventory. The on-road mobile category alone contributes about 34 and 59 percent of the VOC and NO_x emissions, respectively, and approximately 68 percent of the CO for the annual average inventory. For directly emitted PM_{2.5}, mobile sources represent 39 percent of the emissions with another 10 percent due to vehicle-related entrained road dust.

Within the category of stationary sources, point sources contribute more SO_x emissions than area sources. Area sources play a major role in VOC emissions, emitting about seven times more than point sources. Area sources, including sources such as commercial cooking, are the predominant source of directly emitted PM_{2.5} emissions (39 percent).

Demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by SCAG for their 2012 RTP are used in the ~~Draft~~ 2012 AQMP. Industry growth factors for 2008, 2014, 2018, 2020, 2023, and 2030 are also provided by SCAG, and interim years are calculated by linear interpolation. Current forecasts indicate that this region will experience a population growth of 11 percent between 2008 and 2023, with a four percent increase in vehicle miles traveled (VMT); and a population growth of 16 percent by the year 2030 with an 11 percent increase in VMT.

Without any additional controls, VOC, NO_x, and SO_x emissions are expected to decrease due to existing regulations, such as controls on off-road equipment, new vehicle standards, and the RECLAIM programs. Due to already-adopted regulations, 2023 on-road mobile sources are expected to account for: about 16 percent of total VOC emissions compared to 34 percent in 2008; about 37 percent of total NO_x emissions compared to 59 percent in 2008; and about 38 percent of total CO emissions compared to 68 percent in 2008. Meanwhile, area sources are expected to become the major contributor to VOC emissions from 35 percent in 2008 to 50 percent in 2023.

The milestone years 2008, 2014, 2019, 2023, and 2030 are the years for which emission inventories were developed as they are relevant target years under the federal CAA and the CCAA. The base year for the 24-hour PM_{2.5} attainment demonstration is 2008. The attainment year for the federal 2006 24-hour PM_{2.5} standard without an extension is 2014 and 2019 represents the latest attainment date with a full five-year extension. The 80 ppb federal 8-hour ozone standard attainment deadline is 2023, and the new 75 ppb 8-hour ozone standard deadline is 2032. A 2030 inventory will be used to approximate this latter year.

1.5.4.3 Energy

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation (U.S. DOT), United States Department of Energy (U.S. DOE), and

U.S. EPA are three agencies with substantial influence over energy policies and programs. Generally, federal agencies influence transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy related research and development projects, and through funding for transportation infrastructure projects.

On the state level, the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are two agencies with authority over different aspects of energy policy and regulations. The CPUC regulates privately-owned utilities in the energy, rail, passenger transportation, telecommunications, and water fields. The CEC collects and analyzes energy-related data, prepares state-wide energy policy recommendations and plans, promotes and funds energy efficiency and renewable energy resources programs, plans and directs state response to energy emergencies, and regulates the power plant siting and transmission process.

In 2010, 71 percent of the electricity used in California came from in-state sources, while 29 percent was imported into the state. The electricity imported totaled 85,169 gigawatt hours (GWh), with 24,677 GWh coming from the Pacific Northwest, and 60,492 GWh from the Southwest. (Note: A gigawatt is equal to one million kilowatts). For natural gas in 2010, 42 percent of the natural gas used in California came from the Southwest, 22 percent from Canada, 12 percent from in-state, and 23 percent from the Rockies. Also in 2010, 38 percent of the crude oil came from in state, with 12 percent coming from Alaska, and 50 percent being supplied by foreign sources.

One of the key areas of concern in the energy sector is reducing the amount of petroleum based fuels in the district. Consumption of these fuels is a major factor in the amount of criteria pollutants in southern California. Alternative fuels play an important role in the strategy to reach attainment in the region. Renewable energy resources include: biomass, hydro, geothermal, solar and wind.

1.54.4 Hazards and Hazardous Materials

The potential for hazards exist in the production, use, storage, and transportation of hazardous materials. Hazardous materials may be found at industrial production and processing facilities. Some facilities produce hazardous materials as their end product, while others use such materials as an input to their production process. Examples of hazardous materials used as consumer products include gasoline, solvents, and coatings/paints. Hazardous materials are stored at facilities that produce such materials and at facilities where hazardous materials are a part of the production process. Specifically, storage refers to the bulk handling of hazardous materials before and after they are transported to the general geographical area of use. Currently, hazardous materials are transported throughout the district via all modes of transportation including rail, highway, water, air, and pipeline.

Hazard concerns are related to the risks of explosions or the release of hazardous substances or exposure to air toxics. State law requires detailed planning to ensure

that hazardous materials are properly handled, used, stored, and disposed of to prevent or mitigate injury to health or the environment in the event that such materials are accidentally released. Federal laws, such as the Emergency Planning and Community-Right-To-Know Act of 1986 (also known as Title III of the Superfund Amendments and Reauthorization Act or SARA) impose similar requirements. These requirements are enforced by the California Emergency Management Agency (CalEMA).

In 2010, there were a total of 672 hazardous materials incidents (releases, accidents, spills, etc.) reported for Los Angeles, Orange, Riverside and San Bernardino counties, and in 2011 a total of 698 incidents were reported in these four counties. San Bernardino and Los Angeles counties accounted for the largest number of incidents, followed by Orange and Riverside counties.

1.54.5 Hydrology and Water Quality

The Federal Safe Drinking Water Act, enacted in 1974 and implemented by the U.S. EPA, imposes water quality and infrastructure standards for potable water delivery systems nation-wide. The California Safe Drinking Water Act was enacted in 1976. Potable water supply is managed through local agencies and water districts, the State Department of Water Resources (DWR), the Department of Health Services (DHS), the State Water Resources Control Board (SWRCB), the U.S. EPA, and the U.S. Bureau of Reclamation. The DWR manages the State Water Project (SWP), and compiles planning information on supply and demand within the state.

The DWR divides the state into ten hydrologic regions. Some regions contain a great deal of water, some regions are very dry and must have their water imported by aqueducts. The South Coast Air Basin lies within the South Coast Hydrologic Region. More than half of the state's population resides in the region (about 19.6 million people or about 54 percent of the state's population), which covers 11,000 square miles or seven percent of the state's total land. The cities of Los Angeles, Long Beach, Santa Ana, San Bernardino, and Big Bear Lake are among the many urban areas in this section of the state. The Santa Clara, Los Angeles, San Gabriel, and Santa Ana Rivers are among the area's hydrologic features. Most lakes in this area are actually reservoirs, made to hold imported water.

Imported sources account for approximately 75 percent of the total water used in the region. Local water resources, which include groundwater and captured surface water runoff, are fully developed and are expected to remain relatively stable in the future on a region-wide basis. Several groundwater basins in the region are threatened by overdraft conditions, increasing levels of salinity, and contamination by agricultural land to urban development, thereby reducing the land surface available for groundwater recharge. Increasing demand for groundwater may also be limited by water quality, since levels of salinity in sources currently used for irrigation could be unacceptably high for domestic use without treatment.

The SWRCB, and the nine regional water quality control boards (RWQCB), are responsible for protecting surface and groundwater supplies in California. In particular, the SWRCB establishes water-related policies and approves water quality control plans, which are implemented and enforced by the RWQCBs. Five RWQCBs have jurisdiction over areas within the boundaries of the SCAQMD. These agencies also regulate discharges to state waters through federal pre-treatment requirements enforced by the publicly owned treatment works (POTWs).

Water quality of regional surface water and groundwater resources is affected by point source and non-point source discharges occurring throughout individual watersheds. Regulated point sources, such as wastewater treatment effluent discharges, usually involve a single discharge into receiving waters. Non-point sources involve diffuse and non-specific runoff that enters receiving waters through storm drains or from unimproved natural landscaping. Within the regional Basin Plans, the RWQCBs establish water quality objectives for surface water and groundwater resources and designate beneficial uses for each identified waterbody.

Much of the urbanized areas of Los Angeles and Orange Counties are serviced by three [agencies that operate large POTW facilities operating on the coast](#): the City of Los Angeles Bureau of Sanitation's [Hyperion Treatment Plant in El Segundo](#), the [City of Los Angeles Bureau of Sanitation's Terminal Island Facility in San Pedro](#), ~~the Joint Outfall System of the Los Angeles County Sanitation District's~~ [\(LACSD\) Joint Water Pollution Control Plant \(JWPCP\) in Carson](#), and the Orange County Sanitation District's (OCSD) treatment plants [in Huntington Beach and Fountain Valley](#). These ~~three~~ facilities handle more than 70 percent of the wastewater generated in the entire region.

1.54.6 Land Use and Planning

The district is comprised of the non-desert portion of Los Angeles County, all of Orange County, a portion of southwestern San Bernardino County, and the Salton Sea Air Basin and Mojave Desert Air Basin portions of Riverside County amounting to a jurisdiction of approximately 10,473 square miles and a population of approximately 17 million. Urban development in the district tends to cluster around a well-defined network of state and federal highways which connect the regional populations of the district with other regions in California and across the nation. While most urban development has historically been based in the coastal regions of Los Angeles County and Orange County, there has been considerable urban growth eastward to the mountain and valley regions of Riverside County and San Bernardino County.

Without a vast surplus of open space, developers in Los Angeles County and Orange County have turned to different types of housing and commercial developments, including townhouses, condominiums, apartments, and mixed-use developments that combine commercial and office uses. Older buildings are often renovated or converted to accommodate new residential or commercial uses, and land use patterns in major developed cities have generally shifted from the traditional single-use

pattern to more of a mixed use approach, where residential and commercial land uses are often found adjacent to one another, or within the same building.

Much of the development in Riverside and San Bernardino Counties has taken place within unincorporated county land that both counties possess. Riverside County, in particular, has developed the Riverside County Integrated Project, which seeks to improve the quality of life for its citizens through a complementary array of development projects and programs aimed at creating a balanced and sustainable environment.

1.54.7 Noise

The federal government sets noise standards for transportation-related noise sources that are closely linked to interstate commerce, such as aircraft, locomotives, and trucks, and, for those noise sources, the state government is preempted from establishing more stringent standards. The state government sets noise standards for those transportation noise sources that are not preempted from regulation, such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies.

Environmental noise levels typically fluctuate across time of day; different types of noise descriptors are used to account for this variability, and different types of descriptors have been developed to differentiate between cumulative noise over a given period and single noise events. Individual noise events, such as train pass-bys or aircraft overflights, are further described using single-event and cumulative noise descriptors.

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The Federal Transit Administration (FTA) states that in contrast to airborne noise, ground-borne vibration is not a common environmental problem and most people consider groundborne vibration to be an annoyance that may affect concentration or disturb sleep. However, high levels of vibration may damage fragile buildings or interfere with equipment that is highly sensitive to groundborne vibration (e.g., electron microscopes).

Some land uses (residences, schools, hospitals, etc.) are considered more sensitive to ambient noise levels than others due to the amount of noise exposure and the types of activities typically involved and are assigned more stringent noise standards. A noise level of 55 to 60 decibels outdoors is the upper limit for intelligible speech communication inside a typical home. In addition, social surveys and case studies have shown that complaints and community annoyance in residential areas begin to occur at about 55 decibels.

1.54.8 Solid and Hazardous Waste

A total of 32 Class III active landfills and two transformation facilities (e.g., waste-to-energy facilities) are located within the district with a total capacity of 116,796 tons per day and 3,240 tons per day, respectively¹. Permit requirements, capacity and surrounding land use are three of the dominant factors limiting the operations and life of landfills in the ~~South Coast Air D~~istrict. Landfills are permitted by the local enforcement agencies with concurrence from CalRecycle (formerly known as the California Integrated Waste Management Board). Local agencies establish the maximum amount of solid waste that can be received by a landfill each day, and the operational life of a landfill. Landfills are operated by both public and private entities. Landfills in the district are also subject to requirements of the SCAQMD as they pertain to gas collection systems, dust and nuisance impacts.

There are no hazardous waste disposal sites within the jurisdiction of the SCAQMD. Hazardous waste generated at area facilities, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facility. Two such facilities are the Chemical Waste Management (CWM) Kettleman Hills facility in King's County, and the Laidlaw Environmental Services (LES) facility in Buttonwillow (Kern County). Kettleman Hills is operating close to capacity, with reportedly less than one percent of capacity remaining. CMW applied to both the DTSC and the U.S. EPA to expand the facility to provide another 12-14 years of life. Buttonwillow receives approximately 900 tons of hazardous waste per day and has a remaining capacity of approximately 8,890,000 cubic yards. The expectant life of the Buttonwillow Landfill is approximately 40 years. Hazardous waste also can be transported to permitted facilities outside of California such as the U.S. Ecology Inc. facility in Beatty, Nevada or the LES facility in Lake Point, Utah.

While the DTSC has primary responsibility in the state for regulating the generation, transfer, storage and disposal of hazardous materials, DTSC may further delegate enforcement authority to local jurisdictions. In addition, the DTSC is responsible and/or provides oversight for contamination cleanup, and administers state-wide hazardous waste reduction programs. The DTSC conducts annual inspections of hazardous waste facilities. Other inspections can occur on an as-needed basis.

California Department of Transportation (Caltrans) sets standards for trucks transporting hazardous wastes in California. The regulations are enforced by the California Highway Patrol (CHP). Trucks transporting hazardous wastes are required to maintain a hazardous waste manifest. The manifest is required to describe the contents of the material within the truck so that wastes can readily be identified in the event of a spill.

¹ [This represents the sum of the permitted capacities of the Southeast Resource Recovery Facility at 2,240 tons per day and the Commerce Refuse-To-Energy Facility at 1,000 tons per day.](http://www.calrecycle.ca.gov/SWFacilities/Directory/19-AK-0083/Detail/)
[http://www.calrecycle.ca.gov/SWFacilities/Directory/19-AA-0506/Detail.](http://www.calrecycle.ca.gov/SWFacilities/Directory/19-AA-0506/Detail/)

1.54.9 Transportation and Traffic

The southern California transportation system is a complex intermodal network that consists of roads, highways, public transit, paratransit, bus, rail, airports, seaports and intermodal terminals designed to carry both people and goods. The transportation system supports the region's economic needs, as well as the demand for personal travel.

Numerous agencies are responsible for transportation planning and investment decisions within the southern California area. SCAG helps integrate the transportation-planning activities in the region to ensure a balanced, multimodal plan that meets regional as well as county, subregional, and local goals, while each of the four counties within the jurisdiction of the SCAQMD has a Transportation Commission or Authority. These agencies are charged with countywide transportation planning activities, allocation of locally generated transportation revenues, and in some cases operation of transit services.

The existing transportation network serving the Southern California area supports the movement of people and goods. On a typical weekday in the four-county region the transportation network supports a total of approximately 420 million vehicle miles of travel (VMT) and 12 million vehicle hours of travel (VHT). Of this total, over half occur in Los Angeles County.

Much of the existing travel in the Southern California area takes place during periods of congestion, particularly during the morning (6:00 AM to 9:00 AM) and evening peak periods (3:00 PM to 7:00 PM). Congestion can be quantified as the amount of travel that takes place in delay (vehicle hours of delay or VHD), and alternately, as the percentage of all travel time that occurs in delay (defined as the travel time spent on the highway due to congestion, which is the difference between VHT at free-flow speeds and VHT at congested speeds). Regional travel time in delay represents approximately 25 percent of all daily, 30 percent of all AM peak period, and 38 percent of all PM peak period travel times.

The regional freeway and highway system is the primary means of person and freight movement for the region. This system provides for direct automobile, bus and truck access to employment, services and goods. The network of freeways and State highways serves as the backbone of the system offering very high capacity limited-access travel and serving as the primary heavy duty truck route system.

Transit use is growing in southern California. As of 2009, transit agencies in the southern California area reported 747.3 million boardings. This represents growth of nearly 20 percent in the ten years between 2000 and 2010, but only four percent growth in per capita trips due to population growth. Metrolink and Metro Rail (Los Angeles County) have seen ridership growth of six percent to eight percent per year.

1.65 EXECUTIVE SUMMARY: CHAPTER 4 - ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Chapter 4 – Environmental Impacts and Mitigation Measures, provides a detailed review of the environmental topics that were identified in the 8/21/12 NOP/IS where potentially significant adverse impacts were identified (see Appendix A). In addition, the evaluation of several environmental resources (land use and noise) was added to the Program EIR based on public comments. Each of the proposed control measures was evaluated to determine the environmental topics that would potentially be impacted, if the control measure or strategy was adopted. The following subsections provide a brief discussion of the potential environmental impacts and mitigation measures for each environmental category analyzed. Table 1-1 provides a summary of the impacts identified under each resource category, identifies mitigation measures that were imposed (if applicable), and identifies the remaining impacts following mitigation.

1.65.1 Aesthetics

Subchapter 4.1 identifies the potential aesthetics impacts as a result of implementing the control measures in the 2012 AQMP.

Control measures ONRD-05, ADV-01 and ADV-02 included in the 2012 AQMP relate primarily to emission reductions through the incorporation of electrically powered trucks and locomotives. To power this equipment, catenary lines (overhead power lines) could be constructed and could potentially result in aesthetic impacts. These lines are similar to “trolley car lines” associated with electrically powered trollies and buses common in metropolitan transportation.

The areas affected by the proposed Zero and Near-Zero Emissions control measures that could result in the installation of catenary lines are expected to be located in commercial, industrial areas, and along existing transportation corridors (e.g., in areas within and adjacent to the Port of Los Angeles and Port of Long Beach, along the I-710 Freeway, along the I-60 Freeway, as well as near railyards in downtown Los Angeles).

The construction and operation of the catenary or overhead power lines that could be used to power Zero and Near Zero vehicles and locomotives are not expected to be visible to any Scenic Highway or any roadway eligible as a Scenic Highway. Therefore, aesthetics impacts associated with the 2012 AQMP are less than significant.

1.65.2 Air Quality

Subchapter 4.2 examines the secondary air pollutant emissions that could occur as a consequence of efforts to improve air quality (e.g., emissions from control equipment such as afterburners). Secondary air quality impacts are potential increases in air pollutant that occur indirectly from implementation of control

measures in the ~~Draft~~ 2012 AQMP. SCAQMD evaluated all ~~Draft~~ 2012 AQMP control measures to identify those control measures that have the potential to generate secondary adverse air quality impacts. Evaluation of control methods for each control measure indicated that there are 27 control measures that could have potential secondary air quality impacts.

While implementing the ~~Draft~~ 2012 AQMP control measures is expected to reduce operational emissions, construction-related activities associated with installing or replacing equipment, for example, are expected to generate emissions from construction worker vehicles, trucks, and construction equipment. Implementation of some of the measures in the 2012 AQMP that require construction may cause significant impacts to air quality (mainly CO and PM10).

Secondary emissions from increased electricity demand, the reformulation of products (lower VOC materials), mobile sources (PZEV and ZEV vehicles), the increased use of fuels (lower fuel economy), and other miscellaneous sources (handling of greenwaste) are considered to be less than significant.

1.65.3 Energy

Subchapter 4.3 identifies the potential energy impacts as a result of implementing stationary and mobile control measures in the 2012 AQMP. The EIR evaluated the potential impacts of the AQMP on electricity, natural gas, petroleum fuels, alternative fuels, and renewable energy.

The increase in electricity associated with the control measures and strategies in the 2012 AQMP is considered to be significant. While the increase in electricity is expected to be within the electric generating capacity of the region, an increase in electricity of greater than one percent represents a substantial increase in electricity. Thus, the energy impacts associated with electricity demand from the implementation of the 2012 AQMP are considered to be significant.

The energy impacts associated with implementation of the control measures and strategies in the 2012 AQMP are expected to result in an increase in natural gas demand. The increased demand for natural gas is considered to be significant.

The energy impacts associated with implementation of the control measures and strategies in the 2012 AQMP are expected to result in a reduction in use (less demand) of petroleum fuels so that no significant impacts on petroleum fuels are expected.

Although an increase in demand for hydrogen as a transportation fuel is expected due to implementation of the control measures and strategies in the 2012 AQMP, this increase is not expected to be significant since hydrogen is not widely available and its use is currently limited. Hydrogen is available or the feedstock that produces it is generally available. Future demand is expected to be met through increased production. The energy impacts associated with the future use of hydrogen is

expected to be less than the current strategy that uses predominately petroleum based fuels so that no significant hydrogen demand impacts on are expected.

The design and goal of the 2012 AQMP is to shift to less polluting transportation fuels. Although an increase in alternative transportation fuels is expected, this increase is not expected to be significant since alternative fuels (e.g., natural gas or hydrogen) are available or the feedstock that produces the fuels is generally available.

Finally, no 2012 AQMP control measures were identified that would adversely affect renewable energy production or interfere with the goals and requirements of the Renewables Portfolio Standard.

1.65.4 Hazards and Hazardous Materials

Subchapter 4.4 identifies the potential hazard impacts as a result of implementing the control measures in the ~~Draft~~ 2012 AQMP. The Initial Study identified the following types of control measures as having potentially significant hazards impacts: 1) use of reformulated coatings, solvents, adhesives, mold release and consumer products; 2) increase in the transportation and disposal of reformulated products; 3) the use of ammonia in selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) air pollution control technology; and, 4) use of alternative fuels.

Each control measure in the ~~Draft~~ 2012 AQMP was evaluated for potential hazard and hazardous materials impacts based the technologies expected to be employed through implementation of the control measure. Evaluation of control methods for each control measure indicated that there are 24 (three PM2.5 and 21 ozone precursor) control measures that have potential adverse hazard impacts.

Control Measures MCS-01, CTS-01, CTS-02, CTS-03, and CTS-04 could require reformulation of coatings, adhesives, solvents, mold release, and consumer products. The analysis indicates that the fire hazard impacts associated with reformulation are expected to be significant. Mitigation measures HZ-1 and HZ-2 were imposed that would add consumer warning requirements for all flammable and extremely flammable products and require public education regarding the use of flammable materials are expected to reduce the impacts to less than significant.

Control Measures IND-01, INC-01, ONRD-01, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07 would establish in-use strategies that may require or promote the use of alternative fuels. Hazards impacts from the increased use of alternative fuels (including methanol, ethanol, CNG, LPG, biodiesel, hydrogen and electric/hybrid) are expected to be similar to or less than hazards associated with conventional fuels. Therefore, significant hazard impacts are not expected from the increased use of these alternative fuels. The potential hazards associated with the transportation of LNG were determined to be significant and

mitigation measures HZ-3 through HZ-6 were imposed. However, the mitigation measures would not reduce LNG transport impacts to less than significant.

Control Measures CMB-01, IND-01, MSC-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-04, and ADV-05 could result in the use of SCR and SNCR to reduce NOx emissions. While the use of aqueous ammonia at concentrations less than 20 percent by volume is expected to reduce hazard impacts associated with ammonia use, the potential for a spill of aqueous ammonia during transportation or on-site could pose a significant hazard impact. Accordingly, significant hazard impacts are expected from the increased use of ammonia in SCR and SNCR technologies and mitigation measures HZ-7 through HZ-10 were imposed that required the use of aqueous ammonia and included containment devices. After mitigation, no remaining significant impacts associated with ammonia use is expected.

Some control measures in the 2012 AQMP could use fuel additives in conjunction with other technologies and methodologies to provide emission reductions. In the past, the introduction of fuel additives into fuels has resulted in environmental impacts (e.g., lead and MTBE). Because of the many requirements before additives can be approved for use, the potential impacts of fuel additives are less than significant because negative impacts would be identified and mitigated, as necessary, prior to their use. Therefore, no mitigation measures are required.

Finally, no hazard impacts were identified pertaining to safety issues associated with implementing MCS-03, Start-up, Shutdown and Turnaround Procedures or from other control measures that would increase the use of catalysts.

1.65.5 Hydrology and Water Quality

Subchapter 4.5 identifies potential hydrology and water quality impacts that may be generated by implementing the 2012 AQMP. Some of the control measures in the 2012 AQMP may result in impacts on water quality and increased wastewater discharge; water quality impacts associated with the use of alternative fuels; water quality impacts associated with increased use of batteries; increased water demand; and use and application of sodium bisulfate for livestock operations.

Wastewater treatment facilities are expected to have sufficient capacity to handle the estimated increase in wastewater that could be generated from reformulation of products and use of air pollution control equipment (e.g., wet ESPs and WGSs). Therefore, no significant impacts associated with wastewater treatment or water quality is expected.

The use of alternative fuels is not expected to result in greater adverse water quality impacts than the use of conventional fuels. No significant adverse hydrology and water quality impacts are expected from the increased use of alternative fuels.

It is expected that the recycling of EV and hybrid batteries will be greater than lead-acid batteries in conventional vehicles, reducing the potential for illegal disposal and potential water quality impacts. No significant adverse water quality impacts are expected from the increased use of EV and hybrid vehicles.

Water demand associated with the manufacture and use of waterborne and add-on air pollution control technologies are potentially significant. While mitigation measures are available, they can vary from jurisdiction to jurisdiction, and may remain significant.

The use and application of SBS should be controlled and monitored to prevent water quality runoff and related water quality impacts. Therefore, the use of SBS is expected to be less than significant.

Potential spills associated with ammonia are expected to be contained on-site due to the requirement for secondary spill containment devices and berms. Therefore, potential ammonia spills are expected to be less than significant.

1.65.6 Land Use and Planning

Subchapter 4.6 examines the potential land use impacts associated with implementation of the proposed control measures in the 2012 AQMP. Potential land use impacts are associated primarily with the construction of support systems (e.g., catenary overhead electrical lines or magnetic infrastructure related to operation of zero- and near-zero transport systems). Control measures ONRD-05, ADV-01, and ADV-02 could require construction activities that may generate land use impacts. Control measures are not expected to conflict with applicable land use plans, policies, or regulations or physically divide an established community. Therefore, no significant adverse land use impacts are expected.

1.65.7 Noise

Subchapter 4.7 identifies 2012 ~~Draft~~ AQMP control measures that could result in potential adverse noise impacts. Control measures that may have noise impacts relate primarily with construction activities associated with air pollution control equipment and construction of support systems (e.g., wayside power, catenary overhead electrical lines, battery charging or fueling infrastructures related to operation of zero- and near-zero transport systems).

A number of control measures could result in the construction of air pollution control equipment including BCM-03, IND-01, MCS-01, CMB-01, FUG-01, FUG-02, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, and ADV-06. Control measures ONRD-05 and ADV-01 could require the installation of catenary overhead electrical lines within or adjacent to existing roadways, streets, freeways, and/or transportation corridors. ADV-02 could require the installation of electrical or magnetic infrastructure along rail lines.

During construction, there may be significant noise and vibration impacts, but these will be temporary in nature and related solely to construction activities. No modification to existing rail or truck traffic routes/corridor is expected; therefore, noise and vibration impacts associated with operational activities are expected to be less than significant.

1.65.8 Solid and Hazardous Waste

Subchapter 4.8 identifies potential solid and hazardous waste impacts that may be generated by implementing the ~~Draft~~ 2012 AQMP. Implementing some of the control measures could increase the generation and disposal of solid and hazardous waste in the region. Specifically, some control measures will encourage the use of electric vehicles which could result in an increase in waste associated with spent batteries (Control Measures IND-01, INC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, and ADV-06). Other control measures could increase the generation of solid or hazardous waste due to installation of air pollution control equipment, such as activated carbon, filters, and catalysts (Control Measures BCM-03, MCS-01, CMB-01, INC-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-04, and ADV-05). Finally, other control measures would encourage the early retirement of older equipment and replacement with newer and lower emission technology equipment, generating additional waste (Control Measures IND-01, MCS-01, CMB-01, CMB-02, CMB-03, INC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, ADV-01, ADV-02, ADV-05, ADV-06, and ADV-07).

The increased use of EVs and hybrids are not expected to result in a significant increase in the illegal disposal of batteries as they are valuable as a recyclable; no significant solid and hazardous waste impacts were identified due to air pollution control technologies as part of the ~~Draft~~ 2012 AQMP; and control measures that would require new equipment are not expected to result in a significant impact as the equipment being replaced can be reused in areas outside the district or recycled.

1.65.9 Transportation and Traffic

Subchapter 4.9 examines impacts on the potential transportation and traffic impacts associated with implementation of the proposed control measures in the 2012 AQMP. Some of the control measures could require construction activities adjacent to or within existing roadways potentially impacting traffic during construction activities.

The existing rail and truck routes/corridors likely to be modified are located primarily in commercial and industrial zones within the Southern California area. Examples of these areas include, but are not limited to, the Port of Los Angeles, Port of Long Beach, and industrial areas in and around container transfer facilities (rail and truck) near the Terminal Island Freeway, along the Alameda Corridor, as well as inland facilities. Since only existing transportation routes will be modified, no new

transportation routes are anticipated as part of the proposed project, project impacts will be temporary in nature and limited to construction activities.

Implementation of Control Measures ONRD-05 and ADV-01 may contribute to significant adverse operational traffic impacts on roadways because transportation infrastructure improvements pertaining to overhead catenary electrical lines could require the dedication of an existing land exclusive to vehicles using the overhead catenary electrical lines. The dedication of an existing lane would mean that other vehicles would have reduced access to available driving lanes, which could adversely affect traffic and congestion. Mitigation measures for construction and operation would need to be identified on a project-by-project basis. SCAQMD recommends that mitigation measure MM-TR29 from SCAG's 2012-2035 RTP/SCS [Program EIR](#) (which generally requires a traffic management plan) be implemented for all [projects resulting from Control Measures ONRD-05 and/or ADV-01](#) that have the potential to impact roadways. Traffic impacts would remain significant after mitigation.

1.65.10 Other CEQA Topics

1.65.10.1 Growth-Inducing Impacts

CEQA defines growth-inducing impacts as those impacts of a proposed project that "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. The 2012 AQMP is not expected to foster economic or population growth or result in the construction of additional housing or other infrastructure, either directly or indirectly, that would further encourage growth. The 2012 AQMP could result in construction projects at existing stationary sources and along existing transportation corridors. However, the proposed project would not be considered growth-inducing, because it would not result in an increase in production of resources or cause a progression of growth that could significantly affect the environment either individually or cumulatively.

1.65.10.2 Significant Environmental Effects Which Cannot Be Avoided

The following is a summary of impacts associated with the 2012 AQMP that this [Draft-Final Program EIR](#) concluded are significant and unavoidable:

- Air emissions associated with construction activities due to the implementation of the control measures in the 2012 AQMP were considered to be potentially significant for CO and PM10 emissions.
- The increased demand for electricity and natural gas associated with the 2012 control measures is considered to be significant.
- The potential hazards associated with LNG transport are considered significant.

- Water demand associated with the manufacture and use of waterborne coatings, solvents and other consumer products, and add-on air pollution control technologies are potentially significant. While mitigation measures as available, they can vary from jurisdiction to jurisdiction, and may remain significant.
- Noise and vibration impacts will be temporary in nature and related solely to construction activities, but could be significant.
- Traffic impacts will be temporary in nature and related solely to construction activities, but could be significant.

Feasible mitigation measures have been developed for the identified adverse significant impacts; however, those mitigation measures may not reduce the impacts to less than significant. The 2012 AQMP would place only an incremental demand on nonrenewable and limited resources, such as energy and water supplies relative to the rate of use of these resources due to population growth and increased consumer demand. The largely irretrievable conversion of undeveloped/agricultural land to urban uses is a function of the growing population and local land use authority, not the 2012 AQMP. The 2012 AQMP is expected to result in long-term benefits associated with achieving ambient air quality standards and a reduction in the use of petroleum-based fuels (e.g., increased use of alternative fuels).

1.65.10.3 Relationship Between Short-Term Uses and Long-Term Productivity

Implementing the ~~Draft~~ 2012 AQMP is not expected to achieve short-term goals at the expense of long-term environmental productivity or goal achievement. The purpose of the 2012 AQMP is to set forth a comprehensive control program that will lead the Basin into compliance with the federal 24-hour PM_{2.5} air quality standards and achieve additional reductions in ozone precursors. By attaining federal and state air quality standards, the 2012 AQMP is expected to enhance short and long-term environmental productivity in the region.

1.76 EXECUTIVE SUMMARY: CHAPTER 5 – CUMULATIVE IMPACTS

CEQA Guidelines §15130 (a) requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in §15065 (a)(3). The 2012 AQMP is a regional plan that includes broad policy criteria and as such, the 2012 AQMP Final Program EIR evaluates the environmental impacts associated with implementing the 2012 AQMP stationary and mobile source control measures to determine whether or not the impacts of the project are cumulatively considerable when combined with potential impacts associated with other similar regional projects involving regulatory activities or other projects with similar impacts.

The traffic control measures (TCMs) in the 2012 AQMP (see Appendix E of this [Final](#) Program EIR) were developed and adopted by SCAG as part of the 2012-2035 RTP/SCS and the 2011 Federal Transportation Improvement Program (FTIP). These measures and recommendations have accordingly been moved forward for inclusion in the region's air quality plans and are included as part of the 2012 AQMP. The impacts of implementation of these TCMs were evaluated in the 2012-2035 RTP/SCS Program EIR (SCAG, 2012). The cumulative analysis in this section of the Final Program EIR for the 2012 AQMP relies primarily on the environmental analyses in the SCAG 2012-2035 RTP/SCS Program EIR for the evaluation of the environmental impacts of implementing the TCMs.

Because the TCMs, their associated mitigation measures, and their emissions reductions are included along with the 2012 AQMP in the PM_{2.5} SIP submittal for the Basin and because the TCMs and other projects in the 2012-2035 RTP/SCS have the potential to generate similar impacts, the 2012-2035 RTP/SCS is considered to be a cumulatively related project. In general, the long-term transportation planning requirements for emission reductions from on-road mobile sources within the district are met by SCAG's RTP/SCS, whereas the short-term implementation requirements of the Transportation Conformity Rule are met by SCAG's biennial Regional Transportation Improvement Program (RTIP).

1.76.1 Aesthetics

Implementation of the 2012 AQMP would not in itself result in significant aesthetic impacts.

According to the 2012-2035 RTP/SCS Program EIR, aesthetic impacts are expected to remain significant because it is likely that there will be situations where visual impacts cannot be mitigated to a less than significant level. Aesthetic impacts would remain significant because the population growth projected by 2035 in combination with the projects in the 2012-2035 RTP/SCS would consume currently vacant land that would create significant contrasts with the overall visual character of the existing landscape setting. Potential aesthetic resources impacts would be reduced following the implementation of mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation.

There is no overlap between the 2012 AQMP projects that may affect aesthetics resources and aesthetic resources impacts created by the 2012-2035 RTP/SCS. The 2012 AQMP would not contribute to aesthetic impacts as noted above, so adverse cumulative operational aesthetics resources impacts are concluded to be less than significant.

1.76.2 Agricultural Resources

The 2012 AQMP is not expected to result in significant agriculture resources impacts, as evaluated in the NOP/IS.

For the 2012-2035 RTP/SCS, agricultural resource impacts are expected to remain significant following mitigation as the 2012-2035 RTP/SCS is expected to contribute to the loss and disturbance of agricultural lands as up to 74,300 new lane miles could be developed, some of which could disturb or consume agricultural lands. Potential agricultural resources impacts associated with the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS would contribute to significant loss and disturbance of agricultural lands. Moreover, the 2012 AQMP would not contribute to these impacts, so adverse cumulative operational agricultural resources impacts are concluded to be less than significant.

1.76.3 Air Quality

Construction Impacts: Construction activities associated with the 2012 AQMP would result in significant impacts to the air quality resource and any concurrent emissions-generating activities from reasonably foreseeable construction activities would add an additional air emission burden to these significant levels. Therefore, construction air quality impacts from the 2012 AQMP are considered to be cumulatively considerable prior to mitigation and would contribute to significant adverse cumulative impacts from the 2012-2035 RTP/SCS.

Operational Impacts – Criteria Pollutants: The 2012 AQMP would result in overall emission reductions of NO_x, VOC, SO_x, and PM emissions, providing an air quality benefit. The 2012 AQMP would attain the 24-hour federal PM_{2.5} standard by 2014, make progress towards attaining the eight-hour ozone standard, maintain compliance with state and federal NO₂ standards, maintain compliance with state and federal SO₂ standards, and maintain compliance with the federal 24-hour PM₁₀ standard. Secondary emissions from increased electricity demand, control of stationary sources, increased use of reformulated products, mobile sources, increased use of fuels due to reduction in fuel economy, and from miscellaneous sources were considered to be less than significant.

Under the 2012-2035 RTP/SCS, mobile source criteria pollutant emissions would stay approximately the same or decrease, providing an air quality benefit. However, the increase of re-entrained roadway dust would increase proportionately to VMT and as such was considered a significant impact.

Implementation of the 2012 AQMP would not in itself result in significant adverse operational air quality impacts associated with operational activities. For this reason, the 2012 AQMP would not be expected to contribute to significant adverse cumulative impacts from transportation projects projected in the 2012-2035 RTP/SCS.

Operational Impacts – Non-Criteria Pollutants: The 2012 AQMP is expected to result in a reduction of toxic air contaminant (TAC) emissions. The basis for this conclusion is that many TACs are also classified as criteria pollutants (e.g., PM and

VOCs). To the extent that AQMP control measures reduce PM and VOC emissions, associated TAC emission reductions could occur as well. The overall impacts associated with implementation of the 2012 AQMP are an overall reduction in non-criteria pollutants (e.g., toxic air contaminants). Therefore, no significant impacts on non-criteria pollutants have been identified.

Under the 2012-2035 RTP/SCS, as a result of on-going emission controls, cancer and other health risks within any given distance of mobile sources in the region would decline, although the health risks adjacent to transportation facilities would remain higher than regional averages and above desirable levels. As a result of 2012-2035 RTP/SCS policies anticipated growth patterns would concentrate population adjacent to transit and other transportation facilities in High Quality Transit Areas (HQTAs) that could result in more people being exposed to elevated cancer risk as compared to areas of the region more distant from such facilities.

Implementation of the 2012 AQMP would not in itself result in significant air quality impacts associated with non-criteria pollutants. Moreover, the 2012 AQMP would not contribute to impacts associated with transportation projects projected in the 2012-2035 RTP/SCS and, therefore, would not be expected to contribute to a cumulatively considerable impact requiring mitigation.

Greenhouse Gas Impacts: The 2012 AQMP is expected to result in a reduction of GHGs. This conclusion is based on the fact that mobile source control measures would reduce GHG emissions through accelerated penetration of partial zero-emission and zero emission vehicles, the use of alternative fuels such as natural gas, the combustion of which generates less GHG emissions than diesel fuel, along with other energy efficiency and pollution prevention measures.

Implementation of the 2012-2035 RTP/SCS projects would result in a significant increase of greenhouse gas emissions from residential and commercial building construction, operational energy demand, and total mobile source emissions. The 2012-2035 RTP/SCS Program EIR concludes that implementation of 2012-2035 RTP/SCS projects would meet the applicable AB 32 reduction targets (identified in SB 375) with respect to light duty vehicles. However, without technical details as to how each sector of the economy would comply with AB 32, growth anticipated to occur under the 2012-2035 RTP/SCS could result in a significant impact related to AB 32 and the Scoping Plan.

The 2012-2035 RTP/SCS Program EIR concluded that because per capita carbon dioxide emissions from light duty trucks and autos would meet ARB targets by 2020 and would achieve even greater emission reductions in 2035, the 2012-2035 RTP/SCS would result in a less-than-significant impact related to per capita emissions and SB 375.

Air Quality Summary: The air quality impacts associated with 2012 AQMP control measures were determined to be significant for construction activities and less than significant for secondary emissions from increased electricity demand,

control of stationary sources, change in use of lower VOC materials, mobile sources, increase use of fuels due to reduction in fuel economy, miscellaneous sources, non-criteria pollutants, and global warming and ozone. Although mitigation measures identified in the 2012 AQMP [Final](#) Program EIR would reduce construction air quality impacts associated with construction activities, impacts would remain significant and as such would continue to contribute to considerable impacts following mitigation. Since project-specific construction air quality impacts from the 2012 AQMP would be significant, the 2012 AQMP would contribute to significant adverse cumulative construction air quality impacts generated by the 2012-2035 RTP/SCS

Similarly, although mitigation measures identified in the 2012-2035 RTP/SCS Program EIR would reduce air quality and associated health impacts, impacts for construction, operation, TACs, and GHG impacts would continue to contribute to cumulatively considerable impacts following mitigation. The 2012 AQMP would not contribute to these impacts, so adverse cumulative operational air quality impacts are concluded to be less than significant.

1.76.4 Biological Resources

The 2012 AQMP is not expected to result in significant biological resources impacts. 2012-2035 RTP/SCS impacts associated with biological and open space resources would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation due to significant disturbance and removal of natural vegetation that may be utilized by sensitive species, habitat fragmentation and the associated decrease in habitat quality, litter, trampling, light pollution and road noise in previously undisturbed natural areas, displacement of riparian and wetland habitat, siltation of streams and other water bodies during construction, and the loss of prime farmlands, grazing lands, open space and recreation lands. The increased urban development anticipated by the 2012-2035 RTP/SCS would also result in similar impacts. However, since the 2012 AQMP was not identified as creating any adverse biological resources impacts, it would not create cumulatively considerable impacts, so adverse cumulative biological resources impacts from the 2012 AQMP are concluded to be less than significant.

1.76.5 Cultural Resources

The 2012 AQMP is not in itself expected to result in significant cultural resources impacts. The development of transportation facilities as part of the 2012-2035 RTP/SCS may affect historical resources because many projects could be located in older urban centers where structures of architectural or historical significance are likely to be located. In addition, 2012-2035 RTP/SCS transportation projects would significantly affect archaeological and paleontological resources because projects could be located in previously undisturbed areas. However, the 2012 AQMP would not contribute to impacts associated with transportation projects projected in the 2012-2035 RTP/SCS and, therefore, would not be expected to contribute to a

cumulatively considerable impact requiring mitigation. As a result, adverse cumulative cultural resources impacts from the 2012 AQMP are concluded to be less than significant.

1.76.6 Energy

Electricity and natural gas demand impacts associated with the 2012 AQMP control measures were concluded to be significant, while energy impacts associated with use of petroleum fuels, use of alternative fuels and renewable energy sources were considered to be less than significant. Although mitigation measures identified in the 2012 AQMP [Final](#) Program EIR would reduce energy impacts associated with electricity demand, impacts would remain significant and as such would continue to contribute to considerable impacts following mitigation.

2012-2035 RTP/SCS impacts associated with energy resources would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because energy consumed during construction and expansion of the transportation system, as well as growth that would be accommodated by the 2012-2035 RTP/SCS, would contribute to considerable impacts following mitigation. Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would contribute to a cumulatively considerable electricity and natural gas demand impacts following mitigation.

1.76.7 Geology and Soils

Implementation of the 2012 AQMP would not in itself result in significant geological or soil impacts. Potential geologic and soil resources impacts associated with the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS is expected to result in potential damage to transportation infrastructure through surface rupture, ground shaking, liquefaction, and landsliding, as well as long term soil erosion and/or loss of top soil, subsidence, and slope failure. Moreover, the 2012 AQMP would not contribute to geologic and soil resources impacts associated with transportation projects projected in the 2012-2035 RTP/SCS and, therefore, would not be expected to contribute to a cumulatively considerable impact requiring mitigation.

1.76.8 Hazards and Hazardous Materials

It was concluded in the 2012 AQMP [Final](#) Program EIR that potentially significant adverse fire hazard impacts associated with reformulated products and the on-site ammonia storage hazards would be less than significant after mitigation. In spite of implementing mitigation measures, it was concluded that hazards associated with LNG transport would remain significant.

It was concluded in the 2012-2035 RTP/SCS that impacts associated with hazards and hazardous materials would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, impacts from the implementation of the 2012-2035 RTP/SCS, associated with upset and accident conditions, hazardous emissions in vicinity of schools, and disturbance of contaminated property during construction activities would remain significant following mitigation. When combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, the 2012 AQMP has the potential to contribute to a cumulatively considerable hazards and hazardous materials impacts following mitigation for the risks associated with the transport of LNG.

1.76.9 Hydrology and Water Quality

Although 2012 AQMP impacts associated with water demand would be reduced following the implementation measures, the effectiveness of mitigation measures can vary between jurisdictions, therefore, water demand impacts may remain significant.

2012-2035 RTP/SCS impacts associated with hydrology and water quality would be reduced following the implementation of the 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation for water quality, wastewater, riparian habitats and waters of the U.S. runoff/drainage, groundwater, flooding, and water supply. Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would contribute to cumulatively considerable impacts following mitigation to water demand impacts. The cumulative impacts of other hydrology and water quality impacts associated with the 2012 AQMP are less than significant.

1.76.10 Land Use and Planning

Implementation of the 2012 AQMP would not result in any significant impacts associated with land use or planning. Potential land use and planning impacts associated with the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS would contribute to inconsistencies with general plans, disruption or division of established communities, changes to land uses by changing concentrations of development throughout SCAG, change patterns of growth and urbanization beyond the SCAG region, and cumulatively considerable changes to land use and the intensity of land use. Short-term construction related impacts and long-term or permanent displacement or offsite impacts from new facilities would also potentially occur as a result of implementation of the 2012-2035 RTP/SCS. Moreover, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to

contribute to cumulatively considerable land use and planning impacts requiring mitigation.

1.76.11 Mineral Resources

Implementation of the 2012 AQMP would not result in any significant impacts associated with mineral resources. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of 2012-2035 RTP/SCS would result in increased demand driven by growth and the large number of projects anticipated in the 2012-2035 RTP/SCS. The 2012 AQMP, when combined with past, present, and reasonably foreseeable activities and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable mineral resources impacts following mitigation.

1.76.12 Noise

The 2012 AQMP control measures associated with construction of overhead catenary lines could result in significant noise and vibration impacts after mitigation due to the geographic proximity of sensitive receptors. Although impacts would be reduced following implementation of noise mitigation measures identified in the 2012 AQMP [Final](#) Program EIR, noise and vibration impacts associated with the construction of catenary lines would remain significant in areas where sensitive receptors are located near transportation corridors.

2012-2035 RTP/SCS impacts associated with noise would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation for noise and vibration during construction activities and operational activities. Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would contribute to cumulatively considerable construction noise and vibration impacts following mitigation.

1.76.13 Population and Housing

The 2012 AQMP control measures would not result in population and housing impacts. The policies included in the 2012-2035 RTP/SCS seek to direct growth in a way that is efficient for both mobility and land consumption. Implementation of the RTP/SCS would help induce growth to certain vacant areas of the region, a substantial number of residences and businesses would likely be displaced, and the mobility benefits from the RTP/SCS may shift population, households, and employment. This may generate potentially significant adverse cumulative population and housing impacts in spite of implementing mitigation measures. Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and with 2012-2035 RTP/SCS projects in particular, would not be expected to produce a cumulatively considerable impact following mitigation.

1.76.14 Public Services

The 2012 AQMP control measures would not result in significant public services impacts. The public service impacts from the 2012-2035 RTP/SCS associated with police, fire, and emergency response were concluded to be significant in spite of implementing mitigation measures. Impacts to wildfire threats would also remain significant because development would occur in areas that have a high threat of fire. In addition, the region's demand to accommodate an additional 453,000 school children would remain a significant impact on public services following implementation of 2012-2035 RTP/SCS mitigation measures.

Based on the above information, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and with 2012-2035 RTP/SCS projects in particular, is not expected to produce cumulatively considerable impacts to public services following mitigation.

1.76.15 Recreation

The 2012 AQMP control measures would not result in significant impacts on recreation resources. Impacts associated with recreation resources remain significant following mitigation because the 2012-2035 RTP/SCS would contribute to the loss and disturbance of open space and recreational lands. Based on the above information, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable recreation impacts following mitigation.

1.76.16 Solid and Hazardous Waste

The 2012 AQMP control measures would not result in significant impacts on solid or hazardous waste. Solid and hazardous waste impacts associated with the 2012-2035 RTP/SCS would remain significant following mitigation because the demand for solid waste services in the SCAG region and the resulting need to move solid waste large distances, potentially out of the region, would remain. Based on the above information, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable solid or hazardous waste impacts following mitigation.

1.76.17 Transportation and Traffic

The 2012 AQMP control measures that could result in the construction of overhead catenary lines are expected to remain a significant construction impact to traffic after mitigation. Such construction activities would generate traffic associated with construction worker vehicles and trucks delivering equipment, materials and supplies to the project site during the duration of the construction activities. Similarly, transportation infrastructure improvements pertaining to overhead catenary electrical

lines could require the dedication of an existing lane exclusive to vehicles using the overhead catenary electrical lines or fixed guideway systems. Thus, a reduction in the number of available lanes could result in significant adverse operational traffic impacts.

According to the 2012-2035 RTP/SCS [Program](#) EIR, implementation of the RTP/SCS would result in several significant and several less than significant impacts after mitigation. The 2035 VMT and 2035 heavy-duty truck VHD would be substantially greater than the existing conditions and as such would result in a significant impact in spite of implementing mitigation measures. As the population increases through 2035, the number of trips originating and ending in Santa Barbara, San Diego and Kern counties to and from the SCAG region would increase. And the transportation demand from growth, in combination with the accommodating projects in the 2012-2035 RTP/SCS would contribute to a cumulatively considerable transportation impact.

Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and with 2012-2035 RTP/SCS projects in particular, would contribute to cumulatively considerable construction impacts following mitigation and, since no mitigation measures were identified that reduce potential operation-related traffic impacts, these remain significant.

1.87 EXECUTIVE SUMMARY: CHAPTER 6 – ALTERNATIVES

1.87.1 Alternatives Evaluated in the [Program](#) EIR

Four alternatives were evaluated in the [Program](#) EIR. The following provides a description of each alternative.

Alternative 1, No Project: CEQA requires the specific alternative of no project to be evaluated. A No Project Alternative consists of what would occur if the project was not approved; in this case, not adopting the [Draft](#) 2012 AQMP. The net effect of not adopting the [Draft](#) 2012 AQMP would be a continuation of implementing the 2007 AQMP.

Alternative 2, PM2.5 Attainment Plan Localized PM Control in Mira Loma Area: This alternative is similar to the currently proposed [Draft](#) 2012 AQMP with the following exception. Alternative 2 does not include Control Measure BCM-02. Instead, Alternative 2 includes the same episodic control measures that would apply only to the Mira Loma area as described in the June 28, 2012 NOP/IS. These control measures would be implemented sequentially and as needed to meet the 24-hour PM2.5 standard at the Mira Loma monitoring station.

Alternative 3, Greater Reliance on NOx Emissions Reductions: This alternative would rely to a greater extent on NOx emission reductions, primarily from on-road and off-road mobile sources to achieve the federal 24-hour PM2.5 standard.

Alternative 3 includes all of the same ozone control measures as the ~~Draft~~ 2012 AQMP, but Control Measures ONRD-03 and OFFRD-01 would be modified under Alternative 3 to accelerate implementation of CARB's on-road and off-road regulations, respectively.

Alternative 4, PM2.5 Emissions Reduction Strategies Only: This alternative is considered to be a legally viable alternative because the SCAQMD is only required to submit a PM2.5 plan demonstrating attainment of the 2006 24-hour PM2.5 National Ambient Air Quality Standard no later than three years from December 14, 2012, the effective date of designation of nonattainment of the federal 24-hour PM2.5 standard. However, there is no federal requirement to submit an ozone plan by the same date as the PM2.5 plan. Alternative 4 would only include Control Measures CMB-01, BCM-01, BCM-02, BCM-03, BCM-04, IND-01, EDU-01, and MCS-01, eschewing all the other CAA §182 (e)(5) control measures, but continue implementing the Ozone SIP portion of the 2007 AQMP.

1.87.2 Alternatives Analysis Summary

Of the project Alternatives, Alternative 1 would generate the least amount or least severe environmental impacts compared to the 2012 AQMP. However, of the project alternatives it would achieve the fewest of the project objectives.

Alternative 2 would be expected to generate equivalent impacts to the 2012 AQMP in all environmental topic areas analyzed. It would achieve all of the project objectives, but would not achieve the objectives related to reducing PM2.5 emissions as well as the 2012 AQMP.

Alternative 3 has the potential to generate greater impacts than the 2012 AQMP because Alternative 3 ozone Control Measure ONRD-03 could result in approximately 5,000 additional medium-heavy-duty trucks complying with the year 2010 engine exhaust requirements for the years 2013 through 2017 (1,000 trucks per year, 250 trucks per year (1,250 total trucks) would comply with the 2010 on-road vehicle exhaust requirements using CNG engines and the rest would be diesel or diesel hybrid). Similarly, Alternative 3 OFFRD-01 could result in a total of 19,344 additional repowered vehicles from the year 2014 through 2017. To the extent that these ozone control measures contribute to environmental impacts, they would be greater than environmental impacts from the 2012 AQMP. Consequently, Alternative 3 does meet the requirement to reduce environmental impacts compared to the proposed project.

Alternative 4 would generate fewer environmental impacts or less severe impacts than the 2012 AQMP. It would achieve all but four of the project objectives (e.g., those related to continued progress towards attaining the ozone standards).

Based on the above information, the 2012 AQMP is the most effective project that provides the best balance in achieving all of the project objectives relative to environmental impacts generated.

TABLE 1-1

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
AESTHETICS		
Potential visual impacts and impacts to scenic highways due to overhead power lines.	None required since no significant impacts were identified.	Impacts are expected to be less than significant.
AIR QUALITY		
Construction-related activities associated with installing or replacing equipment are expected to generate emissions from construction worker vehicles, trucks, and construction equipment. The secondary impacts associated with construction activities are potentially significant for CO and PM10 emissions.	Develop a Construction Emission Management Plan for the proposed project. The Plan shall include measures to minimize emissions from vehicles including, but not limited to consolidating truck deliveries, prohibiting truck idling in excess of five minutes, description of truck routing, description of deliveries including hours of delivery, description of entry/exit points, locations of parking, and construction schedule. At a minimum the Construction Emission Management Plan will include the following mitigation measures: 1) Prohibit construction equipment from idling longer than five minutes at construction sites; 2) Maintain construction equipment tuned up to manufacturer's recommended specifications that optimize emissions without nullifying engine warranties; 3) Electric welders shall be used in all construction areas that are demonstrated to be served by electricity; 4) Onsite electricity rather than temporary power generators shall be used in all construction areas that are demonstrated to be served by electricity; 5) Use cranes rated 200 hp or greater equipped with Tier 3 or equivalent engines; 6) For off-road construction equipment rated 50 to 200 hp that will be operating for eight hours or more, the project proponent shall use equipment rated 50 to 200 hp equipped with Tier 3 or equivalent engines; and 7) Suspend use of all construction activities that generate air pollutant emissions during first stage smog alerts.	The emissions associated with construction activities from the proposed Draft 2012 AQMP control measures were considered to be significant for CO and PM10 emissions.
Secondary impacts from increased electricity demand are less than significant.	None required since no significant impacts were identified.	Impacts are expected to be less than significant.

TABLE 1-1 (CONTINUED)
Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
AIR QUALITY (cont.)		
Secondary impacts from control of stationary sources are less than significant.	None required since no significant impacts were identified.	Secondary air quality impacts from stationary sources are expected to be less than significant.
Secondary impacts from change in use of lower VOC materials are less than significant.	None required since no significant impacts were identified.	Secondary air quality impacts from use of lower VOC products are expected to be less than significant.
Secondary impacts from mobile sources are less than significant.	None required since no significant impacts were identified.	Secondary air quality impacts from mobile sources are expected to be less than significant.
Secondary impacts from miscellaneous sources are less than significant.	None required since no significant impacts were identified.	Secondary impacts from miscellaneous sources are expected to be less than significant.
The impacts associated with toxic air contaminants were determined to be less than significant.	None required since no significant impacts were identified.	Toxic air contaminant impacts are expected to be less than significant.
Implementation of the control measures in the Draft-2012 AQMP is expected to reduce emissions of compounds that contribute to global warming and ozone. GHG impacts are less than significant.	None required since no significant impacts were identified.	GHG emission impacts are expected to be less than significant.
ENERGY		
The increase in electricity associated with the Draft-2012 AQMP control strategies is expected to be significant.	Mitigation measures E-1 through E-7 have been identified which would encourage energy efficient equipment/vehicles, encourage increasing capacity of transmission lines, development of project electricity requirements, require energy analyses in environmental documentation, and identify measures to reduce peak energy demand.	Impacts on electricity demand are expected to remain significant following mitigation.
The natural gas impacts from the implementation of the Draft-2012 AQMP are expected to be significant.	Mitigation measures E-8 through E-12 have been identified which would promote energy efficiency and energy conservation, increasing the capacity of natural gas lines, development of project natural gas requirements, require energy analyses in environmental documentation, and identify measures to reduce peak energy demand.	Impacts on natural gas demand are expected to remain significant following mitigation.

TABLE 1-1 (CONTINUED)
Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
ENERGY (cont.)		
Implementation of the 2012 AQMP is not expected to result in a significant increase on petroleum fuel use and impacts are less than significant.	None required since no significant impacts were identified.	Impacts on petroleum fuel use are expected to be less than significant.
Implementation of the 2012 AQMP is not expected to result in a significant increase on alternative transportation fuel use (e.g., natural gas and hydrogen) and impacts on alternative fuels are less than significant.	None required since no significant impacts were identified.	Impacts are expected to be less than significant.
HAZARDS AND HAZARDOUS MATERIALS		
The analysis indicates that the fire hazard impacts associated with reformulated coatings, solvents, adhesives, mold release and consumer products may be potentially significant.	Mitigation measures HZ-1 and HZ-2 would be implemented which would add consumer warning requirements for all flammable and extremely flammable products and require public education regarding the use of flammable materials.	Potential fire hazards are expected to be mitigated to less than significant.
The hazard impacts associated with the use of alternative fuels were determined to be less than significant for methanol, ethanol, CNG, LPG, biodiesel, hydrogen and electric/hybrids.	None required since no significant impacts were identified.	Hazard impacts for methanol, ethanol, CNG, LPG, biodiesel, hydrogen and electric/hybrids are expected to be less than significant.
The transportation hazard impacts associated with the use of LNG were determined to be significant.	Mitigation measures HZ-3 through HZ-6 would be implemented which would require the installation of secondary containment, valves that fail shut, emergency release valves, barriers to prevent physical damage to tanks, and require integrity testing to prevent failure.	Transportation hazards associated with LNG are expected to remain significant.
The use of ammonia in SCRs and SNCR would result in the increased transport of ammonia and potentially significant impacts in the event of a release.	The use of aqueous ammonia at concentrations less than 20 percent is recommended to minimize impacts.	The use of aqueous ammonia at concentrations less than 20 percent would reduce ammonia transport impacts to less than significant.

TABLE 1-1 (CONTINUED)
Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
HAZARDS AND HAZARDOUS MATERIALS (cont.)		
The use of ammonia in SCRs and SNCR is considered to be potentially significant and could create significant impacts in the event of an onsite spill.	Mitigation measures HZ-7 through HZ-10 would be implemented which require the installation of safety devices (e.g., tank monitors, lead detection systems), secondary spill containment, and modifications to loading/unloading areas to minimize spills and assure any spills remain onsite.	The use of aqueous ammonia at concentrations less than 20 percent by volume in conjunction with additional mitigation measures are expected to reduce hazard impacts to less than significant.
The hazard impacts associated with fuel additives are expected to be less than significant since the use of fuel additives would require evaluation for their potential health and environmental impacts prior to approval and use.	None required since no significant impacts were identified.	Hazard impacts associated with fuel additives are expected to be less than significant.
The hazards pertaining to safety issues associated with start-up, shutdown, and turnaround procedures or from the increased use of catalyst are less than significant.	None required since no significant impacts were identified.	Hazard impacts associated with start-up, shutdown, and turnaround procedures and associated with the use of catalysts are expected to be less than significant.
HYDROLOGY AND WATER QUALITY		
Wastewater treatment facilities are expected to have sufficient capacity to handle the estimated increase in wastewater that could be generated from reformulation of products and use of air pollution control equipment (e.g., wet ESPs and WGSs). Therefore, no significant impacts associated with wastewater treatment or water quality is expected.	None required since no significant impacts were identified.	Wastewater treatment and water quality impacts are expected to be less than significant.
The use of alternative fuels is not expected to result in greater adverse water quality impacts than the use of regular diesel fuels and is, therefore, less than significant.	None required since no significant impacts were identified.	Alternative fuel impacts on water quality are expected to be less than significant.
No significant adverse water quality impacts are expected from the increased use of EV and hybrid vehicles.	None required since no significant impacts were identified.	Water quality impacts associated with the increased use of EV/hybrids vehicles are expected to be less than significant.

TABLE 1-1 (CONTINUED)
Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
HYDROLOGY AND WATER QUALITY (cont.)		
Water demand associated with the manufacture and use of waterborne and add-on air pollution control technologies are potentially significant.	Mitigation measures HWQ-1 through HWQ-4 were imposed which include the preparation of updated Urban Water Management Plans; development of Water Supply Assessments on a project specific basis; and develop water conservation measures and encourage the use of recycled water.	Mitigation measures vary from jurisdiction to jurisdiction and water demand impacts may remain significant.
The use and application of SBS should be controlled and monitored to prevent water quality runoff and related water quality impacts. The use of SBS is expected to be less than significant.	None required since no significant impacts were identified.	Water quality impacts associated with the use of SBS are expected to be less than significant.
Potential spills associated with ammonia are expected to be contained on-site due to the requirement for secondary spill containment devices and berms. Therefore, potential ammonia spills are expected to be less than significant.	None required since no significant impacts were identified.	Water quality impacts associated with ammonia use are expected to be less than significant.
LAND USE AND PLANNING		
The Draft 2012 AQMP control measures are not expected to conflict with applicable land use plans, policies, or regulations or physically divide an established community. Therefore, no significant adverse land use impacts are expected.	None required since no significant impacts were identified.	Land use impacts are expected to be less than significant.

TABLE 1-1 (CONTINUED)
Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
NOISE		
Noise and vibration impacts will be temporary in nature and related solely to construction activities, but could be significant.	Noise and vibration mitigation measures include NO-1 through NO-9 which would require site-specific construction noise reduction programs, measures to track noise complaints, use of noise barriers and other noise attenuation measures, use of engineers to estimate noise vibration levels required to avoid building impacts, compliance with noise ordinances and regulations, and completion of noise evaluations in environmental documents.	Noise impacts may remain significant during construction activities.
No modification to existing rail or truck traffic routes/corridor is expected; therefore, noise and vibration impacts associated with operational activities are expected to be less than significant.	None required since no significant impacts were identified.	Noise impacts during project operation are expected to be less than significant.
SOLID AND HAZARDOUS WASTE		
The increased use of EVs and hybrids are not expected to result in a significant increase in the illegal disposal of batteries. NiMH and Li-ion batteries more common with EVs and hybrids have a long battery life, are valuable, and usually have a monetary incentive associated with return of the battery to the manufacturer.	None required since no significant impacts were identified.	Waste impacts associated with increased use of EV/Hybrids are expected to be less than significant.
No significant solid and hazardous waste impacts were identified due to air pollution control technologies as part of the Draft 2012 AQMP .	None required since no significant impacts were identified.	Waste impacts associated with air pollution control technologies are expected to be less than significant.

TABLE 1-1 (CONCLUDED)
 Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
TRANSPORTATION AND TRAFFIC		
Control measures that would require new equipment will generally require that it occur as the life of the old equipment is exhausted, be reused outside the district, or recycled. Therefore, no significant solid/hazardous waste impacts were identified due to implementation of the control measures.	None required since no significant impacts were identified.	Waste impacts associated with the retirement of old equipment are expected to be less than significant.
Construction-related traffic impacts associated with the installation of catenary overhead electrical lines and related facilities, although temporary in nature, could be significant.	Mitigation measures will need to be developed on a project-specific basis. The SCAQMD recommends that mitigation measure TT-1 be implemented for applicable projects that may impact roadways, which requires that a detailed traffic management plan should be developed for construction activities.	The mitigation measure is expected to reduce the traffic impacts during construction activities; however, construction traffic impacts are expected to remain significant
Adverse operational traffic impacts may also occur as overhead catenary electrical lines could require dedicated lanes.	Mitigation measures would need to be developed on a project-specific basis.	Operational traffic impacts are expected to remain significant.

CHAPTER 2

PROJECT DESCRIPTION

Introduction

Background

Agency Authority – 2012 AQMP

Agency Authority - CEQA

Project Location

Overall Attainment Strategy

Purpose of the 2012 AQMP

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2.1 INTRODUCTION

The SCAQMD was created by the California legislature in 1977¹ as the public agency responsible for developing and enforcing air pollution control regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin and Mojave Desert Air Basin referred to herein as the district. The Lewis Air Quality Act (now known as the Lewis-Presley Air Quality Management Act) requires the SCAQMD to prepare and adopt an Air Quality Management Plan (AQMP) consistent with federal planning requirements. In 1977, amendments to the federal Clean Air Act (CAA) included requirements for submitting State Implementation Plans (SIPs) for nonattainment areas that fail to meet all federal ambient air quality standards (CAA § 172) and similar requirements exist in state law (Health & Safety Code §40462). The federal CAA was amended in 1990 to specify attainment dates and SIP requirements for ozone, carbon monoxide (CO), nitrogen dioxide (NO₂) and particulate matter with an aerodynamic diameter of less than 10 microns (PM₁₀). In 1997, the United States Environmental Protection Agency (EPA) promulgated ambient air quality standards for a new pollutant, particulate matter with an aerodynamic diameter less than 2.5 microns (PM_{2.5}). The California Clean Air Act (CCAA), adopted in 1988, requires the SCAQMD to endeavor to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide (SO₂), and NO₂ by the earliest practicable date (Health & Safety Code §40910). The CCAA also requires a three-year plan review if necessary, and an update to the AQMP. The EPA is required to periodically update the national ambient air quality standards. The AQMP revision currently under development is primarily triggered by an update to the PM_{2.5} standard, but also provides requirements to attain the (revoked) one-hour ozone standard and measures to continue making progress toward attaining the 8-hour ozone standard.

2.2 BACKGROUND

The first AQMP was prepared and approved by the SCAQMD in 1979 and has been updated and revised eight times since first adopted. The 2012 AQMP will be the tenth plan, not including certain SIPs for specific pollutants (e.g., PM₁₀ for the Coachella Valley and lead), prepared by the SCAQMD. The following bullets summarize the main components of the past AQMP updates and revisions:

- The 1982 AQMP was revised to reflect better data and modeling tools.
- In 1987, a federal court ordered the U.S. Environmental Protection Agency (U.S. EPA) to disapprove the 1982 AQMP because it did not demonstrate attainment of all national ambient air quality standards (NAAQS) by 1987 as required by the CAA. This, in part, led to the preparation of the 1989 AQMP.
- The 1989 AQMP was adopted on March 17, 1989 and was specifically designed to attain all NAAQS. This plan called for three “tiers” of measures as needed to attain all standards and relied on significant future technology advancement to attain these standards.
- In 1991, the SCAQMD prepared and adopted the 1991 AQMP to comply with the CCAA.

¹ The Lewis-Presley Air Quality Management Act, 1976 Cal. State. ch. 324 (codified at H & S Code, Sections 40400 - 40540).

- In 1992, the 1991 AQMP was amended to add a control measure containing market incentive programs.
- In 1994, the SCAQMD prepared and adopted the 1994 AQMP to comply with the CCAA three-year update requirement and to meet the federal CAA requirement for an ozone SIP. The AQMP, as adopted in 1994, included the following:
 - All geographical areas under the jurisdiction of the SCAQMD (referred to here as the district), as opposed to just the South Coast Air Basin;
 - The basic control strategies remained the same although the three-tiered structure of control measures was replaced and measures previously referred to as Tier I, II or III were replaced with short-/intermediate-term or long-term control measures;
 - Updated and refined control measures carried over from 1991;
 - Best Available Control Measure (BACM) PM10 Plan;
 - The ozone attainment demonstration plan;
 - Amendments to the federal Reactive Organic Compound (ROC) Rate-of-Progress Plan (also referred to as the volatile organic compound (VOC) Rate-of-Progress Plan); and
 - Attainment Demonstration Plans for the federal PM10, nitrogen dioxide, and carbon monoxide air quality standards; etc.
- The 1997 AQMP was designed to comply with the three-year update requirements specified in the CCAA as well as to include an attainment demonstration for PM10 as required by the federal CAA. Relative to ozone, the 1997 AQMP contained the following changes to the control strategies compared to the 1994 AQMP:
 - Less reliance on transportation control measures (TCMs);
 - Less reliance on long-term control measures that rely on future technologies as allowed under §182 (e)(5) of the CAA; and
 - Removal of other infeasible control measures and indirect source measures.
- In 1999, the ozone plan portion of the 1997 AQMP was amended to address partial disapproval of the 1997 AQMP by the U.S. EPA and a settlement of litigation by environmental groups challenging the 1997 AQMP to provide the following:
 - Greater emission reductions in the near-term than would occur under the 1997 AQMP;
 - Early adoption of the measures that would otherwise be contained in the next three-year update of the AQMP; and
 - Additional flexibility relative to substituting new measures for infeasible measures and recognition of the relevance of cost effectiveness in determining feasibility.

- In April 2000, U.S. EPA approved the 1999 ozone SIP amendments to the 1997 plan. The 1999 Amendment in part addressed the State’s requirements for a triennial plan update.
- The 2003 AQMP was approved and adopted by the SCAQMD in August 2003. The 2003 AQMP was never fully approved by the U.S. EPA as part of the SIP. The 2003 AQMP addressed the following control strategies:
 - Attaining the federal PM10 ambient air quality standard for the South Coast Air Basin and Coachella Valley - these portions were approved by the U.S. EPA; in both areas, the ozone attainment demonstration was disapproved after the California Air Resources Board (CARB) withdrew its measures;
 - Attaining the federal one-hour ozone standard;
 - 1997/1999 control measures not yet implemented;
 - Revisions to the Post-1996 VOC Rate-of-Progress Plan and SIP for CO;
 - Initial analysis of emission reductions necessary to attain the PM2.5 and eight-hour ozone standards; etc.; and
 - The 2003 AQMP was partially approved and partially disapproved by EPA.
- The SCAQMD Governing Board approved the 2007 AQMP on June 1, 2007. On September 27, 2007, CARB adopted the State Strategy for the 2007 State Implementation Plan and the 2007 South Coast Air Quality Management Plan as part of the (SIP). The 2007 SIP was then forwarded to U.S. EPA for approval. The following summarize the major components of the 2007 AQMP:
 - The most current air quality setting (e.g., 2005 data);
 - Updated emission inventories using 2002 as the base year, which also incorporate measures adopted since adopting the 2003 AQMP;
 - Updated emission inventories of stationary and mobile on-road and off-road sources;
 - 2003 AQMP control measures not yet implemented (eight of the control measures originally contained in the 2003 AQMP were updated or revised for inclusion into the Draft 2007 AQMP);
 - 24 new measures were incorporated into the 2007 AQMP based on replacing the SCAQMD’s long-term control measures from the 2003 AQMP with more defined or new control measures and control measure adoption and implementation schedules;
 - CARB’s recommended control measures aimed at reducing emissions from sources that are primarily under State and federal jurisdiction, including on-road and off-road mobile sources, and consumer products;
 - SCAG’s regional transportation strategy and control measures; and
 - Analysis of emission reductions necessary and attainment demonstrations to achieve the federal eight-hour ozone and PM2.5 air quality standards.

On November 22, 2010, U.S. EPA issued a notice of proposed partial approval and partial disapproval of the 2007 South Coast SIP for the 1997 Fine Particulate Matter Standards and the corresponding 2007 State Strategy. Specifically, U.S. EPA proposed approving the SIP's inventory and regional modeling analyses, but it also proposed disapproving the attainment demonstration because it relied too extensively on commitments to emission reductions in lieu of fully adopted, submitted, and SIP-approved rules. The notice also cited deficiencies in the SIP's contingency measures.

- In response to U.S. EPA's proposed partial disapproval of the 2007 SIP, on March 4, 2011, the SCAQMD Governing Board approved Revisions to the 2007 PM2.5 and Ozone State Implementation Plan for South Coast Air Basin and Coachella Valley. The revisions to the 2007 PM2.5 and Ozone SIP consist of the following:
 - Updated implementation status of SCAQMD control measures necessary to meet the 2015 PM2.5 attainment date;
 - Revisions to the control measure adoption schedule;
 - Changes made to the emission inventory resulting from [California Air Resources Board's \(CARB's\)](#) December 2010 revisions to the on-road truck and off-road equipment rules; and
 - An SCAQMD commitment to its "fair share" of additional NOx emission reductions, if needed, in the event U.S. EPA does not voluntarily accept the "federal assignment."

- In response to the July 14, 2011 U.S. EPA notice of proposed partial approval and partial disapproval of the 2007 South Coast SIP for the 1997 Fine Particulate Matter Standards, at the October 7, 2011 public hearing, the SCAQMD Governing Board approved Further Revisions to PM2.5 and Ozone State Implementation Plan for South Coast Air Basin and Coachella Valley. Revisions to the PM2.5 SIP included a three-prong approach for identifying contingency measures needed to address U.S. EPA's partial disapproval:
 - Equivalent emissions reductions achieved through improvements in air quality;
 - Relying on committed emissions reductions for the 2007 ozone plan;
 - Quantifying excess emissions reductions achieved by existing rules and programs that were not originally included in the 2007 PM2.5 SIP;
 - U.S. EPA approved the PM2.5 SIP except for contingency measures on November 9, 2011. Action is pending on the contingency measures; and
 - U.S. EPA fully approved the 2007 SIP for the 8-hour ozone standard on March 1, 2012.

2.2.1 Progress Implementing the 2007 AQMP

The SCAQMD has fulfilled the majority of its emissions reductions commitments specified in the 2007 SIP. Table 2-1 summarizes the progress achieved toward fulfilling SCAQMD's emissions reductions commitments to attain the 1997 PM2.5 annual and federal 8-hour ozone

standards by the required dates. Through January 31, 2011, the SCAQMD Governing Board has amended and adopted 12 rules. The majority of these rules have been submitted to U.S. EPA and approved as part of the SIP. Several recently adopted SCAQMD rules have been submitted to CARB and have been or are expected to be submitted to and subsequently evaluated by U.S. EPA. As shown in Table 2-1, for the control measures adopted by the [SCAQMD District](#) over this period, 22.5 tons per day of VOC reductions, 7.6 tons per day of NO_x reductions, 4.0 tons per day of SO_x reductions, and 1.0 tons per day of PM_{2.5} reductions will be achieved by 2014. Additional reductions from these adopted rules will be achieved by 2023.

TABLE 2-1

Total 2007 AQMP Emission Reductions
from SCAQMD Control Measures (tons per day)

Pollutant	COMMITMENT ^a		ACHIEVED ^a	
	2014	2023	2014	2023
VOC	10.4	19.2	22.5	26.4
NO _x	10.8	9.2	7.6	10.3
PM _{2.5}	2.9	5.4	1.0	1.6
SO _x	2.9	2.9	4.0	5.7

Source: 2012 AQMP, Chapter 1, Table 1-2

^a 2014 reductions estimated in average annual day, 2023 in planning inventory.

Table 2-2 lists the 2007 AQMP's control measure commitments that have been adopted (either entirely or partially) by CARB since the 2007 AQMP was adopted. The emissions are presented in terms of remaining emissions, rather than reductions, due to some significant changes to the inventory that preclude a direct comparison of committed emissions to those achieved. The table is based on SIP revisions submitted to U.S. EPA in 2011, and thus reflect adopted measures through specific dates in 2011 as described in the footnotes. In combination with the regulatory activity and revised inventory forecast, CARB has achieved the emission targets for both 2014 and 2023.

TABLE 2-2

South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
	2014 ^a	2023 ^b	2014 ^a	2023 ^b
NO_x EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	134.2	74.3	131.6	73.1
Cleaner In-Use Heavy-Duty Trucks & Buses	151.2	76.8	132.6	49.4
Cleaner In-Use Off-Road Equipment (over 25 hp)	28.0	18.9	27.5	15.8
Ship Auxiliary Engine Cold Ironing & Clean Tech.	23.7	40.3	15.6	12.0
Cleaner Main Ship Engines and Fuel - Main Engines	38.5	65.8	20.9	21.3
Accelerated Intro. of Cleaner Line-Haul Locomotives	18.3	21.0	18.3	21.0
Clean Up Existing Harbor Craft	15.2	18.4	11.1	8.4
Cargo Handling Equipment	3.2	1.8	3.2	1.8
New Emission Standards for Recreational Boats	11.0	18.3	11.0	18.3
Co-Benefits from Greenhouse Gas Reduction Measures ^d	--	--	--	--
All other local, state, and federal emissions	166	157	159	147 ^e
TOTAL NO_x REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	589	493	530	368
VOC EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	132.1	97.4	123.5	92.1
Cleaner In-Use Heavy-Duty Trucks & Buses	8.7	6.6	5.4	5.3
Cleaner In-Use Off-Road Equipment (over 25 hp)	2.6	2.0	2.5	1.7
Ship Auxiliary Engine Cold Ironing & Clean Tech.	0.9	1.5	0.7	0.9
Cleaner Main Ship Engines and Fuel - Main Engines	1.9	3.2	1.4	2.5
Accelerated Intro. of Cleaner Line-Haul Locomotives	2.3	2.4	2.3	2.4
Clean Up Existing Harbor Craft	1.2	1.0	1.1	0.5
Cargo Handling Equipment	0.3	0.6	0.3	0.6

TABLE 2-2 (Continued)

South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
	2014 ^a	2023 ^b	2014 ^a	2023 ^b
VOC EMISSIONS (TPD)^c				
New Emission Standards for Recreational Boats	37.9	50.8	37.9	50.8
Expanded Off-Road Rec. Vehicle Emission Standards	6.7	13.4	6.7	13.4
Consumer Products Program	102.6	109.5	96.7	102.4
All other local, state, and federal emissions	221	241	206	226 ^e
TOTAL VOC REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	518	529	485	498
PM2.5 EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	7.8	--	7.5	--
Cleaner In-Use Heavy-Duty Trucks & Buses	6.0	--	3.4	--
Cleaner In-Use Off-Road Equipment (over 25 hp)	1.3	--	1.3	--
Ship Auxiliary Engine Cold Ironing & Clean Tech.	0.5	--	0.4	--
Cleaner Main Ship Engines and Fuel - Main Engines	3.9	--	0.4	--
Accelerated Intro. of Cleaner Line-Haul Locomotives	0.7	--	0.7	--
Clean Up Existing Harbor Craft	0.6	--	0.4	--
Cargo Handling Equipment	0.1	--	0.1	--
All other local, state, and federal emissions	74	--	73	--
TOTAL PM2.5 REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	95	--	87	--

TABLE 2-2 (Concluded)
 South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
SO_x EMISSIONS (TPD)^c				
Cleaner In-Use Heavy-Duty Trucks & Buses	0.3	--	0.3	--
Ship Auxiliary Engine Cold Ironing & Clean Tech.	1.1	--	0.8	--
Cleaner Main Ship Engines and Fuel - Main Engines	38.7	--	1.7	--
All other local, state, and federal emissions	21	--	17	--
TOTAL SO_x REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	61	--	20	--

- The 2014 emissions data reflect the 2014 Emissions Inventory that was included in the March 2011 *Progress Report on Implementation of PM_{2.5} State Implementation Plans*. The inventory is in the process of being updated, and may change slightly in the final [2012 AQMP-draft](#).
- The 2023 emissions data tables reflect the 2023 Emissions Inventory that was current as of August 2011. The inventory is in the process of being updated, and may change slightly in the final [2012 AQMP-draft](#).
- These are remaining emissions. If achieved emissions are lower than the committed emissions, it means the SIP targets are met.
- Remaining emissions are included in "other local, state, and federal emissions"
- Includes benefits of local emission reductions that were not reflected in the revised RFP estimates.

2.3 AGENCY AUTHORITY – 2012 AQMP

The 2012 AQMP sets forth emission reduction programs which require the cooperation of all levels of government: local, regional, state, and federal, as well as public engagement. Each level is represented in the AQMP by the appropriate agency or jurisdiction that has the authority over specific emissions sources. Accordingly, each agency or jurisdiction commits to specific planning and implementation responsibilities.

At the federal level, the U.S. EPA is charged with establishing emission standards including motor vehicle standards; train, airplane, and ship pollutant exhaust and fuel standards; and regulation of non-road engines less than 175 horsepower. CARB, representing the state level, also oversees development of 2012 AQMP control measures for on-road vehicle emission standards in California; motor vehicle fuel specifications; some off-road source emission standards and fuel standards, including marine vessels; and consumer product standards. At the regional level, the SCAQMD is responsible primarily for non-vehicular sources and has limited authority over mobile sources (e.g., in-use fleet regulations, incentives for accelerated vehicle turnover, reduction in average vehicle ridership, etc.). In addition, the SCAQMD has lead responsibility for developing stationary, some area, and indirect source control measures and coordinating the development and adoption of the 2012 AQMP. Lastly, at the local level, the cities and counties and their various departments (e.g., harbors and airports) have a dual role related to transportation and land use. Their efforts are coordinated through the regional metropolitan planning organization for the South Coast Air Basin, the Southern California Association of Governments (SCAG), which is responsible for preparing the transportation

control measure component of the 2012 AQMP. Interagency commitment and cooperation are the keys to success of the 2012 AQMP.

2.4 AGENCY AUTHORITY – CEQA

CEQA, Public Resources Code §21000 et seq., requires that the environmental impacts of proposed projects implemented or approved by governmental agencies be evaluated and that feasible methods to reduce, avoid or eliminate significant adverse impacts of these projects be identified and implemented. The lead agency is the “public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment” (Public Resources Code Section 21067). Since the SCAQMD has the primary responsibility for supervising or approving the entire project as a whole, it is the most appropriate public agency to act as lead agency (CEQA Guidelines Section 15051 (b)).

A Program Environmental Impact Report (Program EIR) for the 2012 AQMP is considered to be the appropriate document pursuant to CEQA Guidelines Section 15168 (a)(3), because the 2012 AQMP constitutes a series of actions that can be characterized as one large project and are related in the connection with the issuance or rules, regulations, plans, or other criteria to govern the conduct of a continuing program.

As the lead agency for the ~~proposed~~ 2012 AQMP, SCAQMD staff prepared a Notice of Preparation/Initial Study (NOP/IS) for the ~~proposed~~ 2012 AQMP Program EIR on June 28, 2012. Due to changes in the project description during circulation of the original 6/28/12 NOP/IS circulation, the NOP/IS was revised and recirculated for a 30-day public review and comment period. The NOP/IS was recirculated for a 30-day public review and comment period from August 2, 2012 through August 31, 2012. [Seven scoping meetings were held on July 10, 2012 \(two meetings\), July 11, 2012, July 12, 2012, July 24, 2012, August 9, 2012 and August 23, 2012.](#) Eleven comment letters were submitted to staff in response to the NOP/IS [that was circulated on June 28, 2012. No comments were received in response to the NOP/IS that was circulated on August 2, 2012.](#) A copy of the [recirculated 8/2/12 6/28/12-NOP/IS](#) can be found in Appendix A. Comments and responses to comments received on the 6/28/12 NOP/IS can be found in Appendix B. [As indicated in Appendix C, no comment letters were received on the 8/2/12 NOP/IS. A copy of the recirculated NOP/IS can be found in Appendix C.](#) Comments [received at the scoping meetings](#) and the responses to [these](#) comments ~~received on the recirculated NOP/IS~~ can be found in Appendix D.

2.5 PROJECT LOCATION

The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Basin) (all of Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB), referred to hereafter as the district. The Basin, which is a subregion of the SCAQMD’s jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward

up to the Palo Verde Valley. The federal nonattainment area (known as the Coachella Valley Planning Area) is a subregion of the Riverside County and the SSAB that is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east (Figure 2-1).

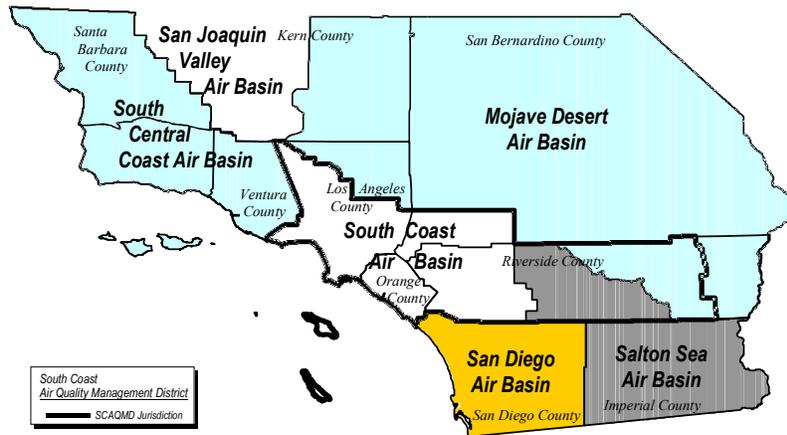


FIGURE 2-1

Southern California Air Basins

2.6 OVERALL ATTAINMENT STRATEGY

The overall control strategy for the [Draft](#) 2012 AQMP is designed to meet applicable federal and state requirements. The focus of the AQMP is to demonstrate attainment of the federal 24-hour PM_{2.5} ambient air quality standard by 2014, while making expeditious progress toward attainment of state PM standards. In addition, to further implement the existing 8-hour ozone plan, the 2012 AQMP includes section 182 (e)(5) implementation measures designed to assist in future attainment of the 8-hour ozone standard (refer to subsection 1.6.1). The proposed control measures in the [Draft](#) 2012 AQMP are based on implementing all feasible control measures through the application of available technologies and management practices as well as development and deployment of advanced technologies and control methods. In addition, SCAQMD retains certain obligations relative to the (revoked) one-hour ozone standard. For purposes of the environmental analysis, it is expected that full implementation of the attainment strategy for the one-hour ozone standard would have the same environmental effects as implementing all the measures in the [Draft](#) 2012 AQMP and the section 182 (e)(5) measures for the eight-hour standard that were already analyzed in the EIR for the 2007 AQMP. These measures rely on proposed actions to be taken by several agencies that currently have the statutory authority to implement such measures. Similar to the approaches taken in previous AQMPs, the SIP commitment includes an adoption and implementation

schedule for each control measure. Each agency is also committed to achieving a total emission reduction target with the ability to substitute specified control measures for control measures deemed infeasible, as long as equivalent reductions are met by other means. These measures are also designed to satisfy the federal Clean Air Act requirement of reasonably available control technologies [§172 (c)], and the California requirement of Best Available Retrofit Control Technologies (BARCT) [Health and Safety Code §40440 (b)(1)].

To ultimately achieve the ozone ambient air quality standards and demonstrate attainment, significant NO_x emissions reductions will be necessary, not only from non-vehicular sources under the jurisdiction of the SCAQMD, but substantial reductions will be necessary from sources primarily under the jurisdiction of CARB (e.g., on-road motor vehicles, off-road equipment, and consumer products) and U.S. EPA (e.g., aircraft, ships, trains, and pre-empted off-road equipment). Without an adequate and fair-share level of reductions from all sources, the emissions reduction burden would unfairly be shifted to stationary sources that are already stringently regulated. The SCAQMD will continue to work closely with CARB to further control mobile source emissions where federal or State actions do not meet regional needs.

2.6.1 One-hour Ozone Standard Attainment Strategy

The federal one-hour ozone standard was revoked, effective one year after the eight-hour standard designations were effective (e.g., 2005). U.S. EPA guidance indicated that while certain planning requirements remained in effect, a new SIP would not be required if an area failed to attain the standard by the attainment date. However, recent litigation and court decisions have suggested that there likely will be a need for the SCAQMD to prepare a new one-hour ozone SIP in the near future. If a one-hour ozone SIP is requested by U.S. EPA, the SIP would likely be due within 12 months of such a SIP call. The attainment demonstration in the SIP would have to show attainment within five years with a potential five-year extension, which would be a similar timeframe (2022) as is required for the 1997 eight-hour ozone standard (deadline of 2023). However, many new technical issues such as modeling for the attainment demonstration and other CAA requirements would require U.S. EPA's guidance, since the previous preambles/guidelines are no longer directly applicable. Based on previous modeling estimates, the types of control strategies and the amount of reductions that are needed to attain the eight-hour ozone standard are nearly identical to those that would be needed to attain the one-hour ozone standard.

Although the primary purpose of the 2012 AQMP Basin is to set forth a comprehensive and integrated program that will lead the Basin into compliance with the federal 24-hour PM_{2.5} air quality standard, it will also provide an update of certain elements for the 2007 eight-hour ozone plan. The AQMP will update specific elements of the previously approved eight-hour ozone SIP: 1) an updated emissions inventory, and 2) new control measures and commitments for emissions reductions to help fulfill the §182 (e)(5) portion of the eight-hour ozone SIP and one-hour ozone SIP.

In anticipation that U.S. EPA would likely request that the SCAQMD prepare a one-hour ozone SIP, the Final Program EIR for the 2012 AQMP includes 11 project objectives² (see Section 2.9), including the following:

1. Continue making expeditious progress towards attaining the federal eight-hour ozone standard and demonstrate attainment of the federal one-hour ozone standard (revoked) by 2022 – 2023;
2. Reduce population exposure to ozone through continued progress towards attaining the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023;

~~Regardless of whether or not U.S. EPA requests that the SCAQMD prepare a one-hour ozone SIP, the 2012 AQMP reflects a multi-agency effort to identify 2012 AQMP~~ includes control measures that specifically address the SCAQMD's efforts to continue making progress towards attaining all state and national ambient air quality standards for ozone. For example, there are four coatings and solvent control measures (CTS 01, CTS02, CTS-03, and CTS-04; Table 2-3); two combustion control measures (CMB-01, RECLAIM phase 2, and CMB-02; Table 2-3); and five §182 (e)(5) implementation measures for on-road mobile sources, five off-road mobile source control measures, and seven advanced control measures (Table 2-4) that all primarily address attaining the ozone standards.

The 2012 AQMP reflects a multi-agency effort ~~to identify 2012 AQMP control measures~~ that specifically addresses the SCAQMD's efforts to attain the federal 24-hour PM_{2.5} standard and the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023, respectively. Consistent with CEQA requirements to analyze the whole of the actions from a project, the Final Program EIR prepared for the 2012 AQMP includes an environmental analysis of all PM_{2.5} control measures, as well as, all of the ozone-related control measures in the 2012 AQMP.

On September 19, 2012, the U.S. EPA published in the Federal Register a proposed “SIP call” which, if finalized, would require the SCAQMD to prepare a demonstration of attainment of the one-hour ozone standard, with attainment required by ten years from the date the SIP call is finalized. The same day, the U.S. EPA published in the Federal Register a proposal to withdraw its approval of, and then to disapprove, the transportation control measure (TCM) demonstrations, also referred to as VMT emissions offset demonstrations, in the 2003 one-hour ozone plan and the 2007 eight-hour ozone plan. As explained by the U.S. EPA, both of these actions were taken in response to a decision of the Ninth Circuit Court of Appeals in Association of Irrigated Residents v. EPA, January 27, 2012.

In response to the U.S. EPA's “SIP call” and in anticipation that it will be finalized, SCAQMD staff has prepared this *One-hour Ozone Attainment Demonstration*, which demonstrates attainment of the federal one-hour (revoked) ozone standard by the year 2022. The federal one-hour ozone attainment demonstration in this document contains all of the

² CEQA Guidelines §15124 (b).

same ozone control measures that are included in the 2012 AQMP, as well as, the seven remaining mobile source control measures from the 2007 AQMP.

~~No other control measures to attain the ozone standards were identified during the multi-agency effort to identify 2012 AQMP control measures.~~

Similarly, in connection with the proposed disapproval of the TCM demonstrations for the South Coast Air Basin, the U.S. EPA prepared a guidance document³ for Severe and Extreme ozone nonattainment areas on how to address Clean Air Act (CAA) §182 (d)(1)(A) (VMT emissions offset demonstrations). SCAQMD staff conducted a VMT emissions offset analysis pursuant to U.S. EPA guidance and concluded that actual emissions with controls and VMT growth were substantially less than emissions assuming no new measures and no VMT growth ("ceiling"). Based on this conclusion, no new TCMs are required for the one-hour ozone SIP. SCAQMD staff has prepared the *VMT Offset Requirement Demonstration (2012 AQMP Appendix VIII)* to provide the results of the VMT emissions offset analysis to the public.

With regard to the seven mobile source control measures from the 2007 AQMP, potential environmental impacts from these control measures along with all other 2007 ozone and PM_{2.5} control measures were evaluated in the Final Program EIR for the 2007 AQMP (SCH #2006111064), certified by the SCAQMD Governing Board on June 1, 2007. These remaining measures would be implemented even without the 2012 AQMP. For this reason, the seven mobile source control measures, as well as four other remaining control measures from the 2007 AQMP, were also evaluated as Alternative 1, the No Project Alternative, in the 2012 AQMP Program EIR, which concluded that implementation of the remaining 2007 AQMP control measures would not generate any significant adverse environmental impacts. An acknowledgment of existing 2007 AQMP control measures in this *One-hour Ozone Attainment Demonstration* does not require additional environmental review where no changes are being proposed to the 2007 measures.

~~As a result~~ Based on the above information, the 2012 AQMP can rely on the same ~~no additional~~ control measures and TCMs to address progress in attaining the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023, would likely be identified. This means that a the ~~One-hour Ozone SIP-Attainment Demonstration (Appendix VII)~~ would include all of the same ozone-related control measures as the 2012 AQMP. Further, the timing or implementation dates of any of the control measures would not be changed to meet the one-hour standard compared to timing and implementation dates in the 2012 AQMP. Further ~~Therefore,~~ by analyzing the 2012 AQMP ozone-related control measures in this Final Program EIR, this Final Program EIR would also serve as the CEQA document for the *One-hour Ozone Attainment Demonstration (2012 AQMP Appendix VII)* and the *VMT Offset Requirement Demonstration (2012 AQMP Appendix VIII)*, a one-hour ozone SIP. Finally, potential impacts from the seven remaining mobile source ozone control measures from the 2007 AQMP have been disclosed to the public in the 2007 AQMP and as part of the

³ U.S. EPA. Office of Transportation and Air Quality. 2012. *Implementing Clean Air Act Section 182 (d)(1)(A): Transportation Control Measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Travelled*. EPA-420-B-12-053. August. <http://www.epa.gov/otaq/stateresources/policy/general/420b12053.pdf>.

[alternatives analysis in the Final Program EIR for the 2012 AQMP. Since no changes are being proposed to those existing measures, no additional environmental analysis of the 2007 AQMP control measures is required.](#)

2.7 PURPOSE OF THE 2012 AQMP

The 2012 AQMP will provide an updated air pollution control strategy to attain the 24-hour PM_{2.5} federal ambient air quality standard and to partially fulfill the 2007 AQMP §182 (e)(5) reduction commitment. It has been developed as an integrated Plan taking into consideration: air quality, climate change, transportation, and energy needs. The 2012 AQMP focuses on PM reductions to attain the federal 24-hour PM_{2.5} standard by 2014. The 2012 AQMP also includes ozone reduction strategies to make expeditious progress in attaining the state one-hour and eight-hour ozone standards and the federal eight-hour ozone standards (80 parts per billion (ppb) by 2023 and 75 ppb by 2032). The 2012 AQMP also provides for meeting requirements applicable under the (revoked) one-hour federal ozone standard. In particular the ozone strategy approach relies heavily on NO_x emission reductions, primarily from mobile sources, and identifies actions that can be taken in the next two to three years. The 2012 AQMP relies upon the most recent planning assumptions and the best available information such as CARB's latest EMFAC2011 for the on-road mobile source emissions inventory, CARB's OFF-ROAD 2011 model for the off-road mobile source emission inventory, the latest point source and improved area source inventories as well as the use of new episodes and air quality modeling analysis, and SCAG's forecast assumptions based on its recent 2012 Regional Transportation Plan. The 2012 AQMP includes the current and future air quality in the Coachella Valley. The 2012 AQMP also includes a discussion of ultra-fine particles, near roadway exposure and energy.

It is expected that implementing the 2012 [AQMP](#) control measures will provide benefits of improved air quality. From a public health standpoint, air pollution has been linked to long-term health problems affecting the lungs, heart, blood, brain and immune and nervous systems. Therefore, improving air quality is expected to result in improvements to public health. Additional benefits include improved visibility, reduced destruction of materials and buildings, reduced damage to agricultural crops and habitat for wildlife and, more efficient land use patterns and transportation systems. The 2012 AQMP control measures have the potential to reduce reliance on traditional petroleum fuels, thus, providing reductions in greenhouse gas emissions. The following sections summarize the overall components of the 2012 AQMP and the specific control measures that comprise the 2012 AQMP.

2.8 PROJECT DESCRIPTION

The ~~Draft~~ 2012 AQMP control measures consist of three components: 1) the SCAQMD's Stationary and Mobile Source Control Measures; 2) suggested State Mobile Source Control Measures; and 3) Regional Transportation Strategy and Control Measures provided by SCAG. These measures rely on not only the traditional command-and-control approach, but also public incentive programs, as well as advanced technologies expected to be developed and deployed in the next several years. A summary of these measures is provided in the following subsections. The following bullet points summarize the major components of the 2012 AQMP:

- The most current air quality setting (e.g., 2008 data);
- Updated emission inventories using 2008 as the base year, which also incorporate measures adopted since adopting the 2007 SIP;
- Consider the 2007 AQMP control measures not yet adopted (through January 31, 2011, the SCAQMD Governing Board has amended and adopted 13 rules achieving approximately 96 percent of the SCAQMD’s SIP commitment for both PM_{2.5} and ozone as outlined in the 2007 AQMP);
- New measures are to be incorporated into the [Draft](#) 2012 AQMP;
- SCAG’s 2012 regional transportation strategy and control measures;
- Analysis of emission reductions necessary to achieve the federal 24-hour PM_{2.5} air quality standards, and (revoked) one-hour ozone standard;
- Overview of state and federal planning requirements;
- Implementation schedule for adoption of the proposed control measures;
- Latest information on near-roadway emissions of combustion-related pollutants with particular focus on ultrafine particulates formation, transport, exposure, and health effects and potential control strategies, although there are no ambient air quality standards specifically for ultrafine particulates; and
- Energy Policy Update including: energy consumption, costs, associated emissions for base year 2008 and the future AQMP years, and associated energy impacts and GHG emissions inventory in the Basin.

2.8.1 Stationary Source Control Measures

The stationary source control measures included in the [Draft](#) 2012 AQMP would further reduce emissions from both point sources (permitted facilities) and area sources (generally small and non-permitted). The proposed control strategies for stationary sources under the SCAQMD’s jurisdiction include implementing the remaining revised and partially implemented measures from the 2007 AQMP and new measures that are deemed feasible, which will provide additional emission reduction opportunities. In addition to PM reduction control measures, the 2012 AQMP also identifies control measures to be implemented by the SCAQMD and CARB to partially fulfill the §182 (e)(5) commitment in attaining ambient air quality standards for ozone. These control measures include short-term and Clean Air Act §182 (e)(5) implementation measures, and would regulate both stationary and mobile sources.

The basic principles followed in developing the SCAQMD’s stationary source control measures included: 1) identify PM_{2.5}, ammonia and NO_x reduction opportunities and maximize reductions by the earliest possible and feasible attainment year; and, 2) initiate programs or rulemaking activities for further VOC and NO_x control strategies to maximize ozone reductions by the year 2022-2023 timeframe. Therefore, the proposed control strategy for stationary sources under the SCAQMD’s jurisdiction includes some revised and partially implemented measures from the 2007 AQMP and new measures that are deemed feasible to provide additional control opportunities. In addition, to foster further technology

advancement, advanced clean technologies measures are also included to achieve additional reductions from sources based on implementation and accelerated penetration of advanced technologies. For each control measure, the SCAQMD will seek to achieve the maximum reduction potential that is technically feasible and cost-effective. The control measures to be implemented by the SCAQMD are listed in Table 2-3 summarized in the paragraphs following Table 2-3.

TABLE 2-3
Stationary Source Control Measures Categorized by Source Type

NUMBER	TITLE	CM TYPE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
PM SOURCES					
BCM-01 <i>(formerly MCS-04B)</i>	Further Reductions from Residential Wood Burning Devices [PM2.5]	Short-term 24-hr PM2.5	2013	2013-2014	7.1 ^a
BCM-02 <i>(new)</i>	Further Reductions from Open Burning [PM2.5]	Short-term 24-hr PM2.5	2013	2013-2014	4.6 ^b
BCM-03 <i>(formerly BCM-01 & BCM-05 in the 2007 AQMP)</i>	Emission Reductions from Under-Fired Charbroilers [PM2.5]	Short-term 24-hr PM2.5	Phase I – 2013 <i>(Tech Assessment)</i> Phase II - TBD	TBD	1.0 ^c
BCM-04 <i>(formerly MCS-04B)</i>	Further Ammonia Reductions from Livestock Waste [NH3]	Short-term 24-hr PM2.5	Phase I – 2013-2014 <i>(Tech Assessment)</i> Phase II - TBD	TBD	TBD ^d
COMBUSTION SOURCES					
CMB-01 ⁱ	Further NOx Reductions from RECLAIM [NOx] – Phase I	Short-term 24-hr PM2.5	2013	2014	2-3
CMB-01 ^j	Further NOx Reductions from RECLAIM [NOx] – Phase II	Section 182 (e)(5) implementation	2015	2020	1-2
CMB-02	NOx Reductions from Biogas Flares [NOx]	Section 182 (e)(5) implementation	2015	Beginning 2017	Pending ^e
CMB-03	Reductions from Commercial Space Heating [NOx]	Section 182 (e)(5) implementation	Phase I – 2014 <i>(Tech Assessment)</i> Phase II - 2016	Beginning 2018	0.18 by 2023 0.6 (total)

TABLE 2-3 (Continued)

Stationary Source Control Measures Categorized by Source Type

NUMBER	TITLE	CM TYPE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
COATINGS AND SOLVENTS					
CTS-01	Further VOC Reductions from Architectural Coatings (R1113) [VOC]	Section 182 (e)(5) implementation	2015 - 2016	2018 - 2020	2-4
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]	Section 182 (e)(5) implementation	2013 - 2016	2015 - 2018	1-2
CTS-03	Further VOC Reductions from Mold Release Products [VOC]	Section 182 (e)(5) implementation	2014	2016	0.8 – 2
CTS-04	Further VOC Reductions from Consumer Products [VOC]	Section 182 (e)(5) implementation	2013 - 2015	2018	N/A ^f
PETROLEUM OPERATIONS AND FUGITIVE VOC					
FUG-01	Further VOC Reductions from Vacuum Trucks [VOC]	Section 182 (e)(5) implementation	2014	2016	1 ^g
FUG-02	Emission Reduction from LPG Transfer and Dispensing [VOC] – <i>Phase II</i>	Section 182 (e)(5) implementation	2015	2017	1-2
FUG-03	Further VOC Reductions from Fugitive VOC Emissions [VOC]	Section 182 (e)(5) implementation	2015 -2016	2017-2018	1-2
MULTIPLE COMPONENT SOURCES					
MCS-01	Application of All Feasible Measures Assessment [All Pollutants]	Short-term 24-hr PM2.5 and section 182 (e)(5) implementation	Ongoing	Ongoing	TBD ^d
MCS-02	Further Emission Reductions from Green Waste Processing (Chipping and Grinding Operations Not Associated with Composting) [VOC]	Section 182 (e)(5) implementation	2015	2016	1 ^g
MCS-03 (formerly MCS-06 in the 2007 AQMP)	Improved Start-up, Shutdown and Turnaround Procedures [All Pollutants]	Section 182 (e)(5) implementation	Phase I – 2012 (<i>Tech Assessment</i>) Phase II - TBD	Phase I – 2013 (<i>Tech Assessment</i>) Phase II - TBD	TBD ^d

TABLE 2-3 (Concluded)

Stationary Source Control Measures Categorized by Source Type

NUMBER	TITLE	CM TYPE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
INDIRECT SOURCES					
IND -01 (formerly MOB-03)	Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources [NOx, SOx, PM2.5]	Short-term 24-hr PM2.5	2013	12 months after trigger	N/A ^f
INCENTIVE PROGRAMS					
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx]	Section 182 (e)(5) implementation	2014	Within 12 months after funding availability	TBD ^h
INC-02	Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies [All Pollutants]	Section 182 (e)(5) implementation	2014-2015	Beginning 2015	N/A ^f
EDUCATIONAL PROGRAMS					
EDU-01 (formerly MCS-02, MCS-03)	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]	Short-term 24-hr PM2.5 and Section 182 (e)(5) implementation	Ongoing	Ongoing	N/A ^f

a. Winter average day reductions based on episodic conditions and 75 percent compliance rate.

b. Reduction based on episodic day conditions.

c. Will submit into SIP once technically feasible and cost effective options are confirmed.

d. TBD are reductions to be determined once the technical assessment is complete, and inventory and control approach are identified.

e. Pending because emission reductions will be provided prior to the Final Draft.

f. N/A are reductions that cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs) or if the measure is designed to ensure reductions that have been assumed to occur will, in fact, occur.

g. Reductions submitted in SIP once emission inventories are included in the SIP.

h. TBD are reductions to be determined once the inventory and control approach are identified.

i. [Emission reductions are included in the SIP as a contingency measure.](#)

j. [If Control Measure CMB-01, RECLAIM Phase I, contingency measure emission reductions are not triggered and implemented, Phase II will target a cumulative 3-5 TPD of NOx emission reductions.](#)

2.8.1.1 Summaries of the Stationary Source Control Measures

BCM-01 – Further Reductions from Residential Wood Burning Devices [PM2.5] (formerly BCM-05 in the 2007 AQMP) (formerly control measure MCS-04B): The purpose of this measure would be to seek further PM2.5 emissions reductions from residential wood burning fireplaces and wood stoves whenever key areas in the South Coast Air Basin are forecast to approach the federal 24-hour PM2.5 standard. A review of other California air district regulations has indicated that the most appropriate amendment to the existing

SCAQMD wood smoke control program would be to decrease the mandatory wood burning curtailment forecast threshold from $35 \mu\text{g}/\text{m}^3$ to a more conservative $30 \mu\text{g}/\text{m}^3$. In addition to the existing sub-regional curtailment program of Rule 445 (based on areas forecast to exceed the existing PM_{2.5} standard), this measure would implement a curtailment that would apply Basin-wide whenever a PM_{2.5} level of greater than $30 \mu\text{g}/\text{m}^3$ is forecast at any monitoring station at which the design value has exceeded the current PM_{2.5} 24-hour standard of $35 \mu\text{g}/\text{m}^3$ for either of the two previous periods. Lowering the wood burning curtailment forecast threshold and applying the curtailment to the entire Basin when triggered could potentially reduce Basin-wide ambient PM_{2.5} concentrations on these episodic no-burn days by about 7.1 tons per winter day (assuming 75 percent rule effectiveness).

BCM-02 – Further Reductions from Open Burning [PM_{2.5}]: Rule 444 outlines the criteria and guidelines for agricultural and prescribed burning, as well as training burns, to minimize PM emissions and smoke in a manner that is consistent with state and federal laws. Agricultural burning is open burning of vegetative materials produced from the growing and harvesting of crops. Prescribed burning is a planned open burning of vegetative materials, usually conducted by a fire protection agency and/or department of forestry, to promote a healthier habitat for plants and animals, to prevent plant disease and pests, and to reduce the risk of wild fires. Training burns are hands-on instructional events conducted by fire protection agencies on methods of preventing and/or suppressing fire. Rule 444 currently contains requirements that a no-burn day may be called under a combination of geographical, meteorological, and air quality conditions. This control measure would potentially increase the number of no-burn days by establishing an additional criteria for no-burn during episodic days as described in control measure BCM-01 by implementing a curtailment that would apply Basin-wide whenever a PM_{2.5} level of greater than $30 \mu\text{g}/\text{m}^3$ is forecast at any monitoring station ~~at which the design value has exceeded the current PM_{2.5} 24-hour standard of $35 \mu\text{g}/\text{m}^3$ for either of the two previous periods.~~ has recorded violations of the design value for the current PM_{2.5} 24-hour standard of $35 \mu\text{g}/\text{m}^3$ for either of the two previous three-year design value periods. It should be noted that, as with the current mandatory program, the Basin-wide curtailment criteria will apply for the entire winter season, which is November through February. Under this measure, consideration will also be given to expanding the defined winter season to potentially include October and/or March. Enhancing the open burning restrictions with this new threshold criteria and applying a curtailment to the entire Basin could potentially reduce Basin-wide ambient PM_{2.5} concentrations on these episodic no-burn days by about 4.6 tons per winter day. Since the burning would likely be shifted to other days, the total annual emissions would remain the same, but would not occur on days where high PM_{2.5} levels are forecast.

BCM-03 – Emission Reductions from Under-Fired Charbroilers (Rule 1138) [PM_{2.5}] (formerly BCM-05 in the 2007 AQMP) (formerly Control Measure BCM-01): This proposed measure seeks emission reductions by potentially requiring new and/or existing medium to large volume restaurants with under-fired charbroilers to install control devices meeting a minimum efficiency requirement. Under-fired charbroilers are responsible for the majority of emissions from restaurant operations – 84 percent of PM and 71 percent of VOC emissions. Several control options are currently being evaluated and tested including electrostatic precipitators (ESP), high efficiency particulate arresting (HEPA) filters, wet scrubbers, and thermal oxidizers. Under-fired charbroilers are one of the largest unregulated

sources of directly emitted PM. This control measure will be implemented in two phases. Phase I will be the completion of the technical assessment at CE-CERT, including considerations for compatibility with existing restaurants and all applicable building and safety codes (e.g., fire suppression). Evaluation of cost and affordability associated with the purchase, installation, and operation and maintenance (e.g., cleaning and/or replacing filters) of the equipment will also be assessed.

A technical assessment of potential control technologies is currently ongoing at University of California, Riverside (CE-CERT), to evaluate the efficiency and the cost-effectiveness of various control devices for the capture and control of filterable and/or condensable forms of PM from under-fired charbroilers. The Bay Area AQMD adopted a rule for commercial cooking equipment that controls both chain-driven and under-fired charbroilers. The Bay Area measure will be evaluated to meet the all feasible measures requirement. A rule will be developed if deemed feasible. Technical and economic feasibility, as well as affordability of controls, particularly for existing restaurants relative to retrofit installation and operation/maintenance, will be considered in conjunction with any future rule development to establish requirements for under-fired charbroilers.

BCM-04 – Further Ammonia Reductions from Livestock Waste [Ammonia] (formerly MCS-05 in the 2007 AQMP) (formerly Control Measure MCS-04C): This measure seeks to reduce ammonia emissions from livestock operations with emphasis on dairies. This control measure would apply only-primarily to the Mira Loma area, which further reduce PM_{2.5} emissions in the only area that currently exceeds the federal 24-hour PM_{2.5} standard. Existing Rule 1127 – Emission Reductions from Livestock Waste requires best management practices for dairies and specific requirements regarding manure removal, handling, and composting; however, the rule does not focus on fresh manure, which is one of the largest dairy sources of ammonia emissions.

This control measure will be implemented in two phases. Phase I will be to conduct a technical assessment of the aforementioned method of control. An assessment will be conducted to evaluate the use of sodium bisulfate (SBS) at local dairies to evaluate the technical and economic feasibility of its application. Reducing pH level in manure through the application of acidulant additives (acidifier), such as sodium bisulfate (SBS), is one of the potential mitigations for ammonia. SBS is currently being considered for use in animal housing areas where high concentrations of fresh manure are located. Research indicates that best results occur when SBS is used on “hot spots”. SBS can also be applied to manure stock piles and at fencelines, and upon scraping manure to reduce ammonia spiking from the leftover remnants of manure and urine. A rule will be developed if deemed feasible. SBS application may be required seasonally or episodically during times when high ambient PM_{2.5} levels are forecast.

If deemed feasible and effective, Phase II would implement the measure as needed to address future PM_{2.5} standards. Rule requirements would be specific to dairies in the AQMD jurisdiction and may be unique to localized operations only.

CMB-01 – Further NO_x Reductions from RECLAIM [NO_x] – Phase I: ~~This proposed control measure will seek further reductions of 2 tpd of NO_x allocations by 2014. The proposed Phase~~

I reductions are designed to serve as a contingency measure. It would be implemented if the Basin does not attain the federal 24-hr PM2.5 standard by 2014. If necessary, Phase I is expected to be adopted in 2013 and the shave will be implemented/triggered for compliance year 2015 if the attainment of 24-hr PM2.5 standard is not met by 2014. In addition, staff would seek to identify appropriate approaches during rulemaking to implement the allocation shaving methodology. The control measure has the ability to produce co-benefits in the reduction of PM2.5 and ozone.

CMB-01 – Further Emission Reductions from NOx RECLAIM [NOx] – Phase II: This proposed NOx control measure would seek further reductions in NOx allocations by the year is expected to be adopted by 2015 for implementation between 2017 and 2020 to be consistent with the 2012 AQMP. If control measure CMB-01, RECLAIM Phase I, contingency measure emission reductions are not triggered and implemented, Phase II will target a cumulative three to five tons per day of NOx emission reductions. This phase of control is to implement periodic BARCT evaluation as required under state law. The control measure has the ability to produce co-benefits in the reduction of PM2.5 and ozone.

CMB-02 – NOx Reductions from Biogas Flares [NOx]: There are no source specific rules regulating NOx emissions from biogas flares. Flare NOx emissions are regulated through new source review and BACT. This control measure proposes that, consistent with the feasible measures, older biogas flares be gradually replaced with new flares that meet current BACT. Strategies that minimize flaring and associated emissions can also be considered as alternative control options.

CMB-03 – Reductions from Commercial Space Heating [NOx] (Rule 1111): This control measure would apply to space heaters used for comfort heating. SCAQMD Rule 1111 - NOx Emissions from Natural Gas-Fired Fan Type Central Furnaces, regulates natural gas-fired commercial space heaters with input rates less than 175,000 Btu/hr. This control measure is expected to reduce NOx emissions from affected heaters by reducing the NOx emission control limit for new space heaters for commercial applications, which can be achieved through the use of low-NOx burners or other low emitting combustion technologies.

CTS-01 – Further VOC Reductions from Architectural Coatings (Rule 1113) [VOC]: SCAQMD adopted Rule 1113 – Architectural Coatings, in 1977 and it has undergone numerous amendments. This proposed control measure seeks to reduce VOC emissions from large volume coating categories such as flat, non-flat and primer, sealer, undercoaters (PSU) and from phasing out the currently exempt use of high-VOC architectural coatings sold in one liter containers or smaller. Additional VOC emission reductions could be achieved from the application of architectural coatings by use of application techniques with greater transfer efficiency. Such transfer efficiency improvements could be achieved through the use of a laser paint targeting system, which has been shown to improve transfer efficiency on average by 30 percent over equipment not using a targeting system, depending on the size, shape and configuration of the substrate. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule.

CTS-02 – Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]: This control measure seeks to reduce VOC emissions from

miscellaneous coating, adhesive, solvent and lubricant categories by further limiting the allowable VOC content in formulations. Examples of the miscellaneous categories to be considered include, but are not limited to, coatings used in aerospace and marine applications; adhesives used in a variety of sealing applications; solvents for graffiti abatement activities; and lubricants used as metalworking fluids to reduce heat and friction to prolong the life of the tool, improve product quality, and carry away debris. Reductions would be achieved by lowering the VOC content of the coatings, adhesives and lubricants. For solvents, reductions could be achieved with the use of alternative low-VOC products or non-VOC product/equipment at industrial facilities. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule.

CTS-03 – Further VOC Reductions from Mold Release Products [VOC]: Metal, fiberglass, composite and plastic products are often manufactured using molds which form the part into a particular configuration. Mold release agents are used to ensure that the parts, as they are made, can be released easily and quickly from the molds. These agents are often blended with VOC solvent carriers and may also contain toxic components such as toluene and xylene. Mold release products are also used for concrete stamping operations to keep the mold from adhering to the fresh concrete. Residential and commercial concrete stamping is a rapidly growing industry and overall VOC emissions are estimated to be significant. This control measure would reduce VOC emissions from mold release products on metal, fiberglass, composite and plastic products, as well as concrete stamping operations, by requiring the use of low-VOC content mold release products.

CTS-04 – Further VOC Reductions from Consumer Products [VOC]: This [control](#) measure seeks to eliminate or revise the exemption for low vapor pressure solvents in CARB's consumer products regulation, which exempts low vapor pressure volatile organic compounds (LVP-VOC) from counting towards the compliance obligation for consumer product VOC limits. Recent testing conducted by the [SCAQMD District](#) on institutional cleaners found that traditionally formulated consumer products may contain significant amounts of LVP-VOC solvents. In some cases, such as certain multipurpose solvents, the products were 100 percent LVP-VOC solvents. Further testing indicated that many of the LVP-VOC solvents evaporate nearly as quickly as the traditional solvents they were meant to replace and have Maximum Incremental Reactivity (MIR) values well above the threshold considered to be non-reactive, currently based on ethane. Therefore, an evaluation of the continued need for use of LVP-VOC solvents in certain categories is warranted.

FUG-01 – ~~Further~~ VOC Reductions from Vacuum Trucks [VOC]: This control measure [will primarily focus on high-emitting seeks to reduce emissions from the further venting of vacuum trucks operations, such as those found in petrochemical industries and other operations that include the transfer of volatile liquids such as gasoline.](#) Emissions from such operations can be reduced through the utilization of control technologies, including but not limited to, carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers and liquid scrubbers. Additionally, implementation of a leak detection and repair (LDAR) program may further reduce fugitive emissions.

FUG-02 – Emission Reduction from LPG Transfer and Dispensing [VOC]: In June 2012, the SCAQMD adopted phase I Rule 1177 - Liquefied Petroleum Gas (LPG) Transfer and

Dispensing. Rule 1177 requires use of low-emission fixed liquid level gauges or equivalent alternatives while filling LPG-containing tanks and cylinders, use of low-emission connectors, routine leak checks and repairs of LPG transfer and dispensing equipment. The purpose of Control Measure FUG-02 is to further reduce fugitive VOC emissions associated with the transfer and dispensing of LPG by expanding rule applicability to include LPG transfer and dispensing at currently exempted facilities such as refineries, marine terminals, natural gas processing plants and pipeline transfer stations, as well as facilities that conduct fill-by-weight techniques.

FUG-03 – Further VOC Reductions from Fugitive VOC Emissions [VOC]: This control measure would broaden the applicability of improved leak detection and repair (LDAR) programs to remove additional fugitive VOC emissions. Areas for further study may include, but are not limited to, Rule 1142 - Marine Vessel Tank Operations, and wastewater separators. This control measure would explore the opportunity of incorporating a recently developed advanced optical gas imaging technology to detect leaks (Smart LDAR) to more easily identify and repair leaks in a manner that is less time consuming and labor intensive. Additionally, vapor recovery systems are currently required to have a control efficiency of 95 percent. In an effort to further reduce VOC emissions from these types of operations, this control measure would explore opportunities and the feasibility of further improving the collection/control efficiency of existing control systems, resulting in additional VOC reductions.

MCS-01 – Application of All Feasible Measures Assessment [All Pollutants]: This control measure is to address the state law requirement for all feasible measures for ozone. Existing rules and regulations for pollutants such as VOC, NO_x, SO_x and PM typically reflect BARCT requirements at the time the rules or regulations were adopted or amended. However, BARCT continually evolves as feasible and cost-effective new technology becomes available or becomes more efficient. Through this proposed control measure, the SCAQMD would commit to the adoption and implementation of the new retrofit control technology standards. Finally, staff would review actions taken by other air districts for applicability in the district.

MCS-02 – Further Emission Reductions from Greenwaste Processing (Chipping and Grinding Not Associated with Composting) [VOC]: Chipped or ground greenwaste and/or woodwaste have the potential to emit VOCs when being stockpiled or land-applied for various purposes. Chipping and grinding is a process to mechanically reduce the size of greenwaste and woodwaste pieces. SCAQMD rules have established best management practices (BMPs) for greenwaste composting and related operations under Rule 1133.1 – Chipping and Grinding Activities, and Rule 1133.3 – Greenwaste Composting Operations. During rule development, stakeholders raised the need to develop a holistic approach to identifying and accounting for emissions from all greenwaste streams and reducing potential emissions from greenwaste material handling operations at chipping and grinding facilities and other related facilities, not just the ones associated with composting operations. This control measure would seek to establish additional BMPs for handling processed or unprocessed greenwaste material by greenwaste processors, haulers, and operators who inappropriately stockpile material or directly apply the material to land. The implementation of the control measure would be in two phases. [First](#)In Phase 1, the existing database would be reviewed to refine greenwaste material inventory, and second, a rule would potentially be developed to incorporate

technically feasible and cost-effective BMPs or controls. SCAQMD staff will work with counties and cities relative to green material handling practices in light of the aforementioned state diversion requirements and goals in order to determine green material end use and minimize any potential adverse impacts associated with implementing this measure.

In Phase 2, a rule would potentially be developed to incorporate technically feasible and cost-effective BMPs or controls. The SCAQMD will convene its working group involving all stakeholders to develop cost-effective and workable solutions for this source category.

MCS-03 – Improved Start-up, Shutdown and Turnaround Procedures [All Pollutants] (formerly MCS-06 in the 2007 AQMP): This proposed control measure seeks to reduce emissions during equipment startup, shutdown, and turnaround. Opportunities for further reducing emissions from start-up, shut-down and turnaround activities potentially exist at refineries as well as other industries. Examples of possible areas for improvement may include implementing BMPs, promoting better engineering and equipment design, diverting or eliminating process streams that are vented to flares, and installing redundant equipment to increase operational reliability. This measure will be implemented through a two-phase effort to first collect/refine emissions and related data and then, based on the data collected, assess viable controls, if appropriate.

IND-01 - Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources [NO_x, SO_x, PM_{2.5}] (formerly MOB-03 in the 2007 AQMP): This measure would be designed to ensure NO_x, SO_x and PM_{2.5} emissions reductions from port-related sources are sufficient to attain the 24-hour federal PM_{2.5} ambient air quality standard. If emission levels projected to result from the current regulatory requirements and voluntary reduction strategies specified by the Ports are not realized, the 24-hr federal PM_{2.5} ambient air quality standard may not be achieved. This control measure is designed to ensure that the necessary emission reductions from port-related sources projected in the 2012 AQMP milestone years are achieved or if it is later determined through a SIP amendment that additional region-wide reductions are needed due to the change in Basin-wide carrying capacity for PM_{2.5} attainment.

This measure is divided into two phases. The Phase I requirements are triggered if emission levels projected to result from the current regulatory requirements and voluntary reduction strategies that are assumed and relied upon in the 2012 AQMP are not realized. Once triggered, the ports will be required to develop and implement a plan to reduce emissions from their sources to meet the emission targets. Phase II is designed to reduce emissions if it is later determined through a SIP amendment that additional region-wide reductions are needed due to the change in Basin-wide carrying capacity for PM_{2.5} attainment. In this case, the ports will be required to further reduce their emissions on a “fair-share” basis.

INC-01: Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NO_x]: The primary objective of this measure is to develop a program that promotes and encourages adoption and installation of cleaner, more efficient combustion equipment, such as boilers, water heaters and commercial space heating, through economic incentive programs subject to the availability of public funding. Incentives may include grants for new purchases

of equipment as well as loan programs in areas where long-term cost savings from increased efficiency are achieved.

INC-02: Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies [All Pollutants]: This proposed [control](#) measure is aimed at providing incentives for companies to manufacture zero and near-zero emission technologies locally, thus, populating the market, potentially lowering the purchase cost, and increasing demand. With availability and usage of such technologies, air quality benefits would be achieved. This proposed measure focuses on two elements: 1) processing the required air permit(s) in an expedited procedure; and 2) prioritizing the preparation, circulation and certification of any applicable CEQA document where the SCAQMD is the lead agency. A stakeholder process will be initiated to design the program and collaborate with other existing [SCAQMD](#) or local programs.

EDU-01: Further Criteria Pollutant Reductions from Education Outreach and Incentives [All Pollutants] (formerly MCS-02, MCS-03): This proposed control measure would provide educational outreach and incentives for consumers to contribute to clean air efforts. Examples include the usage of energy efficient products, new lighting technology, “super compliant” coatings, tree planting, and the use of lighter colored roofing and paving materials which reduce VOC or NOx by lowering the ambient temperature. In addition, this proposed measure intends to increase the effectiveness of energy conservation programs through public education and awareness as to the environmental effects and benefits from conservation. Finally, educational and incentive tools to be used include social comparison applications (e.g., lifestyle comparisons of personal energy use and efficiency), social media, and public/private partnerships.

2.8.2 Mobile Source Control Measures

This subsection describes SCAQMD staff’s proposed control measures to be included in the 2012 AQMP to reduce mobile source emissions to provide progress in attaining the eight-hour ozone and one-hour ozone ambient air quality standards by 2022-2023. The §182 (e)(5) proposed implementation measures presented in this subsection are based upon a variety of control technologies that are commercially available and/or technologically feasible to implement in the next several years. The focus of these measures includes accelerated retrofits or replacement of legacy fleets of vehicles or equipment, acceleration of vehicle turnover through voluntary vehicle retirement programs, and greater use of cleaner fuels in the near-term. In the longer-term, in order to attain the federal ozone ambient air quality standard, there is a need to increase the penetration and deployment of near-zero and zero-emissions vehicles such as plug-in hybrids, battery-electric, and fuel cell vehicles; accelerate the penetration and use of cleaner fuels (either alternative fuels or new formulations of gasoline and diesel fuels); and obtain additional emission reductions from aircraft engines. As set forth in the descriptions of individual control measures in Table 2-4, some of the measures will likely require action by CARB, while some control measures recognize actions being taken by other agencies.

TABLE 2-4

Mobile Source Control Measures Categorized by Source Type

§182 (e)(5) PROPOSED IMPLEMENTATION 8-HOUR OZONE MEASURES - ON-ROAD MOBILE SOURCES				
CM Number	Title	Adoption	Implementation Period	Reduction (tpd)
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles [VOC, NO _x , PM]	N/A	Ongoing	TBD ^a
ONRD-02	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles [VOC, NO _x , PM]	N/A	Ongoing	TBD ^a
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero Emission Light Heavy-Duty Vehicles [NO _x , PM]	N/A	Ongoing	TBD ^a
ONRD-04	Accelerated Retirement of Older Heavy-Duty Vehicles [NO _x , PM]	N/A	Ongoing	TBD ^{a,b}
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NO _x , PM]	2014	2015-2020	0.75 [NO _x] 0.025 [PM2.5]
§182 (e)(5) Proposed Implementation 8-Hour Ozone Measures – Off-Road Mobile Sources				
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment [NO _x]	N/A	Ongoing	7.5
OFFRD-02	Further Emission Reductions from Freight Locomotives [NO _x , PM]	Ongoing	2015 -2023	12.7 [NO _x] 0.32 [PM2.5]
OFFRD-03	Further Emission Reductions from Passenger Locomotives [NO _x , PM]	Ongoing	Beginning 2014	3.0 [NO _x] ^c 0.06 [PM2.5] ^c
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels While at Berth [NO _x , PM]	N/A	Ongoing	TBD ^a
OFFRD-05	Emission Reductions from Ocean-Going marine Vessels [NO _x]	N/A	Ongoing	TBD ^a
ADV-01	§182 (e) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles [NO _x]	N/A	2012 and on	TBD ^d
ADV-02	§182 (e) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives [NO _x]	N/A	2012 and on	TBD ^d
ADV-03	§182 (e) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment [NO _x]	N/A	2012 and on	TBD ^d
ADV-04	§182 (e) Proposed Implementation Measures for the Deployment of Cleaner Commercial Harborcraft [NO _x]	N/A	2012 and on	TBD ^d

TABLE 2-4 (Concluded)

Mobile Source Control Measures Categorized by Source Type

§182 (e)(5) PROPOSED IMPLEMENTATION 8-HOUR OZONE MEASURES - ON-ROAD MOBILE SOURCES				
ADV-05	§182 (e) Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx]	N/A	2012 and on	TBD ^d
ADV-06	§182 (e) Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment [NOx]	N/A	2012 and on	TBD ^d
ADV-07	§182 (e) Proposed Implementation Measures for the Deployment of Cleaner Aircraft Engines [NOx]	N/A	2012 and on	TBD ^d

- a) Emission reductions will be determined after projects are identified and implemented
- b) Reductions achieved locally in Mira Loma region
- c) Submitted into the SIP once technically feasible and cost effective options are confirmed
- d) Emission reductions will be quantified after the projects are demonstrated.

2.8.2.1 Summaries of §182 (e)(5) Implementation 8-Hour Ozone Measures – On-Road Mobile Sources

By 2023, it is estimated that about 12 million vehicles will be operating in the Basin. To address emissions from these vehicles, SCAQMD staff is proposing five on-road mobile source control measures. The first two measures focus on on-road light- and medium-duty vehicles operating in the South Coast Air Basin, while the remaining three measures focus on heavy-duty vehicles. Summaries of each of the five on-road mobile source control measures are provided in the following paragraphs.

ONRD-01 – Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles [NOx]: This measure proposes to continue incentives for the purchase of zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode. The state Clean Vehicle Rebate Pilot (CVRP) program is proposed to continue from 2015 to 2023 with a proposed funding for up to \$5,000 per vehicle. The proposed measure seeks to provide funding assistance for up to 1,000 zero-emission or partial-zero emission vehicles per year.

ONRD-02 – Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles [NOx]: This proposed [control](#) measure calls for promoting the permanent retirement of older eligible vehicles through financial incentives currently offered through local funding incentive programs and the AB 118 Enhanced Fleet Modernization Program (EFMP). This proposed [control](#) measure seeks to retire up to 2,000 older light- and medium-duty vehicles (up to 8,500 lbs gross vehicle weight) per year. Funding incentives of up to \$2,500 per vehicle are proposed for the scrapping of the vehicle, which may include a replacement voucher for a newer or new vehicle.

ONRD-03 – Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium Heavy-Duty Vehicles [NOx]: The objective of the proposed action is to accelerate

the introduction of advanced hybrid and zero-emission technologies for Class 4 through 6 heavy-duty vehicles. The state is currently implementing a Hybrid Vehicle Incentives Project (HVIP) program to promote zero-emission and hybrid heavy-duty vehicles. This proposed [control](#) measure seeks to continue the program from 2015 to 2023 to deploy up to 1,000 zero- and partial-zero emission vehicles per year with up to \$25,000 funding assistance per vehicle. Zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode would be given the highest priority.

ONRD-04 – Accelerated Retirement of Older Heavy-Duty Vehicles [NOx]: This proposed [control](#) measure seeks to replace up to 1,000 heavy-duty vehicles per year with newer or new vehicles that at a minimum, meet the 2010 on-road heavy-duty NOx exhaust emissions standard of 0.2 g/bhp-hr. Given that exceedances of the 24-hour PM_{2.5} air quality standard occur in the Mira Loma region, priority will be placed on replacing older diesel trucks that operate primarily at the warehouse and distribution centers located in the Mira Loma area. Funding assistance of up to \$35,000 per vehicle is proposed and the level of funding will depend upon the NOx emissions certification level of the replacement vehicle. In addition, a provision similar to the Surplus Off-Road Option for NOx (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation will be sought to ensure that additional NOx emission reduction benefits are achieved.

ONRD-05 – Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NOx, PM]: This proposed control measure calls for a requirement that any cargo container moved between the Ports of Los Angeles and Long Beach to the nearby railyards (the Intermodal Container Transfer Facility and the proposed Southern California International Gateway) be with zero-emission technologies. This [control](#) measure would be fully implemented by 2020 through the deployment of zero-emission trucks or any alternative zero-emission container movement system such as a fixed guideway system. This [control](#) measure calls for CARB to either adopt a new regulation or amend an existing regulation to require such deployment by 2020. [In lieu of a regulation or to complement a regulation, other enforceable mechanisms may achieve the objectives of the control measures. The Ports of Los Angeles and Long Beach have successfully implemented the Clean Truck Program as mentioned above. A second phase of such a program could be implemented to bring zero-emission trucks or hybrid trucks with sufficient all electric range to serve the near-dock railyards. In addition, incentives funding programs will encourage the deployment of such zero-emission trucks.](#) To the extent the measure can feasibly be extended beyond near-dock railyards, this would be considered for adoption by CARB.

2.8.2.2 §182 (e)(5) Implementation 8-Hour Ozone Measures – Off-Road Mobile Sources

SCAQMD staff is proposing five control measures that seek further emission reductions from off-road mobile sources and industrial equipment. Off-road mobile sources such as aircraft, locomotives, and marine vessels are principally regulated by federal and state agencies. In addition, several of the off-road mobile source control measures include certain local actions that can result in emission reductions beyond the emissions standard setting authority of the state and EPA. Summaries of each of the five off-road mobile source control measures are provided in the following paragraphs.

OFFRD-01 – Extension of the SOON Provision for Construction/Industrial Equipment [NOx]: This [control](#) measure seeks to continue the Surplus Off-Road Option for NOx (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation beyond 2014 through the 2023 timeframe. In order to implement the SOON program in this timeframe, funding of up to \$30 million per year would be sought to help fund the repower or replacement of older Tier 0 and Tier 1 equipment, with reductions that are considered surplus to the statewide regulation with Tier 4 or cleaner engines.

OFFRD-02 – Further Emission Reductions from Freight Locomotives [NOx]: ~~This~~ proposed control measure ~~carries forward the freight locomotive control measures from is to meet the commitment in~~ the 2007 SIP. ~~This control measure calls for replacing existing locomotive engines with the accelerated use of~~ Tier 4 locomotives in the South Coast Air Basin. ~~This~~ [control](#) measure calls for CARB to seek further emission reductions from freight locomotives through enforceable mechanisms within its authority to achieve 95 percent or greater introduction of Tier 4 locomotives by 2023.

OFFRD-03 – Further Emission Reductions from Passenger Locomotives [NOx]: This [control](#) measure recognizes the recent actions by the Southern California Regional Rail Authority (SCRRA or Metrolink) to consider replacement of their existing Tier 0 passenger locomotives with Tier 4 locomotives. The SCRRA adopted a plan that contains a schedule to replace their older existing passenger locomotives with Tier 4 locomotives by 2017. More recently, SCRRA released a Request for Quotes on the cost of new or repowered passenger locomotives with locomotive engines that meet Tier 4 emission levels.

OFFRD-04 – Further Emission Reductions from Ocean-Going Marine Vessels While at Berth [NOx]: This [control](#) measure seeks additional emission reductions from ocean-going marine vessels while at berth. The actions would affect ocean-going vessels that are not subject to the statewide Shorepower Regulation or vessel calls that are considered surplus to the statewide regulation. ~~This~~ [control](#) measure seeks at a minimum to have an additional 25 percent of vessel calls beyond the statewide regulation to deploy shorepower technologies or alternative forms of emissions reduction as early as possible. Such actions could be implemented through additional incentives programs or through the San Pedro Bay Ports as part of the implementation of the Ports Clean Air Action Plan.

OFFRD-05 – Emission Reductions from Ocean-Going Marine Vessels [NOx]: This [control](#) measure recognizes the recent actions at the Ports of Los Angeles and Long Beach to initiate an incentives program for cleaner ocean-going vessels to call at the ports. The program has been initiated as part of the San Pedro Bay Ports Clean Air Action Plan. The program will provide financial incentives for cleaner Tier 2 and Tier 3 ocean-going vessels to call at the ports. This [control](#) measure also recognizes the need to monitor progress under such programs and augment them as necessary to ensure sufficient results. The program will be monitored on annual basis and, if necessary, any adjustments to the program will be made.

§182 (e)(5) Implementation to Deploy Advanced Control Technologies

SCAQMD staff is also proposing the following seven additional §182 (e) proposed implementation [control](#) measures to deploy the cleanest control technologies as early as possible and the development, demonstration, and deployment of near-zero and zero-emission

technologies. Many of these actions have already begun. However, additional research and development will be needed that will lead to commercial development of control technologies that achieve emission levels below current adopted emission standards. Other near-zero and zero-emission technologies that are commercially available will require infrastructure development to facilitate their deployment.

ADV-01 – §182 (e)(5) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles [NOx] This [control](#) measure would continue the efforts underway to develop zero-emission and near-zero emission technologies for on-road heavy-duty vehicle applications. Such technologies include, but are not limited to, fuel cell, battery-electric, hybrid-electric with all electric range, and overhead catenary systems. Hybrid-electric systems incorporate an engine powered by conventional fuels or alternative fuels such as natural gas. The actions provided in [this](#) proposed [control](#) measure are based on the SCAG 2012 Regional Transportation Plan.

ADV-02 – §182 (e)(5) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives [NOx] This [control](#) measure calls for the development and deployment of zero-emission and near-zero emission technologies for locomotives. Such technologies include overhead catenary systems, hybrid locomotives that have some portion of their operation in an “all electric range” mode, and alternative forms of external power such as a battery tender car. The actions provided in [this](#) proposed [control](#) measure are based on the SCAG 2012 Regional Transportation Plan. The zero-emission technologies could apply to freight and passenger locomotives.

ADV-03 – §182 (e)(5) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment [NOx] This [control](#) measure recognizes the actions underway to develop and deploy zero- and near-zero emission technologies for various cargo handling equipment. The San Pedro Bay Ports are currently demonstrating battery-electric yard tractors. In addition, battery-electric, fuel cell, and hybridized systems could be deployed on smaller cargo handling equipment. In addition, the use of alternative fuels for conventional combustion engines could potentially result in greater emissions benefits.

ADV-04 – §182 (e)(5) Proposed Implementation Measures for the Deployment of Cleaner Commercial Harborcraft [NOx] Several commercial harbor craft operators have begun deployment of hybrid systems in their harbor craft to further reduce criteria pollutant emissions and improve fuel efficiency. Other cleaner technologies include the use of alternative fuels, retrofit of existing older marine engines with selective catalytic converters, and diesel particulate filters. This [control](#) measure recognizes several efforts between the [SCAQMD District](#) and the Ports of Los Angeles and Long Beach to further demonstrate control technologies that could be deployed on commercial harbor craft that could go beyond the statewide Harbor Craft Regulation.

ADV-05 – §182 (e)(5) Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx] The Ports of Los Angeles and Long Beach, CARB, and the [SCAQMD District](#) have sponsored research and demonstration of various control technologies to further reduce emissions from ocean-going vessels. In addition, the

San Pedro Bay Ports Clean Air Action Plan contains a measure to further demonstrate such technologies on ocean-going vessels. This [control](#) measure recognizes many of these efforts and the need to further demonstrate retrofit technologies on existing ocean-going vessels.

ADV-06 – §182 (e)(5) Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment [NOx] The [SCAQMD’s District](#), Mobile Source Air Pollution Reduction Review Committee (MSRC), and CARB have been conducting an off-road “showcase” program for retrofit technologies to further reduce emissions from older off-road equipment. In addition, several major off-road engine manufacturers are investigating the potential use of hybrid systems to further reduce criteria pollutant and greenhouse gas emissions. Potential advanced technologies include hybrid systems that utilize batteries, fuel cells, or plug-in capabilities, which could result in lower emissions compared to Tier 4 emission levels when combined with future Tier 4 compliant engines. This [control](#) measure ~~will be is~~ implemented by the [SCAQMD District](#), CARB and U.S. EPA.

ADV-07 – §182 (e)(5) Proposed Implementation Measures for the Deployment of Cleaner Aircraft Engines [NOx] This [control](#) measure recognizes the efforts of the Federal Aviation Administration’s Continuous Lower Energy, Emissions and Noise (CLEEN) Program. The goal of the CLEEN Program is the development of new aircraft engines that potentially can be up to 60 percent cleaner in NOx emissions than current aircraft engines. The actions under this [control](#) measure are to continue the development of cleaner aircraft engines and work with the airlines and local airport authorities to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin.

2.8.3 Transportation Control Measures from the Southern California Association of Governments 2012 – 2035 Regional Transportation Plan and Sustainable Communities Strategy

The Southern California Association of Governments (SCAG), the Metropolitan Planning Organization (MPO) for Southern California, is mandated to comply with federal and state transportation and air quality regulations. Further, pursuant to California Health and Safety Code (HSC) §40460, SCAG has the responsibility of preparing and approving the portions of the AQMP related to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. The SCAQMD combines its portion of the AQMP with those portions prepared by SCAG and required by HSC §40460.

The transportation strategy and transportation control measures (TCMs) to be included as part of the 2012 PM2.5 AQMP and SIP for the South Coast Air Basin, as defined in the Health and Safety Code, are based on SCAG’s adopted 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and 2011 Federal Transportation Improvement Program (FTIP), which were developed in consultation with federal, state and local transportation and air quality planning agencies and other stakeholders. A list of the TCMs from the 2012-2035 RTP/SCS can be found in [Appendix E of the Final Program EIR and Appendix B](#) of the recirculated NOP/IS.

The 2012 – 2035 Regional Transportation Strategy and Transportation Control Measures portion of the 2012 AQMP/SIP consists of the following three related sections.

- Section I. Linking Regional Transportation Planning to Air Quality Planning: As required by federal and state laws, SCAG is responsible for ensuring that the regional transportation plan, program, and projects are supportive of the goals and objectives of AQMPs/SIPs. SCAG is also required by state law to develop demographic projections and regional transportation strategy and control measures for the AQMPs/SIPs. SCAG prepares the RTP/SCS, which is updated every four years, and the Federal Transportation Improvement Plan biennially.
- Section II. Regional Transportation Strategy and Transportation Control Measures: The 2012-2035 RTP/SCS was formally adopted by the SCAG Regional Council on April 4, 2012. The 2012-2035 RTP/SCS contains a host of improvements to every component of the regional multimodal transportation system including:
 - Active transportation (non-motorized transportation, such as biking and walking)
 - Transportation demand management (TDM)
 - Transportation system management (TSM)
 - Transit
 - Passenger and high-speed rail
 - Goods movement
 - Aviation and airport ground access
 - Highways
 - Arterials
 - Operations and maintenance

Included within these transportation system improvements are projects that reduce vehicle use or change traffic flow or congestion conditions (“TCMs”). TCMs include the following three main categories of transportation improvement projects and programs:

- High occupancy vehicle (HOV) measures,
- Transit and systems management measures, and
- Information-based transportation strategies.
- Section III. Reasonably Available Control Measure Analysis: As required by the CAA, a RACM analysis must be included as part of the overall control strategy in the AQMP/SIP to ensure that all potential control measures are evaluated for implementation and that justification is provided for those measures that are not implemented. Based on this comprehensive review, it is determined that the TCMs being implemented in the South Coast Air Basin are inclusive of all TCM RACM. None of the candidate measures reviewed and determined to be infeasible meets the criteria for RACM implementation.

The 2012-2035 RTP/SCS was formally adopted by the SCAG Regional Council on April 4, 2012. In conjunction with preparing the 2012-2035 RTP/SCS, SCAG also prepared a 2012 Final Program EIR (State Clearinghouse #2011051018) for the 2012-2035 RTP/SCS to evaluate potential impacts from the project at the program level. Potential adverse impacts from implementing the TCMs were also evaluated in the 2012 [AQMP](#) Final Program EIR. The [Final](#) Program EIR for the 2012 AQMP will rely on the environmental analyses in SCAG's 2012 Final Program EIR for the 2012-2035 RTP/SCS for the evaluation of the environmental impacts of implementing the TCMs. Environmental impacts from implementing the TCMs will be addressed in the [Draft-Final](#) Program EIR for the 2012 AQMP under cumulative impacts.

2.8.4 Coordination with the State's Greenhouse Gas Reduction Efforts

The Basin faces several ozone and PM attainment challenges, as strategies for significant emission reductions become harder to identify and the federal standards continue to become more stringent. California's Greenhouse Gas reductions targets under AB32 add new challenges and timelines that affect many of the same sources that emit criteria pollutants. In finding the most cost-effective and efficient path to meet multiple deadlines for multiple air quality and climate objectives, it is essential that an integrated planning approach is developed. Responsibilities for achieving these goals span all levels of government, and coordinated and consistent planning efforts among multiple government agencies are a key component of an integrated approach.

To this end, and concurrent with the development of the 2012 AQMP, the [SCAQMD District](#), [the Air Resources Board](#) [CARB](#), and San Joaquin Valley Air Pollution Control District engaged in a joint effort to take a coordinated and integrated look at strategies needed to meet California's multiple air quality and climate goals, as well as its energy policies. California's success in reducing smog has largely relied on technology and fuel advances, and as health-based air quality standards are tightened, the introduction of cleaner technologies must keep pace. More broadly, a transition to zero- and near-zero emission technologies is necessary to meet 2023 and 2032 air quality standards and 2050 climate goals. Many of the same technologies will address air quality, climate and energy goals. As such, strategies developed for air quality and climate change planning should be coordinated to make the most efficient use of limited resources and the time needed to develop cleaner technologies. The product of this collaborative effort, the draft Vision for Clean Air: A Framework for Air Quality and Climate Planning, examines how those technologies can meet both air quality and climate goals over time. A public review draft of this document is now available at <http://www.aqmd.gov/aqmp/2012aqmp/> and serves as context and a resource for the 2012 AQMP.

2.8.5 Ultrafine Particles

The [Draft](#) 2012 AQMP also includes a discussion of the emerging issues of ultrafine particle and near-roadway exposures. There is growing concern about the potential health effects as caused by exposure for people living near major roadways to criteria pollutants and air toxics emitted from both gasoline and diesel vehicles (HEI, 2010). Recent toxicological and epidemiological studies have identified living near major roadways as a risk factor for

respiratory and cardiovascular problems and other health related issues. These very minute particles (consisting primarily of organic material, soot, and trace elements) have a different chemical composition than the larger PM fractions (PM_{2.5} and PM₁₀). Due to their small size, UFPs can penetrate deeply into the human respiratory tract, into the blood stream, and be transported to other critical organs such as the heart and brain. Furthermore, their large surface area may provide a mechanism for delivering potentially toxic adsorbed material into the lung and other organs.

UFPs are emitted from almost every fuel combustion process, including diesel, gasoline, and jet engines, as well as external combustion processes such as wood burning. Consequently, there is growing concern that people living in close proximity to highly trafficked roadways and other sources of combustion-related pollutants (e.g., airports and rail yards) may be exposed to significant levels of UFPs and other air toxics.

Over the last decade, substantial efforts have been made to better characterize the physical and chemical properties of UFPs and their potential impact on people living in close proximity to roadways and other emissions sources. Two areas of research have received particular attention:

- On-roadways, near-roadways, and in-vehicle measurements
- Effect of UFP reduction technologies

From a regulatory perspective, the U.S. focus has been on reducing the mass of PM emitted in the ambient air. However, UFPs contribute a very small portion of the overall atmospheric particle mass concentration. Thus, there has been growing interest over the last two decades to study, understand, and regulate the size and number of particles found in PM generated from diesel and other combustion engines. Partly because light-duty diesel vehicles are very common in European countries, the European Union has already adopted standards that phase in particle number limits for passenger car and light-duty vehicle emissions. However, there are still concerns related to the health impacts of non-solid organic UFP components that are not addressed by the European solid particle number standard.

Recently, CARB staff prepared a preliminary discussion paper on proposed amendments to California's Low-Emission Vehicle (LEV III) Regulations, to address UFP emissions from light-duty motor vehicles by promoting a solid particle number based PM compliance strategy (CARB, 2010)⁴. CARB staff ultimately decided that the complexity of the issues warranted further study and understanding before proceeding. Although the ~~SCAQMD District~~ has limited authority to regulate mobile source pollution in the near-roadway environment, ~~SCAQMD District~~ staff has implemented a variety of measures to assess and reduce the health impacts of near-roadway emissions on local communities. The ~~SCAQMD District~~ continues to demonstrate and incentivize the deployment of zero/near-zero emission technology, has implemented numerous installations of high-efficiency air filtration in schools, and conducts outreach and education on near-roadway health impacts. Furthermore, on July 1, 2012 the ~~SCAQMD District~~ began the next Multiple Air Toxics Exposure Study (MATES IV) to characterize the carcinogenic risk from exposure to air toxics in the Basin. A new focus of

⁴ http://www.arb.ca.gov/msprog/levprog/leviii/meetings/051810/pm_disc_paper-v6.pdf

MATES IV will be the inclusion of measurements of UFP and BC concentrations across the Basin, and near specific combustion sources (e.g., airports, freeways, rail yards, busy intersections, and warehouse operations) to evaluate the long- and short-term exposures to these pollutants.

Environmental impacts from implementing potential control, mitigation, and policy strategies for limiting exposures to ultrafine particles will be addressed in the [Draft-Final](#) Program EIR for the 2012 AQMP under cumulative impacts.

2.9 PROJECT OBJECTIVES

CEQA Guidelines §15124 (b) requires an EIR to include a statement of objectives, which describes the underlying purpose of the proposed project. The purpose of the statement of objectives is to aid the lead agency in identifying alternatives and the decision-makers in preparing a statement of findings and a statement of overriding considerations, if necessary. The objectives of the proposed 2012 AQMP are summarized in the following points.

1. Reduce PM_{2.5} nonattainment pollutants and their precursors on an expeditious implementation schedule;
2. Demonstrate attainment of the 24-hour PM_{2.5} national ambient air quality standard at the earliest possible date;
3. Reduce population exposure to PM_{2.5} by achieving the 24-hour PM_{2.5} national ambient air quality standard;
4. Continue making expeditious progress towards attaining the federal eight-hour ozone standard and demonstrate attainment of the federal one-hour ozone standard (revoked) by 2022 – 2023;
5. Reduce population exposure to ozone through continued progress towards attaining the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023;
6. Reduce nonattainment pollutants at a rate of five percent per year, or include all feasible measures and an expeditious adoption schedule;
7. Update planning assumptions and the best available information such as SCAG's 2012 RTP, CARB's latest EMFAC2011 for the on-road mobile source emissions inventory, and CARB's OFF-ROAD 2011 model;
8. Update emission inventories using 2008 as the base year and incorporate emission reductions achieved from all applicable rules and regulations and the latest demographic forecasts;
9. Update any remaining control measures from the 2007 AQMP and incorporated into the 2012 AQMP as appropriate;
10. Compliance with federal contingency measure requirements;

11. Continue to work closely with businesses and industry groups to identify the most cost-effective and efficient path to meeting clean air goals while being sensitive to their economic concerns.

CHAPTER 3.0

EXISTING SETTING

Existing Setting

3.0 EXISTING SETTING

CEQA Guidelines §15360 (Public Resources Code Section 21060.5) defines “environment” as “the physical conditions that exist within the area which will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance.” According to CEQA Guidelines §15125 (a), a CEQA document must include a description of the physical environment in the vicinity of the project, as it exists at the time the Notice of Preparation (NOP) is published from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to provide an understanding of the significant effects of the proposed project and its alternatives. Since this [CEQA document](#) is a programmatic EIR that covers the SCAQMD’s entire jurisdiction, the existing setting for each category of impact is described on a regional level.

The following subchapters describe the existing environmental setting for those environmental areas identified in the Initial Study (see Appendix A) that could be adversely affected by the proposed project. These areas include the following [topics](#): aesthetics; air quality; energy; hazards [and hazardous materials](#); hydrology and water quality; land use [and planning](#); noise; solid and hazardous waste [management](#); and, transportation and traffic.

SUBCHAPTER 3.1

AESTHETICS

Introduction

Regulatory Setting

Environmental Setting

3.1 AESTHETICS

3.1.1 Introduction

The [2012](#) AQMP control measures could potentially create projects that can affect the visual character quality within the district. Specifically, on-road mobile source control measures that include electrification of trucks using a catenary (overhead-wired) system have the potential to adversely affect scenic resources such as scenic highways. Therefore, an overview of existing aesthetic resources, including scenic highways and coastal zones within the district, is provided in this subchapter.

3.1.2 Regulatory Setting

3.1.2.1 Federal

Aesthetic resources on federal lands are managed by the federal government using various visual resource management programs, depending on the type of federal land and/or the federal agency involved with a given project. Examples of federal visual resource management programs include the Visual Resource Management System utilized by the Federal Bureau of Land Management (BLM) and the Visual Management System utilized by the United States Forest Service (USFS).

3.1.2.2 State

3.1.2.2.1 California Coastal Act

The California Coastal Act of 1976 was enacted to regulate development projects within California's Coastal Zone. The act includes requirements that protect views and aesthetic resources through siting and design control measures, which are typically implemented at the local planning level through local coastal programs (LCPs) or land use plans (LUPs). According to the California Coastal Act:

The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting (California Public Resources Code, California Coastal Act [Chapter 3 (Coastal Resources Planning and Management Policies) Article 6, Section 30251]).

For local jurisdictions that do not have an approved LCP, regulation of development projects within the coastal zone remains under the jurisdiction of the California Coastal Commission (CCC).

3.1.2.2.2 *State Scenic Highway Program*

California's Scenic Highway Program was created by the California Legislature in 1963 to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of land adjacent to those highways. When a city or county nominates an eligible scenic highway for official designation, it must adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes. These ordinances make up the scenic corridor protection program.

Scenic corridor protection programs include policies intended to preserve the scenic qualities of the highway corridor, including regulation of land use and density of development, detailed land and site planning, control of outdoor advertising (including a ban on billboards), careful attention to and control of earthmoving and landscaping, and careful attention to design and appearance of structures and equipment (California Streets and Highways Code §260 et seq.).

3.1.2.3 Local

3.1.2.3.1 *Counties and Cities*

The geographic area encompassed by the district includes numerous cities and unincorporated communities in the counties of Los Angeles, Orange, San Bernardino, and Riverside. Each of these counties and incorporated cities has prepared a general plan, which is the primary document that establishes local land use policies and goals. Many of these general plans also establish local policies related to aesthetics and the preservation of scenic resources within their communities or subplanning areas, and may include local scenic highway programs.

3.1.2.3.2 *Local Coastal Programs*

The CCC and the local governments along the coast share responsibility for managing the state's coastal resources. Through coordination with the CCC, coastal cities and counties develop LCPs. These programs are the primary means for carrying out the policies of the California Coastal Act at the local level. In general, these policies are intended to promote public access and enhance recreational use of the coast as well as protection of natural resources in the coastal zone. Examples of counties, cities and local jurisdictions within the district that do have an approved LCP or LUP include Los Angeles County and the County of Orange and the cities of Santa Monica, El Segundo, Manhattan Beach, Hermosa Beach, Redondo Beach, Palos Verdes Estates, Rancho Palos Verdes, Long Beach, Avalon, Huntington Beach, Newport Beach, Irvine, Laguna Beach, Laguna Niguel, Dana Point, and San Clemente.

Following approval by the CCC, an LCP is certified and the local governments implement the programs. LCPs include two main components, a Land Use Plan and an Implementation Plan. These components may include policies or regulations that apply to preservation of visual and scenic resources within the coastal zone. Typically, these policies relate to preservation of views of the coast.

3.1.3 Environmental Setting

This environmental setting subchapter describes the aesthetics resources settings that may be adversely affected by the proposed project. Specifically, this environmental setting subchapter describes visual character and quality, visual resources, scenic highways, and coastal zones within the district.

3.1.3.1 Visual Character and Quality

Visual character and quality are defined by the built and natural environment. The *visual character* of a view is descriptive cataloguing of underlying landforms and landcover including the topography, general land use patterns, scale, form, and the presence of natural areas. Urban features, such as structures, roads, utility lines, and other development associated with human activities also help to define visual character. *Visual quality* is an evaluative appraisal of the aesthetics of a view and is established using a well-established approach to visual analysis adopted from the Federal Highway Administration (FHWA) based upon the relative degree of vividness, intactness, and unity found within the visual setting, as defined in the following bullet points (FHWA, 1981).

- Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive patterns.
- Intactness is the visual integrity of the landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, as well as in natural settings.
- Unity is the degree to which the visual resources of the landscape join together to form a coherent, harmonious visual pattern. Unity refers to the compositional harmony or inter-compatibility between landscape elements.

Each of the three criteria is independent and intended to evaluate one aspect of visual quality; however, no one criterion considered alone equates to visual quality.

The perception of visual quality can vary significantly among viewers depending on their level of visual sensitivity (interest). Sensitive viewers' perceptions can vary seasonally and even hourly as weather, light, shadow, and the elements that compose the viewshed change. Form, line, color, and texture are the basic components used to describe visual character and quality for most visual assessments (FHWA, 1981). Sensitivity depends upon the length of time the viewer has access to a particular view. Typically, residential viewers have extended viewing periods and are often concerned about changes in views from their homes. Visual sensitivity is, therefore, considered to be high for neighborhood residential areas. Visual sensitivity is considered to be less important for commuters and other people driving along surrounding streets. Views from vehicles are generally more fleeting and temporary, yet under certain circumstances are sometimes considered important (e.g., viewers who are driving for pleasure, views/vistas from scenic corridors).

As discussed in the Subchapter 3.1 - Aesthetics, of the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan (RTP) Final Environmental

Impact Report (FEIR), various jurisdictions within the SCAG region, which includes the jurisdiction of SCAQMD such as cities, counties, and federal or regional agencies, provide guidelines regarding the preservation and enhancement of visual quality in their plans or regulations¹. An example of such guidance is the Caltrans Scenic Highway Visual Quality Program Intrusion Examples, which are presented in Table 3.1-1. As the table illustrates, a given visual element may be considered desirable or undesirable, depending on design, location, use, and other considerations. Because of the size and diversity of the area within the SCAQMD's jurisdiction, it is not possible to apply uniform standards to all areas within the district.

TABLE 3.1-1

Caltrans Scenic Highway Program – Examples of Visual Quality Intrusions

Minor Intrusion	Moderate Intrusion	Major Intrusion
Buildings: Residential, Commercial, and Industrial Developments		
Widely dispersed buildings. Natural landscape dominates. Wide setbacks and buildings screened from roadway. Forms, exterior colors and materials are compatible with landscape. Buildings have cultural or historical significance.	Increased numbers of buildings, not well integrated into the landscape. Smaller setbacks and lack of roadway screening. Buildings do not dominate the landscape or obstruct scenic view.	Dense and continuous development. Highly reflective surfaces. Buildings poorly maintained. Visible blight. Development along ridgelines. Buildings dominate the landscape or obstruct scenic view.
Unightly Land Uses: Dumps, Quarries, Concrete Plants, Tank Farms, Auto Dismantling		
Screened from view so that most of facility is not visible from the highway.	Not screened and visible but programmed/funded for removal and site restoration. Land use is visible but does not dominate the landscape or obstruct scenic view.	Not screened and visible by motorists. Will not be removed or modified. Land use dominates the landscape or obstructs scenic view.
Commercial Retail Development		
N/A	Neat and well landscaped. Single story. Generally blends with surroundings. Development is visible but does not dominate the landscape or obstruct scenic view.	Not harmonious with surroundings. Poorly maintained or vacant. Blighted. Development dominates the landscape or obstructs scenic view.

¹ California cities and counties are not required to include visual quality elements in their General Plans although many do. However, the General Plans are required to include a Conservation Element, which includes resources such as waterways and forests that frequently are also scenic resources.

TABLE 3.1-1 (Continued)

Caltrans Scenic Highway Program – Examples of Visual Quality Intrusions

Minor Intrusion	Moderate Intrusion	Major Intrusion
Parking Lots		
Screened from view so that most of the vehicles and pavement are not visible from the highway.	Neat and well landscaped. Generally blends with surroundings. Pavement and/or vehicles visible but do not dominate the landscape or degrade scenic view.	Not screened or landscaped. Pavement and/or vehicles dominate the landscape or degrade scenic view.
Off-Site Advertising Structures		
N/A	N/A	Billboards degrade or obstruct scenic view.
Noise Barriers		
N/A	Noise barriers are well landscaped and complement the natural landscape. Noise barriers do not degrade or obstruct scenic view.	Noise barriers degrade or obstruct scenic view.
Power Lines and Communication Facilities		
Not easily visible from road.	Visible, but do not dominate scenic view.	Towers, poles or lines dominate view. Scenic view is degraded.
Agriculture: Structures, Equipment, Crops		
Generally blends in with scenic view. Is indicative of regional culture.	Not compatible with the natural landscape. Scale and appearance of structures and equipment visually competes with natural landscape.	Scale and appearance of structures and equipment are incompatible with and dominates natural landscape. Structures, equipment or crops degrade or obstruct scenic view.
Exotic Vegetation		
Used as screening and landscaping. Generally is compatible with scenic view.	Competes with native vegetation for visual dominance.	Incompatible with and dominates natural landscape. Scenic view is degraded.
Clearcutting		
N/A	Clearcutting or deforestation is evident, but is in the distant background.	Clearcutting or deforestation is evident. Scenic view is degraded.
Erosion		
Minor soil erosion (i.e., rill erosion).	Rill erosion starting to form gullies.	Large slip outs and/or gullies with little or no vegetation. Scenic view is degraded.

TABLE 3.1-1 (Concluded)

Caltrans Scenic Highway Program – Examples of Visual Quality Intrusions

Minor Intrusion	Moderate Intrusion	Major Intrusion
Grading		
Grading generally blends with adjacent landforms and topography.	Some changes, less engineered appearance and restoration are taking place.	Extensive cut and fill. Unnatural appearance, scarred hillsides or steep slopes with little or no vegetation. Canyons filled in. Scenic view is degraded.
Road Design		
Blends in and complements scenic view. Roadway structures are suitable for location and compatible with landscape.	Large cut and fill slopes are visible. Scale and appearance of roadway, structures, and appurtenances are incompatible with landscape.	N/A

Source: Caltrans, 2008

The *viewshed* can be defined as all of the surface area visible from a particular location or sequence of locations, and is described in terms of the dominance of landforms, landcover, and manmade development constituting visual character. Views of high visual quality in urban settings generally have several of the following additional characteristics:

- Harmony in scale with the surroundings;
- Context sensitive architectural design; and,
- Impressive landscape design features.

Areas of medium visual quality have interesting forms but lack unique architectural design elements or landscape features. Areas of low visual quality have uninteresting features and/or undistinguished architectural design and/or other common elements.

3.1.3.2 Visual Resources

Visual resources include historic buildings that uniquely identify a setting, views identified as significant in local plans, and/or views from scenic highways. The importance of a view to viewers is related to the position of the viewers relative to the resource and the distinctiveness of a particular view. The visibility and visual dominance of landscape elements are usually described with respect to their placement in the viewshed.

Visual resources occur in a diverse array of environments within the boundaries of the district, ranging in character from urban centers to rural agricultural land, natural woodlands, and coastal views. The extraordinary range of visual features in the region is afforded by the mixture of climate, topography, flora, and fauna found in the natural environment, and the diversity of style, composition, and distribution of the built environment. Views of the coast from locations in Los Angeles and Orange counties are considered valuable visual resources, while views of various mountain ranges are prevalent throughout the district. Other natural

features that may be visually significant in the district include rivers, streams, creeks, lakes, and reservoirs.

The County of Los Angeles General Plan identifies regional open space and recognized scenic areas, generally including the Santa Monica Mountains, as well as the San Gabriel Mountains, Verdugo Hills, Santa Susana Mountains, Simi Hills, Santa Monica Mountains, and Puente Hills. In addition, ridgelines and hillsides are generally considered to be scenic resources, with specific measures for the protection of these areas (LA County, 2010).

The County of Orange General Plan identifies the Santa Ana Mountains along with their distinctive twin peaks known as “Saddleback” as the county’s signature landmark. The Plan designates 10 scenic “viewscape corridors,” which include among others Pacific Coast Highway, Oso Parkway, Ortega Highway, Jamboree Road, Santiago Canyon Road, and Laguna Canyon Road. These designated viewscape corridors provide scenic views of the Santa Ana Mountains, Lomas de Santiago and the San Joaquin Hills, as well as numerous canyons and valleys including the Santa Ana Canyon, Capistrano Valley, Laguna, Aliso, Wood, Moro, San Juan, Trabuco Santiago, Modjeska, Silverado, Limestone, and Black Star Canyons. Finally, the General Plan identifies nearly 42 miles of coastline and approximately 33 miles of sandy beaches as defining scenic resources (Orange County, 2011).

The County of Riverside General Plan identifies regional scenic resources, including Santa Ana River basin, Lake Mathews, Lake Perris, Lake Elsinore, Lake Skinner, Vail Lake, the San Jacinto River, Murrieta Creek, the Santa Margarita River, the vineyard/citrus region near Temecula, the Diamond Valley Reservoir, Joshua Tree National Park, Whitewater River, the Santa Rosa Mountains, and a portion of the Salton Sea (Riverside County, [2011/2009](#)).

The County of San Bernardino General Plan identifies several scenic areas, including the San Gabriel Mountains, the San Bernardino Mountains, La Loma Hills, Jurupa Hills, Chino Hills, Yucaipa Hills, Holcomb Valley, and the Mojave Desert. In addition, Big Bear Lake, Silverwood Lake, Lake Arrowhead, and Lake Gregory, along with associated waterways, serve as defining characteristics of the mountain regions within the County. San Bernardino County has a wide variety of scenic and wilderness areas respectively categorized as the Mountain, Valley, and Desert regions. Each region has its own defined measures for protecting the specific resources contained in this region. The County of San Bernardino also considers desert night-sky views to be scenic resources and has enacted measures to reflect this (San Bernardino County, [2007/2012](#)).

In addition to County plans, many of the cities within the district have general plan policies, and in some cases, ordinances, related to the protection of visual resources. In addition to the visual resources related to natural areas, many features of the built environment that may also have visual significance include individual or groups of structures that are distinctive due to their aesthetic, historical, social, or cultural significance or characteristics, such as architecturally appealing buildings or groups of buildings, landscaped freeways, bridges or overpasses, and historic resources.

3.1.3.3 Scenic Highways

Within the district, there are numerous officially designated state and county scenic highways and one historic parkway, as listed in Table 3.1-2.

There are also a number of roadways that have been determined eligible for state scenic highway designation, as listed in Table 3.1-3.

TABLE 3.1-2

Scenic Highways Within District Borders

Route	County	Location	Description	Miles	Designation
2	Los Angeles	From near La Cañada Flintridge north to the San Bernardino County line.	This U.S. Forest Service Scenic Byway and State Scenic Highway winds along the spine of the San Gabriel Mountains. It provides views of the mountain peaks, the Mojave Desert, and the Los Angeles Basin.	55	ODSSH ^(a)
38	San Bernardino	From east of South Fork Campground to State Lane.	This U.S. Forest Service Scenic Byway and State Scenic Highway crosses the San Bernardino Mountains at Onyx Summit. It features forested mountainsides with far-off desert vistas near the summit.	16	ODSSH
62	Riverside	From I-10 north to the San Bernardino County line.	This highway features high desert country scenery and leads to or from Joshua Tree National Monument. Large “windmill farms,” where wind power is used to generate electricity, can be seen along the way.	9	ODSSH
74	Riverside	From west boundary of the San Bernardino National Forest to SR-111 in Palm Desert.	This road goes from the southern Mojave Desert to oak and pine forests of San Bernardino National Forest. It offers views of the San Jacinto Valley and peaks of the San Jacinto Mountains.	48	ODSSH
91	Orange	From SR-55 to east of Anaheim city limit.	This freeway runs along the banks of the Santa Ana River. Views include residential and commercial development with intermittent riparian and chaparral vegetation.	4	ODSSH

TABLE 3.1-2 (Continued)

Scenic Highways Within District Borders

Route	County	Location	Description	Miles	Designation
243	Riverside	From SR-74 to the Banning city limit.	This U.S. Forest Service Scenic Byway and State Scenic Highway traverses forested mountain scenery along a ridge of the San Bernardino Mountains. It then drops in a series of switchbacks offering views of the San Bernardino Valley and the desert scenery.	28	ODSSH
N/A	Los Angeles	Mulholland Highway from SR- 1 to Kanan Dume Road and from west of Cornell Road to east of Las Virgenes Road.	With the dramatic canyons, oak woodlands, open spaces and ocean views of the Santa Monica Mountains, Mulholland Highway offers travelers views of the mountains, the Pacific Ocean, and historic sites along its stretch.	19	ODCSH ^(b)
N/A	Los Angeles	Malibu Canyon- Las Virgenes Highway from State Route 1 to Lost Hills Road.	The rugged terrain and ancient rock formations along this route have been a backdrop of many early California settlers. The formations have known presence dating to the original De Anza expedition of Spanish colonists.	7.4	ODCSH

Source: Caltrans, Officially Designated State Scenic Highways, accessed July 2012.

(a) Officially Designated State Scenic Highway

(b) Officially Designated County Scenic Highway

TABLE 3.1-3

Highways Within District Boundaries Eligible for State Scenic Highway Designation

Route	County	Location (From/To)	Postmiles
1	Orange/LA	I-5 south of San Juan Capistrano/SR-19 near Long Beach	0.0-3.6
1	LA/(Ventura)	SR-187 near Santa Monica/SR-101 near El Rio	32.2-21.1
2	LA/SB	SR-210 in La Cañada Flintridge/SR 138 via Wrightwood	22.9-6.36
5	(SD)/Orange	Opposite Coronado/SR-74 near San Juan Capistrano	R14.0-9.6
5	LA	I-210 near Tunnel Station/SR-136 near Castaic	R44.0-R55.5
10	SB/Riverside	SR-38 near Redlands/SR-62 near Whitewater	T0.0-R10.0
15	(SD)/Riverside	SR-76 near San Luis Rey River/SR-91 near Corona	R46.5-41.5
15	SB	SR-58 near Barstow/SR-127 near Baker	76.9-R136.6
18	SB	SR-138 near Mt. Anderson/SR-247 near Lucerne Valley	R17.7-73.8
27	LA	SR-1/Mulholland Drive	0.0-11.1
30	SB	SR-330 near Highland/I-10 near Redlands	T29.5-33.3
38	SB	I-10 near Redlands/SR-18 near Fawnskin	0.0-49.5
39	LA	SR-210 near Azusa/SR-2	14.1-44.4
40	SB	Barstow/Needles	0.0-154.6
57	Orange/LA	SR-90/SR-60 near City of Industry	19.9-R4.5
58	(Kern)/SB	SR-14 near Mojave/I-15 near Barstow	112.0-R4.5
62	Riverside/SB	I-10 near Whitewater/Arizona State Line	0.0-142.7
71	Riverside	SR-91 near Corona/SR-83 north of Corona	0.0-G3.0
74	Orange/Riverside	I-5 near San Juan Capistrano/I-111 (All)	0.0-R96.0
79	(SD)/Riverside	SR-78 near Santa Ysabel/SR-371 near Aguanga	20.2-2.3
91	Orange/Riverside	SR-55 near Santa Ana Canyon/I-15 near Corona	R9.2-7.5
101	LA/(Ventura)/ (SBar)/(SLO)	SR-27 (Topanga Canyon Blvd)/SR-46 near Paso Robles	25.3-57.9
111	(Imperial)/ Riverside	Bombay Beach-Salton Sea/SR-195 near Mecca	57.6-18.4
111	Riverside	SR-74 near Palm Desert/I-10 near Whitewater	39.6-R63.4
118	(Ventura)/LA	SR-23/Desoto Avenue near Browns Canyon	17.4-R2.7
126	(Ventura)/LA	SR-150 near Santa Paula/I-5 near Castaic	R12.0-0R5.8
127	SB/(Inyo)	I-15 near Baker/Nevada State Line	L0.0-49.4
138	SB	SR-2 near Wrightwood/SR-18 near Mt. Anderson	6.6-R37.9
142	SB	Orange County Line/Peyton Dr.	0.0-4.4
173	SB	SR-138 near Silverwood Lake/SR-18 south of Lake Arrowhead	0.0-23.0
210	LA	I-5 near Tunnel Station/SR-134	R0.0-R25.0
215	Riverside	SR-74 near Romoland/SR-74 near Perris	23.5-26.3
243	Riverside	SR-74 near Mountain Center/I-10 near Banning	0.0-29.7
247	SB	SR-62 near Yucca Valley/I-15 near Barstow	0.0-78.1
330	SB	SR-30 near Highland/SR-18 near Running Springs	29.5-44.1

Source: Caltrans, Eligible and Officially Designated Routes, accessed July 2012.

LA = Los Angeles SB = San Bernardino SD = San Diego SBar = Santa Barbara SLO = San Luis Obispo
() = County not within the district

3.1.3.4 Coastal Zones

According to the California Coastal Act of 1976, a coastal zone is the land and water area of the State of California from the Oregon border to the border of Mexico, extending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas, the coastal zone extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the coastal zone generally extends inland less than 1,000 yards.

The coastal zone within the district generally extends from Leo Carrillo State Park in Malibu in the northwestern corner of Los Angeles County to San Clemente Beach in San Clemente near the southern tip of Orange County.

Local Coastal Plans (LCPs) typically contain policies on visual access and site development review. LCPs are basic planning tools used by local governments to guide development in the coastal zone, in partnership with the California Coastal Commission. LCPs contain the ground rules for future development and protection of coastal resources in the 75 coastal cities and counties. The LCPs specify appropriate location, type, and scale of new or changed uses of land and water. Each LCP includes a land use plan and measures to implement the plan (such as zoning ordinances). Prepared by local government, these programs govern decisions that determine the short- and long-term conservation and use of coastal resources. While each LCP reflects unique characteristics of individual local coastal communities, regional and statewide interests and concerns must also be addressed in conformity with Coastal Act goals and policies.

SUBCHAPTER 3.2

AIR QUALITY

Criteria Air Pollutants

Non-Criteria Air Pollutants

3.2 AIR QUALITY

3.2.1 Criteria Air Pollutants

The purpose of the 2012 AQMP is designed to address the federal eight-hour and one-hour (revoked) ozone and PM_{2.5} air quality standards, to satisfy the planning requirements of the federal Clean Air Act (CAA), and to develop transportation emission budgets using the latest approved motor vehicle emissions model and planning assumptions. This chapter summarizes emissions that occurred in the Basin during the 2008 base year, and projected emissions in the years 2014, 2019, 2023, and 2030. More detailed emission data analyses are presented in Appendix III of the [Draft-2012 AQMP](#). The 2008 base year emissions inventory reflects adopted air regulations with current compliance dates as of 2008; whereas future baseline emissions inventories are based on adopted air regulations with both current and future compliance dates. A list of the SCAQMD's and CARB's rules and regulations that are part of the base year and future-year baseline emissions inventories is presented in Appendix III of the [Draft-2012 AQMP](#). The SCAQMD is committed to implement the SCAQMD rules that are incorporated in the [Draft-2012 AQMP](#) future baseline emissions inventories.

The emissions inventory is divided into four major classifications: point, area, on-road, and off-road sources. The 2008 base year point source emissions are based principally on reported data from facilities using the SCAQMD's Annual Emissions Reporting Program. The area source emissions are estimated jointly by CARB and the SCAQMD. The on-road emissions are calculated by applying CARB's EMFAC2011 emission factors to the transportation activity data provided by Southern California Association of Governments (SCAG) from their adopted 2012 Regional Transportation Plan (2012 RTP). CARB's 2011 In-Use Off-Road Fleet Inventory Model is used for the construction, mining, gardening and agricultural equipment. CARB also provides other off-road emissions, such as ocean-going vessels, commercial harbor craft, locomotives and cargo handling equipment. Aircraft emissions are based on an updated analysis by the SCAQMD. The future emission forecasts are primarily based on demographic and economic growth projections provided by SCAG. In addition, emission reductions resulting from SCAQMD regulations adopted by June, 2012 and CARB regulations adopted by August 2011 are included in the baseline.

This chapter summarizes the major components of developing the base year and future baseline inventories. More detailed information, such as CARB's and the SCAQMD's emission reductions resulting from adopted rules and regulations since the 2007 AQMP, growth factors, and demographic trends, are presented in Appendix III of the [Draft-2012 AQMP](#). In addition, the top ten source categories contributing to the 2008, 2014, and 2023 emission inventories are identified in this chapter. Understanding information about the highest emitting source categories leads to the identification of potentially more effective and/or cost effective control strategies for improving air quality.

3.2.1.1 Current Emission Inventories

Two inventories are prepared for the [Draft-2012 AQMP](#) for the purpose of regulatory and SIP performance tracking and transportation conformity: an annual average inventory, and a

summer planning inventory. Baseline emissions data presented in this chapter are based on average annual day emissions (e.g., total annual emissions divided by 365 days) and seasonally adjusted summer planning inventory emissions. The ~~Draft~~ 2012 AQMP uses annual average day emissions to estimate the cost-effectiveness of control measures, to rank control measure implementation, and to perform PM_{2.5} modeling and analysis. The summer planning inventory emissions are developed to capture the emission levels during a poor ozone air quality season, and are used to report emission reduction progress as required by the federal and California CAAs.

Detailed information regarding the emissions inventory development for the base year and future years, the emissions by major source category of the base year, and future baseline emission inventories are presented in Appendix III of the ~~Draft~~ 2012 AQMP. Attachments A and B to Appendix III list the annual average and summer planning emissions by major source category for 2008, 2014, 2017, 2019, 2023 and 2030, respectively. Attachment C to Appendix III of the ~~Draft~~ 2012 AQMP has the top VOC and NO_x point sources which emitted greater than or equal to ten tons per year in 2008. Attachment D to the Appendix III of the ~~Draft~~ 2012 AQMP contains the on-road emissions by vehicle class and by pollutant for 2008, 2014, 2019, 2023 and 2030. Attachment E to Appendix III of the ~~Draft~~ 2012 AQMP shows emissions associated with the combustion of diesel fuel for various source categories.

3.2.1.1.1 *Stationary Sources*

Stationary sources can be divided into two major subcategories: point and area sources. Point sources are large emitters with one or more emission sources at a permitted facility with an identified location (e.g., power plants, refineries). These facilities have annual emissions of four tons or more of either VOC, NO_x, SO_x, PM, or annual emissions of over 100 tons of CO or toxic air contaminants (TACs). Facility owners/operators are required to report their criteria pollutant emissions and selected TACs to the SCAQMD on an annual basis, if any of these thresholds are exceeded.

Area sources consist of many small emission sources (e.g., residential water heaters, architectural coatings, consumer products, as well as, permitted sources smaller than the above thresholds), which are distributed across the region. There are about 400 area source categories for which emissions are jointly developed by CARB and the SCAQMD. The emissions from these sources are estimated using activity information and emission factors. Activity data are usually obtained from survey data or scientific reports (e.g., Energy Information Administration (EIA) reports for fuel consumption other than natural gas fuel, Southern California Gas Company for natural gas consumption, paint suppliers, and SCAQMD databases). The emission factors are based on rule compliance factors, source tests, Material Safety Data Sheets (MSDS), default factors (mostly from AP-42, U.S. EPA's published emission factor compilation), or weighted emission factors derived from the point sources in annual emissions reports. Socioeconomic data may also be used to estimate emissions over specific areas.

Appendix III of the ~~Draft~~ 2012 AQMP has more detail regarding emissions from specific source categories such as fuel combustion sources, landfills, composting waste, metal-

coating operations, architectural coatings, and livestock waste. Since the 2007 AQMP was finalized, new area source categories, such as liquefied petroleum gas (LPG) transmission losses, storage tank and pipeline cleaning and degassing, and architectural colorants were characterized and included in the emission inventories. These updates and new additions are listed below:

- Fuel combustion sources: The emissions inventories from commercial and industrial internal combustion engines were updated to include the portable equipment emissions.
- Landfills: The emission inventories for this area source category was revised to incorporate CARB's landfills greenhouse gas (GHG) emissions.
- Composting waste operations: The emission inventories for this area source category were revised to include the emissions from green waste composting covered under SCAQMD Rule 1133.3. The 2007 AQMP only included the emissions from co-composting, as it relates to SCAQMD Rule 1133.2.
- Metal coating operations: The area source emissions inventory in the 2007 AQMP only included the emissions from small permitted facilities with VOC emissions below four tons per year. As such, emissions from these sources have been underreported in the 2007 AQMP. During the rule development process amending Rule 1107, SCAQMD staff discovered numerous small shops using coating materials with compliant high-solid content, which were subsequently thinned beyond the allowable limits allowed by Rule 1107. The ~~Draft~~ 2012 AQMP revised emission inventory adjusts the 2007 AQMP emission inventory to account for excess emissions from these coating activities.
- Architectural coating category: Three new area source categories were added to the emissions inventory under this category to track the emissions from colorants.
- LPG transmission losses: This newly added area source category was developed to quantify the emissions from LPG storage and fueling losses.
- Livestock waste sources: This emission inventory category was updated to reflect the difference in types of dairy cattle milking cows, dry cows, calves, and heifers as each type of cattle has specific VOC and NH₃ emission factors based on the quantity of manure production.
- Storage tanks and pipeline cleaning: This new area source emissions category was added to quantify the emissions from these types of operations.

3.2.1.1.2 *Mobile Sources*

Mobile sources consist of two subcategories: on-road and off-road sources. On-road sources are from vehicles that are licensed to drive on public roads. Off-road sources are typically registered with the state and cannot be typically driven on public roads. On-road vehicle emissions are calculated by applying CARB's EMFAC2011 emissions factors to the transportation activity data provided by SCAG in their adopted 2012 RTP. Spatial distribution data from Caltrans' Direct Travel Impact Model (DTIM4) are used to generate gridded emissions for regional air quality modeling. Off-road emissions are calculated using CARB's 2011 In-Use Off-Road Emissions Inventory model for construction, mining, gardening, and agricultural equipment. Ship, locomotive, and aircraft emissions are excluded from CARB's In-Use Off-Road Emissions Inventory model. The emissions for 2008 and future years were revised separately based on the most recently available data.

3.2.1.1.3 *On-Road*

CARB's EMFAC2011 has been updated to reflect more recent vehicle population, activity, and emissions data. Light-duty motor vehicle fleet age, vehicle type, and vehicle population are updated based on 2009 California Department of Motor Vehicles data. The model also reflects recently adopted rules and benefits that were not reflected in EMFAC2007. The rules and benefits include on-road diesel fleet rules, the Pavley Clean Car Standards, and the Low Carbon Fuel standard. The most important improvement in the model is the integration of new data and methods to estimate emissions from diesel trucks and buses. CARB's Truck and Bus Regulation for the on-road heavy-duty in-use diesel vehicles applies to nearly all privately owned diesel fueled trucks and privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. EMFAC2011 includes the emissions benefits of the Truck and Bus Rule and previously adopted rules for other on-road diesel equipment. The impacts of the recent recession on emissions, quantified as part of the truck and bus rulemaking, are also included.

EMFAC2011 uses a modular emissions modeling approach that departs from past EMFAC versions. The first module, named EMFAC-LDV, is used as the basis for estimating emissions from gasoline powered on-road vehicles, diesel vehicles below 14,000 pounds GVWR, and urban transit buses. The second module, called EMFAC-HD, is the basis for emissions estimates for diesel trucks and buses with a GVWR greater than 14,000 pounds operating in California. This module is based on the Statewide Truck and Bus Rule emissions inventory that was developed between 2007 and 2010 and approved by ~~the~~ CARB Board in December 2010. The third module is called EMFAC2011SG. It takes the output from EMFAC-LDV and EMFAC-HD and applies scaling factors to estimate emissions consistent with user-defined vehicle miles of travel and vehicle speeds. Together the three modules comprise EMFAC2011.

Several external adjustments were made to EMFAC2011 in the ~~Draft~~ 2012 AQMP to reflect CARB's rules and regulations, which were adopted after the development of EMFAC2011. The adjustments include the advanced clean cars regulations, reformulated gasoline, and smog check improvement.

Figure 3.2-1 compares the on-road emissions between EMFAC2007 V2.3 used in the 2007 AQMP and EMFAC2011 used in the ~~Draft~~ 2012 AQMP, respectively. It should be noted that the comparison for 2008 reflects changes in methodology; whereas, the comparison for 2023 includes adopted rules and updated growth projections since the release of EMFAC2007. In general, the emissions are lower in EMFAC2011 as compared to EMFAC2007. The lower emissions can be attributed to additional rules and regulations, which result in reduced emissions, revisions to growth projections, and the economic impacts of the recent recession.

3.2.1.1.4 *Off-Road*

Emissions from off-road vehicle categories (construction & mining equipment, lawn & gardening equipment, ground support equipment, agricultural equipment) in CARB's In-Use Off-Road Emissions Inventory Model were developed primarily based on estimated activity levels and emission factors. Ships, commercial harbor craft, locomotives, aircraft, and cargo handling equipment emissions are not included in CARB's In-Use Off-Road Emissions Inventory Model. Separate models or estimations were used for these emissions sources. The off-road source population, activities, and emission factors were re-evaluated and re-estimated since the 2007 AQMP. Consequently, the emissions are modified accordingly.

The major updates and/or improvements to the off-road inventory include:

1. The equipment population in CARB's In-Use Off-Road Emissions Inventory model was updated by using the equipment population reported to CARB for rule compliance. Based on information from CARB, the total population in 2009 was 26 percent lower than had been anticipated in 2007 due to fleet downsizing during the recent recession.
2. The equipment hours of use in CARB's In-Use Off-Road Emissions Inventory model were updated with reported activity data for the period between 2007 and 2009. According to CARB staff, the new data indicates a 30 percent or greater reduction in most cases in 2009 activity data when compared to 2007 activity data due to the recession.
3. The equipment load factor in CARB's In-Use Off-Road Emissions Inventory model was updated using a 2009 academic study and information from engine manufacturers. According to CARB, the new data suggests that the load factors should be reduced by about 33 percent.
4. According to CARB staff, construction activity and emissions have dropped by more than 50 percent between 2005 and 2011. Emissions beyond 2011 are uncertain and depend on the pace of economic recovery. The future growth in CARB's In-Use Off-Road Emissions Inventory model was projected based on the average of the future forecast scenarios. CARB's data suggest off-road activity and emissions will recover slowly from the recessionary lows.
5. Locomotive inventories reflect the 2008 U.S. EPA Locomotive regulations and adjustments due to economic activity.

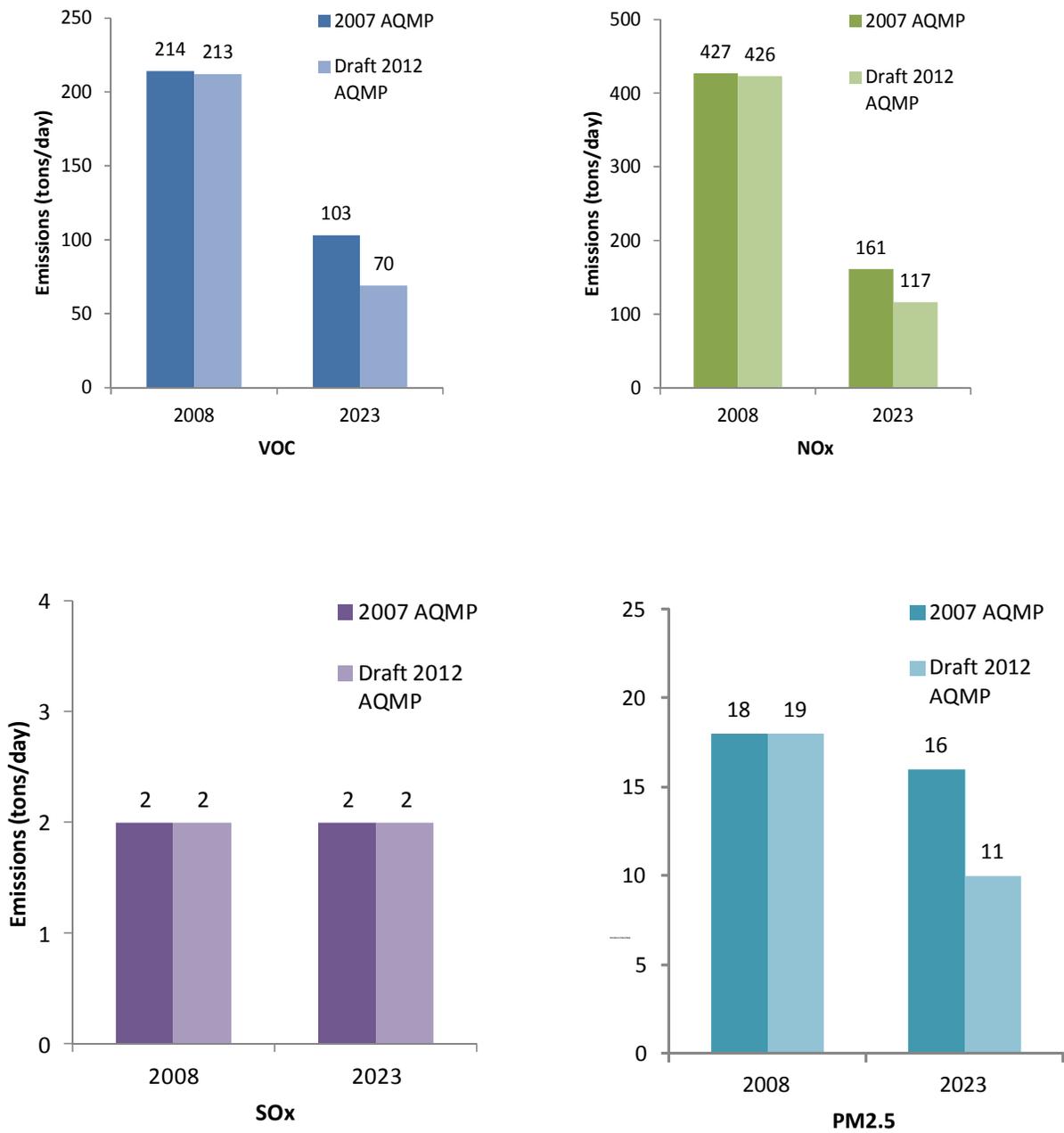


FIGURE 3.2-1

Comparison of On-Road Emissions Between EMFAC2007 V2.3 (2007 AQMP) and EMFAC2011 (Draft 2012 AQMP) (VOC & NO_x – Summer Planning; SO_x & PM_{2.5} – Annual Average Inventory)

6. Cargo handling equipment was updated with population, activity, engine load, and recessionary impacts on growth. The updates are based on new information collected since 2005. The new information includes CARB's regulatory reporting data, which includes all the cargo handling equipment in the state including their model year, horsepower and activity. In addition, the Ports of Los Angeles and Long Beach have developed annual emissions inventories, and a number of the major rail yards and other ports in the state have completed individual emission inventories.
7. Ocean-going vessel emissions in the ~~Draft~~ 2012 AQMP included CARB's fuel regulation for ocean-going vessels and the 2007 shore power regulation. The improvements and corrections include recoding the model for speed, updating auxiliary engine information, updating ship routing, revising vessel speed reduction compliance rates, and an adjustment factor to estimate the effects of the recession. In March 2010, the International Maritime Organization (IMO) officially designated the waters within 200 miles of the North American Coast as an Emissions Control Area (ECA). Beginning August 2012, IMO requires ships that travel these waters use fuel with a sulfur content of less than or equal to 1.0 percent, and in 2015 the sulfur limit will be further reduced to 0.1 percent. Additionally, vessels built after January 1, 2016, will be required to meet the most stringent IMO Tier 3 NOx emission levels, while transiting within the 200 mile ECA zone. Outer Continental Shelf (OCS) emissions (e.g., emissions from vessels beyond the three-mile state waters line) are included in the ships emissions as well.
8. Another improvement was the development of a separate emission category for commercial harbor craft using a new commercial harbor craft database. CARB approved a regulation to significantly reduce diesel PM and NOx emissions from diesel-fueled engines on commercial harbor craft vessels. These vessels emit an estimated three tons per day of diesel PM and 70 tons per day of NOx statewide in 2007. The harbor craft database includes emissions from crew and supply, excursion, fishing, pilot, tow boats, barge, and dredge vessels.
9. The aircraft emissions inventory was updated for the 2008 base year and the 2035 forecast year based on the latest available activity data and calculation methodologies. A total of 43 airports were identified as having aircraft operations within the SCAQMD boundaries including commercial air carrier, air taxi, general aviation, and military aircraft operations. The sources of activity data include airport operators (for several commercial and military airports), FAA's databases (e.g., Bureau of Transportation Statistics, Air Traffic Activity Data System, and Terminal Area Forecast), and SCAG. For commercial air carrier operations, SCAG's 2035 forecast, which is consistent with the forecast adopted for the 2012 RTP, reflects the future aircraft fleet mix. The emissions calculation methodology was primarily based on the application of FAA's Emissions and Dispersion Modeling System (EDMS) model for airports with detailed activity data for commercial air carrier operations (by aircraft make and model). For other airports and aircraft types (e.g., general aviation, air taxi, military), the total number of landing and takeoff activity data was used in conjunction with the U.S. EPA's average emission factors for major aircraft types (e.g., general aviation, air taxi,

military). For the intermediate milestone years, the emissions inventories were linearly interpolated between 2008 and 2035.

Several external adjustments to the off-road emissions were made to reflect CARB's rules and regulations and new estimates of activity. The adjustments include locomotives, large spark ignition engines and non-agricultural internal combustion engines. Figure 3.2-2 shows a comparison between the off-road baseline emissions in the 2007 AQMP and the ~~Draft~~ 2012 AQMP. In general, the emissions are lower in the 2011 In-Use Off-Road Emissions Inventory model, except for 2008 SO_x emissions. The projected 2008 off-road NO_x emissions in the 2007 AQMP were 339 tons per day, while the 2008 base year off-road NO_x emissions in the ~~Draft~~-2012 AQMP are 209 tons per day. The 2011 In-Use Off-Road Emissions Inventory generated lower emissions because of rules and regulations adopted since 2007 OFFROAD model, updated data, future growth corrections and recessionary impacts to commercial and industrial mobile equipment. The higher 2008 estimated SO_x emissions reflect a temporary stay in the implementation of the lower sulfur content marine fuel regulation that occurred during a portion of 2008.

3.2.1.1.5 *Uncertainty in the Inventory*

An effective AQMP relies on a complete and accurate emission inventory. Over the years, significant improvements have been made in emission estimates for sources affected by control measures. Increased use of continuous monitoring and source tests has contributed to the improvement in point source inventories. Technical assistance to facilities and auditing of reported emissions by SCAQMD staff have also improved the accuracy of the emissions inventory. Area source inventories that rely on average emission factors and regional activities have inherent uncertainty. Industry-specific surveys and source-specific studies during rule development have provided much needed refinement to the emissions estimates.

Mobile source inventories remain the greatest challenge due to new information continuously collected from the large number and types of equipment and engines. Every AQMP revision provides an opportunity to further improve the current knowledge of mobile source inventories. The ~~Draft~~-2012 AQMP is not an exception. As described earlier, many improvements were included in EMFAC2011, and such work is ongoing. However, it should be acknowledged that there are still areas that could be significantly improved if better data were available. Technological changes and advancement in the area of electric, hybrid, flexible fuel, fuel cell vehicles coupled with changes in future gasoline prices all add uncertainty to the on-road emissions inventory.

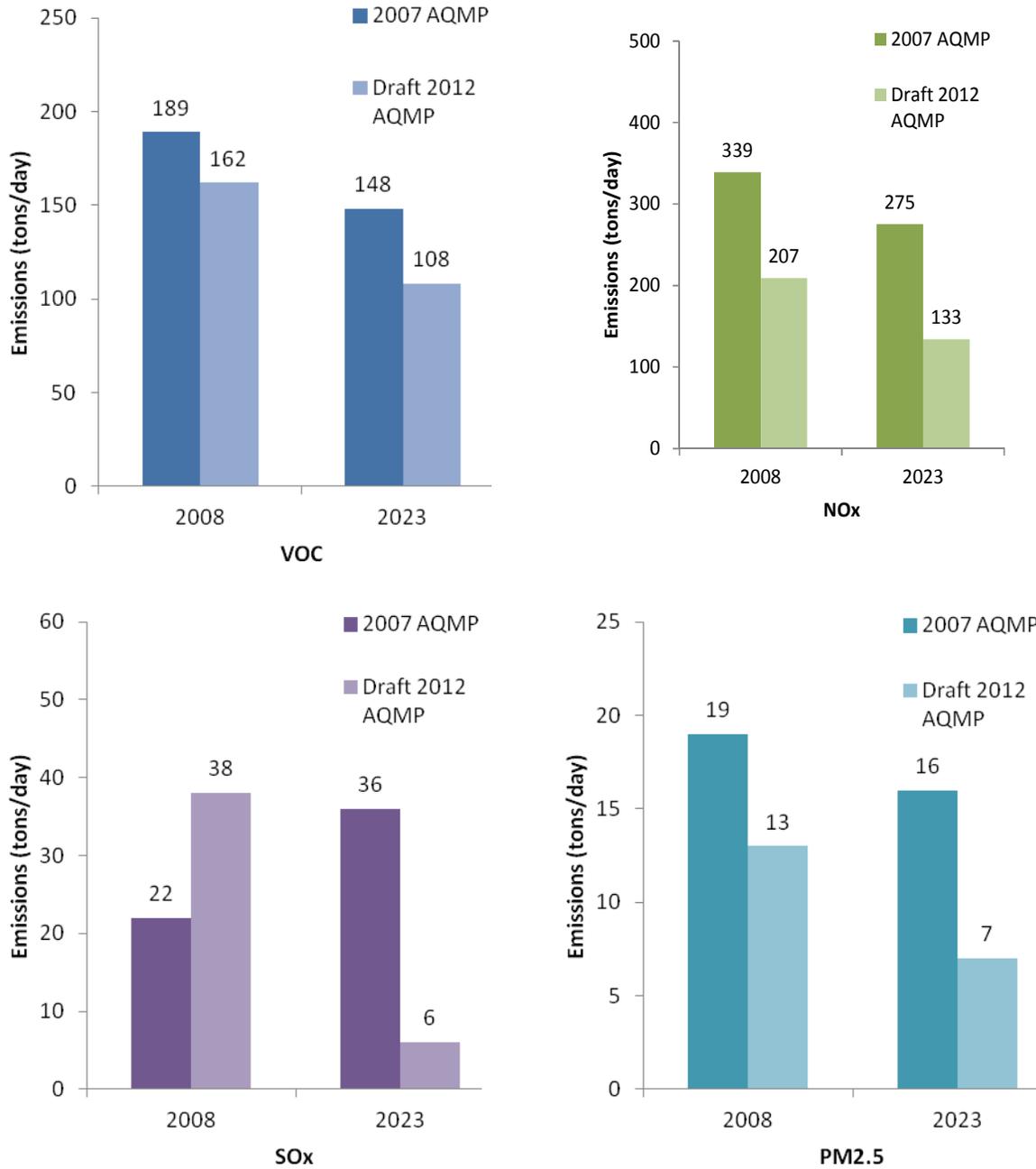


FIGURE 3.2-2

Comparison of Off-Road Emissions Between 2007 AQMP and Draft 2012 AQMP (VOC & NOx – Summer Planning; SOx & PM2.5 – Annual Average Inventory)

It is important to note that the recent recession began in 2007, and since it was unforeseen at the time, associated impacts were not included in the 2007 AQMP. As the Draft 2012 AQMP is developed, Southern California is in a slow economic recovery. The impact of the recession is deep and is still being felt and, thus, adds to the uncertainty in the emission estimates provided in this analysis. There are many challenges with making accurate

projections of future growth, such as, where vehicle trips will occur, the distribution between various modes of transportation (such as trucks and trains), as well as, estimates for population growth and changes to the numbers and types of jobs held. Forecasts are made with the best information available; nevertheless, these issues contribute to the overall uncertainty in emissions projections. Fortunately, AQMP updates are generally developed every three to four years; thereby allowing for frequent improvements to the emission inventories.

3.2.1.1.6 *Gridded Emissions*

The air quality modeling region for the 2012 AQMP extends to Southern Kern County in the north, the Arizona border in the east, northern Mexico in the south and more than 100 miles offshore to the west. The modeling area is divided into a grid system comprised of four kilometer square grid cells defined by Lambert Conformal coordinates. Both stationary and mobile source emissions are allocated to individual grid cells within the modeled area. In general, daily modeling emissions are used. Variations in temperature, hours of operation, speed of motor vehicles, and/or other factors are considered in developing gridded motor vehicle emissions. The gridded emissions data used for both PM_{2.5} and ozone modeling applications differ from the average annual day or planning inventory emission data in two respects: (1) the air quality modeling region covers larger geographic areas than the Basin; and (2) emissions used in air quality modeling represent day-specific instead of average or seasonal conditions. For PM_{2.5}, the annual average day is used in the air quality modeling, which represents the characteristic of emissions that contribute to year-round particulate impacts. The summer planning inventory, which is used for ozone modeling analyses, focuses on the warmer months (May through October) when evaporative VOC emissions play an important role in ozone formation.

3.2.1.2 Base Year Emissions - 2008 Emission Inventory

Table 3.2-1A compares the annual average emissions between the 2008 base year in the ~~Draft~~ 2012 AQMP and the projected 2008 emissions in the 2007 AQMP by major source category for VOC and NO_x. Table 3.2-1B compares the annual average emissions between the 2008 base year in the ~~Draft~~ 2012 AQMP and the projected 2008 emissions in the 2007 AQMP for SO_x and PM_{2.5}. Due to the economic recession which began in 2007, it is expected that the more recent 2008 base year emissions estimates should be lower than the previously projected 2008 emissions. Yet, several categories show higher emissions in the 2008 base year in the ~~Draft~~ 2012 AQMP, such as fuel consumption, waste disposal, petroleum production and marketing for VOC; fuel consumption for NO_x; off-road emissions for SO_x; and industrial processes for PM_{2.5}. The reasons for these differences are as follows:

1. Fuel consumption – The emissions from commercial and industrial internal combustion engines were updated to include portable equipment emissions, which were overlooked in the 2007 AQMP. The update causes increases in emissions for this category.

2. Waste disposal – Due to erroneous activity data reported by point sources in the 2007 AQMP, landfill emissions were revised substantially upward in the corrected emissions inventory used for the 2012 AQMP. In addition, landfill emission estimation methodology was revised to incorporate CARB’s GHG Emission Inventory data, which includes the amount of methane being generated in 2008. Industry stakeholders have requested further evaluation of these emission factors used. As a result, the SCAQMD staff will initiate a working group to undertake this effort.
3. Petroleum production and marketing – Two new area source categories (LPG transmission, storage tanks and pipeline cleaning and degassing) were added to the ~~Draft~~ 2012 AQMP. LPG transmission sources were added based on data from the development of Rule 1177. LPG transmission source category includes the fugitive emissions associated with transfer and dispensing of LPG and is based on emission rates derived from the SCAQMD source tests conducted in 2008 and 2011, sale volumes provided by the industry association, and category breakdowns. A total of 8.4 tons per day VOC emissions were added to the 2008 emissions inventory. The storage tanks and pipeline cleaning and degassing source category was updated based on Rule 1149 amendments to reflect more frequent degassing events, as well as, the effectiveness of control techniques. During the amendment to the rule, it was determined that the actual number of degassing events were more than triple the number that was estimated when the rule was originally developed. It was also originally assumed that once the degassing rule requirements were fulfilled, there would be no more fugitive emissions; however, a review of degassing logs indicated that sludge and product residual in the storage tanks continued to generate fugitive emissions, which significantly increase the emissions from the storage tanks. Finally, the source category was expanded to include previously exempted tanks and pipelines. The storage tanks and pipeline source adds 1.4 tons per day VOC to the 2008 base year.
4. Off-road SO_x – CARB adopted a regulation in 2005 to set sulfur content limits on marine fuels for auxiliary diesel engines and diesel-electric engines operated on ocean-going vessels within California waters and 24 nautical miles of the California coastline. The regulation became effective January 1, 2007, and as a result the SO_x reductions were accounted for in the 2007 AQMP. However, pursuant to an injunction issued by a federal district court (district court), CARB ceased enforcing the regulation in the fall of 2007. See *Pacific Merchant Shipping Ass’n v. Thomas A. Cackette* (E.D. Cal. Aug. 30, 2007), No. Civ. S-06 2791-WBS-KJM. CARB filed an appeal with the Ninth Circuit and requested a stay of the injunction pending the appeal. As permitted under the appellate court stay, CARB decided to continue to enforce the regulation while litigation involving the regulation remained active. On May 7, 2008, CARB issued another announcement to discontinue enforcement of the regulation pursuant to the same injunction after the Court of Appeals issued its decisions which invalidated the 2005 regulation. In the meantime, CARB staff prepared a new Ocean-Going Vessel Clean Fuel Regulation that was approved by its Board on July 24, 2008, and implementation began on July 1, 2009. The 2008 regulation includes the auxiliary engines and also the main engines and auxiliary boilers on ocean-going vessels within the same 24 nautical miles zone as the earlier auxiliary engine rule. The 2008

regulation achieves higher SO_x reductions than the original auxiliary engine rule, primarily due to regulating the main engines and auxiliary boilers in addition to the auxiliary engines.

Tables 3.2-1A and 3.2-1B show the 2008 emissions inventory by major source category. Table 3.2-2A shows annual average emissions, while 3.2-2B shows the summer planning inventory. Stationary sources are subdivided into point (e.g., chemical manufacturing, petroleum production, and electric utilities) and area sources (e.g., architectural coatings, residential water heaters, consumer products, and permitted sources smaller than the emission reporting threshold – generally four tons per year). Mobile sources consist of on-road (e.g., light-duty passenger cars) and off-road sources (e.g., trains and ships). Entrained road dust emissions are also included.

Figure 3.2-3 characterizes relative contributions by stationary and mobile source categories. On- and off-road sources continue to be the major contributors for each of the five criteria pollutants. Overall, total mobile source emissions account for 59 percent of the VOC and 88 percent of the NO_x emissions for these two ozone-forming pollutants, based on the summer planning inventory. The on-road mobile category alone contributes about 33 and 59 percent of the VOC and NO_x emissions, respectively, and approximately 27 percent of the CO for the annual average inventory. For directly emitted PM_{2.5}, mobile sources represent 23 percent of the emissions with another 10 percent due to vehicle-related entrained road dust.

Within the category of stationary sources, point sources contribute more SO_x emissions than area sources. Area sources play a major role in VOC emissions, emitting about seven times more than point sources. Area sources, including sources such as commercial cooking, are the predominant source of directly emitted PM_{2.5} emissions (39 percent).

3.2.1.3 Future Emissions

3.2.1.3.1 *Data Development*

The milestone years 2008, 2014, 2019, 2023, and 2030 are the years for which emission inventories were developed as they are relevant target years under the federal CAA and the California CAA. The base year for the 24-hour PM_{2.5} attainment demonstration is 2008. The attainment year for the federal 2006 24-hour PM_{2.5} standard without an extension is 2014 and 2019 represents the latest attainment date with a full five-year extension. The 80 ppb federal 8-hour ozone standard attainment deadline is 2023, and the new 75 ppb 8-hour ozone standard deadline is 2032. A 2030 inventory will be used to approximate this latter year.

TABLE 3.2-1A

Comparison of VOC and NO_x Emissions By Major Source Category of
2008 Base Year in ~~Revised Draft~~ 2012 AQMP and Projected 2008 in 2007 AQMP
Annual Average Inventory (tpd^a)

SOURCE CATEGORY	2007 AQMP	Draft 2012 AQMP	Percent Change	2007 AQMP	Draft 2012 AQMP	Percent Change
	VOC			NO _x		
STATIONARY SOURCES						
Fuel Combustion	7	14	97 100%	30	41 40	36%
Waste Disposal	8	12	50 +	2	2	-24 0%
Cleaning and Surface Coatings	37	37	0%	0	0	0%
Petroleum Production and Marketing	32	41	28%	0	0	0%
Industrial Processes	19	16	-16 7%	0	0	0%
SOLVENT EVAPORATION						
Consumer Products	97	98	1%	0	0	0%
Architectural Coatings	23	22	-5%	0	0	0%
Others	3	2	-33 2%	0	0	0%
Misc. Processes	15	15 6	40 0%	26	26	0%
RECLAIM Sources	0	-0 %-	0 %-	29	23	-21 0%
Total Stationary Sources	241	257	7%	87	92	6%
MOBILE SOURCES						
On-Road Vehicles	207	209	1%	447	462	3%
Off-Road Vehicles	150	127	-15%	325	204	-37%
Total Mobile Sources	357	336	-6%	772	666	-14%
TOTAL	598	593	-1%	859	7587	-1240%

^a Values are rounded to nearest integer.

TABLE 3.2-1B

Comparison of SO_x and PM_{2.5} Emissions By Major Source Category of
2008 Base Year in ~~Revised Draft~~ 2012 AQMP and Projected 2008 in 2007 AQMP
Annual Average (tpd^a)

SOURCE CATEGORY	2007 AQMP	Draft 2012 AQMP	Percent Change	2007 AQMP	Draft 2012 AQMP	Percent Change
	SO _x			PM _{2.5}		
STATIONARY SOURCES						
Fuel Combustion	2	2	-30%	6	6	-30%
Waste Disposal	0	0	0%	0	0	0%
Cleaning and Surface Coatings	0	0	0%	1	12	530%
Petroleum Production and Marketing	1	1	-320%	1	2	10068%
Industrial Processes	0	0	0%	5	7	4037%
Solvent Evaporation						
Consumer Products	0	0	0%	0	0	0%
Architectural Coatings	0	0	0%	0	0	0%
Others	0	0	0%	0	0	0%
Misc. Processes	1	1	-460%	52	32	-39%
RECLAIM Sources	12	10	-175%	0	0	0%
Total Stationary Sources	16	14	-124%	65	48	-26%
MOBILE SOURCES						
On-Road Vehicles	2	2	50%	18	19	36%
Off-Road Vehicles	14	38	1710%	18	13	-285%
Total Mobile Sources	16	40	1503%	36	32	-11%
TOTAL	32	54	7064%	101	80	-21%

^a Values are rounded to nearest integer.

^b Refer to Base Year Emissions – Off-road-SO_x.

TABLE 3.2-2A

Summary of Emissions By Major Source Category: 2008 Base Year
Average Annual Day (tpd^a)

SOURCE CATEGORY	VOC	NO_x	CO	SO_x	PM_{2.5}
STATIONARY SOURCES					
Fuel Combustion	14	41	57	2	6
Waste Disposal	12	2	1	0	0
Cleaning and Surface Coatings	37	0	0	0	2
Petroleum Production and Marketing	41	0	5	1	2
Industrial Processes	16	0	2	0	7
Solvent Evaporation					
Consumer Products	98	0	0	0	0
Architectural Coatings	22	0	0	0	0
Others	2	0	0	0	0
Misc. Processes	156	26	72	1	32
RECLAIM Sources	0	23	0	10	0
Total Stationary Sources	257	92	137	14	41.48
MOBILE SOURCES					
On-Road Vehicles	209	462	1,966	2	19
Off-Road Vehicles	127	204	778	38	13
Total Mobile Sources	336	666	2,744	40	32
TOTAL	593	758.7	2,881	54	73.80

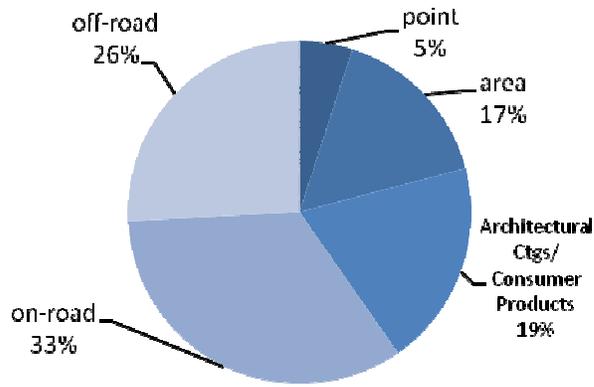
^a Values are rounded to nearest integer.

TABLE 3.2-2B

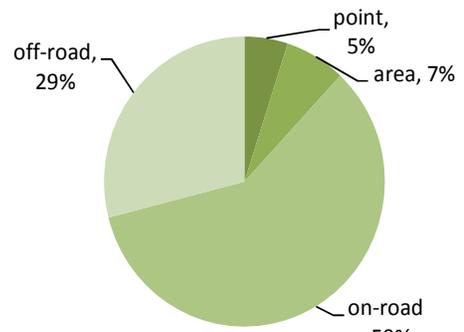
Summary of Emissions By Major Source Category: 2008 Base Year
Summer Planning Inventory (tpd^a)

SOURCE CATEGORY	SUMMER OZONE PRECURSORS	
	VOC	NO _x
STATIONARY SOURCES		
Fuel Combustion	14	<u>42</u> <u>41</u>
Waste Disposal	12	2
Cleaning and Surface Coatings	43	0
Petroleum Production and Marketing	41	0
Industrial Processes	19	0
Solvent Evaporation		
Consumer Products	100	0
Architectural Coatings	25	0
Others	2	0
Misc. Processes	9	19
RECLAIM Sources		24
Total Stationary Sources	264	87
MOBILE SOURCES		
On-Road Vehicles	213	426
Off-Road Vehicles	163	208
Total Mobile Sources	376	634
TOTAL	<u>640</u> <u>639</u>	721

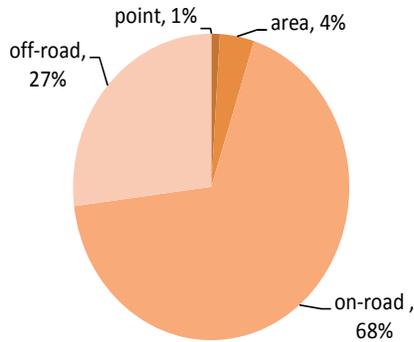
^a Values are rounded to nearest integer.



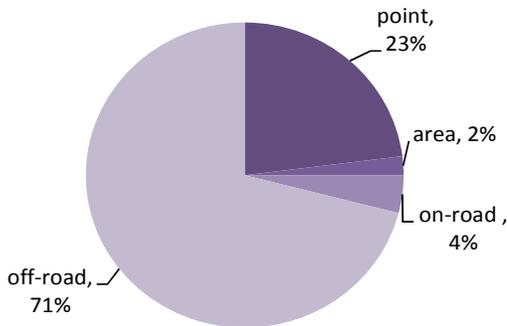
VOC Emissions: 639 tons per day



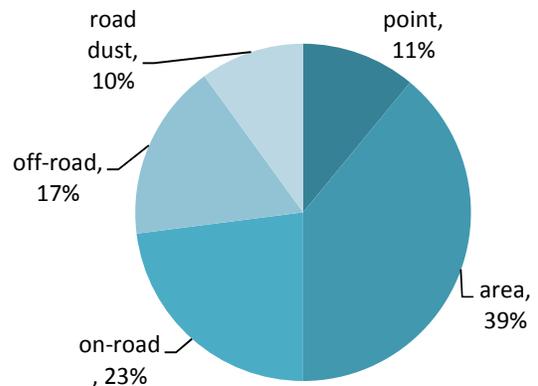
NOx Emissions: 721 tons/day



CO Emissions: 2881 tons/day



SOx Emissions: 54 tons/day



Directly Emitted PM2.5 Emissions: 80 tons/day

FIGURE 3.2-3
Relative Contribution by Source Category to 2008 Emission Inventory
(VOC & NOx – Summer Planning; CO, SOx, & PM2.5 – Annual Average Inventory)

Future stationary emission inventories are divided into RECLAIM and non-RECLAIM emissions. Future NO_x and SO_x emissions from RECLAIM sources are estimated based on their allocations as specified by SCAQMD Rule 2002 –Allocations for NO_x and SO_x. The forecasts for non-RECLAIM emissions were derived using: (1) emissions from the 2008 base year; (2) expected controls after implementation of SCAQMD rules adopted by June, 2012, and CARB rules adopted as of August 2011; and (3) activity growth in various source categories between the base and future years.

Demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by SCAG for their 2012 RTP are used in the [Draft-2012 AQMP](#). Industry growth factors for 2008, 2014, 2018, 2020, 2023, and 2030 are also provided by SCAG, and interim years are calculated by linear interpolation. Table 3.2-3 summarizes key socioeconomic parameters used in the [Draft-2012 AQMP](#) for emissions inventory development.

TABLE 3.2-3

Baseline Demographic Forecasts in the [Draft-2012 AQMP](#)

CATEGORY	2008	2023	2023 % GROWTH FROM 2008	2030	2030 % GROWTH FROM 2008
Population (Millions)	15.6	17.3	11%	18.1	16%
Housing Units (Millions)	5.1	5.7	12%	6.0	18%
Total Employment (Millions)	7.0	7.7	10%	8.1	16%
Daily VMT (Millions)	379	396	4%	421	11%

Current forecasts indicate that this region will experience a population growth of 11 percent between 2008 and 2023, with a four percent increase in vehicle miles traveled (VMT); and a population growth of 16 percent by the year 2030 with a 11 percent increase in VMT.

As compared to the projections in the 2007 AQMP, the current 2030 projections in the [Draft 2012 AQMP](#) show about 1.5 million less population (7.6 percent less), 900,000 less total employment (10 percent less), and 32 million miles less in the daily VMT forecast (7.1 percent less).

3.2.1.3.2 *Summary of Future Baseline Emissions*

Emissions data by source categories (point, area, on-road mobile and off-road mobile sources) and by pollutants are presented in Tables 3.2-4 through 3.2-7 for the years 2014, 2019, 2023, and 2030. The tables provide annual average, as well as, summer planning inventories.

Without any additional controls, VOC, NO_x, and SO_x emissions are expected to decrease due to existing regulations, such as controls on off-road equipment, new vehicle standards,

and the RECLAIM programs. Figure 3.2-4 illustrates the relative contribution to the 2023 emissions inventory by source category. A comparison of Figures 3.2-3 and 3.2-4 indicates that the on-road mobile category continues to be a major contributor to CO and NOx emissions. However, due to already-adopted regulations, on-road mobile sources in 2023 account for: about 16 percent of total VOC emissions compared to 33 percent in 2008; about ~~37~~³⁶ percent of total NOx emissions compared to 59 percent in 2008; and about 38 percent of total CO emissions compared to 27 percent in 2008. Meanwhile, area sources became a major contributor to VOC emissions from 17 percent in 2008 to 25 percent in 2023.

TABLE 3.2-4A

Summary of Emissions By Major Source Category: 2014 Baseline
Average Annual Day (tpd^a)

SOURCE CATEGORY	VOC	NOx	CO	SOx	PM2.5
STATIONARY SOURCES					
Fuel Combustion	13	23 ²⁷	54	2	6
Waste Disposal	12	1	1	0	0
Cleaning and Surface Coatings	39	0	0	0	2
Petroleum Production and Marketing	38	0	5	1	2
Industrial Processes	13	0	2	0	7
Solvent Evaporation					
Consumer Products	85	0	0	0	0
Architectural Coatings	15	0	0	0	0
Others	2	0	0	0	0
Misc. Processes	17	21	102	1	33
RECLAIM Sources	<u>0</u>	27	<u>0</u>	8	0
Total Stationary Sources	234	73⁷⁷	163	14¹²	48⁴⁹
MOBILE SOURCES					
On-Road Vehicles	117	272	1,165	2	12
Off-Road Vehicles	100	157	766	4	8
Total Mobile Sources	217	429	1,931	6	20
TOTAL	451	502⁵⁰⁶	2,095	54¹⁸	80⁷⁰

^a Values are rounded to nearest integer.

TABLE 3.2-4B

Summary of Emissions By Major Source Category: 2014 Baseline
Summer Planning Inventory (tpd^a)

SOURCE CATEGORY	SUMMER OZONE PRECURSORS	
	VOC	NO _x
Stationary Sources		
Fuel Combustion	13	<u>23</u> <u>28</u>
Waste Disposal	12	2
Cleaning and Surface Coatings	45	0
Petroleum Production and Marketing	38	0
Industrial Processes	15	0
Solvent Evaporation		
Consumer Products	86	0
Architectural Coatings	18	0
Others	2	0
Misc. Processes	10	15
RECLAIM Sources	<u>0-</u>	27
Total Stationary Sources	239	<u>68</u> <u>72</u>
Mobile Sources		
On-Road Vehicles	120	251
Off-Road Vehicles	128	161
Total Mobile Sources	248	412
TOTAL	<u>488</u> <u>487</u>	<u>480</u> <u>480</u>

^a Values are rounded to nearest integer.

TABLE 3.2-5A

Summary of Emissions By Major Source Category: 2019 Baseline
Average Annual Day (tpd^a)

SOURCE CATEGORY	VOC	NO_x	CO	SO_x	PM_{2.5}
Stationary Sources					
Fuel Combustion	14	22 27	56	2	6
Waste Disposal	13	2	1	0	0
Cleaning and Surface Coatings	46	0	0	0	2
Petroleum Production and Marketing	36	0	5	1	2
Industrial Processes	15	0	2	0	8
Solvent Evaporation					
Consumer Products	87	0	0	0	0
Architectural Coatings	16	0	0	0	0
Others	2	0	0	0	0
Misc. Processes*	16	18	102	1	34
RECLAIM Sources	<u>0</u>	27	<u>0</u>	6	0
Total Stationary Sources	245	69 74	165	11	52
Mobile Sources					
On-Road Vehicles	80	186	755	2	11
Off-Road Vehicles	90	145	796	5	7
Total Mobile Sources	170	331	1,550	7	18
TOTAL	415	400 405	1,716	18	70

^a Values are rounded to nearest integer.

TABLE 3.2-5B

Summary of Emissions By Major Source Category: 2019 Baseline
Summer Planning Inventory (tpd^a)

STATIONARY SOURCES	SUMMER OZONE PRECURSORS	
	VOC	VOC NO _x
Fuel Combustion	14	22 28
Waste Disposal	13	2
Cleaning and Surface Coatings	53	0
Petroleum Production and Marketing	36	0
Industrial Processes	17	0
Solvent Evaporation		
Consumer Products	89	0
Architectural Coatings	19	0
Others	2	0
Misc. Processes	9	13
RECLAIM Sources		27
Total Stationary Sources	252	65 70
Mobile Sources		
On-Road Vehicles	83	173
Off-Road Vehicles	114	148
Total Mobile Sources	197	321
TOTAL	448	385 391

^a Values are rounded to nearest integer.

TABLE 3.2-6A

Summary of Emissions By Major Source Category: 2023 Baseline
Average Annual Day (tpd^a)

SOURCE CATEGORY	VOC	NO_x	CO	SO_x	PM_{2.5}
Stationary Sources					
Fuel Combustion	14	21 27	56	2	6
Waste Disposal	14	2	1	0	0
Cleaning and Surface Coatings	49	0	0	0	2
Petroleum Production and Marketing	36	0	5	1	2
Industrial Processes	16	0	2	0	8
Solvent Evaporation					
Consumer Products	89	0	0	0	0
Architectural	17	0	0	0	0
Others	2	0	0	0	0
Misc. Processes*	16	17	102	1	35
RECLAIM Sources	<u>0</u>	27	<u>0</u>	6	0
Total Stationary Sources	253	67 73	166	11	53
Mobile Sources					
On-Road Vehicles	67	126	591	2	11
Off-Road Vehicles	85	130	826	6	7
Total Mobile Sources	153	255	1,417	8	18
TOTAL	406	322 328	1,583	18	71

^a Values are rounded to nearest integer.

TABLE 3.2-6B

Summary of Emissions By Major Source Category: 2023 Baseline
Summer Planning Inventory (tpd^a)

SOURCE CATEGORY	Summer Ozone Precursors	
	VOC	NO _x
Stationary Sources		
Fuel Combustion	14	24 27
Waste Disposal	14	2
Cleaning and Surface Coatings	56	0
Petroleum Production and Marketing	37	0
Industrial Processes	18	0
Solvent Evaporation		
Consumer Products	91	0
Architectural	20	0
Others	3	0
Misc. Processes	9	13
RECLAIM Sources		27
Total Stationary Sources	261	64 70
Mobile Sources		
On-Road Vehicles	70	117
Off-Road Vehicles	108	133
Total Mobile Sources	177	250
TOTAL	438	313 319

^a Values are rounded to nearest integer.

TABLE 3.2-7A

Summary of Emissions By Major Source Category: 2030 Baseline
Average Annual Day (tpd^a)

SOURCE CATEGORY	VOC	NO_x	CO	SO_x	PM_{2.5}
Stationary Sources					
Fuel Combustion	15	21 28	59	3	6
Waste Disposal	15	2	1	1	0
Cleaning and Surface Coatings	54	0	0	0	2
Petroleum Production and Marketing	38	0	5	1	2
Industrial Processes	17	0	2	0	9
Solvent Evaporation					
Consumer Products	93	0	0	0	0
Architectural	18	0	0	0	0
Others	2	0	0	0	0
Misc. Processes*	16	15	102	1	36
RECLAIM Sources		27		6	0
Total Stationary Sources	268	65 72	169	11	55
Mobile Sources					
On-Road Vehicles	55	101	446	2	12
Off-Road Vehicles	84	116	886	7	6
Total Mobile Sources	139	217	1,333	9	18
TOTAL	407	283 289	1,501	20	73

^a Values are rounded to nearest integer.

TABLE 3.2-7B

Summary of Emissions By Major Source Category: 2030 Baseline
Summer Planning Inventory (tpd^a)

SOURCE CATEGORY	Summer Ozone Precursors	
	VOC	NO _x
Stationary Sources		
Fuel Combustion	15	22 29
Waste Disposal	15	2
Cleaning and Surface Coatings	62	0
Petroleum Production and Marketing	38	0
Industrial Processes	19	0
Solvent Evaporation		
Consumer Products	95	0
Architectural	20 21	0
Others	3	0
Misc. Processes	9	12
RECLAIM Sources	0	27
Total Stationary Sources	276 277	63 70
Mobile Sources		
On-Road Vehicles	56	95
Off-Road Vehicles	105	119
Total Mobile Sources	161	214
TOTAL	437	277 284

^a Values are rounded to nearest integer.

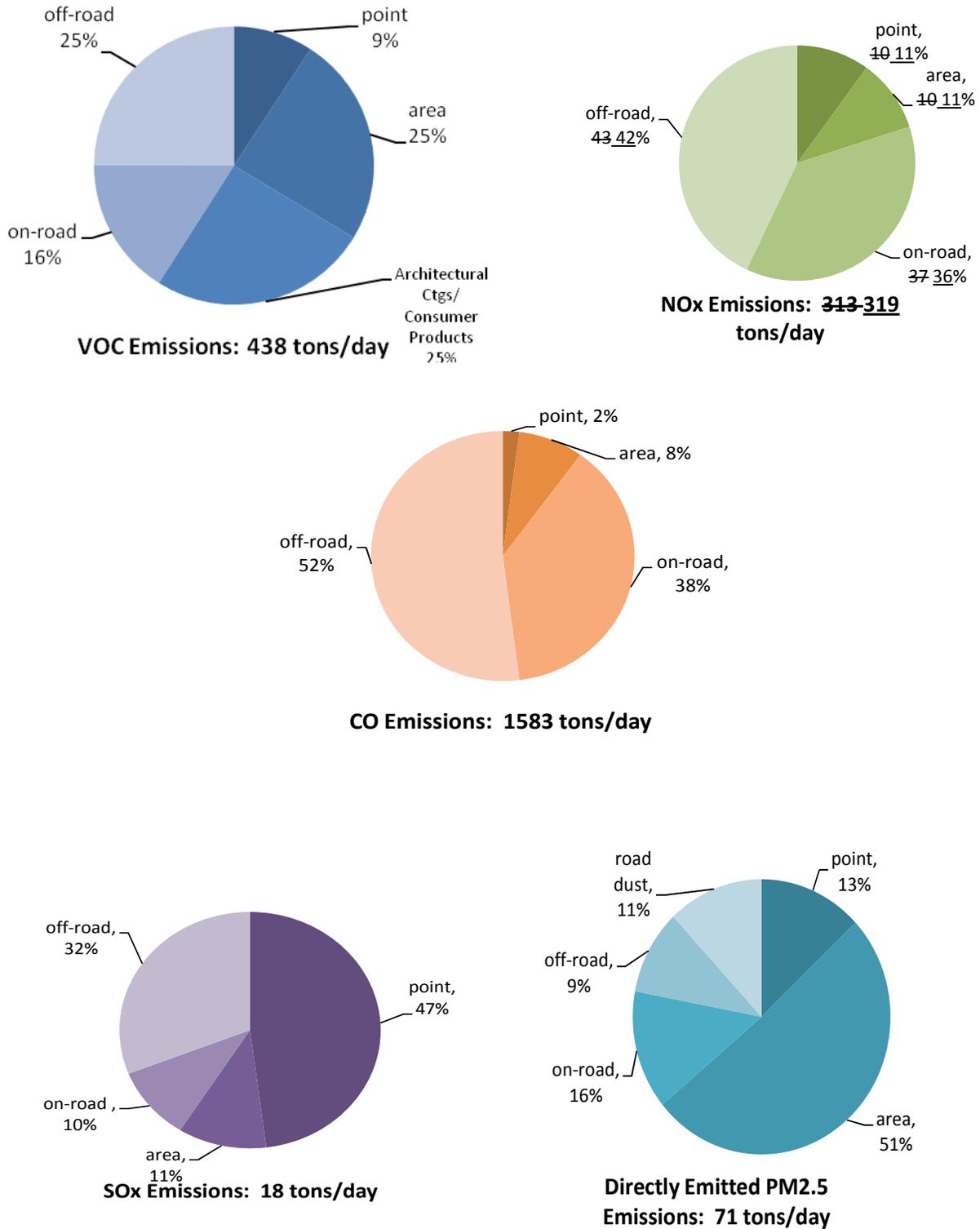


FIGURE 3.2-4

Relative Contribution by Source Category to 2023 Emission Inventory
(VOC & NOx – Summer Planning; CO, SOx, & PM2.5 – Annual Average Inventory)

3.2.1.2 Air Quality Monitoring

This section provides an overview of air quality in the district. A more detailed discussion of current and projected future air quality in the district, with and without additional control measures can be found in the Final Program EIR for the 2012 AQMP (Chapter 3).

It is the responsibility of the SCAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, CO, NO₂, PM₁₀, PM_{2.5} SO₂ and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM₁₀ and SO₂, far more stringent. California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. The state and national ambient air quality standards for each of these pollutants and their effects on health are summarized in Table 3.2-8. The SCAQMD monitors levels of various criteria pollutants at 34 monitoring stations. The 2010 air quality data from SCAQMD's monitoring stations are presented in Table 3.2-9.

3.2.1.2.1 Carbon Monoxide

CO is a colorless, odorless, relatively inert gas. It is a trace constituent in the unpolluted troposphere, and is produced by both natural processes and human activities. In remote areas far from human habitation, carbon monoxide occurs in the atmosphere at an average background concentration of 0.04 ppm, primarily as a result of natural processes such as forest fires and the oxidation of methane. Global atmospheric mixing of CO from urban and industrial sources creates higher background concentrations (up to 0.20 ppm) near urban areas. The major source of CO in urban areas is incomplete combustion of carbon-containing fuels, mainly gasoline. According to the 2007 AQMP, in 2002, the inventory baseline year, approximately 98 percent of the CO emitted into the Basin's atmosphere was from mobile sources. Consequently, CO concentrations are generally highest in the vicinity of major concentrations of vehicular traffic.

CO is a primary pollutant, meaning that it is directly emitted into the air, not formed in the atmosphere by chemical reaction of precursors, as is the case with ozone and other secondary pollutants. Ambient concentrations of CO in the Basin exhibit large spatial and temporal variations due to variations in the rate at which CO is emitted and in the meteorological conditions that govern transport and dilution. Unlike ozone, CO tends to reach high concentrations in the fall and winter months. The highest concentrations frequently occur on weekdays at times consistent with rush hour traffic and late night during the coolest, most stable portion of the day.

TABLE 3.2-8

State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard^a	Federal Primary Standard^b	Most Relevant Effects
Ozone (O₃)	1-hour	0.09 ppm (180 µg/m ³)	No Federal Standard	(a) Short-term exposures: 1) Pulmonary function decrements and localized lung edema in humans and animals; and, 2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; and, (d) Property damage.
	8-hour	0.070 ppm (137 µg/m ³)	0.075 ppm (147 µg/m ³)	
Suspended Particulate Matter (PM₁₀)	24-hour	50 µg/m ³	150 µg/m ³	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; and (b) Excess seasonal declines in pulmonary function, especially in children.
	Annual Arithmetic Mean	20 µg/m ³	No Federal Standard	
Suspended Particulate Matter (PM_{2.5})	24-hour	No State Standard	35 µg/m ³	(a) Increased hospital admissions and emergency room visits for heart and lung disease; (b) Increased respiratory symptoms and disease; and (c) Decreased lung functions and premature death.
	Annual Arithmetic Mean	12 µg/m ³	15.0 µg/m ³	
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and, (d) Possible increased risk to fetuses.
	8-Hour	9 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	

TABLE 3.2-8 (Concluded)
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard ^a	Federal Primary Standard ^b	Most Relevant Effects
Nitrogen Dioxide (NO₂)	1-Hour	0.18 ppm (339 µg/m ³)	0.100 ppm (188 µg/m ³)	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and, (c) Contribution to atmospheric discoloration.
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	
Sulfur Dioxide (SO₂)	1-Hour	0.25 ppm (655 µg/m ³)	75 ppb (196 µg/m ³)–	Broncho-constriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
	24-Hour	0.04 ppm (105 µg/m ³)		
Sulfates	24-Hour	25 µg/m ³	No Federal Standard	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and, (f) Property damage
Hydrogen Sulfide (H₂S)	1-Hour	0.03 ppm (42 µg/m ³)	No Federal Standard	Odor annoyance.
Lead (Pb)	30-Day Average	1.5 µg/m ³	No Federal Standard	(a) Increased body burden; and (b) Impairment of blood formation and nerve conduction.
	Calendar Quarter	No State Standard	1.5 µg/m ³	
	Rolling 3-Month Average	No State Standard	0.15 µg/m ³	
Visibility Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more due to particles when relative humidity is less than 70 percent.	No Federal Standard	The Statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. This is a visibility based standard not a health based standard. Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent.
Vinyl Chloride	24-Hour	0.01 ppm (26 µg/m ³)	No Federal Standard	Highly toxic and a known carcinogen that causes a rare cancer of the liver.

a The California ambient air quality standards for O₃, CO, SO₂ (1-hour and 24-hour), NO₂, PM₁₀, and PM₂₅ are values not to be exceeded. All other California standards shown are values not to be equaled or exceeded.

b The national ambient air quality standards, other than O₃ and those based on annual averages, are not to be exceeded more than once a year. The O₃ standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standards is equal to or less than one.

KEY: ppb = parts per billion parts of air, by volume ppm = parts per million parts of air, by volume µg/m³ = micrograms per cubic meter mg/m³ = milligrams per cubic meter

TABLE 3.2-9
2010 Air Quality Data – South Coast Air Quality Management District

CARBON MONOXIDE (CO)^a				
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. ppm, 1-hour	Max. Conc. ppm, 8-hour
LOS ANGELES COUNTY				
1	Central Los Angeles	364	3	2.3
2	Northwest Coastal Los Angeles County	364	2	1.4
3	Southwest Coastal Los Angeles County	344	3	2.2
4	South Coastal Los Angeles County 1	358	3	2.1
4	South Coastal Los Angeles County 2	-	-	-
6	West San Fernando Valley	365	3	2.6
7	East San Fernando Valley	364	3	2.4
8	West San Gabriel Valley	355	3	2.0
9	East San Gabriel Valley 1	355	3	1.3
9	East San Gabriel Valley 2	360	2	1.3
10	Pomona/Walnut Valley	365	3	1.8
11	South San Gabriel Valley	364	2	1.9
12	South Central Los Angeles County	353	6	3.6
13	Santa Clarita Valley	355	2	1.1
ORANGE COUNTY				
16	North Orange County	356	3	1.8
17	Central Orange County	358	3	2.0
18	North Coastal Orange County	364	2	2.1
19	Saddleback Valley	362	1	0.9
RIVERSIDE COUNTY				
22	Norco/Corona	-	-	-
23	Metropolitan Riverside County 1	364	3	1.8
23	Metropolitan Riverside County 2	355	3	1.7
23	Mira Loma	360	3	1.9
24	Perris Valley	-	-	-
25	Lake Elsinore	363	1	0.6
29	Banning Airport	-	-	-
30	Coachella Valley 1**	365	2	0.5
30	Coachella Valley 2**	-	-	-
SAN BERNARDINO COUNTY				
32	Northwest San Bernardino Valley	353	2	1.8
33	Southwest San Bernardino Valley	-	-	-
34	Central San Bernardino Valley 1	359	3	1.4
34	Central San Bernardino Valley 2	326	2	1.7
35	East San Bernardino Valley	-	-	-
37	Central San Bernardino Mountains	-	-	-
38	East San Bernardino Mountains	-	-	-
DISTRICT MAXIMUM			6	3.6
SOUTH COAST AIR BASIN			6	3.6

KEY:

ppm = parts per million

-- = Pollutant not monitored

** Salton Sea Air Basin

^a The federal 8-hour standard (8-hour average CO > 9 ppm) and state 8-hour standard (8-hour average CO > 9.0 ppm) were not exceeded. The federal and state 1-hour standards (35 ppm and 20 ppm) were not exceeded either.

TABLE 3.2-9 (Continued)
2010 Air Quality Data – South Coast Air Quality Management District

OZONE (O ₃)											
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. in ppm 1-hr	Max. Conc. in ppm 8-hr	4th High Conc. ppm 8-hr	No. Days Standard Exceeded					
						Health Advisory		Federal		State	
						≥ 0.15 ppm 1-hr	Old > 0.12 ppm 1-hr	Current >0.075 ppm 8-hr	Current > 0.09 ppm 1-hr	Current > 0.070 ppm 8-hr	
LOS ANGELES COUNTY											
1	Central Los Angeles	357	0.098	0.080	0.064	0	0	1	1	1	
2	Northwest Coastal Los Angeles County	360	0.099	0.078	0.069	0	0	1	2	4	
3	Southwest Coastal Los Angeles County	319	0.089	0.070	0.059	0	0	0	0	1	
4	South Coastal Los Angeles County 1	358	0.101	0.084	0.057	0	0	1	1	1	
4	South Coastal Los Angeles County 2	-	-	-	-	-	-	-	-	-	
6	West San Fernando Valley	295	0.122	0.091	0.086	0	0	19	11	40	
7	East San Fernando Valley	317	0.111	0.084	0.076	0	0	4	3	11	
8	West San Gabriel Valley	325	0.101	0.081	0.075	0	0	3	1	6	
9	East San Gabriel Valley 1	356	0.104	0.081	0.075	0	0	3	5	10	
9	East San Gabriel Valley 2	350	0.124	0.099	0.090	0	0	20	25	48	
10	Pomona/Walnut Valley	342	0.115	0.082	0.076	0	0	4	9	20	
11	South San Gabriel Valley	358	0.112	0.086	0.059	0	0	1	1	1	
12	South Central Los Angeles County	358	0.081	0.062	0.050	0	0	0	0	0	
13	Santa Clarita Valley	331	0.126	0.105	0.087	0	0	23	18	44	
ORANGE COUNTY											
16	North Orange County	351	0.118	0.096	0.071	0	0	1	2	4	
17	Central Orange County	331	0.104	0.088	0.060	0	0	1	1	1	
18	North Coastal Orange County	353	0.097	0.076	0.060	0	0	1	1	2	
19	Saddleback Valley	353	0.117	0.082	0.069	0	0	2	2	2	
RIVERSIDE COUNTY											
22	Norco/Corona	-	-	-	-	-	-	-	-	-	
23	Metropolitan Riverside County 1	341	0.128	0.098	0.092	0	1	47	31	78	
23	Metropolitan Riverside County 2	-	-	-	-	-	-	-	-	-	
23	Mira Loma	324	0.121	0.094	0.090	0	0	38	22	63	
24	Perris Valley	343	0.122	0.107	0.099	0	0	50	42	82	
25	Lake Elsinore	355	0.107	0.091	0.086	0	0	24	15	42	
29	Banning Airport	328	0.124	0.107	0.099	0	0	60	31	84	
30	Coachella Valley 1**	361	0.114	0.099	0.092	0	0	52	23	83	
30	Coachella Valley 2**	348	0.100	0.087	0.084	0	0	19	7	47	
SAN BERNARDINO COUNTY											
32	Northwest San Bernardino Valley	349	0.131	0.097	0.090	0	1	39	31	59	
33	Southwest San Bernardino Valley	-	-	-	-	-	-	-	-	-	
34	Central San Bernardino Valley 1	350	0.143	0.100	0.094	0	2	33	28	55	
34	Central San Bernardino Valley 2	354	0.129	0.105	0.095	0	1	40	27	63	
35	East San Bernardino Valley	363	0.128	0.112	0.097	0	1	61	43	86	
37	Central San Bernardino Mountains	364	0.142	0.123	0.109	0	6	74	52	101	
38	East San Bernardino Mountains	-	-	-	-	-	-	-	-	-	
DISTRICT MAXIMUM			0.143	0.123	0.109	0	6	74	52	101	
SOUTH COAST AIR BASIN			0.143	0.123	0.109	0	7	102	79	131	

KEY:

ppm = parts per million

-- = Pollutant not monitored

** Salton Sea Air Basin

TABLE 3.2-9 (Continued)
2010 Air Quality Data – South Coast Air Quality Management District

NITROGEN DIOXIDE (NO₂)^b					
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	1-hour Max. Conc. ppb, 1,	1-hour 98 th Percentile Conc. ppb,	Annual Average AAM Conc. ppb
LOS ANGELES COUNTY					
1	Central Los Angeles	364	89.0	70.5	25.0
2	Northwest Coastal Los Angeles County	365	70.8	57.4	15.6
3	Southwest Coastal Los Angeles County	358	75.8	60.9	12.1
4	South Coastal Los Angeles County 1	360	92.8	70.2	19.8
4	South Coastal Los Angeles County 2	-	-	-	-
6	West San Fernando Valley	365	75.0	56.0	16.7
7	East San Fernando Valley	359	82.0	64.3	24.1
8	West San Gabriel Valley	355	71.0	63.0	19.6
9	East San Gabriel Valley 1	364	77.2	59.6	18.5
9	East San Gabriel Valley 2	360	78.5	55.5	15.4
10	Pomona/Walnut Valley	365	97.0	72.5	26.2
11	South San Gabriel Valley	364	79.0	65.4	22.9
12	South Central Los Angeles County	364	76.8	68.8	17.9
13	Santa Clarita Valley	364	59.3	54.2	14.3
ORANGE COUNTY					
16	North Orange County	333	82.5	61.6	20.1
17	Central Orange County	364	73.3	61.1	17.5
18	North Coastal Orange County	364	70.0	56.0	11.3
19	Saddleback Valley	-	-	-	-
RIVERSIDE COUNTY					
22	Norco/Corona	-	-	-	-
23	Metropolitan Riverside County 1	333	64.5	57.0	16.8
23	Metropolitan Riverside County 2	361	60.8	51.5	17.2
23	Mira Loma	365	62.2	50.3	15.1
24	Perris Valley	-	-	-	-
25	Lake Elsinore	363	51.2	40.6	10.1
29	Banning Airport	365	65.7	53.2	11.6
30	Coachella Valley 1**	365	45.7	39.0	8.5
30	Coachella Valley 2**	-	-	-	-
SAN BERNARDINO COUNTY					
32	Northwest San Bernardino Valley	365	78.9	58.0	20.4
33	Southwest San Bernardino Valley	-	-	-	-
34	Central San Bernardino Valley 1	363	71.9	64.8	23.1
34	Central San Bernardino Valley 2	365	69.2	56.6	18.8
35	East San Bernardino Valley	-	-	-	-
37	Central San Bernardino Mountains	-	-	-	-
38	East San Bernardino Mountains	-	-	-	-
DISTRICT MAXIMUM			97.0	72.5	26.2
SOUTH COAST AIR BASIN			97.0	72.5	26.2

KEY:

ppb = parts per billion

AAM = Annual Arithmetic Mean

-- = Pollutant not monitored

** Salton Sea Air Basin

^b

The NO₂ federal 1-hour standard is 100 ppb and the annual standard is annual arithmetic mean NO₂ > 0.0534 ppm. The state 1-hour and annual standards are 0.18 ppm and 0.030 ppm.

TABLE 3.2-9 (Continued)
2010 Air Quality Data – South Coast Air Quality Management District

SULFUR DIOXIDE (SO₂)^c				
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Maximum Conc. ppb, 1-hour	Maximum Conc. ppb, 24-hour
LOS ANGELES COUNTY				
1	Central Los Angeles	355	9.8	1.5
2	Northwest Coastal Los Angeles County	-	-	-
3	Southwest Coastal Los Angeles County	327	25.9	3.5
4	South Coastal Los Angeles County 1	329	40.0	6.0
4	South Coastal Los Angeles County 2	-	-	-
6	West San Fernando Valley	-	-	-
7	East San Fernando Valley	233*	14.9	4.1
8	West San Gabriel Valley	-	-	-
9	East San Gabriel Valley 1	-	-	-
9	East San Gabriel Valley 2	-	-	-
10	Pomona/Walnut Valley	-	-	-
11	South San Gabriel Valley	-	-	-
12	South Central Los Angeles County	-	-	-
13	Santa Clarita Valley	-	-	-
ORANGE COUNTY				
16	North Orange County	-	-	-
17	Central Orange County	-	-	-
18	North Coastal Orange County	348	9.5	2.1
19	Saddleback Valley	-	-	-
RIVERSIDE COUNTY				
22	Norco/Corona	-	-	-
23	Metropolitan Riverside County 1	349	17.6	4.6
23	Metropolitan Riverside County 2	-	-	-
23	Mira Loma	-	-	-
24	Perris Valley	-	-	-
25	Lake Elsinore	-	-	-
29	Banning Airport	-	-	-
30	Coachella Valley 1**	-	-	-
30	Coachella Valley 2**	-	-	-
SAN BERNARDINO COUNTY				
32	Northwest San Bernardino Valley	-	-	-
33	Southwest San Bernardino Valley	-	-	-
34	Central San Bernardino Valley 1	330*	6.6	1.6
34	Central San Bernardino Valley 2	-	-	-
35	East San Bernardino Valley	-	-	-
37	Central San Bernardino Mountains	-	-	-
38	East San Bernardino Mountains	-	-	-
DISTRICT MAXIMUM			40.0	6.0
SOUTH COAST AIR BASIN			40.0	6.0

KEY:

ppb = parts per billion

-- = Pollutant not monitored

** Salton Sea Air Basin

^c The federal SO₂ 1-hour standard is 75 ppb (0.075 ppm). The state standards are 1-hour average SO₂ > 0.25 ppm and 24-hour average SO₂ > 0.04 ppm.

TABLE 3.2-9 (Continued)
2010 Air Quality Data – South Coast Air Quality Management District

SUSPENDED PARTICULATE MATTER PM10^d						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. $\mu\text{g}/\text{m}^3$, 24-hour	No. (%) Samples Exceeding Standard		Annual Average AAM Conc. $\mu\text{g}/\text{m}^3$
				Federal $> 150 \mu\text{g}/\text{m}^3$, 24-hour	State $> 50 \mu\text{g}/\text{m}^3$, 24-hour	
LOS ANGELES COUNTY						
1	Central Los Angeles	56	42	0	0	27.1
2	Northwest Coastal Los Angeles County	-	-	-	-	-
3	Southwest Coastal Los Angeles County	55	37	0	0	20.6
4	South Coastal Los Angeles County 1	58	44	0	0	22.0
4	South Coastal Los Angeles County 2	59	76	0	2(3.4%)	27.3
6	West San Fernando Valley	-	-	-	-	-
7	East San Fernando Valley	55	51	0	1(1.8%)	29.6
8	West San Fernando Valley	-	-	-	-	-
9	East San Gabriel Valley 1	55	70	0	5(9.1%)	29.8
9	East San Gabriel Valley 2	-	-	-	-	-
10	Pomona/Walnut Valley	-	-	-	-	-
11	South San Gabriel Valley	-	-	-	-	-
12	South Central Los Angeles County	-	-	-	-	-
13	Santa Clarita Valley	57	40	0	0	21.0
ORANGE COUNTY						
16	North Orange County	-	-	-	-	-
17	Central Orange County	57	43	0	0	22.4
18	North Coastal Orange County	-	-	-	-	-
19	Saddleback Valley	58	34	0	0	18.1
RIVERSIDE COUNTY⁰						
22	Norco/Corona	61	50	0	0	27.2
23	Metropolitan Riverside County 1	122	75	0	7(5.7%)	32.8
23	Metropolitan Riverside County 2	-	-	-	-	-
23	Mira Loma	60	89	0	25(41.7%)	42.3
24	Perris Valley	61	51	0	1(1.6%)	28.0
25	Lake Elsinore	-	-	-	-	-
29	Banning Airport	60	55	0	1(1.7%)	21.8
30	Coachella Valley 1**	61	37	0	0	18.7
30	Coachella Valley 2**	119	107	0	6(5%)	29.3
SAN BERNARDINO COUNTY						
32	Northwest San Bernardino Valley	-	-	-	-	-
33	Southwest San Bernardino Valley	60	87	0	3(5%)	31.8
34	Central San Bernardino Valley 1	53	62	0	9(17%)	33.9
34	Central San Bernardino Valley 2	59	63	0	3(5.1%)	32.4
35	East San Bernardino Valley	58	57	0	1(1.7%)	25.8
37	Central San Bernardino Mountains	57	39	0	0	18.9
38	East San Bernardino Mountains	-	-	-	-	-
DISTRICT MAXIMUM			107	0	25	42.3
SOUTH COAST AIR BASIN			89	0	34	42.3

KEY:

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter of air AAM = Annual Arithmetic Mean -- = Pollutant not monitored ** Salton Sea Air Basin

^d PM10 samples were collected every 6 days at all sites except for Station Numbers 4144 and 4157, where samples were collected every 3 days. The Federal annual PM10 standard (AAM $> 50 \mu\text{g}/\text{m}^3$) was revoked in 2006. State standard is annual average (AAM) $> 20 \mu\text{g}/\text{m}^3$

TABLE 3.2-9 (Continued)
2010 Air Quality Data – South Coast Air Quality Management District

SUSPENDED PARTICULATE MATTER PM_{2.5}^e						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. $\mu\text{g}/\text{m}^3$, 24-hour	98 th Percentile Conc. in $\mu\text{g}/\text{m}^3$ 24-hr	No. (%) Samples Exceeding Federal Std $> 35 \mu\text{g}/\text{m}^3$, 24-hour	Annual Average AAM Conc. $\mu\text{g}/\text{m}^3$
LOS ANGELES COUNTY						
1	Central Los Angeles	335	39.2	27.1	2(0.6%)	11.9
2	Northwest Coastal Los Angeles County	-	-	-	-	-
3	Southwest Coastal Los Angeles County	-	-	-	-	-
4	South Coastal Los Angeles County 1	338	35.0	28.3	0	10.5
4	South Coastal Los Angeles County 2	351	33.7	26.5	0	10.4
6	West San Fernando Valley	100	40.7	30.4	1(1.0%)	10.2
7	East San Fernando Valley	322	43.7	31.8	4(1.2%)	12.5
8	West San Gabriel Valley	97	35.2	24.0	0	10.2
9	East San Gabriel Valley 1	93	44.4	35.4	1(1.1%)	10.9
9	East San Gabriel Valley 2	-	-	-	-	-
10	Pomona/Walnut Valley	-	-	-	-	-
11	South San Gabriel Valley	117	34.9	32.0	0	12.5
12	South Central Los Angeles County	111	38.2	31.8	1(0.9%)	12.5
13	Santa Clarita Valley	-	-	-	-	-
ORANGE COUNTY						
16	North Orange County	-	-	-	-	-
17	Central Orange County	331	31.7	25.2	0	10.2
18	North Coastal Orange County	-	-	-	-	-
19	Saddleback Valley	116	19.9	17.3	0	8.0
RIVERSIDE COUNTY						
22	Norco/Corona	-	-	-	-	-
23	Metropolitan Riverside County 1	351	46.5	32.0	4(1.1%)	13.2
23	Metropolitan Riverside County 2	115	43.7	27.3	2(1.7%)	11.0
23	Mira Loma	340	54.2	36.1	8(2.4%)	15.2
24	Perris Valley	-	-	-	-	-
25	Lake Elsinore	-	-	-	-	-
29	Banning Airport	-	-	-	-	-
30	Coachella Valley 1**	111	12.8	12.6	0	6.0
30	Coachella Valley 2**	112	16.0	12.2	0	6.8
SAN BERNARDINO COUNTY						
32	Northwest San Bernardino Valley	-	-	-	-	-
33	Southwest San Bernardino Valley	112	46.1	31.2	1(0.9%)	13.0
34	Central San Bernardino Valley 1	112	42.6	30.8	2(1.8%)	12.0
34	Central San Bernardino Valley 2	119	39.3	29.7	2(1.7%)	11.1
35	East San Bernardino Valley	-	-	-	-	-
37	Central San Bernardino Mountains	-	-	-	-	-
38	East San Bernardino Mountains	53	35.4	27.5	0	8.4
DISTRICT MAXIMUM			54.2	36.1	8	15.2
SOUTH COAST AIR BASIN			54.2	36.1	13	15.2

KEY:

^e $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter of air AAM = Annual Arithmetic Mean -- = Pollutant not monitored ** Salton Sea Air Basin
 PM_{2.5} samples were collected every 3 days at all sites except for station numbers 069, 072, 077, 087, 3176, 4144 and 4165, where samples were taken daily, and station number 5818 where samples were taken every 6 days. Federal annual PM_{2.5} standard is annual average (AAM) $> 15.0 \mu\text{g}/\text{m}^3$. State standard is annual average (AAM) $> 12.0 \mu\text{g}/\text{m}^3$.

TABLE 3.2-9 (Continued)**2010 Air Quality Data – South Coast Air Quality Management District**

TOTAL SUSPENDED PARTICULATES TSP^f				
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. $\mu\text{g}/\text{m}^3$, 24-hour	Annual Average AAM Conc. $\mu\text{g}/\text{m}^3$
LOS ANGELES COUNTY				
1	Central Los Angeles	53	105	53.3
2	Northwest Coastal Los Angeles County	59	82	40.8
3	Southwest Coastal Los Angeles County	55	85	36.7
4	South Coastal Los Angeles County 1	60	129	45.5
4	South Coastal Los Angeles County 2	57	130	50.8
6	West San Fernando Valley	-	-	-
7	East San Fernando Valley	-	-	-
8	West San Gabriel Valley	58	58	36.4
9	East San Gabriel Valley 1	53	136	58.2
9	East San Gabriel Valley 2	-	-	-
10	Pomona/Walnut Valley	-	-	-
11	South San Gabriel Valley	59	265	86.1
12	South Central Los Angeles County	58	94	49.2
13	Santa Clarita Valley	-	-	-
ORANGE COUNTY				
16	North Orange County	-	-	-
17	Central Orange County	-	-	-
18	North Coastal Orange County	-	-	-
19	Saddleback Valley	-	-	-
RIVERSIDE COUNTY				
22	Norco/Corona	-	-	-
23	Metropolitan Riverside County 1	60	131	64.3
23	Metropolitan Riverside County 2	59	88	45.0
23	Mira Loma	-	-	-
24	Perris Valley	-	-	-
25	Lake Elsinore	-	-	-
29	Banning Airport	-	-	-
30	Coachella Valley 1**	-	-	-
30	Coachella Valley 2**	-	-	-
SAN BERNARDINO COUNTY				
32	Northwest San Bernardino Valley	59	86	46.7
33	Southwest San Bernardino Valley	-	-	-
34	Central San Bernardino Valley 1	61	142	73.3
34	Central San Bernardino Valley 2	60	106	57.7
35	East San Bernardino Valley	-	-	-
37	Central San Bernardino Mountains	-	-	-
38	East San Bernardino Mountains	-	-	-
DISTRICT MAXIMUM			265	86.1
SOUTH COAST AIR BASIN			265	86.1

KEY:

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter of air AAM = Annual Arithmetic Mean -- = Pollutant not monitored ** Salton Sea Air Basin

^f TSP Particulate samples were taken every six days at all sites monitored..

TABLE 3.2-9 (Concluded)
2010 Air Quality Data – South Coast Air Quality Management District

Source Receptor Area No.	Location of Air Monitoring Station	LEAD ^g		SULFATES (SO _x) ^g	
		Max. Monthly Average Conc. ^{m)} µg/m ³	Max. Quarterly Average Conc. ^{m)} µg/m ³	Max. Conc. µg/m ³ , 24-hour	No. (%) Samples Exceeding State Standard ≥ 25 µg/m ³ , 24-hour
LOS ANGELES COUNTY					
1	Central Los Angeles	0.02	0.01	9.1	0
2	Northwest Coastal Los Angeles County	--	--	7.5	0
3	Southwest Coastal Los Angeles County	0.01	0.01	9.7	0
4	South Coastal Los Angeles County 1	0.01	0.01	11.8	0
4	South Coastal Los Angeles County 2	0.01	0.01	12.2	0
6	West San Fernando Valley	--	--	-	-
7	East San Fernando Valley	--	--	-	-
8	West San Gabriel Valley	--	--	7.7	0
9	East San Gabriel Valley 1	--	--	6.4	0
9	East San Gabriel Valley 2	--	--	-	-
10	Pomona/Walnut Valley	--	--	--	--
11	South San Gabriel Valley	0.02	0.01	8.5	0
12	South Central Los Angeles County	0.01	0.01	7.8	0
13	Santa Clarita Valley	--	--	--	--
ORANGE COUNTY					
16	North Orange County	--	--	--	--
17	Central Orange County	--	--	--	--
18	North Coastal Orange County	--	--	--	--
19	Saddleback Valley	--	--	--	--
RIVERSIDE COUNTY					
22	Norco/Corona	--	--	--	--
23	Metropolitan Riverside County 1	0.01	0.01	6.7	0
23	Metropolitan Riverside County 2	0.01	0.01	5.0	0
23	Mira Loma	--	--	--	--
24	Perris Valley	--	--	--	--
25	Lake Elsinore	--	--	--	--
29	Banning Airport	--	--	--	--
30	Coachella Valley 1**	--	--	--	--
30	Coachella Valley 2**	--	--	--	--
SAN BERNARDINO COUNTY					
32	Northwest San Bernardino Valley	0.01	0.01	10.1	0
33	Southwest San Bernardino Valley	--	--	--	--
34	Central San Bernardino Valley 1	--	--	6.3	0
34	Central San Bernardino Valley 2	0.01	0.01	11.4	0
35	East San Bernardino Valley	--	--	--	--
37	Central San Bernardino Mountains	--	--	--	--
38	East San Bernardino Mountains	--	--	--	--
DISTRICT MAXIMUM		0.02	0.01	12.2	0
SOUTH COAST AIR BASIN		0.02	0.01	12.2	0

KEY:

µg/m³ = micrograms per cubic meter of air -- = Pollutant not monitored

** Salton Sea Air Basin

^g Lead and sulfate samples were collected every six days at all sites monitored.

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of worsening oxygen supply to the heart.

Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport by competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses (unborn babies), and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes.

Reductions in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels. These include pre-term births and heart abnormalities.

Carbon monoxide concentrations were measured at 25 locations in the Basin and neighboring SSAB areas in 2010. Carbon monoxide concentrations did not exceed the standards in 2010. The highest one-hour average carbon monoxide concentration recorded (6.0 ppm in the South Central Los Angeles County area) was 17 percent of the federal one-hour carbon monoxide standard of 35 ppm. The highest eight-hour average carbon monoxide concentration recorded (3.6 ppm in the South Central Los Angeles County area) was 40 percent of the federal eight-hour carbon monoxide standard of 9.0 ppm. The state one-hour standard is also 9.0 ppm. The highest eight-hour average carbon monoxide concentration is 18 percent of the state eight-hour carbon monoxide standard of 20 ppm.

The 2003 AQMP revisions to the SCAQMD's CO Plan served two purposes: it replaced the 1997 attainment demonstration that lapsed at the end of 2000; and it provided the basis for a CO maintenance plan in the future. In 2004, the SCAQMD formally requested the U.S. EPA to re-designate the Basin from non-attainment to attainment with the CO National Ambient Air Quality Standards. On February 24, 2007, U.S. EPA published in the Federal Register its proposed decision to re-designate the Basin from non-attainment to attainment for CO. The comment period on the re-designation proposal closed on March 16, 2007 with no comments received by the U.S. EPA. On May 11, 2007, U.S. EPA published in the Federal Register its final decision to approve the SCAQMD's request for re-designation from non-attainment to attainment for CO, effective June 11, 2007.

3.2.1.2.2 *Ozone*

Ozone (O₃), a colorless gas with a sharp odor, is a highly reactive form of oxygen. High ozone concentrations exist naturally in the stratosphere. Some mixing of stratospheric ozone downward through the troposphere to the earth's surface does occur; however, the extent of ozone transport is limited. At the earth's surface in sites remote from urban areas ozone concentrations are normally very low (e.g., from 0.03 ppm to 0.05 ppm).

While ozone is beneficial in the stratosphere because it filters out skin-cancer-causing ultraviolet radiation, it is a highly reactive oxidant. It is this reactivity which accounts for its damaging effects on materials, plants, and human health at the earth's surface.

The propensity of ozone for reacting with organic materials causes it to be damaging to living cells and ambient ozone concentrations in the Basin are frequently sufficient to cause health effects. Ozone enters the human body primarily through the respiratory tract and causes respiratory irritation and discomfort, makes breathing more difficult during exercise, and reduces the respiratory system's ability to remove inhaled particles and fight infection.

Individuals exercising outdoors, children and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible subgroups for ozone effects. Short-term exposures (lasting for a few hours) to ozone at levels typically observed in southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in high ozone communities. Elevated ozone levels are also associated with increased school absences.

Ozone exposure under exercising conditions is known to increase the severity of the abovementioned observed responses. Animal studies suggest that exposures to a combination of pollutants which include ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

In 2010, the SCAQMD regularly monitored ozone concentrations at 28 locations in the Basin and SSAB. Maximum ozone concentrations for all areas monitored were below the stage 1 episode level (0.20 ppm) and below the health advisory level (0.15 ppm). Maximum ozone concentrations in the SSAB areas monitored by the SCAQMD were lower than in the Basin and were below the health advisory level.

In 2010, the maximum ozone concentrations in the Basin continued to exceed federal standards by wide margins. Maximum one-hour and eight-hour average ozone concentrations were 0.143 ppm and 0.123 ppm, respectively (the maximum one-hour was recorded in the Central San Bernardino Valley 1 area, the eight-hour maximum was recorded in the Central San Bernardino Mountains area). The federal one-hour ozone standard was revoked and replaced by the eight-hour average ozone standard effective June 15, 2005. U.S. EPA has revised the federal eight-hour ozone standard from 0.84 ppm to 0.075 ppm, effective May 27, 2008. The maximum eight-hour concentration was 164 percent of the new federal standard. The maximum one-hour concentration was 159 percent of the one-hour state ozone standard of 0.09 ppm. The maximum eight-hour concentration was 175 percent of the eight-hour state ozone standard of 0.070 ppm.

The objective of the 2012 AQMP is to attain and maintain ambient air quality standards. Based upon the modeling analysis described in the Program Environmental Impact Report for the 2007 AQMP, implementation of all control measures contained in the 2012 AQMP is anticipated to bring the district into compliance with the federal eight-hour ozone standard by 2023 and the state eight-hour ozone standard beyond 2023.

3.2.1.2.3 Nitrogen Dioxide

NO₂ is a reddish-brown gas with a bleach-like odor. Nitric oxide (NO) is a colorless gas, formed from the nitrogen (N₂) and oxygen (O₂) in air under conditions of high temperature and pressure which are generally present during combustion of fuels; NO reacts rapidly with the oxygen in air to form NO₂. NO₂ is responsible for the brownish tinge of polluted air. The two gases, NO and NO₂, are referred to collectively as NO_x. In the presence of sunlight, NO₂ reacts to form nitric oxide and an oxygen atom. The oxygen atom can react further to form ozone, via a complex series of chemical reactions involving hydrocarbons. Nitrogen dioxide may also react to form nitric acid (HNO₃) which reacts further to form nitrates, components of PM_{2.5} and PM₁₀.

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO₂ at levels found in homes with gas stoves, which are higher than ambient levels found in southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO₂ in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma and/or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups. More recent studies have found associations between NO₂ exposures and cardiopulmonary mortality, decreased lung function, respiratory symptoms and emergency room asthma visits.

In animals, exposure to levels of NO₂ considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO₂.

In 2010, nitrogen dioxide concentrations were monitored at 24 locations. No area of the Basin or SSAB exceeded the federal or state standards for nitrogen dioxide. The Basin has not exceeded the federal standard for nitrogen dioxide (0.0534 ppm) since 1991, when the Los Angeles County portion of the Basin recorded the last exceedance of the standard in any county within the United States.

In 2010, the maximum annual average concentration was 26.2 ppb recorded in the Pomona/Walnut Valley area. Effective March 20, 2008, CARB revised the nitrogen dioxide one-hour standard from 0.25 ppm to 0.18 ppm and established a new annual standard of 0.30 ppm. In addition, U.S. EPA has established a new federal one-hour NO₂ standard of 100 ppb (98th percentile concentration), effective April 7, 2010. The highest one-hour average concentration recorded (97.0 ppb in Pomona/Walnut Valley) was 53 percent of the state

one-hour standard and the highest annual average concentration recorded (26.2 ppb in Pomona/Walnut Valley) was 87 percent of the state annual average standard. NO_x emission reductions continue to be necessary because it is a precursor to both ozone and PM (PM_{2.5} and PM₁₀) concentrations.

3.2.1.2.4 *Sulfur Dioxide*

SO₂ is a colorless gas with a sharp odor. It reacts in the air to form sulfuric acid (H₂SO₄), which contributes to acid precipitation, and sulfates, which are components of PM₁₀ and PM_{2.5}. Most of the SO₂ emitted into the atmosphere is produced by burning sulfur-containing fuels.

Exposure of a few minutes to low levels of SO₂ can result in airway constriction in some asthmatics. All asthmatics are sensitive to the effects of SO₂. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, is observed after acute higher exposure to SO₂. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO₂.

Animal studies suggest that despite SO₂ being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO₂ levels. In these studies, efforts to separate the effects of SO₂ from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

No exceedances of federal or state standards for sulfur dioxide occurred in 2010 at any of the seven district locations monitored. The maximum one-hour sulfur dioxide concentration was 40.0 ppb, as recorded in the South Coastal Los Angeles County 1 area. The maximum 24-hour sulfur dioxide concentration was 6.0 ppb, as recorded in South Coastal Los Angeles County 1 area. The U.S. EPA revised the federal sulfur dioxide standard by establishing a new one-hour standard of 0.075 ppm and revoking the existing annual arithmetic mean (0.03 ppm) and the 24-hour average (0.14 ppm), effective August 2, 2010. The state standards are 0.25 ppm for the one-hour average and 0.04 ppm for the 24-hour average. Though sulfur dioxide concentrations remain well below the standards, sulfur dioxide is a precursor to sulfate, which is a component of fine particulate matter, PM₁₀, and PM_{2.5}. Historical measurements showed concentrations to be well below standards and monitoring has been discontinued.

3.2.1.2.5 *Particulate Matter (PM₁₀ and PM_{2.5})*

Of great concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. Respirable particles (particulate matter less than about 10 micrometers in diameter) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis and other lung diseases. Children, the elderly,

exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of PM10 and PM2.5.

A consistent correlation between elevated ambient fine particulate matter (PM10 and PM2.5) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. Studies have reported an association between long-term exposure to air pollution dominated by fine particles (PM2.5) and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in fine particulate matter concentration levels have also been related to hospital admissions for acute respiratory conditions, to school and kindergarten absences, to a decrease in respiratory function in normal children and to increased medication use in children and adults with asthma. Studies have also shown lung function growth in children is reduced with long-term exposure to particulate matter. In addition to children, the elderly, and people with pre-existing respiratory and/or cardiovascular disease appear to be more susceptible to the effects of PM10 and PM2.5.

The SCAQMD monitored PM10 concentrations at 21 locations in 2010. The federal 24-hour PM10 standard (150 $\mu\text{g}/\text{m}^3$) was not exceeded at any of the locations monitored in 2010. The maximum 24-hour PM10 concentration of 107 $\mu\text{g}/\text{m}^3$ was recorded in the Coachella Valley No. 2 area and was 71 percent of the federal standard and 214 percent of the much more stringent state 24-hour PM10 standard (50 $\mu\text{g}/\text{m}^3$). The state 24-hour PM10 standard was exceeded at 12 of the 21 monitoring stations. The maximum annual average PM10 concentration of 42.3 $\mu\text{g}/\text{m}^3$ was recorded in Mira Loma. The maximum annual average PM10 concentration in Mira Loma was 211 percent of the state standard. The federal annual PM10 standard has been revoked.

In 2010, PM2.5 concentrations were monitored at 20 locations throughout the district. U.S. EPA revised the federal 24-hour PM2.5 standard from 65 $\mu\text{g}/\text{m}^3$ to 35 $\mu\text{g}/\text{m}^3$, effective December 17, 2006. In 2010, the maximum PM2.5 concentrations in the Basin exceeded the new federal 24-hour PM2.5 standard in all but six locations. The maximum 24-hour PM2.5 concentration of 54.2 $\mu\text{g}/\text{m}^3$ was recorded in the Mira Loma area, which represents 154 percent of the federal standard of 35 $\mu\text{g}/\text{m}^3$. The maximum annual average concentration of 15.2 $\mu\text{g}/\text{m}^3$ was recorded in Mira Loma, which represents 101 percent of the federal standard of 15 $\mu\text{g}/\text{m}^3$ and 126 percent of the state standard of 12 $\mu\text{g}/\text{m}^3$.

Similar to PM10 concentrations, PM2.5 concentrations were higher in the inland valley areas of San Bernardino and Metropolitan Riverside counties. However, PM2.5 concentrations were also high in Central Los Angeles County. The high PM2.5 concentrations in Los Angeles County are mainly due to the secondary formation of smaller particulates resulting from mobile and stationary source activities. In contrast to PM10, PM2.5 concentrations were low in the Coachella Valley area of SSAB. PM10 concentrations are normally higher in the desert areas due to windblown and fugitive dust emissions.

3.2.1.2.6 *Lead*

Lead in the atmosphere is present as a mixture of a number of lead compounds. Leaded gasoline and lead smelters have been the main sources of lead emitted into the air. Due to the phasing out of leaded gasoline, there was a dramatic reduction in atmospheric lead in the Basin over the past three decades.

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead exposure. Exposure to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

Lead poisoning can cause anemia, lethargy, seizures, and death. It appears that there are no direct effects of lead on the respiratory system. Lead can be stored in the bone from early-age environmental exposure, and elevated blood lead levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland), and osteoporosis (breakdown of bone tissue). Fetuses and breast-fed babies can be exposed to higher levels of lead because of previous environmental lead exposure of their mothers.

The old federal and current state standards for lead were not exceeded in any area of the district in 2010. There have been no violations of these standards at the SCAQMD's regular air monitoring stations since 1982, as a result of removal of lead from gasoline. The maximum quarterly average lead concentration ($0.01 \mu\text{g}/\text{m}^3$ at monitoring stations in South San Gabriel Valley, South Central Los Angeles County, and Central San Bernardino Valley No. 2) was 0.7 percent of the old federal quarterly average lead standard ($1.5 \mu\text{g}/\text{m}^3$). The maximum monthly average lead concentration ($0.01 \mu\text{g}/\text{m}^3$ in South San Gabriel Valley and South Central Los Angeles County), measured at special monitoring sites immediately adjacent to stationary sources of lead was 0.7 percent of the state monthly average lead standard. No lead data were obtained at SSAB and Orange County stations in 2010. Because historical lead data showed concentrations in SSAB and Orange County areas to be well below the standard, measurements have been discontinued.

On November 12, 2008, U.S. EPA published new national ambient air quality standards for lead, which became effective January 12, 2010. The existing national lead standard, $1.5 \mu\text{g}/\text{m}^3$, was reduced to $0.15 \mu\text{g}/\text{m}^3$, averaged over a rolling three-month period. The new federal standard was not exceeded at any source/receptor location in 2010. Nevertheless, U.S. EPA designated the Los Angeles County portion of the Basin as non-attainment for the new lead standard, effective December 31, 2010, primarily based on emissions from two battery recycling facilities. In response to the new federal lead standard, the SCAQMD adopted Rule 1420.1 – Emissions Standard for Lead from Large Lead-Acid Battery Recycling Facilities, in November 2010, to ensure that lead emissions do not exceed the new federal standard. Further, in May 2012, the SCAQMD adopted the 2012 Lead SIP to address the revision to the federal lead standard, which outlines the strategy and pollution control activities to demonstrate attainment of the federal lead standard before December 31, 2015.

3.2.1.2.7 *Sulfates*

Sulfates (SO_x) are chemical compounds which contain the sulfate ion and are part of the mixture of solid materials which make up PM₁₀. Most of the sulfates in the atmosphere are produced by oxidation of SO₂. Oxidation of sulfur dioxide yields sulfur trioxide (SO₃) which reacts with water to form sulfuric acid, which contributes to acid deposition. The reaction of sulfuric acid with basic substances such as ammonia yields sulfates, a component of PM₁₀ and PM_{2.5}.

Most of the health effects associated with fine particles and SO₂ at ambient levels are also associated with SO_x. Thus, both mortality and morbidity effects have been observed with an increase in ambient SO_x concentrations. However, efforts to separate the effects of SO_x from the effects of other pollutants have generally not been successful.

Clinical studies of asthmatics exposed to sulfuric acid suggest that adolescent asthmatics are possibly a subgroup susceptible to acid aerosol exposure. Animal studies suggest that acidic particles such as sulfuric acid aerosol and ammonium bisulfate are more toxic than non-acidic particles like ammonium sulfate. Whether the effects are attributable to acidity or to particles remains unresolved.

In 2010, the state 24-hour sulfate standard (25 µg/m³) was not exceeded in any of the monitoring locations in the district. No sulfate data were obtained at SSAB and Orange County stations in 2010. Historical sulfate data showed sulfate concentrations in the SSAB and Orange County areas to be well below the standard; thus, measurements in these areas have been discontinued. There are no federal sulfate standards.

3.2.1.2.8 *Vinyl Chloride*

Vinyl chloride is a colorless, flammable gas at ambient temperature and pressure. It is also highly toxic and is classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as A1 (confirmed carcinogen in humans) and by the International Agency for Research on Cancer (IARC) as 1 (known to be a human carcinogen)(Air Gas, 2010). At room temperature, vinyl chloride is a gas with a sickly sweet odor that is easily condensed. However, it is stored as a liquid. Due to the hazardous nature of vinyl chloride to human health there are no end products that use vinyl chloride in its monomer form. Vinyl chloride is a chemical intermediate, not a final product. It is an important industrial chemical chiefly used to produce polymer polyvinyl chloride (PVC). The process involves vinyl chloride liquid fed to polymerization reactors where it is converted from a monomer to a polymer PVC. The final product of the polymerization process is PVC in either a flake or pellet form. Billions of pounds of PVC are sold on the global market each year. From its flake or pellet form, PVC is sold to companies that heat and mold the PVC into end products such as PVC pipe and bottles.

In the past, vinyl chloride emissions have been associated primarily with sources such as landfills. Risks from exposure to vinyl chloride are considered to be a localized impacts rather than regional impacts. Because landfills in the district are subject to SCAQMD 1150.1, which contains stringent requirements for landfill gas collection and control,

potential vinyl chloride emissions are below the level of detection. Therefore, the SCAQMD does not monitor for vinyl chloride at its monitoring stations.

3.2.1.2.9 Volatile Organic Compounds

It should be noted that there are no state or national ambient air quality standards for VOCs because they are not classified as criteria pollutants. VOCs are regulated, however, because limiting VOC emissions reduces the rate of photochemical reactions that contribute to the formation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, contributing to higher PM₁₀ and lower visibility levels.

Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOCs because of interference with oxygen uptake. In general, ambient VOC concentrations in the atmosphere are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis, even at low concentrations. Some hydrocarbon components classified as VOC emissions are thought or known to be hazardous. Benzene, for example, one hydrocarbon component of VOC emissions, is known to be a human carcinogen.

3.2.1.2.10 Visibility

In 2005, annual average visibility at Rudiboux (Riverside), the worst case, was just over 10 miles (SCAQMD, 2007). With the exception of Lake County, which is designated in attainment, all of the air districts in California are currently designated as unclassified with respect to the CAAQS for visibility reducing particles.

In Class-I wilderness areas, which typically have visual range measured in tens of miles the deciview metric is used to estimate an individual's perception of visibility. The deciview index works inversely to visual range which is measured in miles or kilometers whereby a lower deciview is optimal. In the South Coast Air Basin, the Class-I areas are typically restricted to higher elevations (greater than 6,000 feet above sea level) or far downwind of the metropolitan emission source areas. Visibility in these areas is typically unrestricted due to regional haze despite being in close proximity to the urban setting. The 2005 baseline deciview mapping of the Basin is presented in Figure 3.2-5. All of the Class-I wilderness areas reside in areas having average deciview values less than 20 with many portions of those areas having average deciview values less than 10. By contrast, Rubidoux, in the Basin has a deciview value exceeding 30.

3.2.1.2.10.1 Federal Regional Haze Rule

The federal Regional Haze Rule, established by the U.S. EPA pursuant to CAA section 169A, establishes the national goal to prevent future and remedy existing impairment of visibility in federal Class I areas (such as federal wilderness areas and national parks). U.S. EPA's visibility regulations (40 CFR 51.300 through 51.309), require states to develop measures necessary to make reasonable progress towards remedying visibility impairment in these federal Class I areas. Section 169A and these regulations also require Best Available Retrofit Technology for certain large stationary sources that were put in place between 1962

and 1977. See Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations, 70 Fed. Reg. 39104 (July 6, 2005).

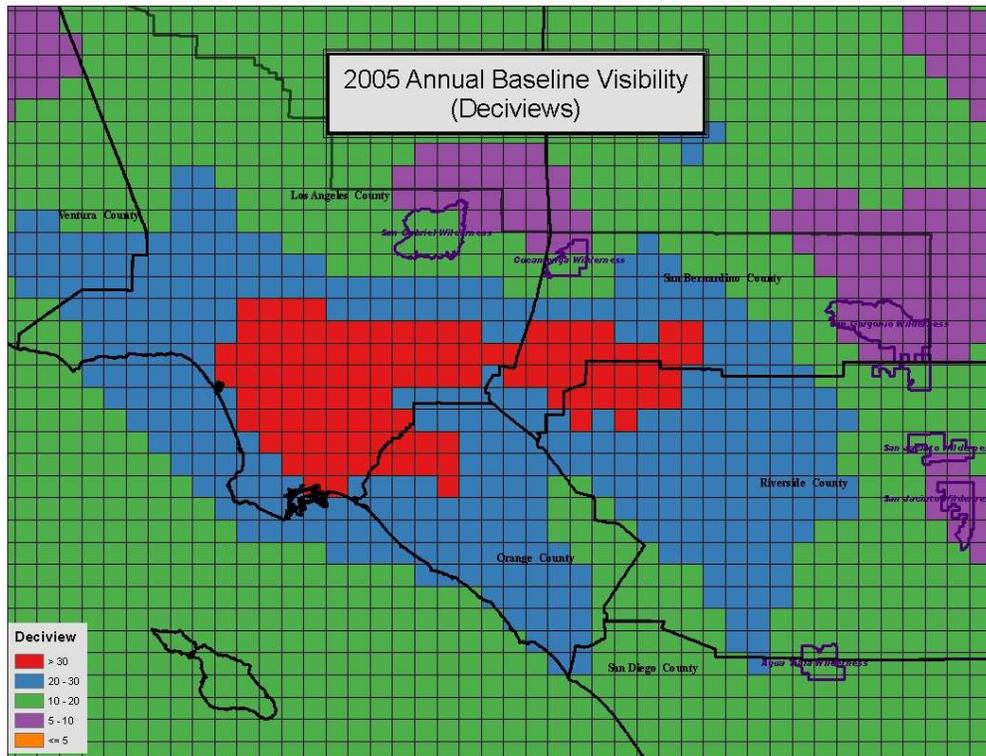


FIGURE 3.2-5

2005 Annual Baseline Visibility

3.2.1.2.10.2 *California Air Resources Board*

Since deterioration of visibility is one of the most obvious manifestations of air pollution and plays a major role in the public's perception of air quality, the state of California has adopted a standard for visibility or visual range. Until 1989, the standard was based on visibility estimates made by human observers. The standard was changed to require measurement of visual range using instruments that measure light scattering and absorption by suspended particles.

The visibility standard is based on the distance that atmospheric conditions allow a person to see at a given time and location. Visibility reduction from air pollution is often due to the presence of sulfur and nitrogen oxides, as well as particulate matter. Visibility degradation occurs when visibility reducing particles are produced in sufficient amounts such that the extinction coefficient is greater than 0.23 inverse kilometers (to reduce the visual range to less than 10 miles) at relative humidity less than 70 percent, 8-hour average (from 10:00 a.m. to 6:00 p.m.) according to the state standard. Future-year visibility in the Basin is projected empirically using the results derived from a regression analysis of visibility with

air quality measurements. The regression data set consisted of aerosol composition data collected during a special monitoring program conducted concurrently with visibility data collection (prevailing visibility observations from airports and visibility measurements from district monitoring stations). A full description of the visibility analysis is given in Appendix V of the 2012 AQMP.

With future year reductions of PM_{2.5} from implementation of all proposed emission controls for 2015, the annual average visibility would improve from 10 miles (calculated for 2008) to over 20 miles at Rubidoux, for example. Visual range in 2021 at all other Basin sites is expected to equal or exceed the Rubidoux visual range. Visual range is expected to double from the 2008 baseline due to reductions of secondary PM_{2.5}, directly emitted PM_{2.5} (including diesel soot) and lower nitrogen dioxide concentrations as a result of 2007 AQMP controls.

To meet Federal Regional Haze Rule requirements, ~~the CARB California Air Resources Board~~ adopted the California Regional Haze Plan on January 22, 2009, addressing California's visibility goals through 2018. As stated in Table 3.3-12 above, ~~the~~ California's statewide standard (applicable outside of the Lake Tahoe area) for Visibility Reducing Particles is an extinction coefficient of 0.23 per kilometer over an 8-hour averaging period. This translates to visibility of ten miles or more due to particles when relative humidity is less than 70 percent.

3.2.2 Non-Criteria Pollutants

Although the SCAQMD's primary mandate is attaining the State and National Ambient Air Quality Standards for criteria pollutants within the district, SCAQMD also has a general responsibility pursuant to HSC §41700 to control emissions of air contaminants and prevent endangerment to public health. Additionally, state law requires the SCAQMD to implement airborne toxic control measures (ATCM) adopted by CARB, and to implement the Air Toxics "Hot Spots" Act. As a result, the SCAQMD has regulated pollutants other than criteria pollutants such as TACs, greenhouse gases and stratospheric ozone depleting compounds. The SCAQMD has developed a number of rules to control non-criteria pollutants from both new and existing sources. These rules originated through state directives, CAA requirements, or the SCAQMD rulemaking process.

In addition to promulgating non-criteria pollutant rules, the SCAQMD has been evaluating AQMP control measures as well as existing rules to determine whether or not they would affect, either positively or negatively, emissions of non-criteria pollutants. For example, rules in which VOC components of coating materials are replaced by a non-photochemically reactive chlorinated substance would reduce the impacts resulting from ozone formation, but could increase emissions of toxic compounds or other substances that may have adverse impacts on human health.

The following subsections summarize the existing setting for the two major categories of non-criteria pollutants: compounds that contribute to TACs global climate change, and stratospheric ozone depletion.

3.2.2.1 Air Quality – Toxic Air Contaminants

3.2.2.1.1 *Federal*

Under Section 112 of the CAA, U.S. EPA is required to regulate sources that emit one or more of the 187 federally listed hazardous air pollutants (HAPs). HAPs are air toxic pollutants identified in the CAA, which are known or suspected of causing cancer or other serious health effects. The federal HAPs are listed on the U.S. EPA website at <http://www.epa.gov/ttn/atw/orig189.html>. In order to implement the CAA, approximately 100 National Emission Standards for Hazardous Air Pollutants (NESHAPs) have been promulgated by U.S. EPA for major sources (sources emitting greater than 10 tons per year of a single HAP or greater than 25 tons per year of multiple HAPs). The SCAQMD can either directly implement NESHAPs or adopt rules that contain requirements at least as stringent as the NESHAP requirements. However, since NESHAPs often apply to sources in the district that are controlled, many of the sources that would have been subject to federal requirements already comply or are exempt.

In addition to the major source NESHAPs, U.S. EPA has also controlled HAPs from urban areas by developing Area Source NESHAPs under their Urban Air Toxics Strategy. U.S. EPA defines an area source as a source that emits less than 10 tons annually of any single hazardous air pollutant or less than 25 tons annually of a combination of hazardous air pollutants. The CAA requires the U.S. EPA to identify a list of at least 30 air toxics that pose the greatest potential health threat in urban areas. U.S. EPA is further required to identify and establish a list of area source categories that represent 90 percent of the emissions of the 30 urban air toxics associated with area sources, for which Area Source NESHAPs are to be developed under the CAA. U.S. EPA has identified a total of 70 area source categories with regulations promulgated for more than 30 categories so far. [Appendix A lists key NESHAPs recently adopted or amended by U.S. EPA.](#)

The federal toxics program recognizes diesel engine exhaust as a health hazard, however, diesel particulate matter itself is not one of their listed toxic air contaminants. Rather, each toxic compound in the speciated list of compounds in exhaust is considered separately. Although there are no specific NESHAP regulations for diesel PM, diesel particulate emission reductions are realized through federal regulations including diesel fuel standards and emission standards for stationary, marine, and locomotive engines; and idling controls for locomotives.

3.2.2.1.2 *State*

The California air toxics program was based on the CAA and the original federal list of hazardous air pollutants. The state program was established in 1983 under the Toxic Air Contaminant Identification and Control Act, Assembly Bill (AB) 1807, Tanner. Under the state program, toxic air contaminants are identified through a two-step process of risk identification and risk management. This two-step process was designed to protect residents from the health effects of toxic substances in the air.

3.2.2.1.2.1 *Control of TACs under the TAC Identification and Control Program*

California's TAC identification and control program, adopted in 1983 as AB 1807, is a two-step program in which substances are identified as TACs, and ATCMs are adopted to control emissions from specific sources. CARB has adopted a regulation designating all 188 federal hazardous air pollutants (HAPs) as TACs.

ATCMs are developed by CARB and implemented by the SCAQMD and other air districts through the adoption of regulations of equal or greater stringency. Generally, the ATCMs reduce emissions to achieve exposure levels below a determined health threshold. If no such threshold levels are determined, emissions are reduced to the lowest level achievable through the best available control technology unless it is determined that an alternative level of emission reduction is adequate to protect public health.

Under California law, a federal NESHAP automatically becomes a state ATCM, unless CARB has already adopted an ATCM for the source category. Once a NESHAP becomes an ATCM, CARB and each air pollution control or air quality management district have certain responsibilities related to adoption or implementation and enforcement of the NESHAP/ATCM.

3.2.2.1.2.2 *Control of TACs under the Air Toxics "Hot Spots" Act*

The Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588) establishes a state-wide program to inventory and assess the risks from facilities that emit TACs and to notify the public about significant health risks associated with the emissions. Facilities are phased into the AB 2588 program based on their emissions of criteria pollutants or their occurrence on lists of toxic emitters compiled by the SCAQMD. Phase I consists of facilities that emit over 25 tons per year of any criteria pollutant and facilities present on the SCAQMD's toxics list. Phase I facilities entered the program by reporting their air TAC emissions for calendar year 1989. Phase II consists of facilities that emit between 10 and 25 tons per year of any criteria pollutant, and submitted air toxic inventory reports for calendar year 1990 emissions. Phase III consists of certain designated types of facilities which emit less than 10 tons per year of any criteria pollutant, and submitted inventory reports for calendar year 1991 emissions. Inventory reports are required to be updated every four years under the state law.

3.2.2.1.2.3 *Air Toxics Control Measures*

As part of its risk management efforts, CARB has passed state ATCMs to address air toxics from mobile and stationary sources. Some key ATCMs for stationary sources include reductions of benzene emissions from service stations, hexavalent chromium emissions from chrome plating, perchloroethylene emissions from dry cleaning, ethylene oxide emissions from sterilizers, and multiple air toxics from the automotive painting and repair industries.

Many of CARB's recent ATCMs are part of the CARB Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (DRRP) which was adopted in September 2000 (<http://www.arb.ca.gov/diesel/documents/rrpapp.htm>) with the goal of reducing diesel particulate matter emissions from compression ignition engines and

associated health risk by 75 percent by 2010 and 85 percent by 2020. The DRRP includes strategies to reduce emissions from new and existing engines through the use of ultra-low sulfur diesel fuel, add-on controls, and engine replacement. In addition to stationary source engines, the plan addresses diesel PM emissions from mobile sources such as trucks, buses, construction equipment, locomotives, and ships. [Appendix A lists key ATCMs recently adopted or amended by CARB.](#)

3.2.2.1.3 SCAQMD

SCAQMD has regulated criteria air pollutants using either a technology-based or an emissions limit approach. The technology-based approach defines specific control technologies that may be installed to reduce pollutant emissions. The emission limit approach establishes an emission limit, and allows industry to use any emission control equipment, as long as the emission requirements are met. The regulation of TACs often uses a health risk-based approach, but may also require a regulatory approach similar to criteria pollutants, as explained in the following subsections.

3.2.2.1.3.1 Rules and Regulations

Under the SCAQMD's toxic regulatory program there are 15 source-specific rules that target toxic emission reductions that regulate over 10,000 sources such as metal finishing, spraying operations, dry cleaners, film cleaning, gasoline dispensing, and diesel-fueled stationary engines to name a few. In addition, other source-specific rules targeting criteria pollutant reductions also reduce toxic emissions, such as Rule 461 which reduces benzene emissions from gasoline dispensing and Rule 1124 which reduces perchloroethylene, trichloroethylene, and methylene chloride emissions from aerospace operations.

New and modified sources of toxic air contaminants in the district are subject to Rule 1401 - New Source Review of Toxic Air Contaminants and Rule 212 - Standards for Approving Permits. Rule 212 requires notification of the SCAQMD's intent to grant a permit to construct a significant project, defined as a new or modified permit unit located within 1000 feet of a school (a state law requirement under AB 3205), a new or modified permit unit posing an maximum individual cancer risk of one in one million (1×10^{-6}) or greater, or a new or modified facility with criteria pollutant emissions exceeding specified daily maximums. Distribution of notice is required to all addresses within a 1/4-mile radius, or other area deemed appropriate by the SCAQMD. Rule 1401 currently controls emissions of carcinogenic and non-carcinogenic (health effects other than cancer) air contaminants from new, modified and relocated sources by specifying limits on cancer risk and hazard index (explained further in the following discussion), respectively. The rule lists nearly 300 TACs that are evaluated during the SCAQMD's permitting process for new, modified or relocated sources. During the past decade, more than 80 compounds have been added or had risk values amended. The addition of diesel particulate matter from diesel-fueled internal combustion engines as a TAC in March 2008 was the most significant of recent amendments to the rule. Rule 1401.1 sets risk thresholds for new and relocated facilities near schools. The requirements are more stringent than those for other air toxics rules in order to provide additional protection to school children.

3.2.2.1.3.2 *Air Toxics Control Plan*

In March 2000, the SCAQMD Governing Board approved the Air Toxics Control Plan (ATCP) which was the first comprehensive plan in the nation to guide future toxic rulemaking and programs. The ATCP was developed to lay out the SCAQMD's air toxics control program which built upon existing federal, state, and local toxic control programs as well as co-benefits from implementation of State Implementation Plan (SIP) measures. The concept for the plan was an outgrowth of the Environmental Justice principles and the Environmental Justice Initiatives adopted by the [SCAQMD](#) Governing Board in October 1997. Monitoring studies and air toxics regulations that were created from these initiatives emphasized the need for a more systematic approach to reducing toxic air contaminants. The intent of the plan was to reduce exposure to air toxics in an equitable and cost-effective manner that promotes clean, healthful air in the district. The plan proposed control strategies to reduce toxic air contaminants in the district implemented between years 2000 and 2010 through cooperative efforts of the SCAQMD, local governments, CARB and U.S. EPA.

3.2.2.1.3.3 *2003 Cumulative Impact Reduction Strategies*

The SCAQMD Governing Board approved a cumulative impacts reduction strategy in September 2003. The resulting 25 cumulative impacts strategies were a key element of the 2004 Addendum to the ATCP. The strategies included rules, policies, funding, education, and cooperation with other agencies. Some of the key SCAQMD accomplishments related to the cumulative impacts reduction strategies were:

- Rule 1401.1 which set more stringent health risk requirements for new and relocated facilities near schools
- Rule 1470 which established diesel PM emission limits and other requirements for diesel-fueled engines
- Rule 1469.1 which regulated chrome spraying operations
- Rule 410 which addresses odors from transfer stations and material recovery facilities
- Intergovernmental Review comment letters for CEQA documents
- SCAQMD's land use guidance document
- Additional protection in toxics rules for sensitive receptors, such as more stringent requirements for chrome plating operations and diesel engines located near schools

3.2.2.1.3.4 *Addendum to the ATCP*

The Addendum to the ATCP (Addendum) was adopted by the SCAQMD Governing Board in 2004 and served as a status report regarding implementation of the various mobile and stationary source strategies in the 2000 ATCP and introduced new measures to further address air toxics. The main elements of the Addendum were to address the progress made

in implementation of the 2000 ATCP control strategies provide a historical perspective of air toxic emissions and current air toxic levels; incorporate the Cumulative Impact Reduction Strategies approved by the [SCAQMD Governing Board](#) in 2003 and additional measures identified in the 2003 AQMP; project future air toxic levels to the extent feasible; and summarize future efforts to develop the next ATCP. Significant progress had been made in implementing most of the SCAQMD strategies from the 2000 ATCP and the 2004 Addendum. CARB has also made notable progress in mobile source measures via its Diesel Risk Reduction Plan, especially for goods movement related sources, while the U.S. EPA continued to implement their air toxic programs applicable to stationary sources

3.2.2.1.3.5 *Clean Communities Plan*

On November 5, 2010, the SCAQMD Governing Board approved the 2010 Clean Communities Plan (CCP). The CCP was an update to the 2000 Air Toxics Control Plan (ATCP) and the 2004 Addendum. The objective of the 2010 CCP is to reduce the exposure to air toxics and air-related nuisances throughout the district, with emphasis on cumulative impacts. The elements of the 2010 CCP are community exposure reduction, community participation, communication and outreach, agency coordination, monitoring and compliance, source-specific programs, and nuisance. The centerpiece of the 2010 CCP is a pilot study through which the SCAQMD staff will work with community stakeholders to identify and develop solutions community-specific to air quality issues in two communities: (1) the City of San Bernardino; and (2) Boyle Heights and surrounding areas.

3.2.2.1.3.6 *Control of TACs under the Air Toxics "Hot Spots" Act*

In October 1992, the SCAQMD Governing Board adopted public notification procedures for Phase I and II facilities. These procedures specify that AB 2588 facilities must provide public notice when exceeding the following risk levels:

- Maximum Individual Cancer Risk: greater than 10 in one million (10×10^{-6})
- Total Hazard Index: greater than 1.0 for TACs except lead, or > 0.5 for lead

Public notice is to be provided by letters mailed to all addresses and all parents of children attending school in the impacted area. In addition, facilities must hold a public meeting and provide copies of the facility risk assessment in all school libraries and a public library in the impacted area.

The AB2588 Toxics "Hot Spots" Program is implemented through Rule 1402. The SCAQMD continues to review health risk assessments submitted. Notification is required from facilities with a significant risk under the AB 2588 program based on their initial approved health risk assessments and will continue on an ongoing basis as additional and subsequent health risk assessments are reviewed and approved.

There are currently about 600 facilities in the SCAQMD's AB2588 program. Since 1992 when the state Health and Safety Code incorporated a risk reduction requirement in the program, the SCAQMD has reviewed and approved over 300 HRAs, 44 facilities were required to do a public notice, and 21 facilities were subject to risk reduction. Currently,

over 96 percent of the facilities in the program have cancer risks below ten in a million and over 98 percent have acute and chronic hazard indices of less than one.

3.2.2.1.3.7 *CEQA Intergovernmental Review Program*

The SCAQMD staff, through its Intergovernmental Review (IGR) provides comments to lead agencies on air quality analyses and mitigation measures in CEQA documents. The following are some key programs and tools that have been developed more recently to strengthen air quality analyses, specifically as they relate to exposure of mobile source air toxics:

- SCAQMD’s Mobile Source Committee approved the “Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions” (August 2002). This document provides guidance for analyzing cancer risks from diesel particulate matter from truck idling and movement (e.g., truck stops, warehouse and distribution centers, or transit centers), ship hotelling at ports, and train idling.
- Cal/EPA and CARB’s “Air Quality and Land Use Handbook: A Community Health Perspective” (April 2005), provides recommended siting distances for incompatible land uses.
- Western Riverside Council of Governments Air Quality Task Force developed a policy document titled, “Good Neighbor Guidelines for Siting New and/or Modified Warehouse/Distribution Facilities” (September 2005). This document provides guidance to local government on preventive measures to reduce neighborhood exposure to toxic air contaminants from warehousing facilities.

3.2.2.1.3.8 *Environmental Justice (EJ)*

Environmental justice has long been a focus of the SCAQMD. In 1990, the SCAQMD formed an Ethnic Community Advisory Group that was recently restructured as the Environmental Justice Advisory Group (EJAG). EJAG’s mission is to advise and assist SCAQMD in protecting and improving public health in SCAQMD’s most impacted communities through the reduction and prevention of air pollution.

In 1997, the [SCAQMD](http://www.aqmd.gov/ej/history.htm) Governing Board adopted four guiding principles and ten initiatives (<http://www.aqmd.gov/ej/history.htm>) to ensure environmental equity. Also in 1997, the [SCAQMD](http://www.aqmd.gov/ej/history.htm) Governing Board expanded the initiatives to include the “Children’s Air Quality Agenda” focusing on the disproportionate impacts of poor air quality on children. Some key initiatives that have been implemented were the Multiple Air Toxics Exposure Studies (MATES, MATES II and MATES III); the Clean Fleet Rules, the Cumulative Impacts strategies; funding for lower emitting technologies under the Carl Moyer Program; the Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning; a guidance document on Air Quality Issues in School Site Selection; and the 2000 Air Toxics Control Plan and its 2004 Addendum. Key initiatives focusing on communities and residents include the Clean Air Congress; the Clean School Bus Program; Asthma and Air Quality Consortium; Brain and Lung Tumor and Air Pollution Foundation; air quality

presentations to schools and community and civic groups; and Town Hall meetings. Technological and scientific projects and programs have been a large part of the SCAQMD's EJ program since its inception. Over time, the EJ program's focus on public education, outreach, and opportunities for public participation have greatly increased. Public education materials and other resources for the public are available on the SCAQMD's website (www.AQMD.gov)

3.2.2.1.3.9 *AB 2766 Subvention Funds*

AB2766 subvention funds, money collected by the state as part of vehicle registration and passed through to the SCAQMD, is used to fund projects of local cities that reduce motor vehicle air pollutants. The Clean Fuels Program, funded by a surcharge on motor vehicle registrations in the SCAQMD, reduces TAC emissions through co-funding projects to develop and demonstrate low-emission clean fuels and advanced technologies, and to promote commercialization and deployment of promising or proven technologies in Southern California.

3.2.2.1.3.10 *Carl Moyer Program*

Another program that targets diesel emission reductions is the Carl Moyer program which provides grants for projects that achieve early or extra emission reductions beyond what is required by regulations. Examples of eligible projects include cleaner on-road, off-road, marine, locomotive, and stationary agricultural pump engines. Other endeavors of the SCAQMD's Technology Advancement Office help to reduce diesel PM emissions through co-funding research and demonstration projects of clean technologies, such as low-emitting locomotives.

3.2.2.1.3.11 *Control of TACs with Risk Reduction Audits and Plans*

Senate Bill (SB) 1731, enacted in 1992 and codified at HSC §44390 et seq., amended AB 2588 to include a requirement for facilities with significant risks to prepare and implement a risk reduction plan which will reduce the risk below a defined significant risk level within specified time limits. SCAQMD Rule 1402 - Control of Toxic Air Contaminants From Existing Sources, was adopted on April 8, 1994, to implement the requirements of SB 1731.

In addition to the TAC rules adopted by SCAQMD under authority of AB 1807 and SB 1731, the SCAQMD has adopted source-specific TAC rules, based on the specific level of TAC emitted and the needs of the area. These rules are similar to the state's ATCMs because they are source-specific and only address emissions and risk from specific compounds and operations.

3.2.2.1.3.12 *Multiple Air Toxics Exposure Studies*

Multiple Air Toxics Exposure Study (MATES)

In 1986, SCAQMD conducted the first MATES Study to determine the Basin-wide risks associated with major airborne carcinogens. At the time, the state of technology was such that only twenty known air toxic compounds could be analyzed and diesel exhaust

particulate did not have an agency accepted carcinogenic health risk value. Toxic air contaminants are determined by the U.S. EPA, and by the Cal/EPA, including the Office of Environmental Health Hazard Assessment and the ARB. For purposes of MATES, the California carcinogenic health risk factors were used. The maximum combined individual health risk for simultaneous exposure to pollutants under the study was estimated to be 600 to 5,000 in one million.

Multiple Air Toxics Exposure Study II (MATES II)

At its October 10, 1997 meeting, the SCAQMD Governing Board directed staff to conduct a follow up to the MATES study to quantify the magnitude of population exposure risk from existing sources of selected air toxic contaminants at that time. The follow up study, MATES II, included a monitoring program of 40 known air toxic compounds, an updated emissions inventory of toxic air contaminants (including microinventories around each of the 14 microscale sites), and a modeling effort to characterize health risks from hazardous air pollutants. The estimated basin-wide carcinogenic health risk from ambient measurements was 1,400 per million people. About 70 percent of the basin wide health risk was attributed to diesel particulate emissions; about 20 percent to other toxics associated with mobile sources (including benzene, butadiene, and formaldehyde); about 10 percent of basin wide health risk was attributed to stationary sources (which include industrial sources and other certain specifically identified commercial businesses such as dry cleaners and print shops.)

Multiple Air Toxics Exposure Study III (MATES III)

MATES III was a follow up to previous air toxics studies in the Basin and was part of the SCAQMD Governing Board's 2003-04 Environmental Justice Workplan. The MATES III Study consists of several elements including a monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize carcinogenic health risk across the Basin. Besides toxics, additional measurements include organic carbon, elemental carbon, and total carbon, as well as, Particulate Matter (PM), including PM_{2.5}. It did not estimate mortality or other health effects from particulate exposures. MATES III revealed a general downward trend in air toxic pollutant concentrations with an estimated basin-wide lifetime carcinogenic health risk of 1,200 in one million. Mobile sources accounted for 94 percent of the basin-wide lifetime carcinogenic health risk with diesel exhaust particulate contributing to 84 percent of the mobile source basin-wide lifetime carcinogenic health risk. Non-diesel carcinogenic health risk was reduced declined by 50 percent from the MATES II values.

3.2.2.2.4 *Health Effects*

3.2.2.2.4.1 *Carcinogenic Health Risks from Toxic Air Contaminants*

One of the primary health risks of concern due to exposure to TACs is the risk of contracting cancer. The carcinogenic potential of TACs is a particular public health concern because it is currently believed by many scientists that there is no "safe" level of exposure to carcinogens. Any exposure to a carcinogen poses some risk of causing cancer. It is

currently estimated that about one in four deaths in the United States is attributable to cancer. About two percent of cancer deaths in the United States may be attributable to environmental pollution (Doll and Peto 1981). The proportion of cancer deaths attributable to air pollution has not been estimated using epidemiological methods.

3.2.2.2.4.2 *Non-Cancer Health Risks from Toxic Air Contaminants*

Unlike carcinogens, for most TAC non-carcinogens it is believed that there is a threshold level of exposure to the compound below which it will not pose a health risk. Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) develops Reference Exposure Levels (RELs) for TACs which are health-conservative estimates of the levels of exposure at or below which health effects are not expected. The non-cancer health risk due to exposure to a TAC is assessed by comparing the estimated level of exposure to the REL. The comparison is expressed as the ratio of the estimated exposure level to the REL, called the hazard index (HI).

3.2.2.2 Climate Change

Global climate change is a change in the average weather of the earth, which can be measured by wind patterns, storms, precipitation, and temperature. Historical records have shown that temperature changes have occurred in the past, such as during previous ice ages. Data indicate that the current temperature record differs from previous climate changes in rate and magnitude.

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs), comparable to a greenhouse, which captures and traps radiant energy. GHGs are emitted by natural processes and human activities. The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature. Global warming is the observed increase in average temperature of the earth's surface and atmosphere. The primary cause of global warming is an increase of GHGs in the atmosphere. The six major GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), and perfluorocarbon (PFCs). The GHGs absorb longwave radiant energy emitted by the Earth, which warms the atmosphere. The GHGs also emit longwave radiation both upward to space and back down toward the surface of the Earth. The downward part of this longwave radiation emitted by the atmosphere is known as the "greenhouse effect." Emissions from human activities such as fossil fuel combustion for electricity production and vehicles have elevated the concentration of these gases in the atmosphere.

CO₂ is an odorless, colorless greenhouse gas. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (human caused) sources of CO₂ are from burning coal, oil, natural gas, and wood.

CH₄ is a flammable gas and is the main component of natural gas. N₂O, also known as laughing gas, is a colorless greenhouse gas. Some industrial processes such as fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions also

contribute to the atmospheric load of N₂O. HFCs are synthetic man-made chemicals that are used as a substitute for chlorofluorocarbons (whose production was stopped as required by the Montreal Protocol) for automobile air conditioners and refrigerants. The two main sources of PFCs are primary aluminum production and semiconductor manufacture. SF₆ is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF₆ is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Scientific consensus, as reflected in recent reports issued by the United Nations Intergovernmental Panel on Climate Change, is that the majority of the observed warming over the last 50 years can be attributable to increased concentration of GHGs in the atmosphere due to human activities. Industrial activities, particularly increased consumption of fossil fuels (e.g., gasoline, diesel, wood, coal, etc.), have heavily contributed to the increase in atmospheric levels of GHGs. The United Nations Intergovernmental Panel on Climate Change constructed several emission trajectories of greenhouse gases needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of greenhouse gases at 400 to 450 ppm carbon dioxide-equivalent concentration is required to keep global mean warming below two degrees Celsius, which is assumed to be necessary to avoid dangerous impacts from climate change.

The potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, air quality impacts, and sea level rise. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases may increase, such as those spread by mosquitoes and other disease carrying insects. Those diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding, hurricanes, and wildfires can displace people and agriculture, which would have negative consequences. Drought in some areas may increase, which would decrease water and food availability. Global warming may also contribute to air quality problems from increased frequency of smog and particulate air pollution.

The impacts of climate change will also affect projects in various ways. Effects of climate change are rising sea levels and changes in snow pack. The extent of climate change impacts at specific locations remains unclear. It is expected that Federal, State and local agencies will more precisely quantify impacts in various regions. As an example, it is expected that the California Department of Water Resources will formalize a list of foreseeable water quality issues associated with various degrees of climate change. Once state government agencies make these lists available, they could be used to more precisely determine to what extent a project creates global climate change impacts.

3.2.2.2.1 *Federal*

3.2.2.2.1.1 *Greenhouse Gas Endangerment Findings*

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the CAA (). The Endangerment Finding stated that CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆ taken in combination endanger both the public health and the public welfare of current and future generations. The Cause or Contribute Finding stated that the combined emissions from motor vehicles and motor vehicle engines contribute to the greenhouse gas air pollution that endangers public health and welfare. These findings were a prerequisite for implementing GHG standards for vehicles. The U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) finalized emission standards for light-duty vehicles in May 2010 and for heavy-duty vehicles in August of 2011.

3.2.2.2.1.2 *Renewable Fuel Standard*

The RFS program was established under the Energy Policy Act (EPA) of 2005, and required 7.5 billion gallons of renewable-fuel to be blended into gasoline by 2012. Under the Energy Independence and Security Act (EISA) of 2007, the RFS program was expanded to include diesel, required the volume of renewable fuel blended into transportation fuel be increased from nine billion gallons in 2008 to 36 billion gallons by 2022, established new categories of renewable fuel and required U.S. EPA to apply lifecycle GHG performance threshold standards so that each category of renewable fuel emits fewer greenhouse gases than the petroleum fuel it replaces. The RFS is expected to reduce greenhouse gas emissions by 138 million metric tons, about the annual emissions of 27 million passenger vehicles, replacing about seven percent of expected annual diesel consumption and decreasing oil imports by \$41.5 billion.

3.2.2.2.1.3 *GHG Tailoring Rule*

On May 13, 2010, U.S. EPA finalized the Tailoring Rule to phase in the applicability of the PSD and Title V operating permit programs for GHGs. The rule was tailored to include the largest GHG emitters, while excluding smaller sources (restaurants, commercial facilities and small farms). The first step (January 2, 2011 to June 30, 2011) addressed the largest sources that contributed 65 percent of the stationary GHG sources. Title V GHG requirements were triggered only when affected facility owners/operators were applying, renewing or revising their permits for non-GHG pollutants. PSD GHG requirements were applicable only if sources were undergoing permitting actions for other non-GHG pollutants and the permitted action would increase GHG emission by 75,000 metric tons of CO₂e per year or more.

The second step (July 1, 2011 to June 30, 2013), included sources that emit or have the potential to emit 100,000 of CO₂e metric tons per year or more. Newly constructed sources that are not major sources for non-GHG pollutants would not be subject to PSD GHG requirements unless it emits 100,000 tons of CO₂e per year or more. Modifications to a major source would not be subject to PSD GHG requirements unless it generates a net

increase of 75,000 tons of CO₂e per year or more. Sources not subject to Title V would not be subject to Title V GHG requirements unless 100,000 tons of CO₂e per year or more would be emitted.

The third step of the Tailoring Rule was finalized on July 12, 2012. The third step determined not to lower the current PSD and Title V applicability thresholds for GHG-emitting sources established in the Tailoring Rule for Steps 1 and 2. The rule also promulgates regulatory revisions for better implementation of the federal program for establishing plantwide applicability limitations (PALs) for GHG emissions, which will improve the administration of the GHG PSD permitting programs.

3.2.2.2.1.4 *GHG Reporting Program*

U.S. EPA issued the Mandatory Reporting of Greenhouse Gases Rule (40 CFR Part 98) under the 2008 Consolidated Appropriations Act. The Mandatory Reporting of Greenhouse Gases Rule requires reporting of GHG data from large sources and suppliers under the Greenhouse Gas Reporting Program (GHGRP). Suppliers of certain products that would result in GHG emissions if released, combusted or oxidized; direct emitting source categories; and facilities that inject CO₂ underground for geologic sequestration or any purpose other than geologic sequestration are included. Facilities that emit 25,000 metric tons or more per year of GHGs in CO₂ equivalents (CO₂e) are required to submit annual reports to U.S. EPA. For the 2010 calendar, there were 6,260 entities that reported GHG data under this program, and 467 of the entities reporting were from California. Of the 3,200 million metric tons of CO₂e that were reported nationally, 112 million metric tons were from California. Power plants were the largest stationary source of direct U.S. GHG emissions with 2,326 million metric tons of CO₂e, followed by refineries with 183 million metric tons of CO₂e. CO₂ emissions accounted for largest share of direct emissions with 95 percent, followed by methane with four percent, and nitrous oxide and fluorinated gases representing the remaining one percent.

3.2.2.2.2 *State*

3.2.2.2.2.1 *Executive Order S-3-05*

In June 2005, then Governor Schwarzenegger signed Executive Order S-3-05, which established emission reduction targets. The goals would reduce GHG emissions to 2000 levels by 2010, then to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

3.2.2.2.2.2 *AB 32: Global Warming Solutions Act*

On September 27, 2006, Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, was enacted by the State of California and signed by Governor Schwarzenegger. AB 32 expanded on Executive Order #S-3-05. The legislature stated that “global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California.” AB 32 represents the first enforceable state-wide program in the United States to cap all GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB 32 lays out a

program to inventory and reduce greenhouse gas emissions in California and from power generation facilities located outside the state that serve California residents and businesses.

AB 32 requires CARB to:

- Establish a statewide GHG emissions cap for 2020, based on 1990 emissions by January 1, 2008;
- Adopt mandatory reporting rules for significant sources of GHG by January 1, 2008;
- Adopt an emissions reduction plan by January 1, 2009, indicating how emissions reductions will be achieved via regulations, market mechanisms, and other actions; and
- Adopt regulations to achieve the maximum technologically feasible and cost-effective reductions of GHG by January 1, 2011.

The combination of Executive Order #S-3-05 and AB 32 will require significant development and implementation of energy efficient technologies and shifting of energy production to renewable sources.

Consistent with the requirement to develop an emission reduction plan, CARB prepared a Scoping Plan indicating how GHG emission reductions will be achieved through regulations, market mechanisms, and other actions. The Scoping Plan was released for public review and comment in October 2008 and approved by CARB on December 11, 2008. The Scoping Plan calls for reducing greenhouse gas emissions to 1990 levels by 2020. This means cutting approximately 30 percent from business-as-usual (BAU) emission levels projected for 2020, or about 15 percent from today's levels. Key elements of CARB staff's recommendations for reducing California's greenhouse gas emissions to 1990 levels by 2020 contained in the Scoping Plan include the following:

- Expansion and strengthening of existing energy efficiency programs and building and appliance standards;
- Expansion of the Renewables Portfolio Standard to 33 percent;
- Development of a California cap-and-trade program that links with other Western Climate Initiative (WCI) Partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gases and pursuing policies and incentives to achieve those targets;
- Adoption and implementation of existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Targeted fees, including a public good charge on water use, fees on high GWP gases and a fee to fund the state's long-term commitment to AB 32 administration.

In response to the comments received on the Draft Scoping Plan and at the November 2008 public hearing, CARB made a few changes to the Draft Scoping Plan, primarily to:

- State that California “will transition to 100 percent auction” of allowances and expects to “auction significantly more [allowances] than the Western Climate Initiative minimum;”
- Make clear that allowance set-asides could be used to provide incentives for voluntary renewable power purchases by businesses and individuals and for increased energy efficiency;
- Make clear that allowance set-asides can be used to ensure that voluntary actions, such as renewable power purchases, can be used to reduce greenhouse gas emissions under the cap;
- Provide allowances are not required from carbon neutral projects; and
- Mandate that commercial recycling be implemented to replace virgin raw materials with recyclables.

3.2.2.2.3 *SB 97 - CEQA: Greenhouse Gas Emissions*

On August 24, 2007, Governor Schwarzenegger signed into law Senate Bill (SB) 97 – CEQA: Greenhouse Gas Emissions stating, “This bill advances a coordinated policy for reducing greenhouse gas emissions by directing the Office of Planning and Research (OPR) and the Resources Agency to develop CEQA guidelines on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions.” OPR’s amendments provided guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments did not establish a threshold for significance for GHG emissions. The amendments became effective on March 18, 2010. SB 97 was repealed on January 1, 2010.

3.2.2.2.4 *Office of Planning and Research - Technical Advisory on CEQA and Climate Change*

Consistent with SB 97, on June 19, 2008, OPR released its “Technical Advisory on CEQA and Climate Change,” which was developed in cooperation with the Resources Agency, the Cal/EPA, and the CARB. According to OPR, the “Technical Advisory” offers the informal interim guidance regarding the steps lead agencies should take to address climate change in their CEQA documents, until CEQA guidelines are developed pursuant to SB 97 on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions.

According to OPR, lead agencies should determine whether greenhouse gases may be generated by a proposed project, and if so, quantify or estimate the GHG emissions by type and source. Second, the lead agency must assess whether those emissions are individually or cumulatively significant. When assessing whether a project’s effects on climate change are “cumulatively considerable” even though its GHG contribution may be individually limited, the lead agency must consider the impact of the project when viewed in connection

with the effects of past, current, and probable future projects. Finally, if the lead agency determines that the GHG emissions from the project as proposed are potentially significant, it must investigate and implement ways to avoid, reduce, or otherwise mitigate the impacts of those emissions.

In 2009, total California greenhouse gas emissions were 457 million metric tons of carbon dioxide equivalent (MMTCO₂e); net emissions were 453 MMTCO₂e, reflecting the influence of sinks (net CO₂ flux from forestry). While total emissions have increased by 5.5 percent from 1990 to 2009, emissions decreased by 5.8 percent from 2008 to 2009 (485 to 457 MMTCO₂e). The total net emissions between 2000 and 2009 decreased from 459 to 453 MMTCO₂e, representing a 1.3 percent decrease from 2000 and a 6.1 percent increase from the 1990 emissions level. The transportation sector accounted for approximately 38 percent of the total emissions, while the industrial sector accounted for approximately 20 percent. Emissions from electricity generation were about 23 percent with almost equal contributions from in-state and imported electricity.

Per capita emissions in California have slightly declined from 2000 to 2009 (by 9.7 percent), but the overall nine percent increase in population during the same period offsets the emission reductions. From a per capita sector perspective, industrial per capita emissions have declined 21 percent from 2000 to 2009, while per capita emissions for ozone depleting substances (ODS) substitutes saw the highest increase (52 percent).

From a broader geographical perspective, the state of California ranked second in the United States for 2007 greenhouse gas emissions, only behind Texas. However, from a per capita standpoint, California had the 46th lowest GHG emissions. On a global scale, California had the 14th largest carbon dioxide emissions and the 19th largest per capita emissions. The GHG inventory is divided into three categories: stationary sources, on-road mobile sources, and off-road mobile sources.

3.2.2.2.2.5 *AB 1493 Vehicular Emissions: Carbon Dioxide*

Prior to the U.S. EPA and NHTSA joint rulemaking, the Governor signed Assembly Bill (AB) 1493 (2002). AB 1493 requires that CARB develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state.”

CARB originally approved regulations to reduce GHGs from passenger vehicles in September 2004, with the regulations to take effect in 2009. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1). California’s first request to the U.S. EPA to implement GHG standards for passenger vehicles was made in December 2005 and denied in March 2008. The U.S. EPA then granted California the authority to implement GHG emission reduction standards for new passenger cars, pickup trucks and sport utility vehicles on June 30, 2009.

On April 1, 2010, the CARB filed amended regulations for passenger vehicles as part of California’s commitment toward the National Program to reduce new passenger vehicle

GHGs from 2012 through 2016. The amendments will prepare California to harmonize its rules with the federal Light-Duty Vehicle GHG Standards and CAFE Standards (discussed above).

3.2.2.2.2.6 *Senate Bill 1368 (2006)*

SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a greenhouse gas emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) must establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

3.2.2.2.2.7 *Executive Order S-1-07 (2007)*

Governor Schwarzenegger signed Executive Order S-1-07 in 2007 which finds that the transportation sector is the main source of GHG emissions in California. The executive order proclaims the transportation sector accounts for over 40 percent of statewide GHG emissions. The executive order also establishes a goal to reduce the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020.

In particular, the executive order established a Low-Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the CEC, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the “life-cycle carbon intensity” of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by CEC on December 24, 2007) and was submitted to CARB for consideration as an “early action” item under AB 32. CARB adopted the LCFS on April 23, 2009.

3.2.2.2.2.8 *Senate Bill 375 (2008)*

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. As part of the alignment, SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) which prescribes land use allocation in that MPO’s Regional Transportation Plan (RTP). CARB, in consultation with MPOs, is required to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO’s SCS or APS for consistency with its assigned GHG emission reduction targets. If MPOs do not meet the GHG reduction

targets, transportation projects located in the MPO boundaries would not be eligible for funding programmed after January 1, 2012.

CARB appointed the Regional Targets Advisory Committee (RTAC), as required under SB 375, on January 23, 2009. The RTAC's charge was to advise ARB on the factors to be considered and methodologies to be used for establishing regional targets. The RTAC provided its recommendation to CARB on September 29, 2009. CARB must adopt final targets by September 30, 2010.

3.2.2.2.2.9 *Executive Order S-13-08 (2008)*

Governor Schwarzenegger signed Executive Order S-13-08 on November 14, 2008 which directs California to develop methods for adapting to climate change through preparation of a statewide plan. The executive order directs OPR, in cooperation with the Resources Agency, to provide land use planning guidance related to sea level rise and other climate change impacts by May 30, 2009. The order also directs the Resources Agency to develop a state Climate Adaptation Strategy by June 30, 2009 and to convene an independent panel to complete the first California Sea Level Rise Assessment Report. The assessment report is required to be completed by December 1, 2010 and required to meet the following four criteria:

1. Project the relative sea level rise specific to California by taking into account issues such as coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates;
2. Identify the range of uncertainty in selected sea level rise projections;
3. Synthesize existing information on projected sea level rise impacts to state infrastructure (e.g., roads, public facilities, beaches), natural areas, and coastal and marine ecosystems; and
4. Discuss future research needs relating to sea level rise in California.

3.2.2.2.2.10 *Senate Bills 1078 and 107 and Executive Order S-14-08 (2008)*

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, then Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020.

3.2.2.2.2.11 *SB X-1-2*

SB X1-2 was signed by Governor Edmund G. Brown, Jr., in April 2011. SB X1-2 created a new Renewables Portfolio Standard (RPS), which preempted the CARB's 33 percent Renewable Electricity Standard. The new RPS applies to all electricity retailers in the state including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. These entities must adopt the new RPS goals

of 20 percent of retail sales from renewables by the end of 2013, 25 percent by the end of 2016, and the 33 percent requirement by the end of 2020.

3.2.2.2.2 SCAQMD

The SCAQMD adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990. The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the AQMP. In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include support of the adoption of a California greenhouse gas emission reduction goal.

3.2.2.2.2.1 Basin GHG Policy and Inventory

The SCAQMD has established a policy, adopted by the SCAQMD Governing Board at its September 5, 2008 meeting, to actively seek opportunities to reduce emissions of criteria, toxic, and climate change pollutants. The policy includes the intent to assist businesses and local governments implementing climate change measures, decrease the agency's carbon footprint, and provide climate change information to the public. The SCAQMD will take the following actions:

1. Work cooperatively with other agencies/entities to develop quantification protocols, rules, and programs related to greenhouse gases;
2. Share experiences and lessons learned relative to the Regional Clean Air Incentives Market (RECLAIM) to help inform state, multi-state, and federal development of effective, enforceable cap-and-trade programs. To the extent practicable, staff will actively engage in current and future regulatory development to ensure that early actions taken by local businesses to reduce greenhouse gases will be treated fairly and equitably. SCAQMD staff will seek to streamline administrative procedures to the extent feasible to facilitate the implementation of AB 32 measures;
3. Review and comment on proposed legislation related to climate change and greenhouse gases, pursuant to the 'Guiding Principles for SCAQMD Staff Comments on Legislation Relating to Climate Change' approved at the [SCAQMD Governing Board's](#) Special Meeting in April 2008;
4. Provide higher priority to funding Technology Advancement Office (TAO) projects or contracts that also reduce greenhouse gas emissions;
5. Develop recommendations through a public process for an interim greenhouse gas CEQA significance threshold, until such time that an applicable and appropriate statewide greenhouse gas significance level is established. Provide guidance on analyzing greenhouse gas emissions and identify mitigation measures. Continue to consider GHG impacts and mitigation in SCAQMD lead agency documents and in comments when SCAQMD is a responsible agency;
6. Revise the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning to include information on greenhouse gas strategies as a resource for local governments. The Guidance Document will be consistent with state guidance, including CARB's Scoping Plan;

7. Update the Basin's greenhouse gas inventory in conjunction with each Air Quality Management Plan. Information and data used will be determined in consultation with CARB, to ensure consistency with state programs. Staff will also assist local governments in developing greenhouse gas inventories;
8. Bring recommendations to the [SCAQMD Governing Board](#) on how the agency can reduce its own carbon footprint, including drafting a Green Building Policy with recommendations regarding SCAQMD purchases, building maintenance, and other areas of products and services. Assess employee travel as well as other activities that are not part of a GHG inventory and determine what greenhouse gas emissions these activities represent, how they could be reduced, and what it would cost to offset the emissions;
9. Provide educational materials concerning climate change and available actions to reduce greenhouse gas emissions on the SCAQMD website, in brochures, and other venues to help cities and counties, businesses, households, schools, and others learn about ways to reduce their electricity and water use through conservation or other efforts, improve energy efficiency, reduce vehicle miles traveled, access alternative mobility resources, utilize low emission vehicles and implement other climate friendly strategies; and
10. Conduct conferences, or include topics in other conferences, as appropriate, related to various aspects of climate change, including understanding impacts, technology advancement, public education, and other emerging aspects of climate change science.

On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. SCAQMD's recommended interim GHG significance threshold proposal uses a tiered approach to determining significance. Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA. Tier 2 consists of determining whether or not the project is consistent with a GHG reduction plan that may be part of a local general plan, for example. Tier 3 establishes a screening significance threshold level to determine significance using a 90 percent emission capture rate approach, which corresponds to 10,000 metric tons of CO₂ equivalent emissions per year (MTCO₂e/year). Tier 4, to be based on performance standards, is yet to be developed. Under Tier 5 the project proponent would allow offsets to reduce GHG emission impacts to less than the proposed screening level. If CARB adopts statewide significance thresholds, SCAQMD staff plans to report back to the [SCAQMD Governing Board](#) regarding any recommended changes or additions to the SCAQMD's interim threshold.

Table 3.2-10 presents the GHG emission inventory by major source categories in calendar year 2008, as identified in the 2012 AQMP, for Basin. The emissions reported herein are based on in-basin energy consumption and do not include out-of-basin energy production (e.g., power plants, crude oil production) or delivery emissions (e.g., natural gas pipeline loss). Three major GHG pollutants have been included: the CO₂, N₂O, and CH₄. These GHG emissions are reported in MMTCO₂e. Mobile sources generate 59.4 percent of the

TABLE 3.2-10
2008 GHG Emissions for Basin

CODE	Source Category	Emission (TPD)			Emission (TPY)			MMTONS
		CO2	N2O	CH4	CO2	N2O	CH4	CO2e
Fuel Combustion								
10	Electric Utilities	34,303	.08	0.71	12,520,562	29.0	258	11.4
20	Cogeneration	872	.00	0.02	318,340	0.60	6.00	0.29
30	Oil and Gas Production (combustion)	2,908	.01	0.08	1,061,470	4.71	29.5	0.96
40	Petroleum Refining (Combustion)	44,654	.06	0.57	16,298,766	20.7	207	14.8
50	Manufacturing and Industrial	22,182	.06	0.48	8,096,396	20.9	174	7.35
52	Food and Agricultural Processing	927	.00	0.02	338,516	0.84	7.16	0.31
60	Service and Commercial	21,889	0.08	0.59	7,989,416	30.8	215	7.26
99	Other (Fuel Combustion)	2,241	0.2	0.16	818,057	8.58	58	0.75
Total Fuel Combustion		129,977	0.32	2.62	47,441,523	116	956	43.1
Waste Disposal								
110	Sewage Treatment	26.4	0.00	0.00	9,653	0.12	1.50	0.01
120	Landfills	3,166	0.04	505	1,155,509	14.0	184,451	4.57
130	Incineration	580	0.00	0.02	211,708	0.81	5.48	0.19
199	Other (Waste Disposal)			2.25	0	0.00	820	0.02
Total Waste Disposal		3,772	0.04	508	1,376,870	14.9	185,278	4.78
Cleaning and Surface Coatings								
210	Laundering							
220	Degreasing							
230	Coatings and Related Processes	27.1	0.00	0.21	9,890	0.02	78.0	0.01
240	Printing			0.00	0	0.00	0.00	0.00
250	Adhesives and Sealants			0.00	0	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	2,621	0.00	0.12	956,739	1.20	43.9	0.87
Total Cleaning and Surface Coatings		2,648	0.00	0.33	966,628	1.22	122	0.88
Petroleum Production and Marketing								
310	Oil and Gas Production	92.1	0.00	0.92	33,605	0.06	336	0.04
320	Petroleum Refining	770	0.00	1.65	280,932	0.36	603	0.27
330	Petroleum Marketing			83.8	0	0.00	30,598	0.58
399	Other (Petroleum Production and Marketing)			0.00	0	0.00	0	0.00
Total Petroleum Production and Marketing		862	0.00	86.4	314,536	0.42	31,537	0.89

TABLE 3.2-10 (Continued)
2008 GHG Emissions for Basin

CODE	Source Category	Emission (TPD)			Emission (TPY)			MMTONS
		CO2	N2O	CH4	CO2	N2O	CH4	CO ₂ e
Industrial Processes								
410	Chemical			0.92	0	0.00	337	0.01
420	Food and Agriculture			0.02	0	0.00	7.10	0.00
430	Mineral Processes	279	0.00	0.05	101,804	0.19	17.3	0.09
440	Metal Processes			0.02	0	0.00	9.10	0.00
450	Wood and Paper			0.00	0	0.00	0.00	0.00
460	Glass and Related Products			0.00	0	0.00	0.90	0.00
470	Electronics			0.00	0	0.00	0.00	0.00
499	Other (Industrial Processes)	0.08	0.00	0.47	28	0.00	172	0.00
Total Industrial Processes		279	0.00	1.49	101,832	0.19	543	0.10
Solvent Evaporation								
510	Consumer Products			0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent			0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers			0.00	0.00	0.00	0.00	0.00
540	Asphalt Paving/Roofing			0.07	0.00	0.00	24.20	0.00
Total Solvent Evaporation		0.00	0.00	0.07	0.00	0.00	24.20	0.00
Miscellaneous Processes								
610	Residential Fuel Combustion	38,850	0.12	0.95	14,180,326	45.3	347	12.9
620	Farming Operations			25.6	0.00	0.00	9,354	0.18
630	Construction and Demolition			0.00	0.00	0.00	0	0.00
640	Paved Road Dust			0.00	0.00	0.00	0	0.00
645	Unpaved Road Dust			0.00	0.00	0.00	0	0.00
650	Fugitive Windblown Dust			0.00	0.00	0.00	0	0.00
660	Fires			0.08	0.00	0.00	30.9	0.00
670	Waste Burning and Disposal			0.58	0.00	0.00	212	0.00
680	Utility Equipment				0.00	0.00		0.00
690	Cooking			0.64	0.00	0.00	235	0.00
699	Other (Miscellaneous Processes)			0.00	0.00	0.00	0	0.00
Total Miscellaneous Processes		38,850	0.12	27.9	14,180,326	45.3	10,179	13.1

TABLE 3.2-10 (CONCLUDED)

2008 GHG Emissions for Basin

CODE	Source Category	Emission (TPD)			Emission (TPY)			MMTONS
		CO2	N2O	CH4	CO2	N2O	CH4	CO2e
On-Road Motor Vehicles								
710	Light Duty Passenger Auto (LDA)	84,679	2.72	3.62	30,907,957	993	1,321	28.3
722	Light Duty Trucks 1 (T1 : up to 3750 lb.)	22,319	0.72	0.96	8,146,321	263	350	7.47
723	Light Duty Trucks 2 (T2 : 3751-5750 lb.)	33,495	1.08	1.43	12,225,619	392	523	11.2
724	Medium Duty Trucks (T3 : 5751-8500 lb.)	29,415	0.94	1.25	10,736,309	343	456	9.85
732	Light Heavy Duty Gas Trucks 1 (T4 : 8501-10000 lb.)	8,195	0.16	0.21	2,991,059	57.3	76.7	2.73
733	Light Heavy Duty Gas Trucks 2 (T5 : 10001-14000 lb.)	1,116	0.05	0.07	407,174	19.0	25.6	0.38
734	Medium Heavy Duty Gas Trucks (T6 : 14001-33000 lb.)	727	0.02	0.20	265,506	5.48	73.0	0.24
736	Heavy Heavy Duty Gas Trucks ((HHDGT > 33000 lb.)	102	0.01	0.01	37,198	2.19	2.56	0.03
742	Light Heavy Duty Diesel Trucks 1 (T4 : 8501-10000 lb.)	2,166	0.02	0.02	790,600	6.94	7.30	0.72
743	Light Heavy Duty Diesel Trucks 2 (T5 : 10001-14000 lb.)	735	0.01	0.01	268,413	2.56	2.92	0.24
744	Medium Heavy Duty Diesel Truck (T6 : 14001-33000 lb.)	5,422	0.02	0.02	1,978,974	8.40	8.76	1.80
746	Heavy Heavy Duty Diesel Trucks (HHDDT > 33000 lb.)	17,017	0.05	0.05	6,211,247	17.5	16.4	5.64
750	Motorcycles (MCY)	7,959	0.26	0.34	2,904,910	94.9	124	2.66
760	Diesel Urban Buses (UB)	2,135	0.00	0.00	779,389	1.46	1.46	0.71
762	Gas Urban Buses (UB)	166	0.02	0.02	60,654	8.40	6.94	0.06
770	School Buses (SB)	337	0.00	0.00	122,995	1.46	1.46	0.11
776	Other Buses (OB)	927	0.00	0.00	338,430	0.73	0.73	0.31
780	Motor Homes (MH)	568	0.03	0.04	207,431	11.0	14.6	0.19
Total On-Road Motor Vehicles		217,480	6.11	8.26	79,380,188	155	187	72.7
Other Mobile Sources								
810	Aircraft	37,455	0.10	0.09	13,670,930	36.5	31.8	12.4
820	Trains	586	0.00	0.00	213,835	0.45	1.38	0.19
830	Ships and Commercial Boats	3,452	0.01	0.02	1,259,927	2.64	8.13	1.14
	Other Off-road sources (construction equipment, airport equipment, oil and gas drilling equipment)	16,080	1.72	8.84	5,869,123	628	3,226	5.56
Total Other Mobile Sources		57,572	1.83	8.95	21,013,816	668	3,268	19.3
Total Stationary and Area Sources		176,388	0.49	626	64,381,716	178	228,639	63
Total On-Road Vehicles		217,480	6.11	8.26	79,380,188	155	187	73
Total Other Mobile*		57,572	1.83	8.95	21,013,816	668	3,268	19
Total 2008 Baseline GHG Emissions for Basin		451,440	8.42	644	164,775,719	1,001	232,094	155

equipment, airport equipment, oil and gas drilling equipment. The remaining 40.6 percent of the total Basin GHG emissions are from stationary and area sources. The largest stationary/area source is fuel combustion, which is 27.8 percent of the total Basin GHG emissions (68.6 percent of the GHG emissions from the stationary and area source category).

3.2.2.3 Air Quality – Ozone Depletion

The Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol) is an international treaty designed to phase out halogenated hydrocarbons (chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs)), which are considered ozone depleting substances (ODSs). The Montreal Protocol was first signed in September 16, 1987 and has been revised seven times. The United States ratified the original Montreal Protocol and each of its revisions.

3.2.2.3.1 *Federal*

Under Title VI of the CAA, U.S. EPA is responsible for programs that protect the stratospheric ozone layer. Title 40, Part 82 of the Code of Federal Regulations contains U.S. EPA's regulations to protect the ozone layer. U.S. EPA regulations phase out the production and import of ODSs consistent with the Montreal Protocol. ODSs are typically used as refrigerants or as foam blowing agents. ODS are regulated as Class I or Class II controlled substances. Class I substances have a higher ozone-depleting potential and have been completely phased out in the U.S., except for exemptions allowed under the Montreal Protocol. Class II substances are hydrochlorofluorocarbons (HCFCs), which are transitional substitutes for many Class I substances and are being phased out.

3.2.2.3.2 *State*

3.2.2.3.2.1 *AB 32: Global Warming Solutions Act*

Some ODS exhibit high global warming potentials. As stated in Section 3.2.2.2.23-1, ARB developed a cap and trade regulation under AB 32. The cap and trade regulation includes the Compliance Offset Protocol Ozone Depleting Substances Projects, which provides methods to quantify and report GHG emission reductions associated with the destruction of high global warming potential ODS sourced from and destroyed within the U.S. that would have otherwise been released to the atmosphere. The protocol must be used to quantify and report GHG reductions under the ARB's GHG Cap and Trade Regulation.

3.2.2.3.2.2 *Refrigerant Management Program*

As part AB 32, ARB adopted a regulation (Refrigerant Management Program) in 2009 to reduce GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal.

3.2.2.3.2.3 *HFC Emission Reduction Measures for Mobile Air Conditioning - Regulation for Small Containers of Automotive Refrigerant*

The automotive refrigerant small containers regulation applies to the sale, use, and disposal of small containers of automotive refrigerant with a GWP greater than 150. Emission reductions are achieved through implementation of four requirements: 1) use of a self-sealing valve on the container, 2) improved labeling instructions, 3) a deposit and recycling program for small containers, and 4) an education program that emphasizes best practices for vehicle recharging. This regulation went into effect on January 1, 2010 with a one-year sell-through period for containers manufactured before January 1, 2010. The target recycle rate is initially set at 90 percent, and rose to 95 percent beginning January 1, 2012.

3.2.2.3.2 *SCAQMD*

The SCAQMD adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990. The policy targeted a transition away from chlorofluorocarbons (CFCs) as an industrial refrigerant and propellant in aerosol cans. In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include the following directives for ODSs:

- phase out the use and corresponding emissions of chlorofluorocarbons (CFCs), methyl chloroform (1,1,1-trichloroethane or TCA), carbon tetrachloride, and halons by December 1995;
- phase out the large quantity use and corresponding emissions of hydrochlorofluorocarbons (HCFCs) by the year 2000;
- develop recycling regulations for HCFCs; and
- develop an emissions inventory and control strategy for methyl bromide.

3.2.3.3.2.1 *Rule 1122 – Solvent Degreasers*

Rule 1122 applies to all persons who own or operate batch-loaded cold cleaners, open-top vapor degreasers, all types of conveyORIZED degreasers, and air-tight and airless cleaning systems that carry out solvent degreasing operations with a solvent containing Volatile Organic Compounds (VOCs) or with a NESHAP halogenated solvent. Some ODSs (carbon tetrachloride and 1,1,1-trichloroethane) are NESHAP halogenated solvents.

3.2.2.3.2.2 *Rule 1171 – Solvent Cleaning Operations*

Rule 1171 reduces emissions of volatile organic compounds (VOCs), toxic air contaminants, and stratospheric ozone-depleting or globalwarming compounds from the use, storage and disposal of solvent cleaning materials in solvent cleaning operations and activities

3.2.2.3.2.3 *Rule 1411 - Recovery or Recycling of Refrigerants from Motor Vehicle Air Conditioners*

Rule 1411 prohibits release or disposal of refrigerants used in motor vehicle air conditioners and prohibits the sale of refrigerants in containers which contain less than 20 pounds of refrigerant.

3.2.2.3.2.4 *Rule 1415 - Reduction of Refrigerant Emissions from Stationary Air Conditioning Systems*

Rule 1415 reduces emissions of high-global warming potential refrigerants from stationary air conditioning systems by requiring persons subject to this rule to reclaim, recover, or recycle refrigerant and to minimize refrigerant leakage.

3.2.2.3.2.5 *Rule 1418 - Halon Emissions from Fire Extinguishing Equipment*

Rule 1418 reduce halon emissions by requiring the recovery and recycling of halon from fire extinguishing systems, by limiting the use of halon to specified necessary applications, and by prohibiting the sale of portable halon fire extinguishers that contain less than five pounds of halon.

SUBCHAPTER 3.3

ENERGY

Regulatory Setting

Energy Trends in General (Statewide)

Alternative Clean Transportation Fuels

Renewable Energy

Consumptive Uses

3.3 ENERGY

This subsection describes existing regulatory setting relative energy production and demand, including alternative and renewable fuels, and trends within California and the district.

3.3.1 Regulatory Setting

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation (U.S. DOT), United States Department of Energy (U.S. DOE), and United States Environmental Protection Agency (U.S. EPA) are three agencies with substantial influence over energy policies and programs. Generally, federal agencies influence transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy related research and development projects, and through funding for transportation infrastructure projects.

On the state level, the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are two agencies with authority over different aspects of energy. The CPUC regulates privately-owned utilities in the energy, rail, passenger transportation, telecommunications, and water fields. The CEC collects and analyzes energy-related data, prepares state-wide energy policy recommendations and plans, promotes and funds energy efficiency and renewable energy resources programs, plans and directs state response to energy emergencies, and regulates the power plant siting and transmission process. Some of the more relevant federal and state transportation-energy-related laws and plans are discussed in the following subsections.

3.3.1.1 Federal Regulations

3.3.1.1.1 *Energy Policy and Conservation Act*

The Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the U.S. would meet certain fuel economy goals. Through this Act, Congress established the first fuel economy standards for on-road motor vehicles in the U.S. Pursuant to the Act, the National Highway Traffic and Safety Administration, which is part of the U.S. DOT, is responsible for establishing additional vehicle standards and for revising existing standards. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (e.g., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with federal fuel economy standards is not determined for each individual vehicle model, but rather, compliance is determined on the basis of each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the U.S. The Corporate Average Fuel Economy (CAFE) program, which is administered by U.S. EPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. The U.S. EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information

generated under the CAFE program, the U.S. DOT is authorized to assess penalties for noncompliance.

3.3.1.1.2 National Energy Act

The National Energy Act of 1978 included the following statutes: Energy Tax Act, National Energy Conservation Policy Act, Power Plant and Industrial Fuel Use Act, and the National Gas Policy Act. The Power Plant and Industrial Fuel Use Act restricted the fuel used in power plants, however, these restrictions were lifted in 1987. The Energy Tax Act was superseded by the Energy Policy Acts of 1992 and 2005. The National Gas Policy Act gave the Federal Energy Regulatory Commission authority over natural gas production and established pricing guidelines. The National Energy Conservation Policy Act (NECPA). The NECPA set minimum energy performance standards, which replaced those in the EPCA. The federal standards preempted state standards. The NECPA was amended by the Energy Policy and Conservation Act Amendments of 1985.

3.3.1.1.3 Public Utility Regulatory Policies Act of 1978 (PURPA) (Public Law 95-617)

PURPA was passed in response to the unstable energy climate of the late 1970s. PURPA sought to promote conservation of electric energy. Additionally, PURPA created a new class of nonutility generators, small power producers, from which, along with qualified co-generators, utilities are required to buy power.

PURPA was in part intended to augment electric utility generation with more efficiently produced electricity and to provide equitable rates to electric consumers. Utility companies are required to buy all electricity from qualifying facilities (Qfs) at avoided cost (avoided costs are the incremental savings associated with not having to produce additional units of electricity). PURPA expanded participation of nonutility generators in the electricity market and demonstrated that electricity from nonutility generators could successfully be integrated with a utility's own supply. PURPA requires utilities to buy whatever power is produced by Qfs (usually cogeneration or renewable energy). The Fuel Use Act (FUA) of 1978 (repealed in 1987) also helped Qfs become established. Under FUA, utilities were not allowed to use natural gas to fuel new generating technologies, but Qfs, which were by definition not utilities, were able to take advantage of abundant natural gas and abundant new technologies (such as combined-cycle).

3.3.1.1.4 Energy Policy Act of 1992

The Energy Policy Act of 1992 is comprised of twenty-seven titles. It addressed clean energy use and overall national energy efficiency to reduce dependence on foreign energy, incentives for clean, radioactive waste protection standards, and renewable energy and energy conservation in buildings and efficiency standards for appliances.

3.3.1.1.5 Energy Policy Act of 2005

The Energy Policy Act of 2005 addresses energy efficiency; renewable energy requirements; oil, natural gas and coal; alternative-fuel use; tribal energy, nuclear security; vehicles and

vehicle fuels, hydropower and geothermal energy, and climate change technology. The Act provides revised annual energy reduction goals (two percent per year beginning in 2006), revised renewable energy purchase goals, federal procurement of Energy Star or Federal Energy Management Program-designated products, federal green building standards, and fuel cell vehicle and hydrogen energy system research and demonstration.

3.3.1.1.6 Clean Air Act

Section 211(o) of the Clean Air Act (the Act), as amended by the Energy Policy Act of 2005, requires the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) to annually determine a renewable fuel standard (RFS), which is applicable to refiners, importers, and certain blenders of gasoline, and publish the standard in the Federal Register by November 30 of each year. On the basis of this standard, each obligated party determines the volume of renewable fuel that it must ensure is consumed as motor vehicle fuel. This standard is calculated as a percentage, by dividing the amount of renewable fuel that the Act requires to be blended into gasoline for a given year by the amount of gasoline expected to be used during that year, including certain adjustments specified by the Act.

3.3.1.1.7 Corporate Average Fuel Economy (CAFE) Program

Compliance with federal fuel economy standards is determined on the basis of each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the U.S. The CAFE program, which is administered by the U.S. EPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. The U.S. EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, the USDOT is authorized to assess penalties for noncompliance.

3.3.1.1.8 Energy Independence and Security Act of 2007 (EISA)

The Energy Independence and Security Act of 2007 was signed into law by President Bush on December 19, 2007. The Act's objectives are to move the United States toward greater energy independence and security, increase the production of clean renewable fuels, protect consumers, increase the efficiency of products, buildings and vehicles, promote greenhouse gas research, improve the energy efficiency of the Federal government, and improve vehicle fuel economy.

The renewable fuel standard in the Act requires 36 billion gallons of ethanol per year by 2022, with corn ethanol limited to 15 billion gallons. The new CAFE standard is for light duty vehicles 35 miles per gallon by 2020. The Act also specifies that vehicle attribute-based standards are to be developed separately for cars and light trucks. The Act creates a CAFE credit and transfer program among manufacturers and across a manufacturer's fleet. It would allow an extension through 2019 of the CAFE credits specified under the Alternative Motor Fuels Act. It establishes appliance energy efficiency standards for boilers, dehumidifiers, dishwashers, clothes washers, external power supplies, commercial walk-in coolers and freezers, federal buildings; lighting energy efficiency standards for

general service incandescent lighting in 2012; and standards for industrial electric motor efficiency

3.3.1.2 State Regulations

The CEC and CPUC have jurisdiction over the investor-owned utilities (IOUs) in California. Within the district, the CEC also collects information for the Los Angeles Department of Water and Power (LADWP) and the Burbank, Glendale and Pasadena Municipal Utilities. The applicable state regulations, laws, and executive orders relevant to energy use are discussed below.

3.3.1.2.1 *California Building Energy Efficiency Standards: Title 24*

California established statewide building energy efficiency standards following legislative action. The legislation required the standards to be cost-effective based on the building life cycle and to include both prescriptive and performance-based approaches. The 2005 Building Energy Efficiency Standards were adopted in November 2003, took effect October 1, 2005, and followed by a 2008 update.

3.3.1.2.2 *AB 1007, Alternative Fuels Plan*

Assembly Bill (AB) 1007, (Pavley, Chapter 371, Statutes of 2005) requires the CEC to prepare a state plan to increase the use of alternative fuels in California (Alternative Fuels Plan). The CEC prepared the plan in partnership with CARB, and in consultation with the other state, federal and local agencies in December 2007. The Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

3.3.1.2.3 *AB 1493, Vehicle Climate Change Standards*

AB 1493 required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light-duty trucks. Regulations were adopted by CARB in September 2004. Compliance with these standards is expected to improve fuel efficiency.

3.3.1.2.4 *Senate Bill (SB) 1368, Greenhouse Gas Emissions Performance Standard for Major Power Plant Investments*

This law requires the CEC to develop and adopt by regulation a greenhouse gas emissions performance standard for long-term procurement of electricity by local publicly-owned utilities. The CEC must adopt the standard on or before June 30, 2007 and must be consistent with the standard adopted by the CPUC for load-serving entities under their jurisdiction on or before February 1, 2007. On January 25, 2007, and on May 23, 2007, respectively, the CPUC and the CEC adopted specific regulations regarding greenhouse gas emissions performance standards for IOUs and other electricity service providers under SB 1368. Compliance with these standards is expected to improve fuel use.

3.3.1.2.5 *California Solar Initiative*

On January 12, 2006, the CPUC approved the California Solar Initiative (CSI), which provides \$2.9 billion in incentives between 2007 and 2017. CSI is part of the Go Solar California campaign, and builds on 10 years of state solar rebates offered to California's IOU territories: Pacific Gas & Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E.) The California Solar Initiative is overseen by the CPUC, and includes a \$2.5 billion program for commercial and existing residential customers, funded through revenues and collected from gas and electric utility distribution rates. Furthermore, the CEC will manage \$350 million targeted for new residential building construction, utilizing funds already allocated to the CEC to foster renewable projects between 2007 and 2011.

Current incentives provide an upfront, capacity-based payment for a new system. In its August 24, 2006 decision, the CPUC shifted the program from volume-based to performance-based incentives and clarified many elements of the program's design and administration. These changes were enacted in 2007, when the CSI incentive system changed to performance-based payments.

3.3.1.2.6 *Reducing California's Petroleum Dependence*

The CEC and CARB produced a joint report Reducing California's Petroleum Dependence to highlight petroleum consumption and to establish a performance based goal to reduce petroleum consumption in California over the next thirty years. The report includes the following recommendations to the Governor and Legislature regarding petroleum:

- Adopt the recommended statewide goal of reducing demand for on-road gasoline and diesel to 15 percent below the 2003 demand level by 2020 and maintaining that level for the foreseeable future.
- Work with the California delegation and other states to establish national fuel economy standards that double the fuel efficiency of new cars, light trucks, and sport utility vehicles.
- Establish a goal to increase the use of non-petroleum fuels to 20 percent of on-road fuel consumption by 2020, and 30 percent by 2030.

The CEC will use these recommendations when developing its series of recommendations to the Governor and Legislature for the integrated energy plan for electricity, natural gas, and transportation fuels.

3.3.1.2.7 *Renewables Portfolio Standard*

California's renewables portfolio standard (RPS) requires retail sellers of electricity to increase their procurement of eligible renewable energy resources by at least one percent per year so that 20 percent of their retail sales are procured from eligible renewable energy resources by 2017. If a seller falls short in a given year, they must procure more renewables in succeeding years to make up the shortfall. Once a retail seller reaches 20 percent, they

need not increase their procurement in succeeding years. RPS was enacted via SB 1078 (Sher), signed September 2002 by Governor Davis. The CEC and the CPUC are jointly implementing the standard. In 2006, RPS was modified by Senate Bill 107 to require retail sellers of electricity to reach the 20 percent renewables goal by 2010. In 2011, RPS was further modified by Senate Bill 2 to require retailers to reach 33 percent renewable energy by 2020.

3.3.1.2.8 *California Environmental Quality Act (CEQA)*

Appendix F of the CEQA Guidelines describes the types of information and analyses related to energy conservation that are to be included in EIRs that are prepared pursuant to CEQA. In Appendix F of the CEQA Guidelines, energy conservation is described in terms of decreased per capita energy consumption, decreased reliance on natural gas and oil, and increased reliance on renewable energy sources. To assure that energy implications are considered in project decisions, EIRs must include a discussion of the potentially significant energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

3.3.1.3 Local Regulations

3.3.1.1.1 *Clean Cities Program*

The U.S. DOE Clean Cities Program promotes voluntary, locally based government/industry partnerships for the purpose of expanding the use of alternatives to gasoline and diesel fuel by accelerating the deployment of alternative fuel vehicles and building a local alternative fuel vehicle refueling infrastructure. The mission of the Clean Cities Program is to advance the nation's and energy security by supporting local decisions to adopt practices that contribute to the reduction of petroleum consumption. Clean Cities carries out this mission through a network of more than 80 volunteer coalitions, which develop public/private partnerships to promote alternative fuels and vehicles, fuel blends, fuel economy, hybrid vehicles, and idle reduction.

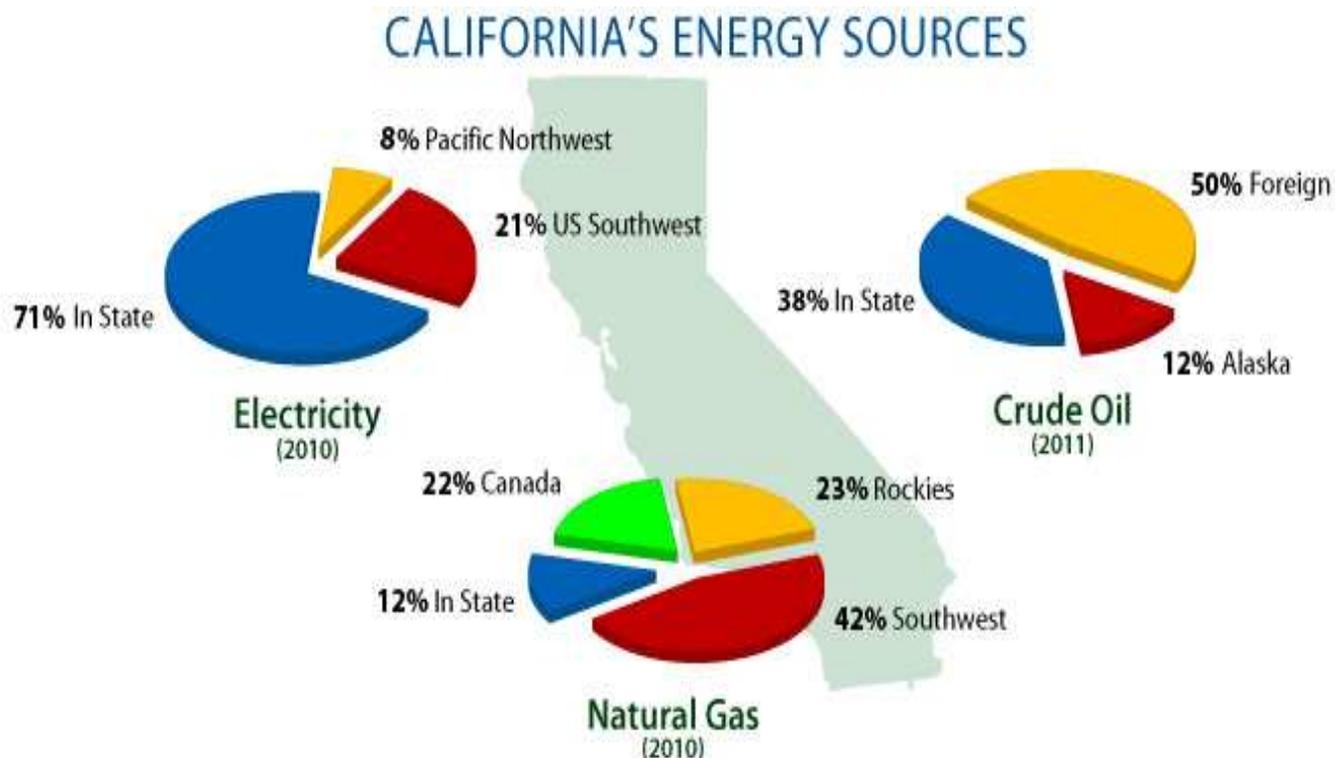
3.3.1.1.2 *San Gabriel Valley Energy Efficiency Partnership*

In April 2006, the SCAG's Regional Council authorized SCAG's Executive Director to enter into a partnership with SCE to incentivize energy efficiency programs in the San Gabriel Valley Subregion. The San Gabriel Valley Energy Wise Program (SGVEWP) agreement was fully executed on October 20, 2006 with the main goal to save a combined three million kilowatt-hours (kWh) by providing technical assistance and incentive packages to cities by 2008. The program has been extended seeks to reduce energy usage in the region by approximately five million kWh by 2012. The SGVEWP is funded by California utility customers and administered by SCE under the auspices of the CPUC.

3.3.2 Energy Trends In General (Statewide)

Figure 3.3-1 shows California's major sources of energy. In 2010, 71 percent of the electricity came from in-state sources, while 29 percent was imported into the state. The

electricity imported totaled 85,169 gigawatt hours (GWh), with 24,677 GWh coming from the Pacific Northwest, and 60,492 GWh from the Southwest. (Note: A gigawatt is equal to one million kilowatts). For natural gas in 2010, 42 percent came from the Southwest, 22 percent from Canada, 12 percent from in-state, and 23 percent from the Rockies. Also in 2010, 38 percent of the crude oil came from in state, with 12 percent coming from Alaska, and 50 percent being supplied by foreign sources (CEC, 2012).



Source: California Energy Commission

FIGURE 3.3-1

California's Major Sources of Energy

3.3.2.1 Electricity

Power plants in California provided approximately 71 percent of the total in-state electricity demand in 2010 of which 15 percent came from renewable sources such as biomass, geothermal, small hydro, solar, and wind. The Pacific Northwest provided another 8.5 percent of the total electricity demand of which 31 percent came from renewable sources. The Southwestern U.S. provided 20.8 percent of the total electricity demand, with 11.1 percent coming from renewable sources. In total, 13.7 percent of the total in-state electricity demand for 2010 came from renewable sources (CEC, 2012a). Five of the state's largest power plants are located in Basin (U.S. Energy Information Administration, 2012). The largest power plants in California are located in northern California. The Moss Landing Natural Gas Power Plant (net summer capacity 2,529 megawatts (MW)) is located in Monterey Bay in Monterey County and the Diablo Canyon Nuclear Plant (net summer

capacity 2,240 MW) is located in Avila Beach in San Luis Obispo County. The third and fourth largest power plants in California are the San Onofre Nuclear Generating Station (net summer capacity 2,150 MW) in San Diego and the AES Alamitos Natural Gas Power Generating Station (net summer capacity 1,997 MW) in Long Beach in Los Angeles County. The San Onofre Nuclear Generating Station is operated by Southern California Edison International, San Diego Gas & Electric Company, and the City of Riverside Utilities Department. It is currently not operating while it is undergoing repairs. [The Los Angeles Department of Water and Power \(LADWP\) County](#) operates [the](#) state's fifth and sixth largest power plants: [the Castaic Pump-Storage Power Plant¹](#) in Castaic (net summer capacity 1,620 MW) and Haynes Natural Gas Power Plant (net summer capacity 1,524MW) in Long Beach. The seventh and eighth largest power plants in California are outside of the Basin: the Ormond Beach Natural Gas Power Plant (net summer capacity 1,516 MW) in City and County of Oxnard and Pittsburg Natural Gas Power Plant (net summer capacity 1,311 MW) in the City of Pittsburg in Contra Costa County. The AES Redondo Beach Natural Gas Power Plant (net summer capacity 1,310 MW) in Redondo Beach is the ninth largest in the state (AES, 2010). The Helms Pumped Storage (net summer capacity 1,212 MW) in Sierra National Forest of Fresno County is the tenth largest power plant in the state.

Local electricity distribution service is provided to customers within southern California by one of two investor-owned utilities – either SCE or SDG&E – or by a publicly owned utility, such as the Los Angeles Department of Water and Power (LADWP) and the Imperial Irrigation District. SCE is the largest electric utility company in Southern California with a service area that covers all or nearly all of Orange, San Bernardino, and Ventura Counties, and most of Los Angeles and Riverside Counties. SCE delivers 78 percent of the retail electricity sales to residents and businesses in southern California. SDG&E provides local distribution service to the southern portion of Orange County (SCAG, 2012).

The LADWP is the largest of the publicly owned electric utilities in southern California. LADWP provides electricity service to the most of the customers located in the City of Los Angeles and provides approximately 20 percent of the total electricity demand in the Basin. The other publicly owned utilities in southern California include Anaheim, Azusa, Banning, Burbank, Cerritos, Colton, Glendale, Pasadena, Riverside, Vernon, and the Imperial Irrigation District (SCAG, 2012).

Table 3.3-1 shows the amount of electricity delivered to residential and nonresidential entities in the counties in the Basin.

¹ [The Castaic Pump-Storage Power plant is operated by the LADWP in cooperation with the Department of Water Resources \(DWR\).](#)

TABLE 3.3-1

2011 Electricity Use GWh (Aggregated, includes self generation and renewables)

Sector	Los Angeles	Orange	Riverside	San Bernardino	Total
Ag & Water Pump	1,453	1,600	623	483	4,159
Commercial	26,093	9,151	5,137	4,510	44,890
Industry	11,384	2,588	1,071	2,620	17,662
Mining	1,346	356	129	214	2,045
Residential	19,292	6,682	6,644	4,717	37,334
Streetlight	267	115	80	56	517
TCU	4,065	979	504	953	6,501
Total	63,899	21,470	14,188	13,553	113,109

Source: California Energy Commission –email sent by Steven Mac on August 24, 2012.

3.3.2.2 Natural Gas

Four regions supply California with natural gas. Three of them—the Southwestern U.S., the Rocky Mountains, and Canada—supplied 88 percent of all the natural gas consumed in California in 2010. The remainder is produced in California (CEC, 2012c).

Southern California Gas Company (SoCalGas), an investor-owned utility company, provides natural gas service throughout the district, except for the southern portion of Orange County, portions of San Bernardino County, and the City of Long Beach. The Long Beach Gas & Oil Department (LBGOD) is municipally owned and operated by the City of Long Beach, providing gas service for the cities of Long Beach and Signal Hill (LBGOD, 2012). San Diego Gas & Electric Company provides natural gas services to the southern portion of Orange County. In San Bernardino County, Southwest Gas Corporation provides natural gas services to Victorville, Big Bear, Barstow, and Needles (SCAG, 2012).

Table 3.3-2 provides the estimated use of natural gas in California by residential, commercial and industrial sectors. In 2010, about 50 percent of the natural gas consumed in California was for electric generation purposes (2,312 + 784/6,133).

California is currently ranked fourth among the oil producing states, behind Texas, Louisiana, and Alaska, respectively. Crude oil production in California averaged 629,500 barrels per day in 2009, a decline of 3.04 percent from 2008. Statewide oil production has declined to levels not seen since 1941 (DOGGR, [20092010](#)). California also ranks first in gasoline and jet fuel consumption and third in distillate fuel consumption (U.S. EIA, 2012).

3.3.2.3 Liquid Petroleum Fuels

California relies on oil produced within the state, Alaska, and foreign nations to supply its refineries and produce the petroleum that is used in automobiles and for other purposes. The percentage of oil that is imported from foreign nations has increased dramatically over the past 20 years. For example, in 1991, California imported just four percent of oil from

foreign sources (30.7 million barrels out of a total of 683.5 million barrels), and in 2011, California imported 49.9 percent of oil from foreign sources (300 million barrels out of a total of 600.7 million barrels). The long-term oil supply outlook for California remains one of declining in-state and Alaska supplies leading to increasing dependence on foreign oil sources (CEC, 2012d).

TABLE 3.3-2

California Natural Gas Demand 2010
(Million Cubic Feet per Day – MMcf/d)

Sector	Utility	Non-Utility	Total
Residential	1,193	--	1,193
Commercial	493	--	493
Natural Gas Vehicles	33	--	33
Industrial	810	--	810
Electric Generation	1,856	456	2,312
Enhanced Oil Recovery (EOR) Steaming	30	784	814
Wholesale / International + Exchange	230	--	230
Company Use and Unaccounted-for	85	--	85
EOR Cogeneration / Industrial	--	784	784
Total	4,729	1,403	6,133

Source: California Gas Report, 2010

Most gasoline and diesel fuel sold in California for on-road motor vehicles is refined in California to meet state-specific formulations required by CARB. Major petroleum refineries in California are concentrated in three counties: Contra Costa County in northern California, Kern County in central California, and Los Angeles County in southern California. In Los Angeles County, petroleum refineries are located mostly in the southern portion of the county (SCAG, 2012). In 2010 14,860 million gallons of gasoline and 1,414 million gallons of diesel were sold by retail facilities. Sales data reported does not include commercial fleets, government entities, private cardlocks (facilities open only to participating companies and not the general public), or rental facilities/equipment yards. The state total and sales by county are presented in Table 3.3.-3. In fiscal year 2011, 14,728,734,063 gallons of gasoline and 2,564,017,901 gallons of diesel were sold in California (California State Board of Equalization, 2012). The volume of gasoline also includes aviation fuel.

3.3.3 Alternative Clean Transportation Fuels

The demand for transportation fuels in California is increasing at a rapid rate. It is projected to grow by almost 35 percent over the next 20 years. Unless habits change, petroleum will be the primary source of California's transportation fuels for the foreseeable future. As demand continues to rise and in-state and Alaskan petroleum supplies diminish, California will rely more and more on foreign imports of crude oil (Consumer Energy Center, 2012).

TABLE 3.3-3

Retail Gasoline Sales by California Total and by County
(millions of gallons per year)

Description	California	Los Angeles	Orange	Riverside	San Bernardino
Gasoline ^a	14,860	3,658	1,406	952	902
Diesel ^b	1,414	235	47	93	149

^a CEC, 2012k

^b CEC, 2012l

Alternative fuels, as defined by the Energy Policy Act of 1992, include ethanol, natural gas, propane, hydrogen, biodiesel, electricity, methanol, and P-Series fuels, a family of renewable, non-petroleum liquid fuels that can substitute for gasoline. These fuels are being used worldwide in a variety of vehicle applications. Use of these fuels for transportation can generally reduce air pollutant emissions and can be domestically produced and, in some cases, derived from renewable sources. The Energy Policy Act of 2005 directed the U.S. DOE to carry out a study to plan for the transition from petroleum to hydrogen in a significant percentage of vehicles sold by 2020.

Use of renewable and other alternative fuels in the United States and California is expected to continue growing, primarily as a consequence of federal and state regulations mandating ever-increasing levels of renewable content in gasoline and diesel fuel, carbon reduction rules, and incentives for increasing alternative fuel consumption.

3.3.3.1 Biodiesel

Biodiesel is a domestically produced, renewable fuel that can be manufactured from vegetable oils, animal fats, or recycled restaurant greases. According to the U.S. DOE, pure biodiesel (B100) is considered an alternative fuel under Energy Policy Act. Lower-level biodiesel blends are not considered alternative fuels, but covered fleets can earn one Energy Policy Act credit for every 450 gallons of B100 purchased for use in blends of 20 percent or higher (SCAG, 2012).

Biodiesel is the only alternative fuel to have fully completed the health effects testing requirements under the Clean Air Act (CAA). The use of biodiesel in a conventional diesel engine results in substantial reductions of unburned hydrocarbons, carbon monoxide, and particulate matter compared to emissions from diesel fuel (Consumer Energy Center, 2012a).

Production of biodiesel in the United States dramatically increased in response to federal legislation that went into effect in 2005 included a \$1 per gallon blending credit for all biodiesel blended with conventional diesel fuel, but declined in 2009 and 2010 with the temporary loss of the subsidy in conjunction with poor production economics (high feedstock costs relative to market price of diesel fuel). Output is expected to rebound as refiners and other obligated parties strive to meet biodiesel blending requirements mandated

by the Renewables Fuels Standard Expansion (RFS2) and could set record levels of production (CEC, 2011).

Biodiesel use in California has been modest over the last several years due to an inadequate level of distribution infrastructure (lack of storage tanks at terminals) and varying approaches and interpretations of regulations controlling the concentration of biodiesel that is permissible in USTs. As such, biodiesel use in California is estimated to have been no higher than 20 million gallons over the last several years. Table 3.3-4 shows the reported retail sale of biodiesel was 1,673,555 gallons in 2010 (CEC, 2012m). Retail sales do not include distributed by commercial fleets, government entities, private cardlocks (unattended dispensing facilities not open to the public), rental facilities/equipment yards, and special user groups. Biodiesel use is expected to increase in California as the distribution and retail infrastructure improves, storage tank issues are fully resolved, and obligated parties under the state's LCFS turn to greater quantities of biodiesel to help achieve compliance with their sales of diesel fuel (CEC, 2011).

TABLE 3.3-4
Reported Retail Biodiesel Sales in California in 2010
(gallons per year)

Reporting Year	Conventional Fuel Component (Gallons)	Biodiesel Component (Gallons)	Total Biodiesel Throughput (Gallons)	Stations Reported
2010	926,043	747,512	1,673,555	44

Source: CEC, 2012m

3.3.3.2 Natural Gas

Natural gas is a mixture of hydrocarbons - mainly methane (CH₄) - and is produced either from gas wells or in conjunction with crude oil production worldwide and locally at relatively low cost. The interest in natural gas as an alternative fuel for automobiles stems mainly from its clean burning qualities, its domestic resource base, and its commercial availability to end users. Because of the gaseous nature of this fuel, it must be stored onboard a vehicle in either a compressed gaseous state (CNG) or in a liquefied state (LNG) (SCAG, 2012).

Natural gas vehicles have been introduced in a wide variety of commercial applications, from light-duty trucks and sedans (e.g., taxi cabs), to heavy-duty vehicles (e.g., transit buses, street sweepers, and school buses). In California, transit agency buses are some of the most visible CNG vehicles.

With consumption of natural gas increasing nationwide, 21 percent from 2006 to 2010 (U.S. EIA, 2012a), and California's demand expected to grow up to 96 percent in 2030 (CEC, 2011a), the fueling infrastructure for natural gas vehicles continues to grow. California has over 260 natural gas fueling stations. In southern California alone, there are more than 100 public fueling stations in major metropolitan areas from Los Angeles to the Mexican border (U.S. DOE, 2012).

3.3.3.3 Electricity

Electricity can be used as a transportation fuel to power battery electric and fuel cell vehicles. When used to power electric vehicles (EVs), electricity is stored in an energy storage device such as a battery. Fuel cell vehicles use electricity produced from an electrochemical reaction that takes place when hydrogen and oxygen are combined in the fuel cell "stack." The production of electricity using fuel cells takes place without combustion or pollution and leaves only two byproducts, heat and water.

Electric vehicles have several different charging systems: 120-volt, 240-volt, direct-current, and inductive charging. An electric vehicle that accepts 120-volt power can do so from any standard electrical outlet with a 12- or 16-amp dedicated branch circuit (with no other receptacles or loads on the circuit). A 240-volt system requires the installation of a home charging station and is available at most public charging stations. Direct current (DC) fast charging equipment (480 volt) provides 50 kW to the battery. This option enables charging along heavy traffic corridors and at public stations. Inductive charging equipment was installed for all electric vehicles in the early 1990s, such as the GM/Saturn EV-1, Toyota RAV4 EV, and the Chevy S10, and is still being used in certain areas. Some companies are working on inductive charging options for future electric drive vehicles. The most common types of EVs use either 120-volt or 240-volt electrical systems (SCAG, 2012).

The U.S. DOE's Advanced Vehicle Testing Activity (AVTA) promotes the use of EVs in commercial fleets in the United States. During 1996, AVTA requested and received proposals from interested groups to become qualified vehicle testers (QVT). SCE headed one QVT. According to SCE, California's approximately 20,000 megawatts of excess off-peak (nighttime) electricity capacity would allow the charging of millions of electro-drive technologies without the need for new power generation facilities (SCAG, 2012).

By 2020, the CEC estimates there will be more than 2.5 million plug-in electric vehicles (PEVs) in California. Over the 2011-2012 period, there will be significant investment in California's charging infrastructure. The Federal government's American Recovery and Reinvestment Act of 2009 funds matched with CEC program funds in California and other private and public funding are available to support PEV charging infrastructure for the deployment of PEVs in California. Currently there are about 250 public/commercial plug-in stations in Southern California, with more than 2,400 additionally planned (CEC, 2011).

One of the attractions of PEVs compared to internal combustion engine vehicles is the convenience of home charging instead of fueling at a gas station. ICF International estimates that in the early market, roughly 95 percent of charging will either be at home or at fleet facilities. Charging at home may require additional equipment and the broad consensus is that residential charging is the highest priority for deployment because consumers like the convenience and it encourages charging during periods of off-peak electrical demand. The CEC will consider providing PEV consumers with incentives to help defray the cost of home electric vehicle supply equipment (EVSE) (CEC, 2011).

3.3.3.4 Ethanol and E85

Ethanol, or ethyl alcohol, is a clear, colorless liquid that is the same alcohol that is found in alcoholic beverages. In California, ethanol is blended into gasoline (up to 10 percent) for use by most automobiles or in a more pure state (85 percent) as an alternative fuel.

As of June 2011, there was an estimated 472 million gallons of idle ethanol production capacity in the United States, about 3.2 percent of total production capacity of 14.65 billion gallons. Most of these facilities use corn as their sole or primary feedstock. The pace of construction and expansion of additional ethanol plants that use corn for a feed stock has slowed because the RFS2 regulations restrict affected facilities to use a maximum 15 billion gallons of year by 2015 of that corn based ethanol. Refiners and marketers can use even greater quantities of conventional ethanol but they would not earn additional RFS2 compliance credits.

Most ethanol used for fuel in California is being blended into gasoline at concentrations from five to ten percent, and has replaced methyl tertiary butyl ether (MTBE) as a gasoline component. Most gasoline supplied in the state today contains at least six percent ethanol (Consumer Energy Center, 2012b).

Blends of at least 85 percent ethanol are considered alternative fuels under the Energy Policy Act. E85, a blend of 85 percent ethanol and 15 percent gasoline is used in flexible fuel vehicles (FFVs) that are currently offered by most major auto manufacturers. FFVs can run on gasoline, E85, or any combination of the two and qualify as alternative fuel vehicles under Energy Policy Act regulations (SCAG, 2012).

In the United States, ethanol is most widely produced through fermentation and distillation of corn. Due to poor economic conditions, only three of the five California corn-based ethanol facilities are operating. These three facilities collectively produce 170 million gallons of ethanol per year. The two idle facilities have a production capacity of an additional 71 million gallons per year (CEC, 2011).

As of October 2009, there were nearly 409,636 registered FFVs in California which could use either gasoline or E85. Although there is a large population of FFVs in California, there are a modest but growing number of retail stations that offer E85. As of July 2011, there were approximately 60 stations that offered E85 to the public. Table 3.3-5 shows the reported retail sale of E85 was 1,995,812 gallons in 2010 (CEC, 2012m). Retail sales does not include distributed by commercial fleets, government entities, private cardlocks (unattended dispensing facilities not open to the public), rental facilities/equipment yards, and special user groups. With upgraded infrastructure and increasing availability of E85, sales in California are forecast to rise from 13.2 million gallons in 2009 to more than 3,000 million gallons by 2030 (CEC, 2011n).

During 2010, rail imports represented 95.8 percent of the ethanol consumed and in state production represented 4.2 percent. There were no marine imports of ethanol during 2010 due to unfavorable economics in foreign source countries. However, it is projected that ethanol imports from Brazil will be needed to meet demand mandated by the RFS2 and

LCFS requirements. Especially, since ethanol produced from sugarcane in Brazil is the type of commercially available ethanol that has the lowest carbon intensity

3.3.3.5 Methanol and M85

Methanol, also known as wood alcohol, can be used as an alternative fuel in flexible fuel vehicles that run on M85 (a blend of 85 percent methanol and 15 percent gasoline). Methanol was sold in California as part of a public-private partnership demonstration program between the state of California and oil companies. After the demonstration program ended, however, the oil companies discontinued selling M85. M85 is no longer available.

TABLE 3.3-5

Reported Retail E-85 Sales in California in 2010
(gallons per year)

Conventional Fuel Component)	Ethanol Component	Total E-85 Throughput	Count of Facilities
299,372	1,696,440	1,995,812	36

Source: CEC, 2012m

3.3.3.6 Hydrogen as a Transportation Fuel

Hydrogen is the simplest and lightest fuel. At atmospheric pressure and ambient temperatures hydrogen is a colorless, odorless, tasteless, and non-toxic gas that burns invisibly. Hydrogen is being explored for use in combustion engines and fuel cell electric vehicles. The ability to create hydrogen from a variety of resources and its clean-burning properties make it a desirable alternative fuel.

In 2011, there were approximately 250 hydrogen fuel cell vehicles (FCVs) operating in California, compared to only 15 registered in 2009. These vehicles use stored hydrogen, which is combined with oxygen from the atmosphere through an electrochemical reaction to produce electricity, which is then used to power an electric motor. Like battery electric vehicles, FCVs produce no tailpipe emissions and store the hydrogen fuel in on-board pressure tanks. Today's FCVs hold enough hydrogen in their on-board tanks to support driving ranges of roughly 250 miles. Current refueling is relatively quick, taking about three to five minutes per fill for a 700 bar tank (CEC, 2011).

Although there is no significant transportation distribution system currently for hydrogen transportation use, hydrogen could be transported and delivered using the established hydrogen infrastructure; for significant market penetration, the infrastructure will need further development (SCAG, 2012). Currently, there are 23 hydrogen stations in California, only five of which are public (U.S. DOE, 2012).

3.3.3.7 Propane (LPG)

Propane (C₃H₈) is a three-carbon alkane gas used as a clean-burning, high-energy alternative fuel for decades to power light-, medium-, and heavy-duty propane vehicles.

Propane, also known as liquefied petroleum gas (LPG) or autogas, is produced as a by-product of natural gas processing and petroleum refining. As an alternative fuel, it is stored under pressure inside a tank, as a colorless, odorless liquid and as pressure is released, the liquid propane vaporizes and turns into gas that is used for combustion. Propane has a high octane rating and excellent properties for spark-ignited internal combustion engines. It is non-toxic and presents no threat to soil, surface water, or groundwater.

Propane is a popular fuel choice for vehicles because there is already an infrastructure of pipelines, processing facilities, and storage for its efficient distribution. Domestic availability, high-energy density, clean-burning qualities, and its relatively low cost also add to its popularity.

Propane is the third most commonly used transportation fuel used in the United States, behind gasoline and diesel. Over time, propane has been used in several niche applications such as for fork-lifts, both inside and outside warehouses, and at construction sites. Use of propane can result in lower vehicle maintenance costs, lower emissions, and fuel costs savings when compared to conventional gasoline and diesel. In 2010, the California state fleet operated more than 1,100 vehicles that use propane as an alternative fuel and there are more than 2,200 facilities in California that dispense propane (U.S. DOE, 2012). Propane is an unregulated fuel in California (except for storage and safety issues). Prices are set by supply and demand. Because it is an unregulated commodity, no data is collected by the state on LPG sales or usage. The latest usage data presented by the CEC is that 26 million gallons of propane were dispensed in 2004 (CEC, 2012o).

3.3.4 Renewable Energy

Renewable energy is energy that comes from sources that regenerate and can be sustained indefinitely, unlike fossil fuels, which are exhaustible. The five most common renewable sources are biomass, hydropower, geothermal, wind, and solar. Unlike fossil fuels, non-biomass renewable sources of energy do not directly emit greenhouse gasses.

The production and use of renewable fuels has grown quickly in recent years as a result of higher prices for oil and natural gas, and a number of state and federal government incentives, including the Energy Policy Acts of 2002 and 2005. The use of renewable fuels is expected to continue to grow over the next 30 years, although projections show that reliance on non-renewable fuels to meet most energy needs will continue.

In 2011, consumption of renewable sources in the United States totaled about nine quadrillion British thermal units (Btu) or about nine percent of all energy used nationally. About 13 percent of U.S. electricity was generated from renewable sources in 2011 (U.S. EIA, 2012c). In 2009, 11.6 percent of all electricity came from renewable sources in California (CEC, 2012p).

The Renewables Portfolio Standard (RPS) requires investor-owned utilities, electric service providers, and community choice aggregators regulated by the CPUC to procure 33 percent of retail sales per year from eligible renewable sources by 2020. CPUC issues quarterly renewable energy progress report to the state Legislature, showing that the state's utilities

have met the goal of serving 20 percent of their electricity with renewable energy and are already on track to far surpass that goal in 2012 (CEC, 2012n). The quarterly reports report focuses on California's three large investor-owned utilities: Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E). These investor-owned utilities currently provide approximately 68 percent of the state's electric retail sales and analyzing this data provides significant insight into the state's RPS progress. On March 1, 2012, the large investor-owned utilities reported in their 2012 RPS Procurement Progress Reports that they served 20.6 percent of their electricity with RPS-eligible generation in 2011. Table 3.3-6 shows the renewable electricity use in Los Angeles, Orange, Riverside and San Bernardino in 2011.

TABLE 3.3-6

2011 Renewable Electricity Use in GW

Sector	Los Angeles	Orange	Riverside	San Bernardino	Total
Ag & Water Pump	5	0	3	1	10
Commercial	127	32	48	44	252
Industry	10	3	0	3	16
Mining	7	0	1	0	8
Residential	77	32	37	20	166
TCU	51	0	4	12	68
Total	277	67	94	80	519

Source: California Energy Commission –email sent by Steven Mac on August 24, 2012.

3.3.4.1 Hydroelectric Power

Hydroelectric power, or hydropower, is generated when hydraulic turbines connected to electrical generators are turned by the force of flowing or falling water. In 2007, hydro-produced electricity used by California totaled nearly 43,625 GWh or 14.5 percent of the total system power. In-state production accounted for 69.5 percent of all hydroelectricity, while imports from other states totaled 30.5 percent (CEC, 2012e).

California has nearly 343 hydroelectric facilities with an installed capacity about 13,057 MW. Hydro facilities are broken down into two categories: larger than 30 MW capacity facilities are called "large hydro"; smaller than 30 MW capacity facilities are considered "small hydro" and are totaled into the renewable energy portfolio standards. The amount of hydroelectricity produced varies each year, largely dependent on rainfall. During the drought from 1986 to 1992, production fell to less than 22,400 GWh (CEC, 2012e), while total generation increased from 211,028 GWh to 245,535 GWh over the same period of time.

The larger hydro plants on dams in California (such as Shasta, Folsom, Oroville, etc.) are operated by the U.S. Bureau of Reclamation and the state's Department of Water Resources. Smaller plants are operated by utilities, mainly PG&E and Sacramento Municipal Utility District. Licensing of hydro plants is done by the Federal Energy Regulatory Commission

with input from state and federal energy, environmental protection, fish and wildlife, and water quality agencies.

3.3.4.2 Geothermal Energy

Geothermal energy technologies use the clean, sustainable heat from the earth. Geothermal resources include the heat retained in shallow ground, hot water and rock found a few miles beneath the Earth's surface, and extremely high-temperature molten rock, also known as magma, located deep in the Earth. Geothermal energy can be used to generate electricity or used directly in many commercial and industrial applications.

The energy from high-temperature reservoirs (225°F - 600°F) can be used by three different types of geothermal power plants to produce electricity. Dry steam plants use steam from underground wells to rotate a turbine, which activates a generator to produce electricity. Binary cycle plants use the heat from lower-temperature reservoirs (225°F - 360°F) to boil a working fluid, which is then vaporized in a heat exchanger and used to power a generator. The water, which never comes into direct contact with the working fluid, is then injected back into the ground to be reheated. The flash stream plant, the most common type of geothermal power plant, uses water at temperatures above 360°F. As this hot water flows up through wells in the ground, the decrease in pressure causes some of the water to boil into steam which is then used to power a generator (U.S. DOE, 2012a).

The most developed of the high-temperature resource areas of the state is the Geysers. North of San Francisco, the Geysers were first tapped as a geothermal resource to generate electricity in 1960. It is one of only two locations in the world where a high-temperature, dry steam is found that can be directly used to turn turbines and generate electricity. Dry steam does not create condensation, which damages steam turbine blades. Other major geothermal locations in the state include the Imperial Valley area east of San Diego and the Coso Hot Springs area near Bakersfield.

Because of its location on the Pacific's "ring of fire" and because of tectonic plate conjunctions, California contains the largest amount of geothermal generating capacity in the United States. In 2007, geothermal energy in California produced 13,000 GWh of electricity. Combined with another 440 GWh of imported geothermal electricity, then geothermal energy produced 4.5 percent of the state's total system power. A total of 42 operating geothermal power plants with an installed capacity of 1,727 MW are in California, about two-thirds of the total United States' geothermal generation (CEC, 2012q).

Direct use systems harness the energy from low to moderate temperature reservoirs (68°-302°F) for various commercial and industrial uses, such as heating buildings, growing plants in greenhouses, drying crops, heating water at fish farms, and pasteurizing milk. Usually, a well is drilled into a geothermal reservoir to provide a steady stream of hot water. The water is brought up through the well, and a mechanical system -- piping, heat exchangers and controls -- delivers the heat directly for its intended use. A disposal system then either injects the cooled water underground or disposes of it on the surface (CEC, 2012f).

Forty-six of California's 58 counties have lower temperature resources for direct-use geothermal. In fact, the City of San Bernardino has developed one of the largest geothermal direct-use projects in North America, heating at least three dozen buildings - including a 15-story high-rise and government facilities - with fluids distributed through 15 miles of pipelines (Consumer Energy Center, 2012c).

3.3.4.3 Biomass Electricity

Biomass technologies break down organic matter to release stored energy from the sun. There are many types of biomass - organic matter such as plants, residue from agriculture and forestry, and the organic component of municipal and industrial wastes - that can now be used to produce fuels, chemicals, and power. This flexibility has resulted in the increased use of biomass technologies with 53 percent of all renewable energy consumed in the United States in 2007 coming from biomass (U.S. DOE, 2012b).

Biopower is the production of electricity or heat from biomass resources by technologies including direct combustion, co-firing, and anaerobic digestion.

3.3.4.3.1 *Direct Combustion*

Direct combustion using conventional boilers is the most common method of producing electricity from biomass. Boilers primarily burn waste wood products from the agriculture and wood-processing industries to produce steam that spins a turbine connected to a generator to produce electricity. Municipal solid waste power plants use direct combustion to create electricity through three methods:

- **Mass Burn:** Sorted municipal refuse is fed into a hopper to feed a boiler. The heat from the combustion process is used to turn water into steam to power a turbine-generator.
- **Refuse-Derived Fuel:** Pelletized or fluff municipal refuse, which comes from a by-product of a resource recovery operation where non-combustible materials are removed, are used to feed a boiler. The heat from the combustion process is used to turn water into steam to power a turbine-generator.
- **Pyrolysis/Thermal Gasification:** Related technologies where thermal decomposition of organic material at elevated temperatures with little (Thermal Gasification) to no (Pyrolysis) oxygen or air produces combustible gases. The gases are combusted to produce heat and turn water into steam to power a turbine-generator.

3.3.4.3.2 *Co-Firing*

Co-firing involves replacing a portion of the petroleum-based fuel in high-efficiency coal-fired boilers with biomass. Co-firing has been successfully demonstrated in most boiler technologies, including pulverized coal, cyclone, fluidized bed, and spreader stoker units.

Co-firing biomass can significantly reduce the sulfur dioxide emissions of coal-fired power plants and is a least-cost renewable energy option for many power producers.

3.3.4.3.3 *Anaerobic Digestion*

Anaerobic digestion, or methane recovery, is a common technology used to convert organic waste to electricity or heat. It is widely used in the agriculture, municipal waste, and brewing industries. In anaerobic digestion, organic matter is decomposed by bacteria in the absence of oxygen to produce methane and other byproducts that form a renewable natural gas (U.S. DOE, 2012b).

[The Los Angeles County Sanitation District \(LACSD\) operates a combined cycle turbine facility in Carson that uses digester gas to produce 20 MW. In addition, the LACSD operates a landfill gas Rankine cycle steam plant at the Puente Hills Landfill to produce approximately 48 MW.](#)

[Lastly, Royal Farms No. 1 in Tulare, California is a third example of uses—anaerobic digestion use at their facility.](#) Hog manure is slurried and sent to a Hypalon-covered lagoon for biogas generation. The collected biogas fuels a 70 kW engine-generator and a 100 kW engine-generator which helps the farm to be able to meet its own monthly electric and heat energy demand (CEC, 2012g).

There are about 132 waste-to-energy plants in California, with a total capacity of almost 1,000 MW. In 2007, 6,236 GWh of electricity in homes and businesses was produced from biomass: burning forestry, agricultural, and urban biomass; converting methane-rich landfill gas to energy; and processing wastewater and dairy biogas into useful energy. Biomass power plants produced 2.1 percent of the total electricity in California in 2007, or about one-fifth of all the renewable energy (CEC, 2012g).

3.3.4.4 Wind Power

Wind power is the conversion of the kinetic energy of the wind into a useful form of energy. Wind can be harnessed by wind turbines, windmills, windpumps, or sails. These technologies use wind power for practical purposes such as generating electricity, grinding grain, pumping water, or propelling a boat.

A wind turbine works much like the propeller of an airplane. The blades of a turbine are tilted at an angle and contoured such that the movement of the air is channeled creating low and high pressures on the blade that force it to move. The blade is connected to a shaft, which in turn is connected to an electrical generator. The mechanical energy of the turning blades is changed into electricity.

California has several wind farms, a group of wind turbines in the same location used to produce electricity, strategically placed in windy areas, as one of the problems with using wind to generate power is that wind is not always constant.

Wind energy plays an integral role in California's electricity portfolio. In 2007, turbines in wind farms generated 6,802 GWh of electricity - about 2.3 percent of the state's gross

system power. Additionally, hundreds of homes and farms are using smaller wind turbines to produce electricity (CEC, 2012h).

There are many windy areas in California. Problems with using wind to generate power are that it is not windy all year long nor is the wind speed constant. It is usually windier during the summer months when wind rushes inland from cooler areas, such as near the ocean, to replace hot rising air in California's warm central valleys and deserts. By placing wind turbines in these windy areas, California's wind power supply variance can be minimized. Utility-scale wind power generation facilities can be found in Altamont Pass, Solano, Pacheco Pass, the Tehachapi Ranges, and San Geronio Pass.

3.3.4.5 Solar (Photovoltaic Cells)

Solar energy technologies produce electricity from the energy of the sun through photovoltaic (PV) cells, also known as solar cells. PV cells are electricity-producing devices made of semiconductor materials coming in many sizes and shapes, often connected together to ultimately form PV systems. When light shines on a PV cell, the energy of absorbed light transfers to electrons in the atoms of the PV cell semiconductor material causing electrons to escape from their normal positions in the atoms and become part of the electric flow, or current, in an electrical circuit. While small PV systems can provide electricity for homes, businesses, and remote power needs, larger PV systems provide much more electricity for contribution to the electric power system.

The PV cells for small systems can be purchased in two formats: 1) as a stand-alone module that is attached to the roof or on a separate system; or, 2) using integrated roofing materials with dual functions -- as a regular roofing shingle and as a solar cell making electricity.

California's cumulative installed capacity of PV systems in 1998 was 6.3 MW. In 2008, the capacity of PV systems reached about 440 MW, producing 661.5 GWh of electricity for the state (CEC, 2012i).

3.3.4.6 Solar Thermal Energy

Solar thermal energy (STE) is the technology for converting the sun's energy into thermal energy (heat) through solar thermal collectors. The U.S. EIA classifies solar thermal collectors into three categories:

- Low-temperature: Flat plate collectors are used to warm homes, buildings, and swimming pools.
- Medium-temperature: Flat plate collectors are used to heat water or air for residential and commercial uses.
- High-temperature: Mirrors or lenses are used to concentrate STE for electric power production.

Low and medium-temperature collectors can be further classified as either passive or active heating systems. In a passive system, air is circulated past a solar heat surface and through the building by convection (meaning that less dense warm air tends to rise while denser cool

air moves downward). No mechanical equipment is needed for passive solar heating. Active heating systems require a collector to absorb and collect solar radiation. Fans or pumps are used to circulate the heated air or heat absorbing fluid. Active systems often include some type of energy storage system.

High-temperature systems used in solar thermal power plants use the sun's rays to heat a fluid to very high temperatures through the use of mirrors or lenses. The fluid is then circulated through pipes so it can transfer its heat to water to produce steam. The steam, in turn, is converted into mechanical energy in a turbine and into electricity by a conventional generator coupled to the turbine.

California has 11 of the 13 solar thermal power plants in the United States. These facilities are concentrated in the desert areas of the state in the Mojave area. Solar thermal plants produced 675 GWh in 2007, or 0.22 percent of the state's total electricity production (CEC, 2012i).

California's electric utility companies are required to use renewable energy to produce 20 percent of their power by 2010 and 33 percent by 2020 and a main source of the required renewable energy will be solar energy. Many large solar energy projects are being proposed in California's desert area on federal Bureau of Land Management (BLM) land. The developments of 34 large solar thermal power plants have been proposed with a planned combined capacity of 24,000 MW (CEC, 2012i).

3.3.5 Consumptive Uses

3.3.5.1 Transportation

Transportation (i.e., the movement of people and goods from place to place) is an important end use of energy in California, accounting for approximately 40 percent of total statewide energy consumption in 2010, and 11.3 percent of total U.S. energy consumption (U.S. EIA, 2012). Nonrenewable energy products derived from crude oil, including gasoline, diesel, kerosene, and residual fuel, provide most of the energy consumed for transportation purposes by on-road motor vehicles (e.g., automobiles and trucks), locomotives, aircraft, and ships. In addition, energy is consumed in connection with construction and maintenance of transportation infrastructure, such as highways, rail facilities, runways, and shipping terminals. Trends in transportation-related technology foretell increased use of electricity and natural gas for transportation purposes.

Transportation energy is derived from a wide variety of petroleum products. Automobiles and trucks consume gasoline and diesel fuel. Turbine aircraft consume kerosene fuel; trucks and locomotives consume diesel fuel; and ships consume residual fuel oil. The transportation sector consumes relatively minor amounts of natural gas or electricity but propelled mainly by air quality laws and regulations, technological innovations in transportation are expected to increasingly rely on compressed natural gas and electricity as energy sources. Biodiesel, derived from plant sources such as used vegetable oils, is a small but growing source of transportation fuel. Vehicles powered by fuels other than gasoline or diesel are referred to as "alternative fuel vehicles" (SCAG, 2008).

3.3.5.2 Residential, Commercial, Industrial, and Other Uses

Major energy consumption sectors (in addition to transportation) include residential, commercial, industrial uses as well as street lighting, mining, and agriculture. Unlike transportation, these sectors primarily consume electricity and natural gas. Total annual electricity consumption in the SCAG region is approximately 123,678 million kWh (39,432 kWh for residential uses and 84,246 kWh for nonresidential uses) (SCAG, 2008). The residential, commercial, and industrial sectors account for approximately 30, 39, and 19 percent, respectively, of total regional electricity consumption. The agriculture, mining and other uses account for another 14 percent (CEC, 2005).

Within the residential sector, lighting, small appliances, and refrigeration account for most (approximately 60 percent) of the electricity consumption, and within the industrial and commercial sector, lighting, motors, and air cooling account for most (approximately 65 percent) of the electricity consumption. Electricity use by households varies depending on the local climate and on the housing type (e.g., single-family vs. multi-family), as per the four distinct geographic zones in the SCAG region: the cooler and more temperate coastal zone; an inland valley zone; the California central valley zone, and the desert zone, where temperatures are more extreme.

Californians consumed approximately 12,774 million therms of natural gas per year in 2010 (CEC, 2012r). Approximately, 4,662 million therms of natural gas per year were consumed in Los Angeles, Orange, Riverside and San Bernardino Counties (CEC, 2012s). The California Energy Commission (CEC) expects residential natural gas use to increase by 1.3 percent per year and commercial natural gas use to increase by 1.8 percent per year. Industrial natural gas demand increased in 2010 over 2009. The most recent data from the CEC show that the residential sector uses the largest amount of natural gas, both across the state and in the SCAG region. Statewide, the industrial sector was second in the amount of natural gas consumed. The commercial sector falls behind residential, mining, and industrial uses in natural gas consumption in the SCAG region and statewide. The agricultural sector accounts for only one percent of the natural gas use statewide and in the SCAG region.

3.3.5.3 Consumption Reduction Efforts

There are various policies and initiatives to reduce petroleum vehicle fuel consumption and increase the share of renewable energy generation and use in the region. These strategies include energy efficient building practices, smarter land use with access to public transportation, increasing automobile fuel efficiency, and participating in energy efficiency incentive program. All publicly-owned utilities and most municipal-owned utilities that provide electric and natural gas service also administer energy conservation programs. These programs typically include home energy audits; incentives for replacement of existing appliances with new, energy-efficient models; provision of resources to inform businesses on development and operation of energy-efficient buildings; and construction of infrastructure to accommodate increased use of motor vehicles powered by natural gas or electricity (CEC, 2012s).

SUBCHAPTER 3.4

HAZARDS AND HAZARDOUS MATERIALS

Introduction

Hazardous Materials Regulations

Emergency Response to Hazardous Materials and Waste Incidents

Hazardous Materials Incidents

Hazards Associated with Air Pollution Control, Coating Reformulations, and Alternative Fuels

3.4 HAZARDS AND HAZARDOUS MATERIALS

3.4.1 Introduction

The goal of the 2012 AQMP is to attain the federal PM_{2.5} ambient air quality standards and make expeditious progress in attaining the federal one-hour and eight-hour ozone standards thereby improving air quality and protecting public health. Some of the proposed 2012 AQMP control measures intended to improve overall air quality may have direct or indirect hazards and hazardous materials impacts associated with their implementation. Hazard concerns are related to the potential for fires, explosions or the release of hazardous materials/substances in the event of an accident or upset conditions.

The potential for hazards exist in the production, use, storage, and transportation of hazardous materials. Hazardous materials may be found at industrial production and processing facilities. Some facilities produce hazardous materials as their end product, while others use such materials as an input to their production process. Examples of hazardous materials used as consumer products include gasoline, solvents, and coatings/paints. Hazardous materials are stored at facilities that produce such materials and at facilities where hazardous materials are a part of the production process. Specifically, storage refers to the bulk handling of hazardous materials before and after they are transported to the general geographical area of use. Currently, hazardous materials are transported throughout the district via all modes of transportation including rail, highway, water, air, and pipeline.

The Initial Study for the 2012 AQMP identified the use of reformulated coatings, solvents, and consumer products, potential exposure to toxic air contaminants, flammability and toxicity of reformulated products, add-on control devices (e.g., SCRs), and use of alternative fuels and fuel additives as possibly increasing the potential for hazards.

3.4.2 Hazardous Materials Regulations

Incidents of harm to human health and the environment associated with hazardous materials have created a public awareness of the potential for adverse effects from careless handling and/or use of these substances. As a result, the use, storage and transport of hazardous materials are subject to numerous laws and regulations at all levels of government. The most relevant existing hazardous materials laws and regulations include hazardous materials management planning, hazardous materials transportation, hazardous materials worker safety requirements, hazardous waste handling requirements and emergency response to hazardous materials and waste incidents. Potential risk of upset is a factor in the production, use, storage and transportation of hazardous materials. Risk of upset concerns are related to the risks of explosions or the release of hazardous substances in the event of an accident or upset. The most relevant hazardous materials laws and regulations are summarized in the following subsection of this section.

3.4.2.1 Definitions

A number of properties may cause a substance to be hazardous, including toxicity, ignitability, corrosivity, and reactivity. The term "hazardous material" is defined in different ways for different regulatory programs. For the purposes of this [Final](#) Program EIR, the term "hazardous materials" refers to both hazardous materials and hazardous wastes. A hazardous material is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local regulatory agency or if it has characteristics defined as hazardous by such an agency. The California Health & Safety Code §25501 (k) defines hazardous material as follows:

"Hazardous material" means any material that because of its quantity, concentrations, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include but are not limited to hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Examples of the types of materials and wastes considered hazardous are hazardous chemicals (e.g., toxic, ignitable, corrosive, and reactive materials), radioactive materials, and medical (infectious) waste. The characteristics of toxicity, ignitability, corrosivity, and reactivity are defined in Title 22, California Code of Regulations (CCR), §66261.20-66261.24 and are summarized below:

Toxic Substances: Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability, or even death. For example, such substances can cause disorientation, acute allergic reactions, asphyxiation, skin irritation, or other adverse health effects if human exposure exceeds certain levels. (The level depends on the substances involved and are chemical-specific.) Carcinogens (substances that can cause cancer) are a special class of toxic substances. Examples of toxic substances include benzene (a component of gasoline and a suspected carcinogen) and methylene chloride (a common laboratory solvent and a suspected carcinogen).

Ignitable Substances: Ignitable substances are hazardous because of their ability to burn. Gasoline, hexane, and natural gas are examples of ignitable substances.

Corrosive Materials: Corrosive materials can cause severe burns. Corrosives include strong acids and bases such as sodium hydroxide (lye) or sulfuric acid (battery acid).

Reactive Materials: Reactive materials may cause explosions or generate toxic gases. Explosives, pure sodium or potassium metals (which react violently with water), and cyanides are examples of reactive materials.

3.4.2.2 Federal Regulations

The U.S. EPA is the primary federal agency charged with protecting human health and with safeguarding the natural environment over air, water, and land. The U.S. EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The U.S. EPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and Indian tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Since 1970, Congress has enacted numerous environmental laws that pertain to hazardous materials, for the U.S. EPA to implement as well as to other agencies at the federal, state and local level, as described in the following subsections.

3.4.2.2.1 *Toxic Substances Control Act*

The Toxic Substances Control Act (TSCA) was enacted by Congress in 1976 (see 15 U.S.C. §2601 et seq.) and gave the U.S. EPA the authority to protect the public from unreasonable risk of injury to health or the environment by regulating the manufacture, sale, and use of chemicals currently produced or imported into the United States. The TSCA, however, does not address wastes produced as byproducts of manufacturing. The types of chemicals regulated by the act fall into two categories: existing and new. New chemicals are defined as “any chemical substance which is not included in the chemical substance list compiled and published under [TSCA] section 8(b).” This list included all of chemical substances manufactured or imported into the United States prior to December 1979. Existing chemicals include any chemical currently listed under section 8 (b). The distinction between existing and new chemicals is necessary as the act regulates each category of chemicals in different ways. The U.S. EPA repeatedly screens both new and existing chemicals and can require reporting or testing of those that may pose an environmental or human-health hazard. The U.S. EPA can ban the manufacture and import of those chemicals that pose an unreasonable risk.

3.4.2.2.2 *Emergency Planning and Community Right-to-Know Act*

The Emergency Planning and Community Right-to-Know Act (EPCRA) is a federal law adopted by Congress in 1986 that is designed to help communities plan for emergencies involving hazardous substances. EPCRA establishes requirements for federal, state and local governments, Indian tribes, and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals. The Community Right-to-Know provisions help increase the public's knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment. There are four major provisions of EPCRA:

- 1) Emergency Planning (Sections 301 – 303) requires local governments to prepare chemical emergency response plans, and to review plans at least annually. These sections also require state governments to oversee and coordinate local planning efforts. Facilities that maintain Extremely Hazardous Substances (EHS) on-site (see 40 CFR Part 355 for the list of EHS chemicals) in quantities greater than

corresponding Threshold Planning Quantities must cooperate in the preparation of the emergency plan.

- 2) Emergency Release Notification (Section 304) requires facilities to immediately report accidental releases of EHS chemicals and hazardous substances in quantities greater than corresponding Reportable Quantities (RQs) as defined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to state and local officials. Information about accidental chemical releases must be made available to the public.
- 3) Hazardous Chemical Storage Reporting (Sections 311 – 312) requires facilities that manufacture, process, or store designated hazardous chemicals to make Material Safety Data Sheets (MSDSs) describing the properties and health effects of these chemicals available to state and local officials and local fire departments. These sections also require facilities to report to state and local officials and local fire departments, inventories of all on-site chemicals for which MSDSs exist. Lastly, information about chemical inventories at facilities and MSDSs must be available to the public.
- 4) Toxic Chemical Release Inventory (Section 313) requires facilities to annually complete and submit a Toxic Chemical Release Inventory Form for each Toxic Release Inventory (TRI) chemical that are manufactured or otherwise used above the applicable threshold quantities.

Implementation of EPCRA has been delegated to the State of California. The California Emergency Management Agency requires facilities to develop a Hazardous Materials Business Plan if they handle hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas or extremely hazardous substances above the threshold planning quantity. The Hazardous Materials Business Plan is provided to State and local emergency response agencies and includes inventories of hazardous materials, an emergency plan, and implements a training program for employees.

3.4.2.2.3 *Hazardous Materials Transportation Act*

Hazardous Materials Transportation Act: The Hazardous Material Transportation Act (HMTA), adopted in 1975 (see 49 U.S.C. 5101 – 5127), gave the Secretary of Transportation the regulatory and enforcement authority to provide adequate protection against the risks to life and property inherent in the transportation of hazardous material in commerce. The United States Department of Transportation (U.S. DOT) (see 49 CFR Parts 171-180) oversees the movement of hazardous materials at the federal level. The Hazardous Materials Transportation Act requires that carriers report accidental releases of hazardous materials to U.S. DOT at the earliest practical moment. Other incidents that must be reported include deaths, injuries requiring hospitalization, and property damage exceeding \$50,000. The hazardous material regulations also contain emergency response provisions which include incident reporting requirements. Reports of major incidents go to the National Response Center, which in turn is linked with CHEMTREC, a public service hotline established by the chemical manufacturing industry for emergency responders to

obtain information and assistance for emergency incidents involving chemicals and hazardous materials.

The Research and Special Programs Administration (RSPA) of the U.S. DOT implements the hazardous materials regulations. The regulations cover the definition and classification of hazardous materials, communication of hazards to workers and the public, packaging and labeling requirements, operational rules for shippers, and training. These regulations apply to interstate, intrastate, and foreign commerce by air, rail, ships, and motor vehicles, and also cover hazardous waste shipments. The Federal Aviation Administration Office of Hazardous Materials Safety is responsible for overseeing the safe handling of hazardous materials aboard aircraft. The Federal Railroad Administration oversees the transportation of hazardous materials by rail. The U.S. Coast Guard regulates the bulk transport of hazardous materials by sea. The Federal Highway Administration (FHWA) is responsible for highway routing of hazardous materials and issuing highway safety permits.

3.4.2.2.4 Hazardous Materials Waste Regulations

Resource Conservation and Recovery Act: The Resource Conservation and Recovery Act (RCRA) was adopted in 1976 (see 40 CFR Parts 238-282) and authorizes the U.S. EPA to control the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA regulation specifies requirements for generators, including waste minimization methods, as well as for transporters and for treatment, storage, and disposal facilities. The RCRA regulation also includes restrictions on land disposal of wastes and used oil management standards. Under RCRA, hazardous wastes must be tracked from the time of generation to the point of disposal. In 1984, RCRA was amended with addition of the Hazardous and Solid Waste Amendments, which authorized increased enforcement by the U.S. EPA, more strict hazardous waste standards, and a comprehensive Underground Storage Tank (UST) program. Likewise, the Hazardous and Solid Waste Amendments focused on waste reduction and corrective action for hazardous releases. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Amendments. Individual states may implement their own hazardous waste programs under RCRA, with approval by the U.S. EPA.

Comprehensive Environmental Response, Compensation and Liability Act: The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which is often commonly referred to as Superfund, is a federal statute that was enacted in 1980 to address abandoned sites containing hazardous waste and/or contamination. CERCLA was amended in 1986 by the Superfund Amendments and Reauthorization Act, and by the Small Business Liability Relief and Brownfields Revitalization Act of 2002.

CERCLA contains prohibitions and requirements concerning closed and abandoned hazardous waste sites; establishes liability of persons responsible for releases of hazardous waste at these sites; and creates a trust fund to provide for cleanup when no responsible party can be identified. The trust fund is funded largely by a tax on the chemical and petroleum industries. CERCLA also provides federal jurisdiction to respond directly to releases or impending releases of hazardous substances that may endanger public health or the environment.

CERCLA also enabled the revision of the National Contingency Plan (NCP) which provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the National Priorities List, which identifies hazardous waste sites eligible for long-term remedial action financed under the federal Superfund program.

Prevention of Accidental Releases and Risk Management Programs: Requirements pertaining to the prevention of accidental releases are promulgated in Section 112 (r) of the Clean Air Act Amendments of 1990 [42 U.S.C. 7401 et. Seq.]. The objective of these requirements was to prevent the accidental release and to minimize the consequences of any such release of a hazardous substance. Under these provisions, facilities that produce, process, handle or store hazardous substance have a duty to: 1) identify hazards which may result from releases using hazard assessment techniques; 2) design and maintain a safe facility and take steps necessary to prevent releases; and, 3) minimize the consequence of accidental releases that occur.

In accordance with the requirements in Section 112 (r), U.S. EPA adopted implementing guidelines in 40 CFR Part 68. Under this part, stationary sources with more than a threshold quantity of a regulated substance shall be evaluated to determine the potential for and impacts of accidental releases from any processes subject to the federal risk management requirements. Under certain conditions, the owner or operator of a stationary source may be required to develop and submit a Risk Management Plan (RMP). RMPs consist of three main elements: a hazard assessment that includes off-site consequences analyses and a five-year accident history, a prevention program, and an emergency response program.

3.4.2.2.5 *Hazardous Material Worker Safety Requirements*

Occupational Safety and Health Administration Act: The federal Occupational Safety and Health Administration (OSHA) is an agency of the United States Department of Labor that was created by Congress under the Occupational Safety and Health Act in 1970. OSHA is the agency responsible for assuring worker safety in the handling and use of chemicals in the workplace. Under the authority of the Occupational Safety and Health Act of 1970, OSHA has adopted numerous regulations pertaining to worker safety (see 29 CFR Part 1910). These regulations set standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries. Some OSHA regulations contain standards relating to hazardous materials handling to protect workers who handle toxic, flammable, reactive, or explosive materials, including workplace conditions, employee protection requirements, first aid, and fire protection, as well as material handling and storage. For example, facilities which use, store, manufacture, handle, process, or move hazardous materials are required to conduct employee safety training, have available and know how to use safety equipment, prepare illness prevention programs, provide hazardous substance exposure warnings, prepare emergency response plans, and prepare a fire prevention plan.

Subpart H is a pertinent section of 29 CFR Part 1910 which includes procedures and standards for safe handling, storage, operation, remediation, and emergency response activities involving hazardous materials and waste. Some key subsections in Subpart H include §1910.106 (Flammable and Combustible Liquids) and §1910.120 (Hazardous Waste

Operations and Emergency Response). The Hazardous Waste Operations and Emergency Response regulations contain requirements for worker training programs, medical surveillance for workers engaging in the handling of hazardous materials or wastes, and waste site emergency and remediation planning, for those who are engaged in specific clean-up, corrective action, hazardous material handling, and emergency response activities (see 29 CFR §1910.120 (a)(1)(i-v) and §1926.65 (a)(1)(i-v)).

Process Safety Management: As part of the numerous regulations pertaining to worker safety adopted by OSHA, specific requirements that pertain to Process Safety Management (PSM) of Highly Hazardous Chemicals were adopted in 29 CFR Part 1910.119 and 8 CCR §5189 to protect workers at facilities that have toxic, flammable, reactive or explosive materials. PSM program elements are aimed at preventing or minimizing the consequences of catastrophic releases of chemicals and include process hazard analyses, formal training programs for employees and contractors, investigation of equipment mechanical integrity, and an emergency response plan. Specifically, the PSM program requires facilities that use, store, manufacture, handle, process, or move hazardous materials to conduct employee safety training; have an inventory of safety equipment relevant to potential hazards; have knowledge on use of the safety equipment; prepare an illness prevention program; provide hazardous substance exposure warnings; prepare an emergency response plan; and prepare a fire prevention plan.

Emergency Action Plan: An Emergency Action Plan (EAP) is a written document required by OSHA standards promulgated in 29 CFR 1910.38 (a) to facilitate and organize a safe employer and employee response during workplace emergencies. An EAP is required by all that are required to have fire extinguishers. At a minimum, an EAP must include the following: 1) a means of reporting fires and other emergencies; 2) evacuation procedures and emergency escape route assignments; 3) procedures to be followed by employees who remain to operate critical plant operations before they evacuate; 4) procedures to account for all employees after an emergency evacuation has been completed; 5) rescue and medical duties for those employees who are to perform them; and, 6) names or job titles of persons who can be contacted for further information or explanation of duties under the plan.

National Fire Regulations: The National Fire Codes (NFC), Title 45, published by the National Fire Protection Association (NFPA) contains standards for laboratories using chemicals, which are not requirements, but are generally employed by organizations in order to protect workers. These standards provide basic protection of life and property in laboratory work areas through prevention and control of fires and explosions, and also serve to protect personnel from exposure to non-fire health hazards.

In addition to the NFC, the NFPA adopted a hazard rating system (e.g., NFPA 704). NFPA 704 is a “standard (that) provides a readily recognized, easily understood system for identifying specific hazards and their severity using spatial, visual, and numerical methods to describe in simple terms the relative hazards of a material. It addresses the health, flammability, instability, and related hazards that may be presented as short-term, acute exposures that are most likely to occur as a result of fire, spill, or similar emergency¹.” In

¹ NFPA, FAQ for Standard 704. <http://www.nfpa.org/faq.asp?categoryID=928&cookie%5Ftest=1#23057>

addition, the hazard ratings per NFPA 704 are used by emergency personnel to quickly and easily identify the risks posed by nearby hazardous materials in order to help determine what, if any, specialty equipment should be used, procedures followed, or precautions taken during the first moments of an emergency response. The scale is divided into four color-coded categories, with blue indicating level of health hazard, red indicating the flammability hazard, yellow indicating the chemical reactivity, and white containing special codes for unique hazards such as corrosivity and radioactivity. Each hazard category is rated on a scale from 0 (no hazard; normal substance) to 4 (extreme risk). Table 3.4-1 summarizes what the codes mean for each hazards category.

TABLE 3.4-1
NFPA 704 Hazards Rating Codes

Hazard Rating Code	Health (Blue)	Flammability (Red)	Reactivity (Yellow)	Special (White)
4 = Extreme	Very short exposure could cause death or major residual injury (extreme hazard)	Will rapidly or completely vaporize at normal atmospheric pressure and temperature, or is readily dispersed in air and will burn readily. Flash point below 73 °F.	Readily capable of detonation or explosive decomposition at normal temperatures and pressures.	W = Reacts with water in an unusual or dangerous manner.
3 = High	Short exposure could cause serious temporary or moderate residual injury	Liquids and solids that can be ignited under almost all ambient temperature conditions. Flash point between 73 °F and 100 °F.	Capable of detonation or explosive decomposition but requires a strong initiating source, must be heated under confinement before initiation, reacts explosively with water, or will detonate if severely shocked.	OXY = Oxidizer
2 = Moderate	Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury.	Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur. Flash point between 100 °F and 200 °F.	Undergoes violent chemical change at elevated temperatures and pressures, reacts violently with water, or may form explosive mixtures with water.	SA = Simple asphyxiant gas (includes nitrogen, helium, neon, argon, krypton and xenon).
1 = Slight	Exposure would cause irritation with only minor residual injury.	Must be heated before ignition can occur. Flash point over 200 °F.	Normally stable, but can become unstable at elevated temperatures and pressures	

TABLE 3.4-1 (Concluded)
 NFPA 704 Hazards Rating Codes

Hazard Rating Code	Health (Blue)	Flammability (Red)	Reactivity (Yellow)	Special (White)
0 = Insignificant	Poses no health hazard, no precautions necessary	Will not burn	Normally stable, even under fire exposure conditions, and is not reactive with water.	

In addition to the above information, there are also a number of other physical or chemical properties may cause a substance to be a fire hazard. With respect to determining whether any substance is classified as a fire hazard, MSDS lists the National Fire Protection Association 704 flammability hazard ratings (e.g., NFPA 704). NFPA 704 is a “standard (that) provides a readily recognized, easily understood system for identifying flammability hazards and their severity using spatial, visual, and numerical methods to describe in simple terms the relative flammability hazards of a material².”

Although substances can have the same NFPA 704 Flammability Ratings Code, other factors can make each substance’s fire hazard very different from each other. For this reason, additional chemical characteristics, such as auto-ignition temperature, boiling point, evaporation rate, flash point, lower explosive limit (LEL), upper explosive limit (UEL), and vapor pressure, are also considered when determining whether a substance is fire hazard. The following is a brief description of each of these chemical characteristics.

Auto-ignition Temperature: The auto-ignition temperature of a substance is the lowest temperature at which it will spontaneously ignite in a normal atmosphere without an external source of ignition, such as a flame or spark.

Boiling Point: The boiling point of a substance is the temperature at which the vapor pressure of the liquid equals the environmental pressure surrounding the liquid. Boiling is a process in which molecules anywhere in the liquid escape, resulting in the formation of vapor bubbles within the liquid.

Evaporation Rate: Evaporation rate is the rate at which a material will vaporize (evaporate, change from liquid to a vapor) compared to the rate of vaporization of a specific known material. This quantity is represented as a unitless ratio. For example, a substance with a high evaporation rate will readily form a vapor which can be inhaled or explode, and thus have a higher hazard risk. Evaporation rates generally have an inverse relationship to boiling points (i.e., the higher the boiling point, the lower the rate of evaporation).

Flash Point: Flash point is the lowest temperature at which a volatile liquid can vaporize to form an ignitable mixture in air. Measuring a liquid's flash point requires an ignition source. At the flash point, the vapor may cease to burn when the source of ignition is

² National Fire Protection Association, FAQ for Standard 704.
<http://www.nfpa.org/faq.asp?categoryID=928&cookie%5Ftest=1#23057>.

removed. There are different methods that can be used to determine the flashpoint of a solvent but the most frequently used method is the Tagliabue Closed Cup standard (ASTM D56), also known as the TCC. The flashpoint is determined by a TCC laboratory device which is used to determine the flash point of mobile petroleum liquids with flash point temperatures below 175 degrees Fahrenheit (79.4 degrees Centigrade).

Flash point is a particularly important measure of the fire hazard of a substance. For example, the Consumer Products Safety Commission (CPSC) promulgated Labeling and Banning Requirements for Chemicals and Other Hazardous Substances in 15 U.S.C. §1261 and 16 CFR Part 1500. Per the CPSC, the flammability of a product is defined in 16 CFR Part 1500.3 (c)(6) and is based on flash point. For example, a liquid needs to be labeled as: 1) “Extremely Flammable” if the flash point is below 20 degrees Fahrenheit; 2) “Flammable” if the flash point is above 20 degrees Fahrenheit but less than 100 degrees Fahrenheit; or, 3) “Combustible” if the flash point is above 100 degrees Fahrenheit up to and including 150 degrees Fahrenheit.

Lower Explosive Limit (LEL): The lower explosive limit of a gas or a vapor is the limiting concentration (in air) that is needed for the gas to ignite and explode or the lowest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in presence of an ignition source (e.g., arc, flame, or heat). If the concentration of a substance in air is below the LEL, there is not enough fuel to continue an explosion. In other words, concentrations lower than the LEL are "too lean" to burn. For example, methane gas has a LEL of 4.4 percent (at 138 degrees Centigrade) by volume, meaning 4.4 percent of the total volume of the air consists of methane. At 20 degrees Centigrade, the LEL for methane is 5.1 percent by volume. If the atmosphere has less than 5.1 percent methane, an explosion cannot occur even if a source of ignition is present. When the concentration of methane reaches 5.1 percent, an explosion can occur if there is an ignition source.

Upper Explosive Limit (UEL): The upper explosive limit of a gas or a vapor is the highest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in presence of an ignition source (e.g., arc, flame, or heat). Concentrations of a substance in air above the UEL are "too rich" to burn.

Vapor Pressure: Vapor pressure is an indicator of a chemical's tendency to evaporate into gaseous form.

Health Hazards Guidance: In addition to fire impacts, health hazards can also be generated due to exposure of chemicals present in both conventional as well as reformulated products. Using available toxicological information to evaluate potential human health impacts associated with conventional solvents and potential replacement solvents, the toxicity of the conventional solvents can be compared to solvents expected to be used in reformulated products. As a measure of a chemical's potential health hazards, the following values need to be considered: the Threshold Limit Values (TLVs) established by the American Conference of Governmental Industrial Hygiene (ACGIH), OSHA's Permissible Exposure Limits (PELs), the Immediately Dangerous to Life and Health (IDLH) levels recommended by the National Institute for Occupational Safety and Health (NIOSH),

permissible exposure limits (PEL) established by OSHA, and health hazards developed by the National Safety Council. The following is a brief description of each of these values.

Threshold Limit Values (TLVs): The TLV of a chemical substance is a level to which it is believed a worker can be exposed day after day for a working lifetime without adverse health effects. The TLV is an estimate based on the known toxicity in humans or animals of a given chemical substance, and the reliability and accuracy of the latest sampling and analytical methods. The TLV for chemical substances is defined as a concentration in air, typically for inhalation or skin exposure. Its units are in parts per million (ppm) for gases and in milligrams per cubic meter (mg/m³) for particulates. The TLV is a recommended guideline by ACGIH.

Permissible Exposure Limits (PEL): The PEL is a legal limit, usually expressed in ppm, established by OSHA to protect workers against the health effects of exposure to hazardous substances. PELs are regulatory limits on the amount or concentration of a substance in the air. A PEL is usually given as a time-weighted average (TWA), although some are short-term exposure limits (STEL) or ceiling limits. A TWA is the average exposure over a specified period of time, usually eight hours. This means that, for limited periods, a worker may be exposed to concentrations higher than the PEL, so long as the average concentration over eight hours remains lower. A short-term exposure limit is one that addresses the average exposure over a 15 to 30 minute period of maximum exposure during a single work shift. A ceiling limit is one that may not be exceeded for any period of time, and is applied to irritants and other materials that have immediate effects. The OSHA PELs are published in 29 CFR 1910.1000 Table Z1.

Immediately Dangerous to Life and Health (IDLH): IDLH is an acronym defined by NIOSH as exposure to airborne contaminants that is "likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment." IDLH values are often used to guide the selection of breathing apparatus that are made available to workers or firefighters in specific situations.

3.4.2.2.6 *Oil and Pipeline Regulations and Oversight*

Oil Pollution Act: The Oil Pollution Act was signed into law in 1990 to give the federal government authority to better respond to oil spills (see 33 U.S.C. §2701). The Oil Pollution Act improved the federal government's ability to prevent and respond to oil spills, including provision of money and resources. The Oil Pollution Act establishes polluter liability, gives states enforcement rights in navigable waters of the State, mandates the development of spill control and response plans for all vessels and facilities, increases fines and enforcement mechanisms, and establishes a federal trust fund for financing clean-up.

The Oil Pollution Act also establishes the National Oil Spill Liability Trust Fund to provide financing for cases in which the responsible party is either not readily identifiable, or refuses to pay the cleanup/damage costs. In addition, the Oil Pollution Act expands provisions of the National Oil and Hazardous Substances Pollution Contingency Plan, more commonly called the National Contingency Plan, requiring the federal government to direct all public and private oil spill response efforts. It also requires area committees, composed of federal,

state, and local government officials, to develop detailed, location-specific area contingency plans. In addition, the Oil Pollution Act directs owners and operators of vessels, and certain facilities that pose a serious threat to the environment, to prepare their own specific facility response plans. The Oil Pollution Act increases penalties for regulatory non-compliance by responsible parties; gives the federal government broad enforcement authority; and provides individual states the authority to establish their own laws governing oil spills, prevention measures, and response methods. The Oil Pollution Act requires oil storage facilities and vessels to submit to the Federal government plans detailing how they will respond to large discharges. The U.S. EPA has published regulations for aboveground storage facilities and the Coast Guard has done the same for oil tankers.

Oil Pollution Prevention Regulation: In 1973, EPA issued the Oil Pollution Prevention regulation (see 40 CFR 112), to address the oil spill prevention provisions contained in the Clean Water Act of 1972. The Spill Prevention, Control, and Countermeasure (SPCC) Rule is part of the Oil Pollution Prevention regulations (see Subparts A through C of 40 CFR Part 112). Specifically, the SPCC rule includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement SPCC Plans. SPCC Plans require applicable facilities to take steps to prevent oil spills including: 1) using suitable storage containers/tanks; 2) providing overfill prevention (e.g., high-level alarms); 3) providing secondary containment for bulk storage tanks; 4) providing secondary containment to catch oil spills during transfer activities; and, 5) periodically inspecting and testing pipes and containers.

U.S. Department of Transportation, Office of Pipeline Safety: The Office of Pipeline Safety, within the U.S. DOT, Pipeline and Hazards Material Safety Administration, has jurisdictional responsibility for developing regulations and standards to ensure the safe and secure movement of hazardous liquid and gas pipelines under its jurisdiction in the United States. The Office of Pipeline Safety has the following key responsibilities:

- Support the operation of, and coordinate with the United States Coast Guard on the National Response Center and serve as a liaison with the Department of Homeland Security and the Federal Emergency Management Agency on matters involving pipeline safety;
- Develop and maintain partnerships with other federal, state, and local agencies, public interest groups, tribal governments, and the regulated industry and other underground utilities to address threats to pipeline integrity, service, and reliability and to share responsibility for the safety of communities;
- Administer pipeline safety regulatory programs and develops regulatory policy involving pipeline safety;
- Oversee pipeline operator implementation of risk management and risk-based programs and administer a national pipeline inspection and enforcement program;

- Provide technical and resource assistance for state pipeline safety programs to ensure oversight of intrastate pipeline systems and educational programs at the local level; and,
- Support the development and conduct of pipeline safety training programs for federal and state regulatory and compliance staff and the pipeline industry.

49 CFR Parts 178 – 185 relates to the role of transportation, including pipelines, in the United States. 49 CFR Parts 186-199 establishes minimum pipeline safety standards. The Office of the State Fire Marshal works in partnership with the Federal Pipeline and Hazardous Materials Safety Administration to assure pipeline operators are meeting requirements for safe, reliable, and environmentally sound operation of their facilities for intrastate pipelines within California.

Chemical Facility Anti-Terrorism Standards: The Federal Department of Homeland Security is responsible for implementing the Chemical Facility Anti-Terrorism Standards that were adopted in 2007 (see 6 CFR Part 27). These standards establish risk-based performance standards for the security of chemical facilities and require covered chemical facilities to prepare Security Vulnerability Assessments, which identify facility security vulnerabilities, and to develop and implement Site Security Plans.

3.4.2.3 State Regulations

3.4.2.3.1 *Hazardous Materials and Waste Regulations*

Hazardous Waste Control Law: California's Hazardous Waste Control Law is administered by the California Environmental Protection Agency (CalEPA) to regulate hazardous wastes within the State of California. While the California Hazardous Waste Control Law is generally more stringent than RCRA, both the state and federal laws apply in California. The California Department of Toxic Substances Control (DTSC) is the primary agency in charge of enforcing both the federal and state hazardous materials laws in California. The DTSC regulates hazardous waste, oversees the cleanup of existing contamination, and pursues avenues to reduce hazardous waste produced in California. The DTSC regulates hazardous waste in California under the authority of RCRA, the Hazardous Waste Control Law, and the California Health and Safety Code. Under the direction of the CalEPA, the DTSC maintains the Cortese and Envirostor databases of hazardous materials and waste sites as specified under Government Code §65962.5.

The Hazardous Waste Control Law (22 CCR Chapter 11, Appendix X) also lists 791 chemicals and approximately 300 common materials which may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

California Occupational Safety and Health Administration: The California Occupational Safety and Health Administration (CalOSHA) is the primary state agency responsible for worker safety in the handling and use of chemicals in the workplace.

CalOSHA requires employers to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. CalOSHA's standards are generally more stringent than federal regulations.

Hazardous Materials Release Notification: Many state statutes require emergency notification when a hazardous chemical is released, including:

- California Health and Safety Code §25270.7, §25270.8, and §25507;
- California Vehicle Code §23112.5;
- California Public Utilities Code §7673 (General Orders #22-B, 161);
- California Government Code §51018 and §8670.25.5 (a);
- California Water Code §13271 and §13272; and,
- California Labor Code §6409.1 (b)10.

California Accident Release Prevention (CalARP) Program: The California Accident Release Prevention Program (19 CCR Division 2, Chapter 4.5) requires the preparation of Risk Management Plans (RMPs). CalARP requires stationary sources with more than a threshold quantity of a regulated substance to be evaluated to determine the potential for and impacts of accidental releases from any processes subject to state risk management requirements. RMPs are documents prepared by the owner or operator of a stationary source containing detailed information including: 1) regulated substances held onsite at the stationary source; 2) offsite consequences of an accidental release of a regulated substance; 3) the accident history at the stationary source; 4) the emergency response program for the stationary source; 5) coordination with local emergency responders; 6) hazard review or process hazard analysis; 7) operating procedures at the stationary source; 8) training of the stationary source's personnel; 9) maintenance and mechanical integrity of the stationary source's physical plant; and, 10) incident investigation. The CalARP program is implemented at the local government level by Certified Unified Program Agencies (CUPAs) also known as Administering Agencies (AAs). Typically, local fire departments are the administering agencies of the CalARP program because they frequently are the first responders in the event of a release.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program: The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) as promulgated by CalEPA in Title 27 CCR Chapter 6.11 requires the administrative consolidation of six hazardous materials and waste programs (program elements) under one agency, a CUPA. The Unified Program administered by the State of California consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the state's environmental and emergency management programs, which include Hazardous Waste

Generator and On-Site Hazardous Waste Treatment Programs (“Tiered Permitting”); Above ground SPCC Program; Hazardous Materials Release Response Plans and Inventories (business plans); the CalARP Program; the UST Program; and the Uniform Fire Code Plans and Inventory Requirements. The Unified Program is implemented at the local government level by CUPAs.

Hazardous Materials Management Act: The State of California (California Health and Safety Code Division 20, Chapter 6.95) requires any business handling more than a specified amount of hazardous or extremely hazardous materials, termed a "reportable quantity," to submit a Hazardous Materials Business Plan to its CUPA. Business plans must include an inventory of the types, quantities, and locations of hazardous materials at the facility. Businesses are required to update their business plans at least once every three years and the chemical portion of their plans every year. Also, business plans must include emergency response plans and procedures to be used in the event of a significant or threatened significant release of a hazardous material. These plans need to identify the procedures to follow for immediate notification to all appropriate agencies and personnel of a release, identification of local emergency medical assistance appropriate for potential accident scenarios, contact information for all company emergency coordinators, a listing and location of emergency equipment at the business, an evacuation plan, and a training program for business personnel. The requirements for hazardous materials business plans are specified in the California Health and Safety Code and 19 CCR.

Hazardous Materials Transportation in California: California regulates the transportation of hazardous waste originating or passing through the State in Title 13, CCR. The California Highway Patrol (CHP) and Caltrans have primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provide detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. Caltrans has emergency chemical spill identification teams at locations throughout California.

California Fire Code: While NFC Standard 45 and NFPA 704 are regarded as nationally recognized standards, the California Fire Code (24 CCR) also contains state standards for the use and storage of hazardous materials and special standards for buildings where hazardous materials are found. Some of these regulations consist of amendments to NFC Standard 45. State Fire Code regulations require emergency pre-fire plans to include training programs in first aid, the use of fire equipment, and methods of evacuation.

3.4.2.4 Local Regulations

SCAQMD Rule 1166 – Volatile Organic Compound Emissions from Decontamination of Soil: SCAQMD Rule 1166 establishes requirements to control the emission of VOCs from excavating, grading, handling, and treating soil contaminated from leakage, spillage, or other means of VOCs deposition. Rule 1166 stipulates that any parties planning on excavating, grading, handling, transporting, or treating soils contaminated with VOCs must

first apply for and obtain, and operate pursuant to, a mitigation plan approved by the Executive Officer prior to commencement of operation. BACT is required during all phases of remediation of soil contaminated with VOCs. Rule 1166 also sets forth testing, record keeping and reporting procedures that must be followed at all times. Non-compliance with Rule 1166 can result in the revocation of the approved mitigation plan, the owner and/or the operator being served with a Notice of Violation for creating a public nuisance, or an order to halt the offending operation until the public nuisance is mitigated to the satisfaction of the Executive Officer.

Other Local Agencies: In addition to the SCAQMD, other local agencies throughout the four counties in the district and their respective fire departments have a variety of local laws that regulate reporting, storage and handling of hazardous materials and wastes.

Los Angeles County: The Office of Emergency Management is responsible for organizing and directing the preparedness efforts of the Emergency Management Organization of Los Angeles County. Los Angeles County's policies towards hazardous materials management include enforcing stringent site investigations for factors related to hazards; limiting the development in high hazard areas, such as floodplains, high fire hazard areas, and seismic hazard zones; facilitating safe transportation, use, and storage of hazardous materials; supporting lead paint abatement; remediating brownfield sites; encouraging the purchase of homes on the FEMA Repeat Hazard list and designating the land as open space; enforcing restrictions on access to important energy sites; limiting development downslope from aqueducts; promoting safe alternatives to chemical-based products in households; and prohibiting development in floodways. The county has defined effective emergency response management capabilities to include supporting county emergency providers with reaching their response time goals; promoting the participation and coordination of emergency response management between cities and other counties at all levels of government; coordinating with other county and public agency emergency planning and response activities; and encouraging the development of an early warning system for tsunamis, floods and wildfires.

The County of Los Angeles Fire Department, Fire Prevention Guide #9 regulates spray application of flammable or combustible liquids. The guide requires no open flame, spark-producing equipment or exposed surfaces exceeding the ignition temperature of the material being sprayed within the area. For open spraying, as would be the case for the field application of the acetone-based coatings, no spark-producing equipment or open flame shall be within 20 feet horizontally and 10 feet vertically of the spray area. Anyone not complying with these guidelines would be in violation of the current fire codes. The fire department also limits the residential storage of flammable liquids to five gallons and recommends storage in a cool place. If the flammable coating container will be exposed to direct sunlight or heat, storage in cool water is recommended. Finally, all metal containers involving the transfer of five gallons or more should be grounded and bonded.

Orange County: The regulatory agency responsible for enforcement, as well as inspection of pipelines transporting hazardous materials, is the California State Fire Marshal's Office, Hazardous Liquid Pipeline Division. The Orange County Health Care Agency (OCHCA) has been designated by the Board of Supervisors as the agency to enforce the UST program.

The OCHCA UST Program regulates approximately 7,000 of the 9,500 underground tanks in Orange County. The program includes conducting regular inspections of underground tanks; oversight of new tank installations; issuance of permits; regulation of repair and closure of tanks; ensuring the mitigation of leaking USTs; pursuing enforcement action; and educating and assisting the industries and general public as to the laws and regulations governing USTs.

Under mandate from the California Health and Safety Code, the Orange County Fire Authority is the designated agency to inventory the distribution of hazardous materials in commercial or industrial occupancies, develop and implement emergency plans, and require businesses that handle hazardous materials to develop emergency plans do deal with these materials.

Orange County's Hazardous Materials Program Office is responsible for facilitating the coordination of various parts of the County's hazardous materials program; assisting in coordinating County hazardous materials activities with outside agencies and organization; providing comprehensive, coordinated analysis of hazardous materials issues; and directing the preparation, implementation, and modification of the county's Hazardous Waste Management Plan. With regard to San Onofre Nuclear Generating Station, in an effort to prepare those who live and work in areas outside, but adjacent to SONGS, the federal and state governments have established three levels of emergency zones. Orange County is responsible for its own emergency plans concerning a nuclear power plant accident, and the Incident Response Plan is updated regularly.

San Bernardino County: San Bernardino County's Hazardous Waste Management Plan (HWMP) serves as the primary planning document for the management of hazardous waste in San Bernardino County. The HWMP identifies the types and amounts of wastes generated; establishes programs for managing these wastes; identifies an application review process for the siting of specified hazardous waste facilities; identifies mechanisms for reducing the amount of waste generated; and identifies goals, policies, and actions for achieving effective hazardous waste management. One of the county's stated goals is to minimize the generation of hazardous waste and reduce the risk posed by storage, handling, transportation, and disposal of hazardous wastes. In addition, the county will protect its residents and visitors from injury and loss of life and protect property from fires by deploying firefighters and requiring new land developments to prepare site-specific fire protection plans.

Riverside County: Through its membership in the Southern California Hazardous Waste Management Authority (SCHWMA), the County of Riverside has agreed to work on a regional level to solve problems involving hazardous waste. SCHWMA was formed through a joint powers agreement between Santa Barbara, Ventura, San Bernardino, Orange, San Diego, Imperial, and Riverside Counties and the Cities of Los Angeles and San Diego. Working within the concept of "fair share," each SCHWMA county has agreed to take responsibility for the treatment and disposal of hazardous waste in an amount that is at least equal to the amount generated within that county. This responsibility can be met by siting hazardous waste management facilities (transfer, treatment, and/or repository) capable of processing an amount of waste equal to or larger than the amount generated within the

county, or by creating intergovernmental agreements between counties to provide compensation to a county for taking another county's waste, or through a combination of both facility siting and intergovernmental agreements. When and where a facility is to be sited is primarily a function of the private market. However, once an application to site a facility has been received, the county will review the requested facility and its location against a set of established siting criteria to ensure that the location is appropriate and may deny the application based on the findings of this review. The County of Riverside does not presently have any of these facilities within its jurisdiction and, therefore, must rely on intergovernmental agreements to fulfill its fair share responsibility to SCHWMA.

3.4.3 Emergency Response To Hazardous Materials And Waste Incidents

The California Emergency Management Agency (CalEMA) exists to enhance safety and preparedness in California through strong leadership, collaboration, and meaningful partnerships. The goal of CalEMA is to protect lives and property by effectively preparing for, preventing, responding to, and recovering from all threats, crimes, hazards, and emergencies. CalEMA under the Fire and Rescue Division coordinates statewide implementation of hazardous materials accident prevention and emergency response programs for all types of hazardous materials incidents and threats. In response to any hazardous materials emergency, CalEMA is called upon to provide state and local emergency managers with emergency coordination and technical assistance.

Pursuant to the Emergency Services Act, the State of California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local government agencies and private persons. Response to hazardous materials incidents is one part of this plan. The Plan is administered by CalEMA which coordinates the responses of other agencies. Six mutual aid and Local Emergency Planning Committee (LEPC) regions have been identified for California that are divided into three areas of the state designated as the Coastal (Region II, which includes 16 counties with 151 incorporated cities and a population of about eight million people.), Inland (Region III, Region IV and Region V, which includes 31 counties with 123 incorporated cities and a population of about seven million people), and Southern (Region I and Region VI, which includes 11 counties with 226 incorporated cities and a population of about 21.6 million people). The SCAQMD jurisdiction covers portions of Region I and Region VI.

In addition, pursuant to the Hazardous Materials Release Response Plans and Inventory Law of 1985, local agencies are required to develop "area plans" for response to releases of hazardous materials and wastes. These emergency response plans depend to a large extent on the business plans submitted by persons who handle hazardous materials. An area plan must include pre-emergency planning of procedures for emergency response, notification, coordination of affected government agencies and responsible parties, training, and follow-up.

3.4.4 Hazardous Materials Incidents

Hazardous materials move through southern California by a variety of modes including truck, rail, air, ship, and pipeline. The movement of hazardous materials implies a degree of

risk, depending on the materials being moved, the mode of transport, and numerous other factors (e.g., weather).

Hazardous materials move through the region by a variety of modes: Truck, rail, air, ship, and pipeline. According to the Office of Hazardous Materials Safety (OHMS) in the U.S. Department of Transportation, hazardous materials shipments can be regarded as equivalent to deliveries, but any given shipment may involve one or more movements or trip segments, that may occur by different routes (e.g., rail transport with final delivery by truck). According to the Commodity Flow Survey data (U.S. DOT, 2010), there were approximately 2.3 billion tons of hazardous materials shipments in the United States in 2007. Table 3.4-2 indicates that trucks move more than 50 percent of total hazardous materials shipped via all transportation modes from a location in the United States. By contrast, rail accounts of only six percent of total shipments of hazardous materials (U.S. DOT, 2010).

TABLE 3.4-2

Hazardous Material Shipments in the United States

Mode	Total Commercial Freight (thousand tons)	Hazardous Materials Shipped (thousand tons)	Percent of Hazardous Materials Shipped
Truck	8,778,713	1,202,825	13.7%
Rail	1,861,307	129,743	7.0%
Water	403,639	149,794	37.1%
Pipeline	650,859	628,905	96.6%
TOTAL	11,694,518	2,111,267	18.1%

Source: U.S. DOT, 2010.

The movement of hazardous materials through the U.S. transportation system represents almost 18 percent of total tonnage for all freight shipments as measured by the Commodity Flow Survey. The total commercial freight moved in 2007 in California by all transportation modes was 900,817 thousand tons, of which about 738,550 thousand tons were moved by truck (U.S. DOT, 2010).

The California Hazardous Materials Incident Reporting System (CHMIRS) is a post-incident reporting system to collect data on incidents involving the accidental release of hazardous materials in California. Information on accidental releases of hazardous materials are reported to and maintained by CalEMA. While information on accidental releases are reported to CalEMA, according to discussions with Mr. Greg Renick of Cal-EMA on July 25, 2012, CalEMA no longer conducts statistical evaluations of the releases (e.g., total number of releases per year) for the entire State, or data by county. The U.S. DOT Pipeline and Hazardous Materials Safety Administration provides access to retrieve data from the Incident Reports Database, which also includes non-pipeline incidents (e.g., truck and rail events). Incident data and summary statistics (e.g., release date, geographical location for state and county) and type of material released, are available online from the Hazardous Materials Incident Report Form 5800.1.

Table 3.4-3 provides a summary of the reported hazardous material incidents for Los Angeles, Orange, Riverside, and San Bernardino counties for 2010 and 2011 from the Hazardous Materials Incident Report Form 5800.1. Data presented is for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

In 2010, there were a total of 672 incidents reported for Los Angeles, Orange, Riverside and San Bernardino counties, and in 2011 a total of 698 incidents for these four counties. San Bernardino and Los Angeles counties accounted for the largest number of incidents, followed by Orange and Riverside counties.

TABLE 3.4-3

Reported Hazardous Materials Incidents for 2010 and 2011

County	2010	2011
Los Angeles	273	256
Orange	71	93
Riverside	46	51
San Bernardino	282	298
Total	672	698

3.4.5 Hazards Associated With Air Pollution Control, Coating Reformulations and Alternative Fuels

The SCAQMD has evaluated the hazards associated with previous AQMPs, proposed SCAQMD rules, and non-SCAQMD projects where the SCAQMD is the Lead Agency pursuant to CEQA. The analyses covered a range of potential air pollution control technologies and equipment. EIRs prepared for the previous AQMPs have specifically evaluated hazard impacts from: 1) add-on control equipment; 2) alternative coating methods; and, 3) alternative fuels.

Add-on pollution control technologies which have been previously analyzed for hazards include: carbon adsorption, incineration, post-combustion flue-gas treatment, SCR and selective non-catalytic reduction (SNCR), scrubbers, bag filters, and electrostatic precipitators. The use of add-on pollution control equipment may concentrate or utilize hazardous materials. A malfunction or accident when using add-on pollution control equipment could potentially expose people to hazardous materials, explosions, or fires. The SCAQMD has determined that the transport, use, and storage of ammonia, both aqueous and anhydrous, (used in SCR and SNCR systems) may have significant hazard impacts in the event of an accidental release. Further analyses have indicated that the use of aqueous ammonia (instead of anhydrous ammonia) can usually reduce the hazards associated with ammonia use in SCR and SNCR systems to less than significant.

The potential hazards associated with alternative coating reformulations have been analyzed including powder coatings, radiation-curable coatings, high solids coatings, and waterborne coatings. The greatest hazard associated with both current and alternative coating reformulations is flammability.

Alternative fuels may be used to reduce emissions from both stationary source equipment and motor vehicles. The alternative fuels which have been analyzed include reformulated gasoline, methanol, compressed natural gas, LPG or propane, and electrically charged batteries. Like conventional fossil fuels, alternative fuels may create fire hazards, explosions or accidental releases during fuel transport, storage, dispensing, and use. Electric batteries also present a slight fire and explosion hazards due to the presence of reactive compounds, which may be subjected to high temperatures.

Ammonia

Ammonia is the primary hazardous chemical identified with the use of air pollution control equipment (e.g., SCR and SNCR systems). Ammonia, though not a carcinogen, can have chronic and acute health impacts. Therefore, a potential increase in the use of ammonia may increase the current existing risk setting associated with deliveries (e.g., truck and road accidents) and onsite or offsite spills for each facility that currently uses or will begin to use ammonia. Exposure to a toxic gas cloud is the potential hazard associated with this type of control equipment. A toxic gas cloud is the release of a volatile chemical such as anhydrous ammonia that could form a cloud that migrates off-site, thus exposing individuals. Anhydrous ammonia is heavier than air such that when released into the atmosphere, would form a cloud at ground level rather than be dispersed “Worst-case” conditions tend to arise when very low wind speeds coincide with the accidental release, which can allow the chemicals to accumulate rather than disperse. Though there are facilities that may be affected by the proposed 2012 AQMP control measures that are currently permitted to use anhydrous ammonia, for new construction, however, current SCAQMD policy no longer allows the use of anhydrous ammonia. Instead, to minimize the hazards associated with ammonia used in the SCR or SNCR process, aqueous ammonia, 19 percent by volume, is typically required as a permit condition associated with the installation of SCR or SNCR equipment for the following reasons: 1) 19 percent aqueous ammonia does not travel as a dense gas like anhydrous ammonia; and, 2) 19 percent aqueous ammonia is not on any acutely hazardous material lists unlike anhydrous ammonia or aqueous ammonia at higher percentages.

LNG

LNG is essentially no different from the natural gas used in homes and businesses everyday, except that it has been refrigerated to minus 259 degrees Fahrenheit at which point it becomes a clear, colorless, and odorless liquid. LNG currently is used as a combustion fuel in both stationary and mobile sources. As a liquid, natural gas occupies only one six-hundredth of its gaseous volume and can be transported economically between continents in special tankers. LNG weighs slightly less than half as much as water, so it floats on fresh or sea water. However, when LNG comes in contact with any warmer surface such as water or air, it evaporates very rapidly ("boil"), returning to its original, gaseous volume. As the LNG vaporizes, a vapor cloud resembling ground fog will form under relatively calm atmospheric conditions. The vapor cloud is initially heavier than air since it is so cold, but as it absorbs more heat, it becomes lighter than air, rises, and can be carried away by the wind. An LNG vapor cloud cannot explode in the open atmosphere, but it could burn.

LNG is considered a hazardous material. The primary safety concerns are the potential consequences of an LNG spill. LNG hazards result from three of its properties:

- Cryogenic temperatures
- Dispersion characteristics
- Flammability characteristics

The extreme cold of LNG can directly cause injury or damage. Although momentary contact on the skin can be harmless, extended contact will cause severe freeze burns. On contact with certain metals, such as ship decks, LNG can cause immediate cracking. Although not poisonous, exposure to the center of a vapor cloud could cause asphyxiation due to the absence of oxygen. LNG vapor clouds can ignite within the portion of the cloud where the concentration of natural gas is between a five and a 15 percent (by volume) mixture with air. To catch fire, however, this portion of the vapor cloud must encounter an ignition source. Otherwise, the LNG vapor cloud will simply dissipate into the atmosphere. An ignited LNG vapor cloud is very dangerous, because of its tremendous radiant heat output. Furthermore, as a vapor cloud continues to burn, the flame could burn back toward the evaporating pool of spilled liquid, ultimately burning the quickly evaporating natural gas immediately above the pool, giving the appearance of a "burning pool" or "pool fire." An ignited vapor cloud or a large LNG pool fire can cause extensive damage to life and property.

Spilled LNG would disperse faster on the ocean than on land, because water spills provide very limited opportunity for containment. Furthermore, LNG vaporizes more quickly on water, because the ocean provides an enormous heat source. For these reasons, most analysts conclude that the risks associated with shipping, loading, and off-loading LNG are much greater than those associated with land-based storage facilities. Preventing spills and responding immediately to spills should they occur are major factors in the design of LNG facilities (CEC, 2003).

Beyond routine industrial hazards and safety considerations, LNG presents specific safety considerations. In the event of an accidental release of LNG, the safety zone around a facility protects neighboring communities from personal injury, property damage or fire. The one and only case of an accident that affected the public was in Cleveland, Ohio in 1944. Research stemming from the Cleveland incident has influenced safety standards used today. Indeed, during the past four decades, growth in LNG use worldwide has led to a number of technologies and practices that will be used in the U.S. and elsewhere in North America as the LNG industry expands. Generally, multiple layers of protection create four critical safety conditions, all of which are integrated with a combination of industry standards and regulatory compliance. The four requirements for safety – primary containment, secondary containment, safeguard systems and separation distance apply across the LNG value chain, from production, liquefaction and shipping, to storage and re-gasification. The term "containment" means safe storage and isolation of LNG (Foss, 2003).

LPG

More than 350,000 light-and medium-duty vehicles travel the nation's highways using liquefied petroleum gas (LPG or LP gas), while over 4 million vehicles use it worldwide. LPG is a mixture of several gases that is generally called "propane," in reference to the mixture's chief ingredient. LPG changes to the liquid state at the moderately high pressures found in an LPG vehicle's fuel tank. LPG is formed naturally, interspersed with deposits of petroleum and natural gas. Natural gas contains LPG, water vapor, and other impurities that must be removed before it can be transported in pipelines as a salable product. About 55 percent of the LPG processed in the U.S. is from natural gas purification. The other 45 percent comes from crude oil refining. Since a sizable amount of U.S. LPG is derived from petroleum, LPG does less to relieve the country's dependency on foreign oil than some other alternative fuels. However, because over 90 percent of the LPG used in the United States is produced here, LPG does help address the national security component of the nation's overall petroleum dependency problem.

Propane vehicles emit about one-third fewer reactive organic gases than gasoline-fueled vehicles. Nitrogen oxide and carbon monoxide emissions are also 20 percent and 60 percent less, respectively. Unlike gasoline-fueled vehicles, there are no evaporative emissions while LPG vehicles are running or parked, because LPG fuel systems are tightly sealed. Small amounts of LPG may escape into the atmosphere during refueling, but these vapors are 50 percent less reactive than gasoline vapors, so they have less of a tendency to generate smog-forming ozone. LPG's extremely low sulfur content means that the fuel does not contribute significantly to acid rain.

Many propane vehicles are converted gasoline vehicles. The relatively inexpensive conversion kits include a regulator/vaporizer that changes liquid propane to a gaseous form and an air/fuel mixer that meters and mixes the fuel with filtered intake air before the mixture is drawn into the engine's combustion chambers. Also included in conversion kits is closed-loop feedback circuitry that continually monitors the oxygen content of the exhaust and adjusts the air/fuel ratio as necessary. This device communicates with the vehicle's onboard computer to keep the engine running at optimum efficiency. LPG vehicles additionally require a special fuel tank that is strong enough to withstand the LPG storage pressure of about 130 pounds per square inch. The gaseous nature of the fuel/air mixture in an LPG vehicle's combustion chambers eliminates the cold-start problems associated with liquid fuels. In contrast to gasoline engines, which produce high emission levels while running cold, LPG engine emissions remain similar whether the engine is cold or hot. Also, because LPG enters an engine's combustion chambers as a vapor, it does not strip oil from cylinder walls or dilute the oil when the engine is cold. This helps LPG powered engines to have a longer service life and reduced maintenance costs. Also helping in this regard is the fuel's high hydrogen-to-carbon ratio (C₃H₈), which enables propane powered vehicles to have less carbon build-up than gasoline- and diesel powered vehicles. LPG delivers roughly the same power, acceleration, and cruising speed characteristics as gasoline. It does yield a somewhat reduced driving range, however, because it contains only about 70-75 percent of the energy content of gasoline. Its high octane rating (around 105) means, though, that an LPG engine's power output and fuel efficiency can be increased beyond what would be possible with a gasoline engine without causing destructive "knocking." Such fine-tuning

can help compensate for the fuel's lower energy density. Fleet owners find that propane costs are typically 5 to 30 percent less than those of gasoline. The cost of constructing an LPG fueling station is also similar to that of a comparably sized gasoline dispensing system. Fleet owners not wishing to establish fueling stations of their own may avail themselves of over 3,000 publicly accessible fueling stations nationwide.

Propane is an odorless, nonpoisonous gas that has the lowest flammability range of all alternative fuels. High concentrations of propane can displace oxygen in the air, though, causing the potential for asphyxiation. This problem is mitigated by the presence of ethyl mercaptan, which is an odorant that is added to warn of the presence of gas. While LPG itself does not irritate the skin, the liquefied gas becomes very cold upon escaping from a high-pressure tank, and may therefore cause frostbite, should it contact unprotected skin. As with gasoline, LPG can form explosive mixtures with air. Since the gas is slightly heavier than air, it may form a continuous stream that stretches a considerable distance from a leak or open container, which may lead to a flashback explosion upon contacting a source of ignition (U.S. DOE, 2003).

While LPG is classified as a fire hazard, it is not classified as a toxic or as a hazardous air pollutant. LPG is a regulated substance subject to both the California and Federal RMP programs in accordance with the CCR, Title 19, §2770.4.1 and Chapter 40 of the CFR Part 68, §68.126³. A RMP is a document prepared by the owner or operator of a stationary source containing detailed information including, but not limited to:

- Regulated substances held onsite at the stationary source;
- Offsite consequences of an accidental release of a regulated substance;
- The accident history at the stationary source;
- The emergency response program for the stationary source;
- Coordination with local emergency responders;
- Hazard review or process hazard analysis;
- Operating procedures at the stationary source;
- Training of the stationary source's personnel;
- Maintenance and mechanical integrity of the stationary source's physical plant; and
- Incident investigation.

The threshold quantity for LPG (as propane) as a regulated substance for accidental release prevention is 10,000 pounds. However, when LPG is used as a fuel by an end user (as is

³ The federal RMP program is administered in California through the California Accidental Release Prevention (CalARP) program (Health & Safety Code (H&SC), §§ 25531 to 25543.3 and California Code of Regulations, Title 19 (19 CCR or "Title 19"), §§ 2735.1 to 2785.1).

frequently the case with residential portable and stationary storage tanks), or when it is held for retail sale as a fuel, it is excluded from these RMP requirements, even if the amount exceeds the threshold quantity.

On June 1, 2012, SCAQMD adopted Rule 1177 - Liquefied Petroleum Gas Transfer and Dispensing to reduce fugitive VOC emissions released during the transfer and dispensing of LPG at residential, commercial, industrial, chemical, agricultural and retail sales facilities. Rule 1177 applies to the transfer of LPG to and from stationary storage tanks, cylinders and cargo tanks, including bobtails, truck transports and rail tank cars, and into portable refillable cylinders. In addition, Rule 1177 requires the use of low emission fixed liquid level gauges or equivalent alternatives during filling of LPG-containing tanks and cylinders, use of LPG low emission connectors, routine leak checks and repairs of LPG transfer and dispensing equipment, and recordkeeping and reporting to demonstrate compliance.

With respect to suppliers and sellers of LPG, Health and Safety Code §25506 specifically requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in the emergency release or threatened release of a hazardous material. Business emergency response plans generally require the following:

1. Identification of individuals who are responsible for various actions, including reporting, assisting emergency response personnel and establishing an emergency response team;
2. Procedures to notify the administering agency, the appropriate local emergency rescue personnel, and the California Office of Emergency Services;
3. Procedures to mitigate a release or threatened release to minimize any potential harm or damage to persons, property or the environment;
4. Procedures to notify the necessary persons who can respond to an emergency within the facility;
5. Details of evacuation plans and procedures;
6. Descriptions of the emergency equipment available in the facility;
7. Identification of local emergency medical assistance; and
8. Training (initial and refresher) programs for employees in:
 - a. The safe handling of hazardous materials used by the business;
 - b. Methods of working with the local public emergency response agencies;
 - c. The use of emergency response resources under control of the handler; and

- d. Other procedures and resources that will increase public safety and prevent or mitigate a release of hazardous materials.

In general, every county or city and all facilities using a minimum amount of hazardous materials are required to formulate detailed contingency plans to eliminate, or at least minimize, the possibility and effect of fires, explosion, or spills. In conjunction with the California Office of Emergency Services, local jurisdictions have enacted ordinances that set standards for area and business emergency response plans. These requirements include immediate notification, mitigation of an actual or threatened release of a hazardous material, and evacuation of the emergency area.

Lastly, operators who currently transfer and dispense LPG are well aware of the hazardous nature of LPG, including its flammability and receive periodic training for the safe handling of LPG for the following reasons. Facility operators with a dispensing system for LPG are required to comply with operating pressures pursuant to the standards developed by the American Society of Mechanical Engineers (ASME) Pressure Vessel Code, Section 8; NFPA 58 with regard to venting LPG to the atmosphere; and for LPG tanks that are subject to RMP requirements, the operators must obtain permits from, and submit RMPs to the local Certified Unified Program Agency (CUPA) which is typically the city or county fire department. For similar reasons, industrial and commercial customers on the receiving end of LPG deliveries are also well aware of the safety issues associated with LPG. Residential customers, through warning labels on the portable cylinders and on the units to which the portable cylinders connect, are notified of the flammability dangers associated with LPG.

SUBCHAPTER 3.5

HYDROLOGY AND WATER QUALITY

Regulatory Background

Hydrology

Water Demand and Forecasts

Water Supply

Water Conservation

Water Quality

Wastewater Treatment

3.5 HYDROLOGY AND WATER QUALITY

3.5.1 Regulatory Background

Water resources are regulated by an overlapping network of local, state, federal and international laws and regulations. As a result, the authority to address a given discharge or activity is not always clear. Therefore, the regulatory background is broken down by the following topics: Water Quality; Regional Water Quality Management; Watershed Management; Wastewater Treatment; Drinking Water Standards; and local regulations.

3.5.1.1 Water Quality

The principal laws governing water quality in southern California are the federal Clean Water Act (CWA) and the corresponding California law, the Porter-Cologne Water Quality Act. The United States Environmental Protection Agency (U.S. EPA) is the federal agency responsible for water quality management and administration of the federal CWA. The U.S. EPA has delegated most of the administration of the CWA in California to the California State Water Resources Control Board (SWRCB). The SWRCB was established through the California Porter-Cologne Water Quality Act of 1969, and is the primary State agency responsible for water quality management issues in California. Much of the responsibility for implementation of the SWRCB's policies is delegated to the nine Regional Water Quality Control Boards (RWQCBs).

3.5.1.1.1 NPDES Permit Program

§402 of the CWA established the National Pollutant Discharge Elimination System (NPDES) to regulate discharges into “navigable waters” of the United States. The U.S. EPA authorized the SWRCB to issue NPDES permits in the State of California in 1974. The NPDES permit establishes discharge pollutant thresholds and operational conditions for industrial facilities and wastewater treatment plants. For point source discharges (e.g., wastewater treatment facilities), the RWQCBs prepare specific effluent limitations for constituents of concern such as toxic substances, total suspended solids (TSS), bio-chemical oxygen demand (BOD), and organic compounds. The limitations are based on the Basin Plan objectives and are tailored to the specific receiving waters, allowing some discharges, for instance deep water outfalls in the Pacific Ocean, more flexibility with certain constituents due to the ability of the receiving waters to accommodate the effluent without significant impact.

Non-point source NPDES permits are also required for municipalities and unincorporated communities of populations greater than 100,000 to control urban stormwater runoff. These municipal permits include Storm Water Management Plans (SWMPs). A key part of the SWMP is the development of Best Management Practices (BMPs) to reduce pollutant loads. Certain businesses and projects within the jurisdictions of these municipalities are required to prepare Storm Water Pollution Prevention Plans (SWPPPs) which establish the appropriate BMPs to gain coverage under the municipal permit. On October 29, 1999, the U.S. EPA finalized the Storm Water Phase II rule which requires smaller urban communities

with a population less than 100,000 to acquire individual storm water discharge permits. The Phase II rule also requires construction activities on one to five acres to be permitted for storm water discharges. Individual storm water NPDES permits are required for specific industrial activities and for construction sites greater than five acres. Statewide general storm water NPDES permits have been developed to expedite discharge applications. They include the statewide industrial permit and the statewide construction permit. A prospective applicant may apply for coverage under one of these permits and receive Waste Discharge Requirements (WDRs) from the appropriate RWQCB. WDRs establish the permit conditions for individual dischargers. The Stormwater Phase II Rule automatically designates, as small construction activity under the NPDES stormwater permitting program, all operators of construction site activities that result in a land disturbance of equal to or greater than one and less than five acres. Site activities that disturb less than one acre are also regulated as small construction activity if they are part of a larger common plan of development or sale with a planned disturbance of equal to or greater than one acre and less than five acres, or if they are designated by the NPDES permitting authority. The NPDES permitting authority or U.S. EPA Region may designate construction activities disturbing less than one acre based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the United States (U.S. EPA, [20002005](#)).

3.5.1.1.2 Municipal Stormwater and Urban Runoff Discharge Permits

The Municipal Stormwater Permitting Program regulates stormwater discharges from municipal separate storm sewer systems (MS4s). The RWQCB, with oversight by U.S. EPA, administers the MS4 permitting program in the Los Angeles area. The MS4 permits require the municipal discharger (typically, a city or county) to develop and implement a SWMP with the goal of reducing the discharge of pollutants to the maximum extent practicable. The SWMP program specifies what BMPs will be applied to address certain program areas such as public education and outreach, illicit discharge detection and elimination, construction and port-construction, and good housekeeping for municipal operations. MS4 permits also generally include a monitoring program.

3.5.1.1.3 CWA Section 303 – Total Maximum Daily Loads

The CWA §303(d) requires the SWRCB to prepare a list of impaired water bodies in the State and determine total maximum daily loads (TMDLs) for pollutants or other stressors impacting water quality of these impaired water bodies. A TMDL is a quantitative assessment of water quality conditions, contributing sources, and the load reductions or control actions needed to restore and protect bodies of water in order to meet their beneficial uses. All sources of the pollutants that caused each body of water to be included on the list, including point sources and non-point sources, must be identified. The California §303 (d) list was completed in March 1999. On July 25, 2003, U.S. EPA gave final approval to California's 2002 revision of §303 (d) List of Water Quality Limited Segments. A priority schedule has been developed to determine TMDLs for impaired waterways. TMDL projects are in various stages throughout the district for most of the identified impaired water bodies. The RWQCBs will be responsible for ensuring that total discharges do not exceed TMDLs for individual water bodies as well as for entire watersheds.

3.5.1.1.4 *State Water Quality Certification Program*

The RWQCBs also coordinate the State Water Quality Certification program, or §401 of the CWA. Under §401, states have the authority to review any federal permit or license that will result in a discharge or disruption to wetlands and other waters under state jurisdiction to ensure that the actions will be consistent with the state's water quality requirements. This program is most often associated with §404 of the CWA which obligates the U.S. Army Corps of Engineers to issue permits for the movement of dredge and fill material into and from "waters of the United States".

3.5.1.2 Regional Water Quality Management

Water quality of regional surface water and groundwater resources is affected by point source and non-point source discharges occurring throughout individual watersheds. Regulated point sources, such as wastewater treatment effluent discharges, usually involve a single discharge into receiving waters. Non-point sources involve diffuse and non-specific runoff that enters receiving waters through storm drains or from unimproved natural landscaping. Common non-point sources include urban runoff, agriculture runoff, resource extraction (on-going and historical), and natural drainage. Within the regional Basin Plans, the RWQCBs establish water quality objectives for surface water and groundwater resources and designate beneficial uses for each identified water body.

The Basin Plan (Water Quality Control Plan: Los Regional Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties) (LARWQCB, 1994) is designed to preserve and enhance water quality and to protect beneficial uses of regional waters. The Basin Plan designates beneficial uses of surface water and ground water, such as contact recreation or municipal drinking water supply. The Basin Plan also establishes water quality objectives, which are defined as "the allowable limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance in a specific area." The Basin Plan specifies objectives for specific constituents, including bioaccumulation, chemical constituents, dissolved oxygen, oil and grease, pesticides, pH polychlorinated biphenyls, suspended solids, toxicity, and turbidity.

California Water Code, Division 7, Chapter 5.6 established a comprehensive program within the SWRCB to protect the existing and future beneficial uses of California's enclosed bays and estuaries. The Bay Protection and Toxic Cleanup Plan (BPTCP) has provided a new focus on the SWRCB and the RWQCBs' efforts to control pollution of the State's bays and estuaries by establishing a program to identify toxic hot spots and plans for their cleanup. In June 1999, the SWRCB published a list of known toxic hot spots in estuaries, bays, and coastal waters.

Other statewide programs run by the SWRCB to monitor water quality include the California State Mussel Watch Program and the Toxic Substances Monitoring Program. The Department of Fish and Game collects water and sediment samples for the SWRCB for both of these programs and provides extensive statewide water quality data reports annually. In addition, the RWQCBs conduct water sampling for Water Quality Assessments required

by the CWA and for specific priority areas under restoration programs such as the Santa Monica Bay Restoration Program.

3.5.1.3 Watershed Management

In February 1998, the Clean Water Action Plan (CWAP) was established to require states and tribes, with assistance from federal agencies and input from stakeholders and private citizens, to convene and work collaboratively to develop Unified Watershed Assessments (UWA). The CWAP designated watersheds to one of the following categories:

- Category I: Watersheds that are candidates for increased restoration because of poor water quality or the poor status of natural resources.
- Category II: Watersheds that have good water quality but can still improve.
- Category III: Watersheds with sensitive areas on federal, state, or tribal lands that need protection.
- Category IV: Watersheds for which there is insufficient information to categorize them.

Targeted watersheds and watershed priorities and activities were identified for each of California's nine RWQCBs. Examples of targeted watersheds include the Santa Monica Bay Restoration Commission and the Malibu Creek Watershed Non-Point Source Pilot Project.

3.5.1.4 Wastewater Treatment

The federal government enacted the CWA to regulate point source water pollutants, particularly municipal sewage and industrial discharges, to waters of the United States through the NPDES permitting program. In addition to establishing a framework for regulating water quality, the CWA authorized a multibillion dollar Clean Water Grant Program, which together with the California Clean Water Bond funding, assisted communities in constructing municipal wastewater treatment facilities. These financing measures made higher levels of wastewater treatment possible for both large and small communities throughout California, significantly improving the quality of receiving waters statewide. Wastewater treatment and water pollution control laws in California are codified in the CWC and CCR, Titles 22 and 23. In addition to federal and state restrictions on wastewater discharges, most incorporated cities in California have adopted local ordinances for wastewater treatment facilities. Local ordinances generally require treatment system designs to be reviewed and approved by the local agency prior to construction. Larger urban areas with elaborate infrastructure in place would generally prefer new developments to hook into the existing system rather than construct new wastewater treatment facilities. Other communities promote individual septic systems to avoid construction of potentially growth accommodating treatment facilities. The RWQCBs generally delegate management responsibilities of septic systems to local jurisdictions. Regulation of wastewater treatment includes the disposal and reuse of biosolids.

3.5.1.5 Drinking Water Standards

The federal Safe Drinking Water Act, enacted in 1974 and implemented by the U.S. EPA, imposes water quality and infrastructure standards for potable water delivery systems nationwide. The primary standards are health-based thresholds established for numerous toxic substances. Secondary standards are recommended thresholds for taste and mineral content. The California Safe Drinking Water Act enacted in 1976 is codified in Title 22 of the CCR. Potable water supply is managed through the following agencies and water districts: the State Department of Water Resources (DWR), the State Department of Health Services (DHS), the SWRCB, the U.S. EPA, and the U.S. Bureau of Reclamation. Water right applications are processed through the SWRCB for properties claiming riparian rights. The DWR manages the State Water Project (SWP) and compiles planning information on water supply and water demand within the state. Primary drinking water standards are promulgated in the CWA §304 and these standards require states to ensure that potable water retailed to the public meets these standards. Standards for a total of 88 individual constituents, referred to as Maximum Contaminant Levels (MCLs) have been established under the Safe Drinking Water Act as amended in 1986 and 1996. The U.S. EPA may add additional constituents in the future. The MCL is the concentration that is not anticipated to produce adverse health effects after a lifetime of exposure. State primary and secondary drinking water standards are codified in CCR Title 22 §§64431-64501. Secondary drinking water standards incorporate non-health risk factors including taste, odor, and appearance. The 1991 Water Recycling Act established water recycling as a priority in California. The Water Recycling Act encourages municipal wastewater treatment districts to implement recycling programs to reduce local water demands. The DHS enforces drinking water standards in California.

3.5.1.6 Local Regulations

In addition to federal and state regulations, cities, counties and water districts may also provide regulatory advisement regarding water resources. Many jurisdictions incorporate policies related to water resources in their municipal codes, development standards, storm water pollution prevention requirements, and other regulations.

3.5.2 Hydrology

3.5.2.1 Water Sources

The DWR divided California into ten hydrologic regions corresponding to the state's major water drainage basins. The hydrologic regions define a river basin drainage area and are used as planning boundaries, which allows consistent tracking of water runoff, and the accounting of surface water and groundwater supplies (DWR, [20102011](#)).

The Basin lies within the South Coast Hydrologic Region. The South Coast Hydrologic Region is California's most urbanized and populous region. More than half of the state's population resides in the region (about 19.6 million people or about 54 percent of the state's population), which covers 11,000 square miles or seven percent of the state's total land. The South Coast Hydrologic Region extends from the Pacific Ocean east to the Transverse and

Peninsular Ranges, and from the Ventura-Santa Barbara County line south to the international border with Mexico and includes all of Orange County and portions of Ventura, Los Angeles, San Bernardino, Riverside, and San Diego counties (DWR, 2010).

Topographically, most of the South Coast Hydrologic Region is composed of several large, undulating coastal and interior plains. Several prominent mountain ranges comprise its northern and eastern boundaries and include the San Gabriel and San Bernardino mountains. Most of the region's rivers drain into the Pacific Ocean, and many terminate in lagoons or wetland areas that serve as important coastal habitat. Many river segments on the coastal plain, however, have been concrete-lined and in other ways modified for flood control operations (DWR, [20102011](#)).

There are 19 major rivers and watersheds in the South Coast Hydrologic Region. Many of these watersheds have densely urbanized lowlands with concrete-lined channels and dams controlling floodflows. The headwaters for many rivers, however, are within coastal mountain ranges and have remained largely undeveloped (DWR, [20102011](#)).

The cities of Ventura, Los Angeles, Long Beach, Santa Ana, San Bernardino, and Big Bear Lake are among the many urban areas in this section of the state, which contain moderate-sized mountains, inland valleys, and coastal plains. The Santa Clara, Los Angeles, San Gabriel, and Santa Ana rivers are among the area's hydrologic features. In addition to water sources within the South Coast Hydrologic Region, imported water makes up a major portion of the water used in the Basin. Water is brought into the South Coast Hydrologic Region from three major sources: the Sacramento-San Joaquin Delta (Delta), Colorado River, and Owens Valley/Mono Basin. Most lakes in this area are actually reservoirs, made to hold water coming from the SWP, the Los Angeles Aqueduct (LAA), and the Colorado River Aqueduct (CRA) including Castaic Lake, Lake Mathews, Lake Perris, Silverwood Lake, and Diamond Valley Lake. In addition to holding water, Lake Casitas, Big Bear Lake, and Morena Lake regulate local runoff.

3.5.2.2 Surface Water Hydrology

Surface water hydrology refers to surface water systems, including watersheds, floodplains, rivers, streams, lakes and reservoirs, and the inland Salton Sea.

3.5.2.2.1 *Watersheds*

Watersheds refer to areas of land, or basin, in which all waterways drain to one specific outlet, or body of water, such as a river, lake, ocean, or wetland. Watersheds have topographical divisions such as ridges, hills or mountains. All precipitation that falls within a given watershed, or basin, eventually drains into the same body of water (SCAG, 2012).

There are 20 major watersheds within southern California region, all of which are outlined and shaped by the various topographic features of the region. Given the physiographic characteristics of the region, most of the watersheds are located along the Transverse and Peninsular Ranges, and only a small number are in the desert areas (Mojave and Colorado Desert) (SCAG, 2012). Figure 3.5-1 presents a map of the watersheds within the district.

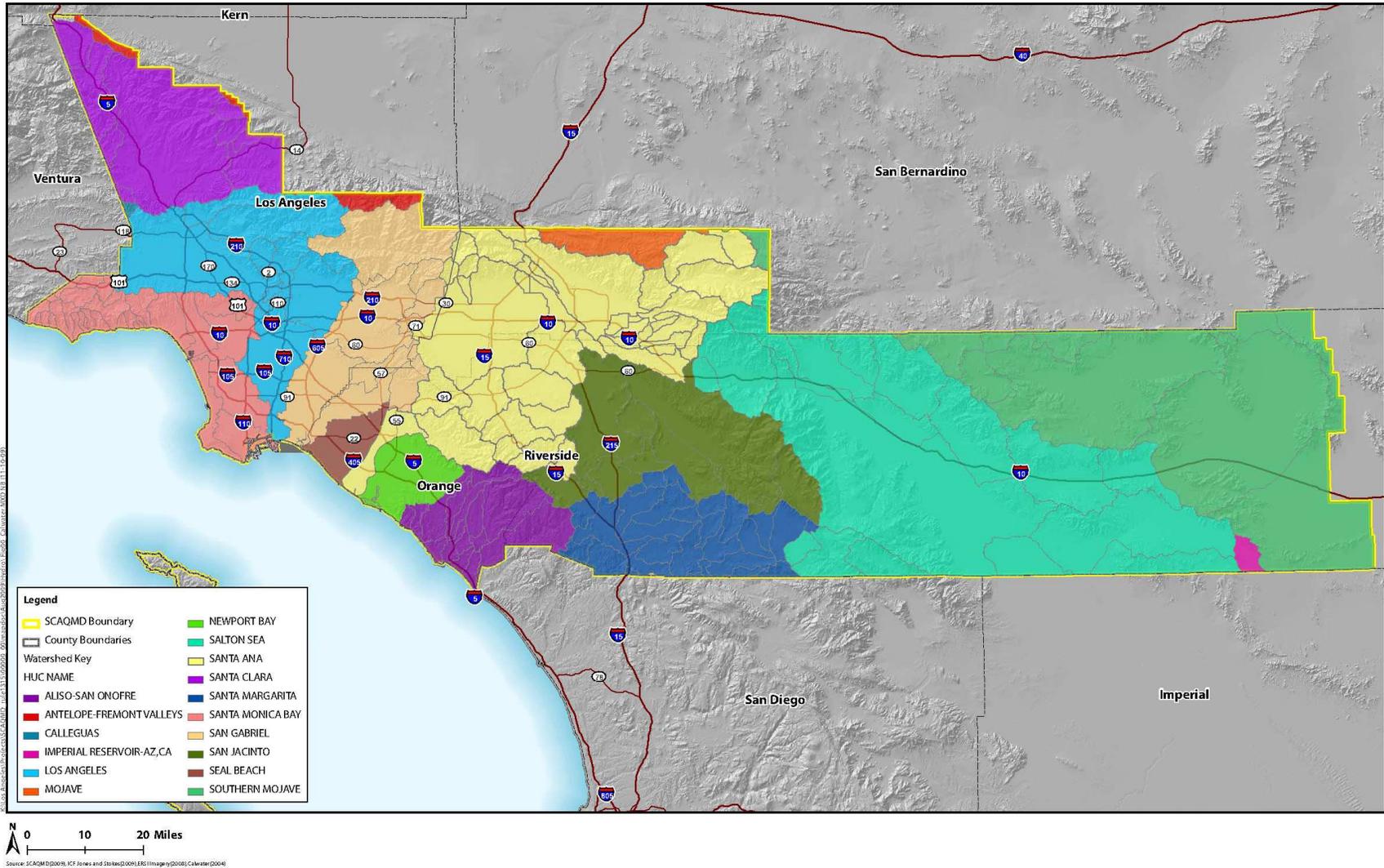


FIGURE 3.5-1
 USGS Watersheds within the South Coast Air Quality Management District

3.5.2.2.2 *Rivers*

Because the climate of Southern California is predominantly arid, many of the natural rivers and creeks are intermittent or ephemeral, drying up in the summer or flowing only after periods of precipitation. For example, annual rainfall amounts vary depending on elevation and proximity to the coast. Some waterways such as Ballona Creek and the Los Angeles River maintain a perennial flow due to agricultural irrigation and urban landscape watering (SCAG, 2012). Figure 3.5-2 presents a map of the major rivers within the district.

Major natural streams and rivers in the South Coast Hydrologic Region include the Ventura River, Santa Clara River, Los Angeles River, San Gabriel River, Santa Ana River, San Jacinto River, and upstream portions of the Santa Margarita River.

The Ventura River, located outside of the district, is fed by Lake Casitas on the western border of Ventura County and empties out into the ocean. It is the northern-most river system in Southern California, supporting a large number of sensitive aquatic species. Water quality decreases in the lower reaches due to urban and industrial impacts.

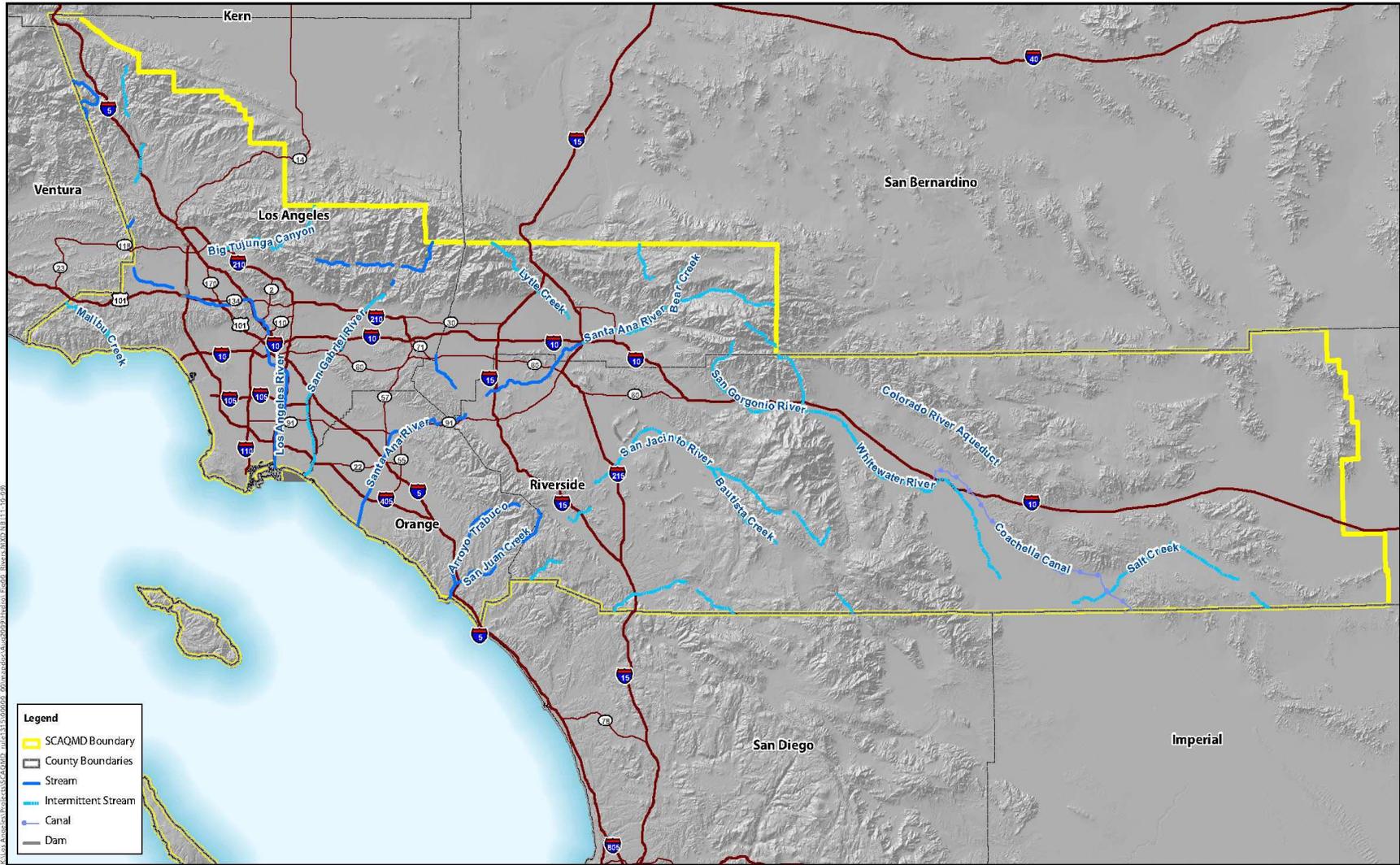
The Santa Clara River starts in Los Angeles County, flows through the center of Ventura County, and remains in a relatively natural state. Threats to water quality include increasing development in floodplain areas, flood control measures such as channeling, erosion, and loss of habitat.

The Los Angeles River is a highly disturbed system due to the flood control features along much of its length. Due to the high urbanization in the area around the Los Angeles River, runoff from industrial and commercial sources as well as illegal dumping contribute to reduce the channel's water quality.

The San Gabriel River is similarly altered with concrete flood control embankments and impacted by urban runoff.

The Santa Ana River drains the San Bernardino Mountains, cuts through the Santa Ana Mountains, and flows onto the Orange County coastal plain. Recent flood control projects along the river have established reinforced embankments for much of the river's path through urbanized Orange County.

The Santa Margarita River begins in Riverside County, draining portions of the San Jacinto Mountains and flowing to the ocean through northern San Diego County.



0 10 20 Miles
 Source: SCAQMD (2009), ICF Jones and Stokes (2009), ERSI (Image by D008) ERSI (2008)

FIGURE 3.5-2
 Rivers within South Coast Air Quality Management District

3.5.2.2.3 *Lakes and Reservoirs*

Since southern California is a semi-arid region, many of its lakes are drinking water reservoirs, created either through damming of rivers, or manually dug and constructed. Reservoirs also serve as flood control for downstream communities. Some of the most significant lakes, including reservoirs, in the Basin are Big Bear Lake, Lake Arrowhead, Lake Casitas, Castaic Lake, Pyramid Lake, Lake Elsinore, Diamond Valley Lake, and the Salton Sea (SCAG, 2012).

Big Bear Lake is a reservoir in San Bernardino County, in the San Bernardino Mountains. It was created by a granite dam in 1884, which was expanded in 1912, and holds back approximately 73,000 acre-feet¹ of water. The lake has no tributary inflow, and is replenished entirely by snowmelt. It provides water for the community of Big Bear, as well as nearby communities (SCAG, 2012).

Lake Arrowhead is also in San Bernardino County, at the center of an unincorporated community also called Lake Arrowhead. The lake is a man-made reservoir, with a capacity of approximately 48,000 acre-feet of water. In 1922, the dam at Lake Arrowhead was completed, with the intention of turning the area into a resort. It is now used for recreation and as a potable water source for the surrounding community (SCAG, 2012).

Lake Casitas is in Ventura County, and was formed by the Casitas Dam on the Coyote Creek just before it joins the Ventura River. The dam, completed in 1959, holds back nearly 255,000 acre-feet of water. The water is used for recreation, as well as drinking water and irrigation (SCAG, 2012).

Castaic Lake is on the Castaic Creek, and was formed by the completion of the Castaic Dam. The lake is in northwestern Los Angeles County. It is the terminus of the West Branch of the California Aqueduct, and holds over 323,000 acre-feet of water. Much of the water is distributed throughout northern Los Angeles County, though some is released into Castaic Lagoon, which feeds Castaic Creek. The creek is a tributary of the Santa Clara River (SCAG, 2012).

Pyramid Lake is just above Castaic Lake, and water flows from Pyramid into Castaic through a pipeline, generating electricity during the day. At night, when electricity demand and prices are low, water is pumped back up into Pyramid Lake. Pyramid Lake is on Piru Creek, and holds 180,000 acre-feet of water (SCAG, 2012).

Lake Elsinore is in the City of Lake Elsinore, in Riverside County. While the lake has been dried up and subsequently replenished throughout the last century, it now manages to maintain a consistent water level with outflow piped into the Temescal Canyon Wash (SCAG, 2012).

Diamond Valley Lake is Southern California's newest and largest reservoir. Located in Riverside County, it was a project of Metropolitan Water District (MWD) to expand surface

¹ One acre-foot is one acre of surface area of water to a depth of one foot and is equivalent to 360,000 gallons or 43,560 cubic feet of water.

storage capacity in the region. A total of three dams were required to create the lake. Completed in 1999, it was full by 2002, holding 800,000 acre-feet of water, effectively doubling MWD's surface water storage in the region. The lake is connected to the existing water infrastructure of the SWP. The lake is situated at approximately 1,500 feet above sea level, well above most of the users of the lake's water which enables the lake to also provide hydroelectric power, as water flows through the lowest dam (SCAG, 2012).

The Salton Sea is California's largest lake, nearly 400 square miles in size. The lake is over 200 feet below sea level, and has flooded and evaporated many times over, when the Colorado overtops its banks during extreme flood years. This cycle of flooding and evaporation has re-created the Salton Sea several times during the last thousand years and has resulted in high levels of salinity. The lake's most recent formation occurred in 1905 after an irrigation canal was breached and the Colorado River flowed into the basin for 18 months, creating the current lake (SCAG, 2012).

The principle inflow to the Salton Sea is from agricultural drainage, which is high in dissolved salts; approximately four million tons of dissolved salts flow into the Salton Sea every year. The evaporation of the Salton Sea's water, plus the addition of highly saline water from agriculture, has created one of the saltiest bodies of water in the world. The Sea has been a highly successful fishery and is a habitat and migratory stopping and breeding area for 380 different bird species; however, the high, and ever-increasing, salinity of the Sea has resulted in declining fish populations that inhabit it, resulting in declining local and migratory bird that rely on the fish as a food source (SCAG, 2012).

The major surface waters in this section are presented in Table 3.5-1.

TABLE 3.5-1
Major Surface Waters

Wetlands	Rivers, Creeks, and Streams	Lakes and Reservoirs
<i>Los Angeles Basin</i>		
Ventura River Estuary Santa Clara River Estuary McGrath Lake Ormond Beach Wetlands Mugu Lagoon Trancas Lagoon Topanga Lagoon Los Cerritos Wetlands Ballona Lagoon Los Angeles River Ballona Wetlands	Sespe Creek Piru Creek Ventura River Santa Clara River Los Angeles River Big Tujunga Canyon San Gabriel River Ballona Creek	Lake Casitas Lake Piru Pyramid Lake Castaic Lake Bouquet Reservoir Los Angeles Reservoir Chatsworth Reservoir Sepulveda Reservoir Hansen Reservoir San Gabriel Reservoir Morris Reservoir Whittier Narrows Reservoir Santa Fe Reservoir

TABLE 3.5-1 (Concluded)
Major Surface Waters

Wetlands	Rivers, Creeks, and Streams	Lakes and Reservoirs
<i>Lahontan Basin</i>		
	Mojave river Amargosa River	Silver Lake Silverwood Lake Mojave River Reservoir Lake Arrowhead Soda Lake
<i>Colorado River Basin</i>		
	Colorado River Whitewater River Alamo River New River	Lake Havasu Gene Wash Reservoir Copper Basin Reservoir Salton Sea Lake Cahuilla
<i>Santa Ana Basin</i>		
Hellman Ranch Wetlands Anaheim Bay Bolsa Chica Wetlands Huntington Wetlands Santa Ana River Laguna Lakes San Juan Creek Upper Newport Bay San Joaquin Marsh Prado Wetlands	Santa Ana River San Jacinto River	Prado Reservoir Big Bear Lake Lake Perris Lake Matthews Lake Elsinore Vail Lake Lake Skinner Lake Hemet Diamond Valley Lake

Source: Draft 2008 RTP Program EIR, January 2008 p. 3.15-14.

3.5.2.3 Groundwater Hydrology

Groundwater is the part of the hydrologic cycle representing underground water sources. Groundwater is present in many forms: in reservoirs, both natural and constructed; in underground streams; and, in the vast movement of water in and through sand, clay, and rock beneath the earth's surface. The place where groundwater comes closest to the surface is called the water table, which in some areas may be very deep, and in others may be right at the surface. Groundwater hydrology is, therefore, connected to surface water hydrology, and cannot be treated as a separate system. One example of how groundwater hydrology can directly impact surface water hydrology is when surface streams are partly filled by groundwater. When that groundwater is pumped out and removed from the system, the stream levels will fall, or even dry up entirely, even though no water was removed from the stream itself (SCAG, 2012).

Groundwater represents most of the Basin's fresh water supply, making up approximately 30 percent of total water use, depending on precipitation levels. Groundwater basins are replenished mainly through infiltration – precipitation soaking into the ground and making its way into the groundwater. Two threats to the function of this system are increases in impervious surface and overdraft (SCAG, 2012).

Impervious surface decreases the area available for groundwater recharge, as precipitation runoff flows off of streets, buildings, and parking lots directly into storm sewers, and straight into either river channels or into the ocean. This prevents the natural recharge of groundwater, effectively removing groundwater from the system without any pumping. Impervious surface also deteriorates the quality of the water, as it moves over streets and buildings, gathering pollutants and trash before entering streams, rivers, and the ocean (SCAG, 2012).

To prevent seawater intrusion in coastal basins in Orange County, recycled water is injected into the ground to form a mound of groundwater between the coast and the main groundwater basin. In Los Angeles County, imported and recycled water is injected to maintain a seawater intrusion barrier (SCAG, 2012).

VOCs and other non-organic contaminants such as perchlorates have created groundwater impairments in industrialized portions of the San Gabriel and San Fernando Valley groundwater basins, where some locations have been declared federal Superfund sites. Subsequently, perchlorate contamination was found in the San Gabriel Valley, and is being removed. The U.S. EPA continues to oversee installation of a groundwater cleanup system, components of which were installed beneath the cities of La Puente and Industry in 2006. Similar problems exist in the Bunker Hills sub-basin of the Upper Santa Ana Valley groundwater basin. Perchlorate contamination has also been found in wells in the cities of Rialto, Colton, and Fontana in San Bernardino County. The presence of contamination in the source water does not necessarily require the closure of a groundwater well. Water systems can implement water treatment accompanied by monthly monitoring for contaminants and/or may blend the problematic water with other “cleaner” water in order to reduce the concentration of the contaminants of concern in the water that is ultimately to be delivered to the end-users (SCAG, 2012). For these reasons, groundwater continues to be used as the predominant source of water supply in these areas (SCAG, 2012).

3.5.3 Water Demand and Forecasts

Estimating total water use in the district is difficult because the boundaries of supplemental water purveyors' service areas bear little relation to the boundaries of the district and there are dozens of individual water retailers within the district. Water demand in California can generally be divided between urban, agricultural, and environmental uses. In southern California, approximately 75 percent of potable water is provided from imported sources. Annual water demand fluctuates in relation to available supplies. During prolonged periods of drought, water demand can be reduced significantly through conservation measures, while in years of above average rainfall demand for imported water usually declines. In 2000, a ‘normal’ year in terms of annual precipitation, the demand for water in the State was between approximately 82 and 83 million acre-feet. Of this total, southern California accounted for approximately 9.8 million acre-feet (SCAG, 2012).

The increase in California’s water demand is due primarily to the increase in population. By employing a multiple future scenario analysis, the California Water Plan Update 2009 (DWR, 2010) provides a growth range for future annual water demand. According to the California Water Plan Update 2009, statewide future annual water demands range from an

increase of fewer than 1.5 million acre-feet for the Slow and Strategic Growth scenario, to an increase of about 10 million acre-feet under the Expansive Growth scenario by year 2050. If southern California maintains its share of 12 percent of the state's water demand, the region could be expected to require an additional 500,000 acre-feet by 2030 (SCAG, 2012).

On June 4, 2008, Governor Arnold Schwarzenegger issued Executive Order S-06-08 and declared an official drought for California². Further, California Water Code §71460 et seq. states that a water district may restrict the use of water during any emergency caused by drought, or other threatened or existing water shortage, and may prohibit the use of water during such periods for any purpose other than household uses or such other restricted uses as determined to be necessary. The water district may also prohibit the use of water during such periods for specific uses which it finds to be nonessential. On February 27, 2009, Governor Schwarzenegger proclaimed a state of emergency regarding the drought and the availability and future sustainability of California's water resources³. The proclamation directed all state government agencies to utilize their resources, implement a state emergency plan and provide assistance for people, communities and businesses impacted by the drought. The proclamation further requested that all urban water users immediately increase their water conservation activities in an effort to reduce their individual water use by 20 percent.

Water districts, in response to the drought, have also taken actions throughout the state such as: 1) asking for voluntary reductions; 2) imposing mandatory restrictions or declaring a local emergency; 3) imposing agricultural rationing; 4) imposing drought rates, surcharges and fines; 5) limiting new development and requiring water efficient landscaping; and, 6) implementing a conservation campaign. In addition, water shortages have prompted cities to begin infrastructure improvements to secure future water supplies.

Following substantial increases in statewide rainfall and mountain snowpack, on March 30, 2011, Governor Jerry Brown officially rescinded Executive Order S-06-08, issued on June 4, 2008 and ended the States of Emergency regarding the drought called on June 12, 2008, and on February 27, 2009. The fourth snow survey of the season was conducted by the DWR and found that water content in California's mountain snowpack was 165 percent of the April 1 full season average. At that time, a majority of the state's major reservoirs were also above normal storage levels. Based on this data, DWR estimated it will be able to deliver 70 percent of requested SWP water for 2011.

In 2012, a recent uptick in water use has occurred due to a dry winter and a below-normal snowpack. Statewide hydrologic conditions at the end of June 2012 showed 80 percent of average precipitation to date; runoff at 65 percent of average to date; and reservoir storage at 100 percent of average for the date. However, impacts of drought are typically felt first by those most reliant on annual rainfall such as small water systems lacking a reliable source, rural residents relying on wells in low-yield rock formations, or ranchers engaged in dryland grazing. As of mid-July 2012, 75-percent of California's pasture and range land is reported to be experiencing "poor" or "very poor" water conditions. So, some regions of California

² <http://gov.ca.gov/press-release/9796>

³ <http://gov.ca.gov/press-release/11556/>

may be experiencing a national trend toward drought. Over half of the contiguous U.S. is experiencing drought conditions, the largest percentage of the nation experiencing drought conditions in the 12-year record of the U.S. Drought Monitor.

3.5.3.1 Water Suppliers

Southern California is served by many water suppliers, both retail and wholesale with MWD being the largest. Created by the California legislature in 1931, MWD serves the urbanized coastal plain from Ventura in the north to the Mexican border in the south to parts of the rapidly urbanizing counties of San Bernardino and Riverside in the east. MWD provides water to about 90 percent of the urban population of southern California. MWD is comprised of 26 member agencies, with 12 supplying wholesale water to retail agencies and other wholesalers. The remaining 14 agencies are individual cities which directly supply water to their residents. A list of the major water suppliers operating within the district is provided in Table 3.5-2.

MWD's largest water customers are the San Diego County Water Authority (28 percent of MWD's supplies based on 2005-2009 average), the LADWP (15 percent) and the Municipal Water District of Orange County (13 percent). The reliance on MWD's water supplies varies by agency. For example, in recent years, Upper San Gabriel received as little as five percent (in fiscal year 2008/09) of its total water supply from MWD, while Beverly Hills received over 93 percent. However, this relative share of local and imported supplies varies from year to year based on supply and demand conditions (MWD, 2010).

MWD monitors demographics in its service area since water demand is heavily influenced by population size, geographical distribution, variation in precipitation levels, and water conservation practices. In 1990, the population of MWD's service area was approximately 14.8 million people. By 2010, it had reached an estimated 19.1 million, representing about 50 percent of the state's population. Growth has generally been around 200,000 persons per year since 2002. The MWD service area is estimated to reach an estimated population of 21.3 million in 2025, and 22.5 million by 2035 (MWD, 2010). Average per capita water usage generally ranges from 170 to 285 gallons per day (SCAG, 2012).

Actual retail water demands within MWD's service area have increased from 3.1 million acre-feet in 1980 to a projected 4.0 million acre-feet in 2010. This represents an estimated annual increase of about 1.0 percent. A similar gradual increase in estimated total retail water demand is expected between 2010 and 2035 (see Table 3.5-2) (MWD, 2010).

Of the estimated 4.0 million acre-feet of total retail water use in 2010, 93 percent is due to municipal and industrial uses, with agriculture accounting for the other seven percent. The relative share of municipal and industrial water use has increased over time at the expense of agricultural use which has declined due to urbanization and market factors. By 2035, it is estimated that agriculture will account for only about four percent of total MWD retail demands. It is estimated that total municipal and industrial water use will grow from an annual average of 4.0 million acre-feet in 2010 to 4.7 million acre-feet in 2035. All water demand projections assume normal weather conditions. Future changes in estimated water demand assumes continued water savings due to conservation measures such as water

savings resulting from plumbing codes, price effects, and the continuing implementation of utility-funded conservation Best Management Practices (BMPs) (MWD, 2010) (see Table 3.5-2).

TABLE 3.5-2
2015 – 2035 Projected Water Demand

Water District	2015 Demand (MAF) ^(a)	2020 Demand (MAF)	2025 Demand (MAF)	2030 Demand (MAF)	2035 Demand (MAF)
MWD ^(b)	5.45	5.63	5.77	5.93	6.07
LADWP ^(c)	0.615	0.652	0.676	0.701	0.711
Antelope Valley/East Kern Water Agency ^(d)	0.091	0.093	0.095	0.097	N/A ^(e)
Castaic Lake Water Agency ^(f)	0.080	0.088	0.097	0.105	0.114
Coachella Valley Water District ^(g)	0.596	0.624	0.661	0.671	0.689
Crestline-Lake Arrowhead Water Agency ^(h)	0.0015	0.0019	0.0021	0.0023	0.0024
Desert Water Agency ⁽ⁱ⁾	0.055	0.059	0.065	0.069	0.073
Palmdale Water Agency ^(j)	0.035	0.040	0.045	0.055	0.060
San Bernardino Valley Municipal ^(k)	0.240	0.256	0.284	0.305	0.324
San Geronio Pass Water Agency ^(l)	0.039	0.048	0.060	0.072	0.078
Municipal Water District of Orange County ^(m)	0.526	0.543	0.558	0.564	0.568

(a) MAF = million acre-feet

(b) LADWP, 2010

(c) MWD, 2010

(d) AVEKWA, 2010

(e) Not Available

(f) CLWA, [20102011](#)

(g) [CVWMCVWD, 20102011](#)

(h) CLAWA, [20102011](#)

(i) DWA, [20102011](#)

(j) PWD, [20102011](#)

(k) SBVMWD, [20102011](#)

(l) SGPWA, 2010

(m) MWDOC, [20102011](#)

3.5.3.2 Water Uses

While most land use in the region is urban, other land uses include national forest and a small percentage of irrigated crop acreage (DWR, 1998). The South Coast Hydrologic Region is the most populous and urbanized region in California. In some portions of the region, water users consume more water than is locally available, which has resulted in an overdraft of groundwater resources and increasing dependence on imported water supplies. The distribution of water uses, however, varies dramatically across the South Coast's planning areas. As a result of recent droughts, South Coast water users have generally become more water efficient. Municipal water agencies are engaged in aggressive water conservation and efficiency programs to reduce per capita water demand. As a result of changes in plumbing codes, energy and water efficiency innovations in appliances, and

trends toward more water efficient landscaping practices, urban water demand has become more efficient (DWR, 2010).

For the South Coast region, urban water uses are the largest component of the developed water supply, while agricultural water use is a smaller but significant portion of the total. Imported water supplies and groundwater are the major components of the water supply for this region, with minor supplies from local surface waters and recycled water (DWR, 2010).

Of the total water supply to the region, more than half is either used by native vegetation; evaporates to the atmosphere; provides some of the water for agricultural crops and managed wetlands (effective precipitation); or flows to the Pacific Ocean and salt sinks like saline groundwater aquifers. The remaining portion is distributed among urban and agricultural uses and for diversions to managed wetlands (DWR, 2010).

3.5.3.2.1 Residential Water Use

While single-family homes are estimated to account for about 61 percent of the total occupied housing stock in 2010, they are responsible for about 74 percent of total residential water demands. This is consistent with the fact that single-family households are known to use more water than multifamily households (e.g., those residing in duplexes, triplexes, apartment buildings and condo developments) on a per housing-unit basis. This is because single-family households tend to have more persons living in the household; they are likely to have more water-using appliances and fixtures; and they tend to have more landscaping (MWD, 2010).

3.5.3.2.2 Non-residential Water Use

Nonresidential water use represents an approximately 25 percent of the total municipal and industrial demands in MWD's service area. This includes water that is used by businesses, services, government, institutions (such as hospitals and schools), and industrial (or manufacturing) establishments. Within the commercial/institutional category, the top water users include schools, hospitals, hotels, amusement parks, colleges, laundries, and restaurants. In southern California, major industrial users include electronics, aircraft, petroleum refining, beverages, food processing, and other industries that use water as a major component of the manufacturing process (MWD, 2010).

3.5.3.2.3 Agricultural Water Use

Agricultural water use currently constitutes about seven percent of total regional water demand in MWD's service area. Agricultural water use accounted for 19 percent of total regional water demand in 1970, 16 percent in 1980, 12 percent in 1990 and five percent in 2008. Part of the reduction seen in 2008 was a 30 percent mandatory reduction in MWD's Interim Agricultural Water Program deliveries, which continued into 2009 and a 25 percent reduction in 2010 (MWD, 2010). Improved technology has allowed growers to more accurately distribute water to the individual trees. In addition, pressure compensating valves and emitters have enabled growers to irrigate on steep slopes with better precision. Maximizing agricultural irrigation systems lowers the growers' irrigation demands (DWR, 2010).

3.5.4 Water Supply

To meet current and growing demands for water, the South Coast region is leveraging all available water resources: imported water, water transfers, conservation, captured surface water, groundwater, recycled water, and desalination. Given the level of uncertainty about water supply from the Delta and Colorado River, local agencies have emphasized diversification. Local water agencies now utilize a diverse mixture of local and imported sources and water management strategies to adequately meet urban and agricultural demands each year (DWR, 2010).

Water used in MWD's service area comes from both local and imported sources. Local sources include groundwater, surface water, and recycled water. Sources of imported water include the Colorado River, the SWP, and the Owens Valley/Mono Basin. Local sources meet about 45 percent of the water needs in MWD's service area, while imported sources supply the remaining 55 percent (MWD, 2010).

The City of Los Angeles imports water from the eastern Owens Valley/Mono Basin in the Sierra Nevada through the LAA. This water currently meets about seven percent of the region's water needs based on a five-year average from 2005-2009, but is dedicated for use by the city of Los Angeles. Contractually and for planning purposes, MWD treats the LAA as a local supply, although physically its water is imported from outside the region. Other supplies come from local sources, and MWD provides imported water supplies to meet the remaining 47 percent of the region's water needs based on the same five-year period. These imported supplies are received from MWD's CRA and the SWP's California Aqueduct (MWD, 2010).

3.5.4.1 Imported Water Supplies

Water is brought into the South Coast region from three major sources: the Delta, Colorado River, and Owens Valley/Mono Basin. All three are facing water supply cutbacks due to climate change and environmental issues. Although historically imported water served to help the South Coast region grow, it is today relied upon to sustain the existing population and economy. As such, parties in the South Coast region are working closely with other regions, the State, and federal agencies to address the challenges facing these imported supplies. Meanwhile, the South Coast region is working to develop new local supplies to meet the needs of future population and economic growth (DWR, 2010).

Most MWD member agencies and retail water suppliers depend on imported water for a portion of their water supply. For example, Los Angeles and San Diego (the largest and second largest cities in the state) have historically (1995-2004) obtained about 85 percent of their water from imported sources. These imported water requirements are similar to those of other metropolitan areas within the state, such as San Francisco and other cities around the San Francisco Bay (MWD, 2010). A list of major water suppliers operating within the district region is given in Table 3.5-3.

TABLE 3.5-3
Major Water Suppliers in the District Region

Water Agency	Land Area (square miles)	Sources of Water Supply
Antelope Valley and East Kern District	2,350	SWP, groundwater, reclaimed water
Bard Irrigation District (and Yuma Project Reservation Division)	23	Colorado River
Castaic Lake Water Agency	125	SWP
Coachella Valley Water District	974	SWP, Colorado River, and local
Crestline Lake Arrowhead	53	SWP
Desert Water Agency	324	SWP and groundwater
Imperial Irrigation District	1,658	Colorado River
Littlerock Creek Irrigation District	16	SWP, groundwater, and surface water
Metropolitan Water District of Southern California	5,200	SWP, Colorado River
Mojave Water Agency	4,900	SWP and groundwater
Palmdale Water Agency	187	SWP and groundwater
Palo Verde Irrigation District	188	Colorado River
San Bernardino Municipal Water	328	SWP and groundwater
San Geronio Pass Water Agency	214	Groundwater

Source: Draft 2008 RTP [Program](#) EIR, January 2008 p. 3.15-22.

3.5.4.1.1 State Water Project

The SWP is an important source of water for the South Coast region wholesale and retail suppliers. SWP contractors in the region take delivery of and convey the supplies to regional wholesalers and retailers. Contractors in the region are MWD, Castaic Lake Water Agency, San Bernardino Valley Municipal Water District (MWD), Ventura County Watershed Protection District (formerly Ventura County Flood Control District), San Geronio Pass Water Agency, and San Gabriel Valley Municipal Water District (DWR, 2010).

The SWP provides imported water to the MWD service area. Since 2002, SWP deliveries have accounted for as much as 70 percent of its water. In accordance with its contract with the DWR, MWD has a Table A allocation of about 1.91 million acre-feet per year under contract from the SWP. Actual deliveries have never reached this amount because they depend on the availability of supplies as determined by DWR. The availability of SWP supplies for delivery through the California Aqueduct over the next 18 years is estimated according to the historical record of hydrologic conditions, existing system capabilities as may be influenced by environmental permits, requests from state water contractors and SWP contract provisions for allocating Table A, Article 21 and other SWP deliveries. The estimates of SWP deliveries to MWD are based on DWR's most recent SWP reliability

estimates contained in its SWP Delivery Reliability Report 200716 and the December 2009 draft of the biannual update (MWD, 2010). The amount of precipitation and runoff in the Sacramento and San Joaquin watersheds, system reservoir storage, regulatory requirements, and contractor demands for SWP supplies impact the quantity of water available to MWD (MWD, 2010).

MWD and 28 other public entities have contracts with the State of California for SWP water. These contracts require the state, through its DWR, to use reasonable efforts to develop and maintain the SWP supply. The state has constructed 28 dams and reservoirs, 26 pumping and generation plants, and about 660 miles of aqueducts. More than 25 million California residents benefit from water from the SWP. DWR estimates that with current facilities and regulatory requirements, the project will deliver approximately 2.3 million acre-feet under average hydrology considering impacts attributable to the combined Delta smelt and salmonid species biological opinions (MWD, 2010). Under the water supply contract, DWR is required to use reasonable efforts to maintain and increase the reliability of service to its users.

3.5.4.1.2 Colorado River System

Another key imported water supply source for the South Coast region is the Colorado River. California water agencies are entitled to 4.4 million acre-feet annually of Colorado River water. Of this amount, 3.85 million acre-feet are assigned in aggregate to agricultural users; 550,000 acre-feet is MWD's annual entitlement. Until a few years ago, MWD routinely had access to 1.2 million acre-feet annually because Arizona and Nevada had not been using their full entitlement and the Colorado River flow was often adequate enough to yield surplus water (DWR, 2010).

A number of water agencies within California have rights to divert water from the Colorado River. Through the Seven Party Agreement (1931), seven agencies recommended apportionments of California's share of Colorado River water within the state. Table 3.5-4 shows the historic apportionment of each agency, and the priority accorded that apportionment.

The water is delivered to MWD's service area by way of the CRA, which has a capacity of nearly 1,800 cubic feet per second or 1.3 million acre-feet per year. The CRA conveys water 242 miles from its Lake Havasu intake to its terminal reservoir, Lake Mathews, near the city of Riverside. Conveyance losses along the Colorado River Aqueduct of 10 thousand acre-feet per year reduce the amount of Colorado River water received in the coastal plain (MWD, 2010).

TABLE 3.5-4

Priorities of the Seven Party Agreement

Priority	Description	TAF^(a) Annually
1	Palo Verde Irrigation District – gross area of 104,500 acres of land in the Palo Verde Valley	3,850
2	Yuma Project (Reservation Division) – not exceeding a gross area of 25,000 acres in California	
3(a)	Imperial Irrigation District and land in Imperial and Coachella Valleys ^b to be served by All American Canal	
3(b)	Palo Verde Irrigation District—16,000 acres of land on the Lower Palo Verde Mesa	
4	Metropolitan Water District of Southern California for use on the coastal plain of Southern California ^c	550
Subtotal		4,400
5(a)	Metropolitan Water District of Southern California for use on the coastal plain of Southern California	550
5(b)	Metropolitan Water District of Southern California for use on the coastal plain of Southern California ^c	112
6(a)	Imperial Irrigation District and land in Imperial and Coachella Valleys ¹ to be served by the All American Canal	300
6(b)	Palo Verde Irrigation District—16,000 acres of land on the Lower Palo Verde Mesa	
7	Agricultural Use in the Colorado River Basin in California	
	Total Prioritized Apportionment	5,362

Source: MWD, 2010

- (a) TAF = thousand acre-feet.
 (b) The Coachella Valley Water District now serves Coachella Valley
 (c) In 1946, the City of San Diego, the San Diego County Water Authority, Metropolitan, and the Secretary of the Interior entered into a contract that merged and added the City of San Diego's rights to store and deliver Colorado River water to the rights of MWD. The conditions of that agreement have long since been satisfied.

Since the date of the original contract, several events have occurred that changed the dependable supply that MWD expects from the CRA. The most significant event was the 1964 U.S. Supreme Court decree in *Arizona v. California* that reduced MWD's dependable supply of Colorado River water to 550 thousand acre-feet per year. The reduction in dependable supply occurred with the commencement of Colorado River water deliveries to the Central Arizona Project (MWD, 2010). The court decision led to a number of other contracts and agreements on how Colorado River water is divided among various users, the key ones of which are summarized below (MWD, 2010).

- In 1987, MWD entered into a contract with the United States Bureau of Reclamation (USBR) for an additional 180 thousand acre-feet per year of surplus water, and 85 thousand acre-feet per year through a conservation program with the Imperial Irrigation District.

- In 1979, the Present Perfected Rights of certain Indian reservations, cities, and individuals along the Colorado River were quantified.
- In 1999, California's Colorado River Water Use Plan (Plan) was developed to provide a framework for how California would make the transition from relying on surplus water supplies from the Colorado to living within its normal water supply apportionment. To implement these plans, the Quantification Settlement Agreement (QSA) and several other related agreements were executed. The QSA quantifies the use of water under the third priority of the Seven Party Agreement and allows for implementation of agricultural conservation, land management, and other programs identified in MWD's 1996 Integrated Water Resources Plan (IRP). The QSA has helped California reduce its reliance on Colorado River water above its normal apportionment.
- In October 2004, the Southern Nevada Water Authority and MWD entered into a storage and interstate release agreement. Under this program, Nevada can request that MWD to store unused Nevada apportionment in MWD's service area. The stored water provides flexibility to MWD for blending Colorado River water with SWP water and improves near-term water supply reliability.
- In December 2007, the Secretary of the Interior approved the adoption of specific interim guidelines for reductions in Colorado River water deliveries during declared shortages and coordinated operations of Lake Powell and Lake Mead.
- In May 2006, the MWD and the USBR executed an agreement for a demonstration program that allowed the MWD to leave conserved water in Lake Mead that MWD would otherwise have used in 2006 and 2007. As of January 1, 2010, MWD had nearly 80 thousand acre-feet of conservation water stored in Lake Mead (MWD, 2010).
- The December 2007 federal guidelines provided the Colorado River contractors with the ability to create system efficiency projects. By funding a portion of the reservoir projects at Imperial Dam, an additional 100 thousand acre-feet of water was allocated to MWD.

MWD is undertaking ongoing efforts to maintain and improve the flexibility and quality of its water supply from the Colorado River. MWD recognizes that in the short-term, programs are not yet in place to provide the full targeted amount, even with the programs adopted under the QSA and the opportunities to store conserved water in Lake Mead. The December 2007 federal guidelines concerning the operation of the Colorado River system reservoirs provide more certainty to MWD with respect to the determination of a shortage, normal, or surplus condition for the operation of Lake Mead (MWD, 2010).

3.5.4.1.3 *Owens Valley Mono Basin (Los Angeles Aqueduct)*

High-quality water from the Mono Basin and Owens Valley is delivered through the LAA to the City of Los Angeles. Construction of the original 233-mile aqueduct from the Owens Valley was completed in 1913, with a second aqueduct completed in 1970 to increase capacity. Approximately 480,000 acre-feet per year of water can be delivered to the City of

Los Angeles each year; however the amount of water the aqueducts deliver varies from year to year due to fluctuating precipitation in the Sierra Nevada Mountains and mandatory instream flow requirements (DWR, 2010).

Diversion of water from Mono Lake has been reduced following State Water Board Decision 1631. Exportation of water from the Owens Valley is limited by the Inyo-Los Angeles Long Term Water Agreement (and related Memorandum of Understanding) and the Great Basin Air Pollution Control District/City of Los Angeles Memorandum of Understanding (to reduce particulate matter air pollution from the Owens Lake bed) (DWR, 2010).

Over time, environmental considerations have required that the City reallocate approximately one-half of the LAA water supply to environmental mitigation and enhancement projects. As a result, the City of Los Angeles has used approximately 205,800 acre-feet of water supplies for environmental mitigation and enhancement in the Owens Valley and Mono Basin regions in 2010, which is in addition to the almost 107,300 acre-feet per year supplied for agricultural, stockwater, and Native American Reservations. Limiting water deliveries to the City of Los Angeles from the LAA has directly led to increased dependence on imported water supply from MWD. LADWP's purchases of supplemental water from MWD in FY 2008/09 reached an all-time high (LADWP, 2010).

LAA deliveries comprise 39 percent of the total runoff in the eastern Sierra Nevada in an average year. The vast majority of water collected in the eastern Sierra Nevada stays in the Mono Basin, Owens River, and Owens Valley for ecosystem and other uses (LADWP, 2010).

Annual LAA deliveries are dependent on snowfall in the eastern Sierra Nevada. Years with abundant snowpack result in larger quantities of water deliveries from the LAA, and typically lower supplemental water purchases from MWD. Unfortunately, a given year's snowpack cannot be predicted with certainty, and thus, deliveries from the LAA system are subject to significant hydrologic variability (LADWP, 2010).

The impact to LAA water supplies due to varying hydrology in the Mono Basin and Owens Valley is amplified by the requirements to release water for environmental restoration efforts in the eastern Sierra Nevada. Since 1989, when City water exports were significantly reduced to restore the Mono Basin's ecosystem, LAA deliveries from the Mono Basin and Owens Valley have ranged from 108,503 acre-feet in 2008/09 to 466,584 acre-feet in 1995/96. Average LAA deliveries since 1989/90 have been approximately 264,799 acre-feet, about 42 percent of the City of Los Angeles' total water needs (LADWP, 2010).

3.5.4.2 Local Water Supplies

Approximately 50 percent of the region's water supplies come from resources controlled or operated by local water agencies. These resources include water extracted from local groundwater basins, catchment of local surface water, non-MWD imported water supplied through the Los Angeles Aqueduct, and Colorado River water exchanged for MWD supplies (MWD, 2010).

Local sources of water available to the region include surface water, groundwater, and recycled water. Some of the major river systems in southern California have been developed into systems of dams, flood control channels, and percolation ponds for supplying local water and recharging groundwater basins. For example, the San Gabriel and Santa Ana rivers capture over 80 percent of the runoff in their watersheds. The Los Angeles River system, however, is not as efficient in capturing runoff. In its upper reaches, which make up 25 percent of the watershed, most runoff is captured with recharge facilities. In its lower reaches, which comprise the remaining 75 percent of the watershed, the river and its tributaries are lined with concrete, so there are no recharge facilities. The Santa Clara River in Ventura County is outside of MWD's service area, but it replenishes groundwater basins used by water agencies within MWD's service area. Other rivers in MWD's service area, such as the Santa Margarita and San Luis Rey, are essentially natural replenishment systems (MWD, 2010).

3.5.4.3 Surface Water

Local surface capture plays an important water resource role in the South Coast region. More than 75 impound structures are used to capture local runoff for direct use or groundwater recharge, operational or emergency storage for imported supplies, or flood protection. While precipitation contributes most of the annual volume of streamflow to the region's waterways, urban runoff, wastewater discharges, agricultural tailwater, and surfacing groundwater are the prime sources of surface flow during non-storm periods. The South Coast has experienced a trend of increasing dry weather flows during the past 30 years as the region has developed, due to increased imported water use and associated urban runoff (DWR, 2101).

Surface water runoff augments groundwater and surface water supplies. However, the regional demand far surpasses the potential natural recharge capacity. The arid climate, summer drought, and increased urbanization contribute to the inadequate natural recharge. Urban and agricultural runoff can contain pollutants, which decrease the quality of local water supplies. Local agencies maintain surface reservoir capacity to capture local runoff. The average yield captured from local watersheds is estimated at approximately 90 thousand acre-feet per year. The majority of this supply comes from reservoirs within the service area of the San Diego County Water Authority (MWD, 2010).

3.5.4.4 Groundwater

During the first half of the 20th century, groundwater was an important factor in the expansion of the urban and agricultural sectors in the South Coast region. Today, it remains important for the Santa Clara, MWD Los Angeles and Santa Ana planning areas, but only a small source for San Diego. Court adjudications recharge operations, and other management programs are helping to maintain the supplies available from many of the region's groundwater basins. Since the 1950s, conjunctive management and groundwater storage has been utilized to increase the reliability of supplies, particularly during droughts. Using the region's other water resources, groundwater basins are being recharged through spreading basins and injection wells. During water shortages of the imported supplies, more groundwater would be extracted to make up the difference. Water quality issues have

impacted the reliability of supplies from some basins. However, major efforts are underway to address the problems and increase supplies for these basins (DWR, 2010).

The groundwater basins that underlie the region provide approximately 86 percent of the local water supply in southern California. The major groundwater basins in the region provide an annual average supply of approximately 1.35 million acre-feet. Most of this water recharges naturally, but approximately 200 thousand acre-feet has historically been replenished each year through MWD imported supplies. By 2025, estimates show that groundwater production will increase to 1.65 million acre-feet (MWD, 2010).

Because the groundwater basins contain a large volume of stored water, it is possible to produce more than the natural recharge of 1.16 million acre-feet and the imported replenishment amount for short periods of time. During a dry year, imported replenishment deliveries can be postponed, but doing so requires that the shortfall be restored in wet years. Similarly, in dry years the level of the groundwater basins can be drawn down, as long as the balance is restored to the natural recharge level by increasing replenishment in wet years. Thus, the groundwater basins can act as a water bank, allowing deposits in wet years and withdrawals in dry years (MWD, 2010).

3.5.4.5 Recycled Water

Local water recycling projects involve further treatment of secondary treated wastewater that would be discharged to the ocean or streams and use it for direct non-potable uses such as landscape and agricultural irrigation, commercial and industrial purpose and for indirect potable uses such as groundwater recharge, seawater intrusion barriers, and surface water augmentation (MWD, 2010).

Within MWD's service area, there are approximately 355,000 acre-feet of planned and permitted uses of recycled water supplies. Actual use is approximately 209,000 acre-feet, which includes golf course, landscape, and cropland irrigation; industrial uses; construction applications; and groundwater recharge, including maintenance of seawater barriers in coastal aquifers. MWD projects the development of 500,000 acre-feet of recycled water supplies (including groundwater recovery) by 2025 (DWR, 2010).

Current average annual recycled water production in the MWD Los Angeles Planning Area is approximately 225 million gallons per day (mgd), which represents approximately 25 percent of the current average annual effluent flows. The Water Replenishment District (WRD) is permitted to recharge up to 50,000 acre-feet per year (45 mgd) of Title 22 recycled water for ground water replenishment of the Montebello Forebay. West Basin Municipal Water District's (WBMWD) Edward Little Water Recycling Facility in El Segundo, which produced approximately 24,500 acre-feet in 2004-2005, recently completed its Phase IV Expansion Project. Approximately 12,500 acre-feet per year of the water produced at this facility is purchased by WRD and injected into the West Coast Barrier. The use of recycled water by LADWP is projected to be approximately 50,000 acre-feet per year by 2019 (DWR, 2010).

Recycled water currently represents approximately four percent of the total water demands in the Santa Ana Planning Area. Eastern Municipal Water District (EMWD) recycles effluent from four wastewater treatment plants. EMWD is also investigating the feasibility of indirect potable reuse through groundwater recharge. The Irvine Ranch Water District (IRWD) has developed an extensive recycled water treatment and delivery system and will expand capacity through 2013 to meet expected recycled water demand. The Inland Empire Utilities Agency is expanding its water recycling with a goal of meeting 20 percent of their demand or 50,000 acre-feet with recycled water. The Western Water Recycling Facility, owned and operated by Western Municipal Water District, is currently being upgraded and expanded. As infrastructure is further developed, recycled water is projected to surpass surface water as a water supply source for the planning area. The Orange County Water District (OCWD) and Orange County Sanitation District's Groundwater Replenishment System provides 72,000 acre-feet per year of recycled water for groundwater recharge and injection along the seawater barrier (DWR, 2010).

The San Diego Planning Area contains a number of recycled water facilities. In Riverside County, water reclamation facilities include Santa Rosa and Temecula Valley which provide non-potable supplies for local use. Seventeen recycled water tertiary treatment facilities are located within San Diego County. The use of tertiary treated recycled water within the San Diego area is projected to increase from 11,500 acre-feet per year in 2005 to 47,600 acre-feet per year in 2030. In September 2008, the City of San Diego approved funding for a demonstration project that releases advanced treated wastewater to San Vicente Reservoir for blending and subsequent additional treatment prior to redistribution (DWR, 2010).

3.5.4.6 Desalination Plants

In the MWD Los Angeles Planning Area, the Robert W. Goldsworthy Desalter, owned and operated by the WRD, processes approximately 2.75 mgd of brackish groundwater desalination for the purpose of remediating a saline plume located within the West Coast sub-basin and providing a reliable local water source to Torrance (DWR, 2010).

The potential for groundwater banking in the Santa Ana Planning Area is substantial, but the volume of clean water that can be stored may be hindered by high salt concentrations in the existing groundwater. In the Santa Ana watershed, three groundwater desalination plants have been constructed and are producing a total of 24 mgd. The Temescal plant, constructed and operated by the City of Corona, has a capacity of 15 mgd. The Menifee and Perris Desalters, owned and operated by EMWD, are producing seven MGD. The Chino Basin Desalter Authority operates Chino I and Chino II Desalters, which are producing 24 mgd (26,000 acre-feet per year) (DWR, 2010).

The Irvine Desalter Project, a joint groundwater quality restoration project by Irvine Ranch Water District and Orange County Water District, yields 7,700 acre-feet per year of potable drinking water and 3,900 acre-feet per year of non-potable water. The Tustin Seventeenth Street Desalter, owned and operated by the City of Tustin yields approximately 2,100 acre-feet per year. The Arlington Desalter, managed by Western MWD, delivers approximately 6,400 acre-feet of treated groundwater annually to the City of Norco (DWR, 2010).

3.5.5 Water Conservation

In the MWD Los Angeles Planning Area, MWD assists member agencies with implementation of water conservation programs. MWD's conservation programs focus on two main areas: residential programs, and commercial, industrial and institutional programs.

Water conservation continues to be a key factor in water resource management in southern California. For MWD, water-use efficiency is anchored by the adopted Long-Term Conservation Plan (LTCP) (August 2011) and the Local Resources Program (LRP). The LTCP sets goals to help retailers achieve water conservation savings, and at the same time, support technology innovation and transform public perception about the value of water. This plan is market oriented and has both incentive and non-incentive drivers to ultimately change how water is used by southern California consumers. Additionally, the LRP encourages the development and increased use of recycled water through incentives (MWD, 2012).

Outdoor water use is a key focus as watering landscapes and gardens accounts for about half of household water use in MWD's service area. MWD will work with water agencies, landscape equipment manufacturers and other stakeholders to make proper irrigation control more effective and easier to understand. A similar effort will be made to reach out to the region's businesses, industries and agriculture to focus on process improvements that can save both money and water. The final focus will be on residential water use, where MWD will work with water agencies and energy utilities to better promote the choices that consumers have for water-efficient products like faucets, shower heads and high-efficiency clothes washers (MWD, 2012).

MWD's incentive programs aimed at residential, commercial and industrial water users make a key contribution to the region's conservation achievements. The rebate program is credited with water savings of 156,000 acre-feet annually. Funding provided by MWD to member agencies and retail water agencies for locally-administered conservation programs included rebates for turf removal projects, toilet distribution and replacement programs, high-efficiency clothes washer rebate programs and residential water audits (MWD, 2012).

3.5.5.1 Residential Programs

MWD's residential conservation consists of the following programs:

- **SoCal Water\$mart:** A region-wide program to help offset the purchase of water-efficient devices. MWD issued 54,000 rebates for residential fixtures in fiscal year 2008/09, resulting in approximately 2.3 thousand acre-feet of water to be saved annually.
- **Save Water, Save A Buck:** This program extends rebates to multi-family dwellings. More than 40,000 rebates were issued fiscal year 2008/09 for high-efficiency toilets and washers for multi-family units.
- **Member Agency Residential Programs:** member and retail agencies also implement local water conservation programs within their respective service areas

and receive MWD incentives for qualified retrofits and other water-saving actions. Typical projects include toilet replacements, locally administered clothes washer rebate programs, and residential water audits.

MWD has provided incentives on a variety of water efficient devices for the residential sector, including: 1) high-efficiency clothes washers; 2) high-efficiency toilets and ultra-low toilets; 3) irrigation evaluations and residential surveys; 4) rotating nozzles for sprinklers; 5) weather-based irrigation controllers; and, 6) synthetic turf.

3.5.5.2 Commercial, Industrial and Institutional Programs

MWD's commercial industrial and institutional conservation consists of three major programs:

- **Save Water, Save-A-Buck Program:** The Save-A-Buck program had its largest year in fiscal year 2008/09, providing rebates for approximately 145,000 device retrofits.
- **Water Savings Performance Program:** This program allows large-scale water users to customize conservation projects and receive incentives for five years of water savings for capital water-use efficiency improvements
- **Member Agency Commercial Programs:** Member and retail agencies also implement local commercial water conservation programs using MWD incentives.

A fourth program, the Public Sector Demonstration Program also resulted in water savings. From August 2007 through 2008, MWD offered a one-time program to provide up-front funding to increase water use efficiency in public buildings and landscapes within its service area. Participants included various special districts, school districts, state colleges and universities, municipalities, counties, and other government agencies.

- Enhanced incentives were provided to replace high water-use equipment including toilets, urinals, and irrigation controllers. Program incentives were often sufficient to cover the total cost of the equipment.
- Pay-for-performance incentives were also offered to reduce landscape irrigation water use by at least 10 percent through behavioral modifications.
- MWD's programs provide rebates for water-saving plumbing fixtures, landscaping equipment, food-service equipment, cleaning equipment, HVAC (heating, ventilating, air conditioning) and medical equipment (MWD).

LADWP implements public outreach and school education programs to encourage conservation ethics; seasonal water rates that are approximately 20 percent greater during the summer high use period; and free water conservation kits. In addition, LADWP implemented Mandatory Water Conservation measures in 2009, which are still in effect today. Mandatory Water Conservation restricts outdoor watering and prohibits certain uses of water such as prohibiting customers from hosing down driveways and sidewalks, requiring all leaks to be fixed, and requiring customers to use hoses fitted with shut-off nozzles. As a result of these conservation efforts by LADWP, the water demand for Los

Angeles is about the same as it was 25 years ago, despite a population increase of more than one million people. LADWP projects an additional savings of at least 50,000 acre-feet per year by 2030 through additional water conservation programs. The Central Basin Municipal Water District and the WBMWD recently completed water conservation master plans to coordinate and prioritize conservation efforts and identify enforcement protocols (DWR, 2010).

OCWD implements several water use efficiency programs in the Santa Ana Planning Area, including a hotel/motel water conservation program, an annual Children’s Water Festival, a Water Heroes program, and water saving tips and tools. Eastern Municipal Water District has a strategic goal to reduce per capita water use and has several programs to replace existing inefficient water devices and encourage water efficiency in new development. Inland Empire Utilities Agency provides multiple rebate programs, including turf removal and water efficient fixtures, and has established the Inland Empire Landscape Alliance to promote the use of water efficiency landscaping by its cities and retail agencies. Western Municipal Water District operates the preeminent water conservation demonstration center in the southland, Landscapes Southern California Style, which has been educating the public about water efficient planting and irrigation for over 15 years (DWR, 2010).

3.5.6 Water Quality

Water quality is a key issue in the South Coast region. Population and economic growth not only affect water demand, but add contamination challenges from increases in wastewater and industrial discharges, urban runoff, agricultural chemical usage, livestock operations, and seawater intrusion. Urban and agricultural runoff can contribute to local surface water sediment from disturbed areas; oil, grease, and toxic chemicals from automobiles; nutrients and pesticides from turf and crop management; viruses and bacteria from failing septic systems and animal waste; road salts; and heavy metals. Three areas that are receiving intense interest are nonpoint source pollution control, salinity management, and emerging contaminants (DWR, 2010).

Three Regional Water Quality Control Boards (Regional Water Boards) have jurisdiction in the South Coast: Los Angeles (Region 4), Santa Ana (Region 8), and San Diego (Region 9). Each Regional Water Board identifies impaired water bodies, establishes priorities for the protection of water quality, issues waste discharge requirements, and takes appropriate enforcement actions within its jurisdiction. Specific water quality issues within the South Coast include beach closures, contaminated sediments, agricultural discharges, salinity management, and port and harbor discharges. Outside the region, high salinity levels and perchlorate contamination contribute to degraded Colorado River supplies, while seawater intrusion and agricultural drainage threaten SWP supplies (DWR, 2010).

3.5.6.1 Non-Point Source Pollution Control

All non-point source pollution is currently regulated through either the NPDES Permitting Program or the Coastal Non-point Pollution Control Program. The Regional Water Boards issue municipal, industrial, and construction NPDES permits with the goal of reducing or eliminating the discharge of pollutants into the storm water conveyance system. The coastal

program requires the U.S. EPA and National Oceanic and Atmospheric Administration to develop and implement enforceable BMPs to control non-point source pollution in coastal waters. Further, the Los Angeles Regional Water Board has adopted conditional waivers for discharges from irrigated agricultural lands, which require farmers to measure and control discharges from their property (DWR, 2010).

South Coast agencies have recently begun to implement Low Impact Development (LID) as a way of improving water quality through sustainable urban runoff management. LID practices include: bioretention and rain gardens, rooftop gardens, vegetated swales and buffers, roof disconnection, rain barrels and cisterns, permeable pavers, soil amendments, impervious surface reduction, and pollution prevention. The Los Angeles and San Diego Regional Water Boards have both incorporated LID language into Standard Urban Storm Water Mitigation Plan requirements for municipal NPDES permits (DWR, 2010).

3.5.6.2 Salinity Management

Surface and groundwater salinity is an ongoing challenge for South Coast water supply agencies. Higher levels of treatment are needed following long-range import of water supplies, as TDS levels are increased during conveyance. Salinity sources in local supplies include concentration from agricultural irrigation, seawater intrusion, discharge of treated wastewater, and recycled water. MWD depends on blending the higher salinity CRA supply at Parker Dam with the lower salinity SWP supply to maintain 500 milligrams per liter (mg/L) TDS or lower. Further, seawater intrusion and agricultural drainage threatens to increase the salinity of SWP supplies. Reduced surface water quality would require additional or upgraded demineralization facilities. Increased salinity also reduces the life of plumbing fixtures and consequently increases replacement costs to customers (DWR, 2010).

Groundwater quality has also been degraded by a long history of groundwater overdrafting and subsequent seawater intrusion. Orange County Water District (OCWD), Water Replenishment District of Southern California (WRD), and Los Angeles County Department of Public Works (LACDPW) operate groundwater injection programs to form hydraulic barriers that protect aquifers from seawater intrusion. Brackish groundwater treatment occurs throughout the Santa Clara and Santa Ana planning areas. Various local agencies have developed salinity and nutrient management plans to reduce salt loading. For example, the Chino Basin Watermaster developed an Optimum Basin Management Plan ([Chino Basin Watermaster](#), 1999) to develop the maximum yield of the basin while protecting water quality. Further development of groundwater recharge programs within the South Coast may exacerbate groundwater salinity and require additional technological advances in desalination (DWR, 2010).

3.5.6.3 Potential Contaminants

Chemical and microbial constituents that have not historically been considered as contaminants are increasingly present in the environment due to municipal, agricultural, and industrial wastewater sources and pathways. Established and emerging contaminants of concern to the region's drinking water supplies include pharmaceuticals and personal care products; disinfection byproducts; those associated with the production of rocket fuel such

as perchlorate and nitrosodimethylamine; those that occur naturally such as arsenic; those associated with industrial processes such as hexavalent chromium and methyl tertiary butyl ether (MTBE). Wastewater treatment plants are not currently designed to remove these emerging contaminants (DWR, 2010).

3.5.6.4 Planning Area Impairments

Water quality issues within the MWD Los Angeles planning areas (Los Angeles Regional Water Board) stem from a range of sources, including industrial and municipal operations, flow diversion, channelization, introduction of non-native species, sand and gravel operations, natural oil seeps, dredging, spills from ships, transient camps, and illegal dumping. Over time, these practices have resulted in the bioaccumulation of toxic compounds in fish and other aquatic life, instream toxicity, eutrophication, beach closures, and a number of Clean Water Act 303(d) listings. Water bodies within this planning area have been listed for metals, pesticides, nitrates, trash, salinity, and pH. The Regional Water Board is developing TMDLs for nutrients, pathogens, trash, toxic organic compounds, and metals (DWR, 2010).

Key issues within the Santa Ana Planning Area (Santa Ana Regional Water Board) include: nitrogen/TDS due to flow diversion; nitrogen/TDS associated with past agricultural activities and dairies in the Chino Basin; and pathogen issues from urbanization impacting river and coastal beaches, and past contamination of groundwater basins from perchlorate which is related to rocket fuel disposal and fertilizer use. Water bodies within this planning area typically have nutrient issues, including organic enrichment, low dissolved oxygen, and algal blooms. These are particular problems in Big Bear Lake and Lake Elsinore. Water quality issues also include pathogens, metals, and toxic organic compounds in the lower watershed due to urbanization and agricultural activities. TMDLs have been developed throughout the Santa Ana River and San Jacinto River watersheds for nutrients and pathogens. Along the Newport coast, TMDLs are in place for metals, nutrients, pathogens, pesticides/priority organics, and siltation (DWR, 2010).

The Chino Basin maintains a large concentration of dairy operations along with livestock. Runoff from the dairies contributes nitrates, salts, and microorganisms to both surface water and groundwater. Since 1972, the Santa Ana Regional Water Board has issued waste discharge requirements to the dairies in this basin. Groundwater quality in this basin is integrally related to the surface water quality downstream in the Santa Ana River, which in turn serves as a source for groundwater recharge in Orange County.

3.5.7 Wastewater Treatment

The CWA requires wastewater treatment facilities discharging to waters of the U.S. to provide a minimum level of treatment commonly referred to as tertiary treatment. Modern wastewater treatment facilities consist of staged processes with the specific treatment systems authorized through NPDES permits. Primary treatment generally consists of initial screening and clarifying. Primary clarifiers are large pools where solids in wastewater are allowed to settle out over a period of hours. The clarified water is pumped into secondary clarifiers and the screenings and solids are collected, processed through large digesters to

break down organic contents, dried and pressed, and either disposed of in landfills or used for beneficial agricultural applications. Secondary clarifiers repeat the process of the primary clarifiers further, refining the effluent. Other means of secondary treatment include flocculation (adding chemicals to precipitate solids removal) and aeration (adding oxygen to accelerate breakdown of dissolved constituents). Tertiary treatment may consist of filtration, disinfection, and reverse osmosis technologies. Chemicals are added to the wastewater during the primary and secondary treatment processes to accelerate the removal of solids and to reduce odors. Hydrogen peroxide can be added to reduce odors and ferric chloride can be used to remove solids. Polymers are added to secondary effluent as flocculate. Chlorine is often added to eliminate pathogens during final treatment and sulfur dioxide is often added to remove the residual chlorine. Methane produced by the treatment processes can be used as fuel for the plant's engines and electricity needs. Recycled water must receive a minimum of tertiary treatment in compliance with DHS regulations. Water used to recharge potable groundwater supplies generally receives reverse osmosis and microfiltration prior to reuse. Microfiltration technologies have improved substantially in recent years and have become more affordable. As levels of treatment increase, greater volumes of solids and condensed brines are produced. These by-products of water treatment are disposed of in landfills or discharged to local receiving waters.

Wastewater flows and capacities of major treatment facilities are shown in Table 3.5-5. Much of the urbanized areas of Los Angeles and Orange Counties are serviced by three [agencies that operate](#) large publicly owned treatment works (POTWs): the City of Los Angeles Bureau of Sanitation's Hyperion [Treatment Plant in El Segundo](#), the City of Los Angeles Bureau of Sanitation's Terminal Island [Facility in San Pedro](#), ~~the Joint Outfall System of~~ the Los Angeles County Sanitation District's [\(LACSD\) Joint Water Pollution Control Plant \(JWPCP\) in Carson](#), and the Orange County Sanitation District's [\(OCSD\) treatment plants in Huntington Beach and Fountain Valley](#). These ~~three~~ facilities handle more than 70 percent of the wastewater generated in the entire SCAG region (SCAG, 2010).

In addition to these large facilities, medium sized POTWs (greater than 10 mgd) and small treatment plants (less than 10 mgd) service smaller communities in Ventura County, southern Orange County, and in the inland regions. Many of these treatment systems recycle their effluent through local landscape irrigation and groundwater recharge projects. Other treatment systems discharge to local creeks on a seasonal basis, effectively matching the natural conditions of ephemeral and intermittent stream habitats (SCAG, 2012).

Many rural communities utilize individually owned and operated septic tanks rather than centralized treatment plants. The RWQCB generally delegates oversight of septic systems to local authorities. However, water discharge requirements are generally required for multiple-dwelling units and in areas where groundwater is used for drinking water. These water discharge requirements are only issued to properties greater than one acre and are not required for properties greater than five acres in size (SCAG, 2012).

TABLE 3.5-5
Wastewater Flow and Capacity in the SCAG Region

WASTEWATER AGENCY	CURRENT FLOW (MGD)	CAPACITY FLOW (MGD)
Los Angeles County		
Los Angeles County Sanitation Districts		
Joint Water Pollution Control Plant Outfall System	406.1	590.2
Lancaster Water Reclamation Plant	12.0	16.0
Palmdale Water Reclamation Plant	8.0	15.0
Santa Clarita Water Reclamation Plant	20.0	28.6
City of Los Angeles	554.5	580.0
Las Virgenes Municipal Water District	9.5	16.0
City of Burbank	9.0	9.0
Orange County		
Orange County Sanitation District	221.0	699.0
Irvine Ranch Water District	12.3	23.5
South Orange County Wastewater Authority	26.5	37.7
El Toto Water District	5.4	6.0
Riverside County		
Eastern Municipal Water District	37.3	59.0
City of Riverside	36.0	40.0
Coachella Valley Water District	18.0	31.0
San Bernardino County		
Inland Empire Utilities Agency	60.0	84.0
City of San Bernardino	25.5	33.0
Victor Valley Wastewater Reclamation Authority	12.5	14.5
City of Redlands	6.0	9.5
Ventura County		
City of Oxnard	22.5	31.7
City of Simi Valley	10.0	12.5
City of Thousand Oaks	10.5	14.0
City of Ventura	9.0	12.0
Camarillo Sanitation District	4.0	7.3
Total	1,535.6	2,369.5

Source: SCAG, 2012

SUBCHAPTER 3.6

LAND USE AND PLANNING

Introduction

Regulatory Setting

Environmental Setting

3.6 LAND USE AND PLANNING

3.6.1 Introduction

The environmental setting describes the land uses that may be affected by the proposed project. The environmental setting addresses residential, commercial, industrial, and institutional land uses across the district.

3.6.2 Regulatory Setting

3.6.2.1 Federal Agencies

3.6.2.1.1 United States Bureau of Land Management (BLM)

The BLM manages much of the undeveloped or unused land in the region, primarily in the eastern portion of the region. The California Desert Conservation Area Plan is used to manage BLM controlled areas. The BLM also implements biological resource management policies through its designation of Areas of Critical Environmental Concern.

3.6.2.1.2 National Park Service (NPS)

The NPS manages national parks and wilderness areas. One national park and one wilderness area are located in the district: Joshua Tree National Park and the Santa Monica Mountains National Recreation Area.

3.6.2.1.3 United States Fish and Wildlife Service (USFWS)

The USFWS administers the Federal Endangered Species Act (FESA) and designates critical habitat for endangered species. The USFWS manages the National Wildlife Refuges in the district such as the Seal Beach National Wildlife Refuge and the Coachella Valley National Wildlife Refuge.

3.6.2.1.4 United States Forest Service (USFS)

The USFS manages approximately 2.3 million acres of national forests in the district. The three national forests in the region are the Angeles National Forest, San Bernardino National Forest, and the Cleveland National Forest.

3.6.2.1.5 United States Army Corps of Engineers (USACOE)

Among its responsibilities, the USACOE administers §404 of the Clean Water Act (CWA), which governs specified activities in waters of the United States, including wetlands. In this role, the USACOE requires that a permit be obtained if a project would place structures, including dredged or filled materials, within navigable waters or wetlands, or result in alteration of such areas.

3.6.2.1.6 *U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)*

The NRCS maps soils and farmland uses to provide comprehensive information necessary for understanding, managing, conserving and sustaining the nation's limited soil resources. The NRCS manages the Farmland Protection Program, which provides funds to help purchase development rights to keep productive farmland in agricultural uses.

3.6.2.2 State Agencies

3.6.2.2.1 *California Department of Conservation*

In 1982, the State of California created the Farmland Mapping and Monitoring Program within the California Department of Conservation to carry on the mapping activity from the NRCS on a continuing basis. The California Department of Conservation administers the California Land Conservation Act of 1965, also known as the Williamson Act, for the conservation of farmland and other resource-oriented laws.

3.6.2.2.2 *California Coastal Commission*

The California Coastal Commission plans for and regulates development in the coastal zone consistent with the policies of the California Coastal Act. The Commission also administers the federal Coastal Zone Management Act in California. As part of the Coastal Act, cities and counties are required to prepare a local coastal program (LCP) for the portion of its jurisdiction within the coastal zone. With an approved LCP, cities and counties control coastal development that accords with the local coastal plan. If no local coastal plan has been approved, the Coastal Commission controls coastal development.

3.6.2.2.3 *California Department of Transportation (Caltrans)*

The Caltrans jurisdiction includes rights-of-way of state and interstate routes within California. Any work within the right-of-way of a federal or state transportation corridor is subject to Caltrans regulations governing allowable actions and modifications to the right-of-way. Caltrans includes the Division of Aeronautics, which is responsible for airport permitting and establishing a county Airport Land Use Commission (ALUC) for each county with one or more public airports. ALUCs are responsible for the preparation of land use plans for areas near aviation facilities.

3.6.2.2.4 *California Department of Forestry and Fire Protection (CDF)*

The CDF reviews and approves plans for timber harvesting on private lands. In addition, through its responsibility for fighting wildland fires, the CDF plays a role in planning development in forested areas.

3.6.2.2.5 *California Department of Parks and Recreation (CDPR)*

The CDPR manages and provides sites for a variety of recreational and outdoor activities. The CDPR is a trustee agency that owns and operates all state parks and participates in land use planning that affects state parkland.

3.6.2.2.6 *California Department of Fish and Game (CDFG)*

The land use mandate of the CDFG is to protect rare, threatened, and endangered species by managing habitat in legally designated ecological reserves or wildlife areas. CDFG reserves located in the district include the Bolsa Chica Ecological Reserve (Orange County), among others.

3.6.2.3 Regional and Local

3.6.2.3.1 *Southern California Association of Governments (SCAG)*

Related to land use, SCAG is authorized to undertake intergovernmental review for federal assistance and direct federal development pursuant to Presidential Executive Order 12,372. Pursuant to CEQA (Public Resource Code §21083 and §21087 and CEQA Guidelines §15206 and §15125 (b), SCAG reviews projects of regional significance for consistency with regional plans. SCAG is also responsible for preparation of the Regional Housing Needs Assessment (RHNA), pursuant to California Government Code Section 65584 (a). SCAG's RHNA provides a tool for providing local affordable housing development strategies.

The 2012–2035 *Regional Transportation Plan/Sustainable Communities Strategy* (2012–2035 RTP/SCS) provides a blueprint for improving quality of life for the residents of SCAG's area of jurisdiction, which includes the district, by providing a variety of choices regarding where they will live, work, and play, and how they will move around. Further, safe, secure, and efficient transportation systems is expected to provide improved access to opportunities, such as jobs, education, and healthcare.

3.6.2.3.2 *Local Agency Formation Commissions*

The Local Agency Formation Commission (LAFCO) is the agency in each county that has the responsibility to create orderly local government boundaries, with the goal of encouraging “planned, well-ordered, efficient urban development patterns,” the preservation of open-space lands, and the discouragement of urban sprawl. While LAFCOs have no direct land use authority, their actions determine which local government will be responsible for planning new areas. LAFCOs address a wide range of boundary actions, including creation of spheres of influence for cities, adjustments to boundaries of special districts, annexations, incorporations, detachments of areas from cities, and dissolution of cities.

3.6.2.3.3 *General Plans*

The most comprehensive land use planning for the district is provided by city and county general plans, which local governments are required by state law to prepare as a guide for

future development. General plans contain goals and policies concerning topics that are mandated by state law or which the jurisdiction has chosen to include. Required topics are land use, circulation, housing, conservation, open space, noise, and safety. Other topics that local governments frequently choose to address include air quality, public facilities, parks and recreation, community design, sustainability and growth management, among others. These plans provide general definitions and implementation methods for each land use designation in the district. City and county general plans must be consistent with each other. County general plans must cover areas not included by city general plans (e.g., unincorporated areas).

3.6.2.3.4 *Specific and Master Plans*

A city or county may also provide land use planning by developing community or specific plans for smaller, more specific areas within their jurisdiction. These more localized plans provide for focused guidance for developing a specific area, with development standards tailored to the area, as well as systematic implementation of the general plan.

3.6.2.3.5 *Zoning and Land Use Permits*

City and county zoning codes are the set of detailed requirements that implement the general plan policies at the level of the individual parcel. The zoning code presents standards for different uses and identifies which uses are allowed in the various zoning districts of the jurisdiction. Since 1971, state law has required the city or county zoning code to be consistent with the jurisdiction's general plan. Cities and counties typically implement their zoning codes through highly individualized land use ordinances that differ from jurisdiction to jurisdiction.

3.6.3 Environmental Setting

The district is comprised of the non-desert portion of Los Angeles County, all of Orange County, a portion of southwestern San Bernardino County, and the Salton Sea Air Basin and Mojave Desert Air Basin portions of Riverside County amounting to a jurisdiction of approximately 10,473 square miles and a population of approximately 17 million. Bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east; and San Diego and Imperial Counties to the south, the district contains a vast network of cities and towns, ranging from small rural developments of a few thousand residents to bustling metropolitan centers of several million residents, interspersed between large expanses of open space and undeveloped land.

Urban development in the district tends to cluster around a well-defined network of state and federal highways which connect the regional populations of the district with other regions in California and across the nation. While most urban development has historically been based in the coastal regions of Los Angeles County and Orange County, there has been considerable urban growth eastward to the mountain and valley regions of Riverside County and San Bernardino County. Downtown Los Angeles is the largest urbanized center within the district. Other urbanized areas in Los Angeles County include Long Beach, Burbank, Glendale, Pasadena and Pomona. Office-based commercial centers have emerged in

Woodland Hills, Universal City, Westwood, around Los Angeles International Airport, and Century City. In the other three counties within the district, urban centers exist in the cities of Riverside, San Bernardino, Santa Ana, Anaheim, and Irvine. Much of the development in Riverside and San Bernardino Counties has taken place within unincorporated county land that both counties possess. Riverside County, in particular, has developed the Riverside County Integrated Project, which seeks to improve the quality of life for its citizens through a complementary array of development projects and programs aimed at creating a balanced and sustainable environment. As a result of Riverside County's efforts, the valley and mountain regions of the County have quickly developed over the past 20 years from small rural settlements to relatively large suburban commuter cities.

Within the older cities and communities in the district, development has taken more of a revitalization outlook. Without a vast surplus of open space, developers in Los Angeles County and Orange County have turned to different types of housing and commercial developments, including townhouses, condominiums, apartments, and mixed-use developments that combine commercial and office uses. Older buildings are often renovated or converted to accommodate new residential or commercial uses, and land use patterns in major developed cities have generally shifted from the traditional single-use pattern to more of a mixed use approach, where residential and commercial land uses are often found adjacent to one another, or within the same building.

Land uses across the district can typically be categorized into six general categories -- residential, commercial, industrial, institutional, open space and agricultural. Agricultural is discussed separately in Section 3.2.

3.6.3.1 Los Angeles County

3.6.3.1.1 *Residential*

Los Angeles County is the most populated and economically robust region in the district. As a result, high demand for housing is a consistent concern for the County. Residential land use patterns in the County, as well as the district, are dependent upon geography. Major concentrations of residential uses are found in the Los Angeles Basin, which is bounded on the north by the transverse mountain ranges of the Santa Monica Mountains and the San Gabriel Mountains. From the foothills of the transverse mountain ranges, large urban and sub-urban cities blanket the Los Angeles Basin southward to the Santa Ana Mountains and the Orange County Coast, and eastward to the San Bernardino Mountains. The County contains most of the high and medium density housing in the district, which is concentrated primarily in urban and sub-urban population centers, such as Downtown Los Angeles, East Los Angeles, Glendale, Burbank, and Long Beach. Surrounding these population centers are lower density suburbs located on the eastern and southern reaches of Los Angeles County and extending into Orange County and San Bernardino County. With the Los Angeles Basin almost completely built-out, the County is now in the process of directing residential land uses, population growth, and residential density to urbanized areas and promoting infill development to minimize sprawl and encourage sustainable growth (Los Angeles County Department of Regional Planning, 2012).

3.6.3.1.2 *Commercial*

In the same way that residential land use patterns are related to geography, commercial land use patterns tend to form around transportation facilities, such as highways, rail lines, and airports, particularly around major freeway intersections. Downtown Los Angeles, bounded in all directions by four different freeways, is the largest commercial and business center in the district, providing jobs to residents across the district. The County also projects tremendous employment growth in northern Los Angeles County as housing and transportation development continues northward.

3.6.3.1.3 *Industrial*

The largest concentration of industrial land uses and activities in the district is provided by the adjacent Ports of Los Angeles and Long Beach. Combined, the San Pedro Bay Ports anticipate cargo volumes to grow to 43 million twenty-foot equivalent unit containers by year 2035 – more than tripling from current levels (Los Angeles County Department of Regional Planning, 2012). Further, these adjacent ports handle approximately 40 percent of the volume imported into the country and approximately 24 percent of the nation’s exports (SCAG, 2012). From the ports, industrial activity can be traced along cargo rail lines and major interstate highways, such as Route 110¹ and Interstate 710 (I-710), north to downtown Los Angeles and east to the Cities of Industry and Commerce. Significant air cargo and associated industrial land uses also are located around Los Angeles International Airport. Oil extraction and refining industries are also found in northern Los Angeles County near the City of Santa Clarita and in southern Los Angeles County surrounding the City of Long Beach.

3.6.3.1.4 *Institutional*

Institutional land uses, which include large government and private operations, such as military bases, airports, and universities, encompass a considerable footprint in the district. In the Antelope Valley, a large portion of land is dedicated to airport uses at Palmdale Airport, while Los Angeles International Airport (LAX) is the largest airport land use. Bob Hope Airport and Long Beach Airport are the other commercial airports in Los Angeles County. In addition, the Los Angeles Air Force Base, located just south of LAX is the major military land use in the County. University and college campuses are located in every county of the district, the largest of which are part of the University of California system. In Los Angeles County, the University of California, Los Angeles (UCLA), California Polytechnic University at Pomona and the University of Southern California are some of the largest universities. There are also numerous California State Universities (Northridge and Los Angeles), as well as community colleges located throughout the County.

¹ Route 110, consists of two segments of State Route 110 (SR-110) joined by Interstate 110 (I-110). The entire length of I-110 (which ends at I-10), as well as SR-110 south of the Four Level Interchange with US Highway (US 101), is the Harbor Freeway, and SR-110 north from US 101 to Pasadena is the historic Arroyo Seco Parkway. The entire Route 110 connects San Pedro and the Port of Los Angeles with Downtown Los Angeles and Pasadena.

3.6.3.1.5 *Open Space*

Over half of the total geography of Los Angeles County is comprised of open space and rural land. Most rural land is located in the Palmdale – Lancaster desert region, which is just northeast of the district’s boundaries. Most of the open space in the County is composed of the Angeles National Forest, which covers the entire northern region of the district. This land is administered by the National Forest Service and provides mainly outdoor recreation and wilderness conservation functions. Other major open space areas can be found in the Santa Monica Mountains and the Whittier Narrows located in the Puente Hills.

3.6.3.2 *Orange County*

Orange County is comprised of 34 cities (County of Orange Resources and Development Management Department, 2005) and also contains unincorporated areas. Orange County has an estimated population of 3,055,792 residents as of January 1, 2012 (California Department of Finance, 2012). Each of the 34 cities has its own General Plan while the unincorporated areas are covered by the Orange County General Plan. The Orange County General Plan states as its first policy that urban land uses within the County must be planned with a balanced mix of residential, commercial, industrial and public land uses. ~~Orange County comprises 34 cities (County of Orange Resources and Development Management Department, 2005) and has an estimated population of 3,055,792 residents as of January 1, 2012 (California Department of Finance, 2012).~~

3.6.3.2.1 *Residential*

In Orange County, residential development follows the coastline and is limited from inland expansion by the Santa Ana Mountains and the Cleveland National Forest (SCAG, 2012). The major population centers in northern Orange County are the Cities of Huntington Beach, Garden Grove, and Fullerton, which tend to be extensions of housing and commercial development from southern Los Angeles County, catering to a large commuter population. From these border cities, high and medium density housing development continues south through the major commercial cities of Anaheim, Santa Ana, and Orange. To the south of these cities are the Cities of Costa Mesa, Newport Beach, Irvine, Lake Forest, and Laguna Niguel, which are less densely populated with primarily single-family medium to low density housing developments. As such, residential land uses in the County can be described as following a similar pattern to that of Los Angeles County, where the major urban and sub-urban population centers align themselves with transportation resources, particularly Interstate 5 (I-5), and natural features, such as the “South Coast” and the Santa Ana Mountains.

3.6.3.2.2 *Commercial*

Commercial land use in the County is divided into two types of designations: community commercial and regional commercial land uses. Community commercial land uses include general commercial facilities providing convenience goods and retail trade to individual communities of 20,000 persons (County of Orange Resources and Development Management Department, 2005). Each city has its own community commercial

developments, mainly located along major arterial highways such as I-5, Interstate 405 (I-405), State Route 22 (SR-22), State Route 55 (SR-55), and Beach Boulevard, also known as State Route 39 (SR-39). Regional commercial land uses are of a higher intensity and serve a larger regional population usually in the form of malls, such as the South Coast Plaza in Costa Mesa and commercial office buildings. Orange County's commercial office activity is within close proximity to the intersection of I-5, SR-22, and State Route 57 (SR-57). ~~known as the "Orange Crush,"~~ [An additional commercial area in Orange County, the Irvine Business Complex \(IBC\), is the area surrounding John Wayne Airport, and the area surrounding the University of California, at Irvine \(UCI\), known as the Irvine Spectrum.](#) ~~Another major commercial office area centers in Orange County, the Irvine Spectrum, is include the area surrounding the "El Toro Y", which is the~~ intersection of I-5 and I-405 ~~freeways, known as the "El Toro Y"~~ (SCAG, 2012a).

3.6.3.2.3 *Industrial*

Relative to the district, Orange County has few industrial land uses. In fact, the [Orange County's General Plan, which only applies to unincorporated areas within Orange County,](#) does not distinguish industrial land uses from other employment providing land uses (SCAG, 2012a). Fifty years ago, Orange County was primarily agricultural and the major industries were based in supporting the rich farming resources of the County. Today, much of Orange County's industrial land uses are located along the coast and focused on oil extraction and refining, while most income in the County is provided by technical, aerospace, and information industries which are typically higher-paid white collar industries set in commercial office areas.

3.6.3.2.4 *Institutional*

The major military land uses in the County are the Seal Beach Naval Weapons Station and Los Alamitos Reserve Air Station. In addition, institutional land uses also include universities, such as UCI and California State University at Fullerton, John Wayne Airport, and three active regional landfills.

3.6.3.2.5 *Open Space*

The unincorporated territories of the County, consisting of approximately 321 square miles, are geographically diverse and spread throughout the County. The largest portion of unincorporated territory is mostly open space found in southeastern Orange County and includes the Cleveland National Forest, a number of planned communities, such as Coto de Caza, Las Flores, and Ladera Ranch, as well as large portions of undeveloped territory south of the Ortega Highway (SCAG, 2012a). [In addition, the Orange County Sustainable Communities Strategy identifies the preservation/open space programs located throughout all of Orange County, including the individual efforts of the County of Orange and the 34 local jurisdictions.](#)

3.6.3.3 Riverside County

3.6.3.3.1 *Residential*

In Riverside County, residential land uses are mainly located in the western valley portion of the county and makes up approximately 288 square miles of County land, of which 57 percent is located in unincorporated areas (Riverside County, 2003). Medium to high density residential developments can be found in northwestern Riverside County mainly in the two major Cities of Riverside and Corona. Farther inland, beginning in the Coachella Valley, the County is comprised almost entirely of low density or rural housing. Much of the development in Riverside County has been on unincorporated county land. Areas that were rural twenty years ago are quickly becoming suburban. Riverside County adopted the County General Plan that strives to create a high quality, balanced, and sustainable environment for the citizens of Riverside (SCAG, 2012a).

3.6.3.3.2 *Commercial*

Commercial land uses account for approximately 15,675 acres of county land, and commercial development is generally less vigorous and on a smaller scale than in Los Angeles County or Orange County (Riverside County, 2003). Commercial office developments would typically be found in the downtown areas of major cities, such as the City of Riverside. Other commercial developments in the County are typically large regional retail and convenience shopping centers typically located in major cities or along major highways such as Interstate 215 (I-215) and Interstate 10 (I-10).

3.6.3.3.3 *Industrial*

A total of over 24,000 acres of the County are devoted to industrial uses, which may include heavy industry, warehousing, and mineral extraction. With the exception of land devoted to mineral extraction (89 percent of which is within unincorporated territories), the majority of industrial land is located within the cities of Riverside County. The major industries within the County are agricultural and mineral extraction industries, most of which are located in eastern Riverside County in the Coachella Valley and Salton Sea Basin. Recently, manufacturing industries, distribution centers, and warehouses have established businesses in Riverside County making it a major distribution center for goods in the region, as well as the state. Riverside County also houses a major wind energy generation site in the San Gorgonio Pass and the County should be poised for further development of wind, solar, and other green energies in the eastern portion of the County.

3.6.3.3.4 *Institutional*

Approximately 106 square miles of land are devoted to various public facilities (utilities, schools, government offices, police and fire facilities, correctional facilities, military installations, museums, convention centers, libraries, theater facilities, rehabilitation facilities, short-and long-term custodial facilities, cemeteries, etc.) through the County. Major military uses include the Naval Warfare Assessment Station in Corona and the Chocolate Mountains Aerial Gunnery Range. Other major institutional land uses are Palm

Springs International Airport, March Inland Port, and the University of California at Riverside.

3.6.3.3.5 *Open Space*

A vast amount of land (1,313,073 acres or 28 percent of the county total) consists of open space use and provides for recreation, agriculture, scientific opportunity, and wild land preservation. The majority of open space in the County is located in eastern portion of the county in the Coachella Valley (part of the Salton Sea Air Basin and the Mojave Desert Air Basin, which house mostly agricultural and mineral extraction operations usually administered by the Bureau of Land Management and the California Department of Conservation. The largest major open space use in the County is the Joshua Tree National Park, which is administered by the National Parks Service and provides a variety of recreation and wild land preservation functions. Other major open space uses include Mount San Jacinto State Park, the Coachella Valley National Wildlife Refuge, the southern reaches of the San Bernardino National Forest, and numerous golf courses located throughout the Coachella Valley and southern Riverside County.

3.6.3.4 San Bernardino County

3.6.3.4.1 *Residential*

Similar to Riverside County, residential land use in San Bernardino County is mainly concentrated in the western valley and high-desert region; however, the unincorporated areas of the desert and mountain regions are populated with dispersed low-density rural residences. The portion of San Bernardino County located within the district, also known as the Valley Region, is perhaps the most densely populated portion of the County as the two largest cities in the County, San Bernardino and Ontario, are both located in this region. Almost half of the 51,766 acres of unincorporated County land in the Valley Region is existing single and multifamily residential uses, occupying 24,236 acres (County of San Bernardino, 2007). Most of the residential uses in the Valley Region are medium to low density uses mostly located in the major cities of the region.

3.6.3.4.2 *Commercial*

Commercial uses occupy almost 2,155 acres of the Valley Region (County of San Bernardino, 2007). The Valley Region can be characterized as the center for commerce in the County while the Desert Region assumes the role of industrial leader. Like other regions in the district, commercial land uses in San Bernardino County portion of the district tend to be retail and convenience shopping uses with some commercial office buildings located in downtown areas. Commercial uses follow similar land use patterns, usually located along major transportation corridors such as Interstate 15 (I-15), I-215, and State Route 60 (SR-60).

3.6.3.4.3 *Industrial*

The Valley Region has nearly 5,155 acres of industrial uses (County of San Bernardino, 2007). While most of San Bernardino County is geared toward agricultural and mineral

extraction industries, the Valley Region is geared toward supporting the Los Angeles County and Orange County economies. Like Riverside County, western San Bernardino County has become a major distribution point for the region with many manufacturing and warehouse facilities being built throughout the County. Adding to the goods coming by highway and rail through San Bernardino County are goods coming to the county by air through several airports that cater to air cargo, primarily Ontario International Airport.

3.6.3.4.4 Institutional

Institutional land uses in the Valley Region account for 2,875 acres of the region and are limited when compared to the rest of the County, which houses numerous military facilities in its Desert Region (County of San Bernardino, 2007). Accordingly, the Valley Region does include the San Bernardino International Airport and the Ontario International Airport, as well as California State University at San Bernardino.

3.6.3.4.5 Open Space

While San Bernardino County has the largest amount of open space and mineral resource conservation areas, the Valley Region contains very few of these land uses. The single major open space land use in the San Bernardino County portion of the district is the San Bernardino National Forest, which forms the northern and eastern boundaries of the Valley Region.

SUBCHAPTER 3.7

NOISE

Introduction

Regulatory Setting

Environmental Setting

3.7 NOISE

3.7.1 Introduction

The environmental setting section describes the noise, and noise sources in the Basin, which includes Orange County and portions of Los Angeles, Riverside and San Bernardino Counties.

Sound waves, traveling outward from a source, exert a sound pressure level (commonly called “sound level”), measured in decibels (dB). “Noise” is often defined as unwanted sound, and environmental noise is usually measured in “A-weighted” decibels, which is a decibel corrected for the variation in frequency response of the typical human ear at commonly-encountered noise levels. All noise levels discussed herein reflect A-weighted decibels. In general, people can perceive a two- to three-dB difference in noise levels; a difference of 10 dB is perceived as a doubling of loudness.

3.7.2 Regulatory Setting

The federal government sets noise standards for transportation-related noise sources that are closely linked to interstate commerce, such as aircraft, locomotives, and trucks, and, for those noise sources, the state government is preempted from establishing more stringent standards. The state government sets noise standards for those transportation noise sources that are not preempted from regulation, such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies.

3.7.2.1 Federal Agencies and Regulations

3.7.2.1.1 *Code of Federal Regulations (CFR)*

Federal regulations for railroad noise are contained in 40 CFR Part 201 and 49 CFR Part 210. The regulations set noise limits for locomotives and are implemented through regulatory controls on locomotive manufacturers.

Federal regulations also establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 CFR Part 205, Subpart B. The federal truck pass-by noise standard is dB at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers. The Federal Highway Administration (FHWA) regulations for noise abatement must be considered for federal or federally-funded projects involving the construction of a new highway or significant modification of an existing freeway when the project would result in a substantial noise increase or when the predicted noise levels approach or exceed the “Noise Abatement Criteria.”

Under the regulations, a “substantial increase” is defined as an increase in Equivalent Continuous Level (Leq) of 12 dB during the peak hour of traffic noise. The Leq provides a time weighted average of the noise measured. For sensitive uses, such as residences,

schools, churches, parks, and playgrounds, the Noise Abatement Criteria for interior and exterior spaces is Leq 57 and 66 dB, respectively, during the peak hour of traffic noise.

3.7.1.1.2 Federal Transit Administration (FTA)

The Federal Transit Administration has prepared guidance noise and vibration impacts assessments for proposed mass transit projects: Transit Noise and Vibration Impact Assessment (U.S. FTA, 2006). The May 2006 version is the second edition of a guidance manual originally issued in 1995, which presented procedures for predicting and assessing noise and vibration impacts of proposed mass transit projects. The guidance is required to evaluate the noise and vibration impacts in environmental review process for project proponents seeking funding from FTA. All types of bus and rail projects are covered. The guidance contains procedures for assessing impacts at different stages of project development, from early planning before mode and alignment have been selected through preliminary engineering and final design. The focus is on noise and vibration impacts during operations, but construction impacts are also covered. The guidance describes a range of measures for controlling excessive noise and vibration.

3.7.2.1.3 Federal Aviation Administration (FAA)

Aircraft operated in the U.S. are subject to certain federal requirements regarding noise emissions levels. These requirements are set forth in Title 14 of the Code of Federal Regulations (14 CFR), Part 36. Part 36 establishes maximum acceptable noise levels for specific aircraft types, taking into account the model year, aircraft weight, and number of engines. Pursuant to the federal Airport Noise and Capacity Act of 1990, the FAA established a schedule for complete transition to Part 36 “Stage 3” standards by year 2000. This transition schedule applies to jet aircraft with a maximum takeoff weight in excess of 75,000 pounds and, thus, applies to passenger and cargo airlines but not to operators of business jets or other general aviation aircraft.

3.7.2.1.4 Federal Railroad Administration (FRA)

On March 24, 2009, the Federal Highway Administration (FHA) and the FTA final rule that modified FRA regulations to make certain changes mandated by the Safe, Accountable, Flexible, Efficient, Transportation, Equity Act: A Legacy for Users (SAFETEA-LU). The SAFETEA-LU prescribes requirements for environmental review and project decision making. This rule became effective April 23, 2009.

3.7.2.1.5 Department of Housing and Urban Development (HUD)

The noise regulation 24 CFR Part 51 Subpart B, Noise Abatement and Control presents the HUD noise program. Within the HUD Noise Assessment Guidelines, potential noise sources are examined for projects located within 15 miles of a military or civilian airport, 1,000 feet from a road or 3,000 feet from a railroad. HUD exterior noise regulations state that 65 dBA DNL noise levels or less are acceptable for residential land uses and noise levels exceeding 75 dBA DNL are unacceptable. HUD's regulations do not contain standards for interior noise levels. A goal of 45 decibels is set forth for interior noise and the attenuation requirements are based upon this level. HUD's standards assume that

internal noise levels would be met if exterior standard are met under standard construction practices.

3.7.2.1.6 *Federal Vibration Policies*

The FRA and FTA have published guidance relative to vibration impacts. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. The decibel notation, VdB, is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.

According to the FRA, fragile buildings can be exposed to groundborne vibration levels of 0.5 inches per second PPV without experiencing structural damage. The FTA has identified the human annoyance response to vibration levels as 80 VdB (U.S. FTA, 2006).

3.7.2.2 State Agencies and Regulations

3.7.2.2.1 *California's Airport Noise Standards*

The State of California's Airport Noise Standards, found in Title 21 of the California Code of Regulations, identify a noise exposure level of Community Noise Equivalent Level (CNEL) 65 dB as the noise impact boundary around airports. CNEL measurements are a weighted average of sound levels gathered throughout a 24-hour period. The noise between 7:00 p.m. and 10:00 p.m. is increased by five dB and the hours of 10:00 p.m. and 7:00 a.m. is increased by 10 dB. This takes into account the decrease in community background noise of during evening and nighttime hours.

Within the noise impact boundary, airport proprietors are required to ensure that all land uses are compatible with the aircraft noise environment or the airport proprietor must secure a variance from the California Department of Transportation.

3.7.2.2.2 *California Department of Transportation (Caltrans)*

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the state pass-by standard is consistent with the federal limit of 80 dB. The state pass-by standard for light trucks and passenger cars (less than 4.5 tons gross vehicle rating) is also 80 dB at 15 meters from the centerline. For new roadway projects, Caltrans employs the Noise Abatement Criteria, discussed above in connection with the FHWA.

3.7.2.2.3 *California Noise Insulation Standards*

The California Noise Insulation Standards found in the California Code of Regulations, Title 24, set requirements for new multi-family residential units, hotels, and motels that may be subject to relatively high levels of transportation-related noise. For exterior noise, the noise insulation standard is DNL 45 dB in any habitable room and requires an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where

such units are proposed in areas subject to noise levels greater than DNL 60 dB. DNL is the average noise level over a 24 hour period. The noise between the hours of 10:00 p.m. and 7:00 a.m. is artificially increased by 10 dB. This takes into account the decrease in community background noise during nighttime hours.

3.7.2.2.4 *State Vibration Policies*

There are no adopted state policies or standards for ground-borne vibration. However, Caltrans recommends that extreme care be taken when sustained pile driving occurs within 7.5 meters (25 feet) of any building, and 15 to 30 meters (50 to 100 feet) of a historic building or a building in poor condition.

3.7.2.3 Local Agencies and Regulations

To identify, appraise, and remedy noise problems in the local community, each county and city within the district has adopted a noise element as part of its General Plan. Each noise element is required to analyze and quantify current and projected noise levels associated with local noise sources, including, but not limited to, highways and freeways, primary arterials and major local streets, rail operations, air traffic associated with the airports, local industrial plants, and other ground stationary sources that contribute to the community noise environment. Beyond statutory requirements, local jurisdictions are free to adopt their own goals and policies in their noise elements, although most jurisdictions have chosen to adopt noise/land use compatibility guidelines that are similar to those recommended by the state. The overlapping DNL ranges indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations.

In addition to regulating noise through noise element policies, local jurisdictions regulate noise through enforcement of local ordinance standards. These standards generally relate to noisy activities (e.g., use of loudspeakers and construction) and stationary noise sources and facilities (e.g., air conditioning units and industrial activities). Two cities within the district, Los Angeles and Long Beach, operate port facilities. Noise from the Ports of Los Angeles and Long Beach are regulated by the noise ordinances and noise elements of the Los Angeles and Long Beach General Plans.

In terms of airport noise, some of the actions that airport proprietors have been allowed to take to address local community noise concerns include runway use and flight routing changes, aircraft operational procedure changes, and engine run-up restrictions. These actions generally are subject to approval by the FAA, which has the authority and responsibility to control aircraft noise sources, implement and enforce flight operational procedures, and manage the air traffic control system

3.7.3 Environmental Setting

3.7.3.1 Noise Descriptors

Environmental noise levels typically fluctuate across time of day; different types of noise descriptors are used to account for this variability, and different types of descriptors have

been developed to differentiate between cumulative noise over a given period and single noise events. Cumulative noise descriptors include the Leq, DNL, and CNEL. The Leq is the actual time-averaged, equivalent steady-state sound level, which, in a stated period, contains the same acoustic energy as the time-varying sound level during the same period. DNL and CNEL values result from the averaging of Leq values (based on A-weighted decibels) over a 24-hour period, with weighting factors applied to different periods of the day and night to account for their perceived relative annoyance. For DNL, noise that occurs during the nighttime period (10:00 p.m. to 7:00 a.m.) is “penalized” by 10 dB. CNEL is similar to DNL, except that it also includes a “penalty” of approximately five dB for noise that occurs during the evening period (7:00 p.m. to 10:00 p.m.). Cumulative noise descriptors, DNL and CNEL, are well correlated with public annoyance due to transportation noise sources. Table 3.12-1 shows the compatibility between various land uses and CNEL.

Individual noise events, such as train pass-bys or aircraft overflights, are further described using single-event and cumulative noise descriptors. For single events, the maximum measured noise level (Lmax) is often cited, as is the Sound Exposure Level (SEL). The SEL is the energy-based sum of a noise event of given duration that has been “squeezed” into a reference duration of one second and is typically a value that is five to 10 dB higher than the Lmax.

3.7.3.2 Vibration Measuring and Reporting

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. The FTA Assessment states that background vibration velocity levels in residential areas is usually 50 VdB or lower, well below the threshold of perception for humans which is around 65 VdB. The upper range for rapid transit vibration is around 80 VdB and the high range for commuter rail vibration is 85 VdB (U.S. FTA, 2006).

The FTA Assessment states that in contrast to airborne noise, ground-borne vibration is not a common environmental problem. Although the motion of the ground may be noticeable to people outside structures, without the effects associated with the shaking of a structure, the motion does not provoke the same adverse human reaction to people outside. Within structures, the effects of ground-borne vibration include noticeable movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. The maximum vibration amplitudes of the floors and walls of a building often will be at the resonance frequencies of various components of the building. However, the FTA Assessment states that noticeable vibration inside a building is typically caused by equipment or activities within the building itself, such as heating and ventilation systems, footsteps or doors closing.

FTA Assessment states that it is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. However, some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment.

TABLE 3.7-1
Noise Land Use Compatibility Matrix

Land Use Category	Community Noise Exposure (dBA, CNEL)					
	55	60	65	70	75	80
Residential - Low Density Single-Family, Duplex, Mobile Homes	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Residential - Multi-Family	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Transient Lodging - Motels Hotels	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Schools, Libraries, Churches, Hospitals, Nursing Homes	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Auditoriums, Concert Halls, Amphitheaters	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Sports Arena, Outdoor Spectator Sports	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Playgrounds, Neighborhood Parks	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Office Buildings, Business Commercial and Professional	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Industrial, Manufacturing, Utilities, Agriculture	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
	Normally Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.					
	Conditionally Acceptable - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditionally will normally suffice.					
	Normally Unacceptable - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.					
	Clearly Unacceptable - New construction or development should generally not be undertaken.					
SOURCE: California Office of Noise Control, Department of Health Services.						

Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. Several different methods are used to quantify vibration. High levels of vibration may cause physical personal injury or damage to buildings. However, groundborne vibration levels rarely affect human health. Instead, most people consider groundborne vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of groundborne vibration may damage fragile buildings or interfere with equipment that is highly sensitive to groundborne vibration (e.g., electron microscopes).

3.7.3.3 Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others due to the amount of noise exposure (in terms of both exposure time and “insulation” from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. Consequently, the noise standards for sensitive land uses are more stringent than those for less sensitive uses, such as commercial and industrial.

To protect various human activities and sensitive land uses (e.g., residences, schools, and hospitals) lower noise levels are needed. A noise level of 55 to 60 dB DNL outdoors is the upper limit for intelligible speech communication inside a typical home. In addition, social surveys and case studies have shown that complaints and community annoyance in residential areas begin to occur at 55 dB DNL. Sporadic complaints associated with the 55 to 60 dB DNL range give way to widespread complaints and individual threats of legal action within the 60 to 70 dB DNL range. At 70 dB DNL and above, residential community reaction typically involves threats of legal action and strong appeals to local officials to stop the noise.

3.7.3.4 Noise Sources

Many principal noise generators within the district are associated with transportation (e.g., airports, freeways, arterial roadways, seaports, and railroads). Additional noise generators include stationary sources, such as industrial manufacturing plants and construction sites. Local collector streets are not considered to be a significant source of noise since traffic volume and speed are generally much lower than for freeways and arterial roadways. Generally, transportation-related noise sources characterize the ambient noise environment of an area.

3.7.3.4.1 *Airports*

The Southern California Association of Governments (SCAG) region contains six established airports, including Los Angeles International (LAX), Bob Hope (formerly Burbank), John Wayne, Long Beach, Ontario, and Palm Springs. There are also four new and emerging airports in the Inland Empire and North Los Angeles County. These include San Bernardino International Airport (formerly Norton Air Force Base [AFB]), March Inland Port (joint use with March Air Reserve Base), Southern California Logistics Airport (formerly George AFB), and Palmdale Airport (joint use with Air Force Plant 42).

3.7.3.4.2 *Freeways and Arterial Roadways*

The SCAG region has over 20,717 centerline (route) miles and over 64,771 lane-miles of roadways, including one of the most extensive High-Occupancy Vehicle (HOV) lane systems in the country (U.S. FTA, 2006). Additionally, the SCAG region has a growing network of tolled lanes and High-Occupancy Toll (HOT) lanes. Regionally significant arterials provide access to the freeway system and often serve as parallel alternate routes; in some cases, they are the only major system of transportation available to travelers.

The extent to which traffic noise levels affect sensitive land uses depends upon a number of factors. These include whether the roadway itself is elevated above grade or depressed below grade, whether there are intervening structures or terrain between the roadway and the sensitive uses, and the distance between the roadway and such uses. For example, measurements show that depressing a freeway by approximately 12 feet yields a reduction in traffic noise relative to an at-grade freeway of seven to 10 dB at all distances from the freeway. Traffic noise from an elevated freeway is typically two to 10 dB less than the noise from an equivalent at-grade facility within 300 feet of the freeway, but beyond 300 feet, the noise radiated by an elevated and at-grade freeway (assuming equal traffic volumes, fleet mix, and vehicle speed) is the same (U.S. FTA, 2006).

Additionally, the SCAG region has an enormous number of arterial roadways. Typical arterial roadways have one or two lanes of traffic in each direction, with some containing as many as four lanes in each direction. Noise from these sources can be a significant environmental concern where buffers (e.g., buildings, landscaping, etc.) are inadequate or where the distance from centerline to sensitive uses is relatively small. Given typical daily traffic volumes of 10,000 to 40,000 vehicle trips, noise levels along arterial roadways typically range from 65 to 70 dB DNL at a distance of 50 feet from the roadway centerlines.

3.7.3.4.3 Railroad Operations

Railroad operations generate high, relatively brief, intermittent noise events. These noise events are an environmental concern for sensitive uses located along rail lines and in the vicinities of switching yards. Locomotive engines and the interaction of steel wheels and rails primarily generate rail noise. The latter source creates three types of noise: 1) rolling noise due to continuous rolling contact, 2) impact noise when a wheel encounters a rail joint, turnout or crossover, and 3) squeal generated by friction on tight curves. For very high speed rail vehicles, air turbulence can be a significant source of noise as well. In addition, use of air horns and crossing bell gates contribute to noise levels in the vicinity of grade crossings (U.S. FTA, 2006).

3.7.3.4.4 Freight Trains

Noise levels generated by freight train pass-by events reflect locomotive engine noise and rail car wheel rail interaction. The former depends upon track grade conditions (e.g., uphill versus downhill) and is largely independent of speed, whereas the latter is highly speed dependent, increasing approximately six dB for each doubling of train velocity (SCAG, 2008a). In addition to noise, freight trains also generate substantial amounts of ground-borne noise and vibration in the vicinity of the tracks. Ground-borne noise and vibration is a function of both the quality of the track and the operating speed of the vehicles.

The SCAG region has an extensive network of railroad lines belonging primarily to two major railroads: Union Pacific Railroad (Union Pacific) and Burlington Northern Santa Fe Railway (BNSF). SCAG's Inland Empire Railroad Main Line Study suggest that the number of freight trains on most BNSF and UP lines will more than double between 2000 and 2025 in response to a tripling of container volume at the San Pedro Bay Ports. A rail line supporting 40 freight trains per day generates approximately 75 dB DNL at 200 feet from the tracks. BNSF rail lines extend south from switching yards in eastern Los Angeles

to the Los Angeles and Long Beach ports complex and east to Arizona and points beyond via San Bernardino County. BNSF generates approximately 75 dB DNL at a distance of 200 feet from the tracks (SCAG, 2008a).

3.7.3.4.5 *Commuter and Inter-City Passenger Trains*

In general, the noise generated by commuter rail facilities (powered by either diesel or electric locomotives) is from the locomotives themselves. In the district, there are two commuter and inter-city passenger train operators: AMTRAK and the Southern California Regional Rail Authority/Metrolink. AMTRAK operates trains with destinations in Seattle, Chicago, Orlando, San Diego, and San Luis Obispo. A typical AMTRAK pass-by event generates 107 dB SEL at 50 feet (SCAG, 2008a); two such events during the daytime or evening periods generate approximately 61 dB DNL at 50 feet and approximately 52 dB DNL at 200 feet. Nine such events generate approximately 67 dB DNL at 50 feet and 58 dB DNL at 200 feet.

The Southern California Regional Rail Authority operates the Metrolink commuter rail system. This system currently includes seven rail lines, with destinations in Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego Counties. Noise levels generated by Metrolink are similar to those associated with AMTRAK.

3.7.3.4.6 *Steel Wheel Urban Rail Transit*

Heavy rail is generally defined as electrified rapid transit trains with dedicated guideway, and light rail as electrified transit trains that do not require dedicated guideway. In general, noise increases with speed and train length. Sensitivity to rail noise generally arises when there is less than 50 feet between the rail and sensitive receptors. A significant percentage of complaints about noise can be attributed to the proximity of switches, rough or corrugated track, or wheel flats. Within the district, the Los Angeles County Metropolitan Transit Authority (Metro) provides urban rail transit service on four lines within Los Angeles County. The Blue Line extends from Long Beach to the 7th Street Metro Center in downtown Los Angeles. The Red Line connects Union Station with North Hollywood via the Metro Center, the Gold Line connects Union Station with Pasadena, and the Green Line extends from Redondo Beach to Norwalk. Other Metro operated urban transit systems include the Orange Line which connects with the northern terminus of the Red Line in North Hollywood and serves much of the northwestern portion of Los Angeles County, and the Eastside Gold Line Extension, which provides rail transit service to East Los Angeles.

3.7.3.4.7 *Port Operations*

The Ports of Long Beach and Los Angeles are major regional economic development centers. These ports currently handle approximately 40 percent of the volume imported into the country and approximately 24 percent of the nation's exports. Noise is generated from four sources: ships using the port facilities, equipment associated with cargo activity within the port, and truck and rail traffic moving cargo to and from the ports. All sources affect the ambient noise levels in the port areas. Residential areas in San Pedro (City of Los Angeles) and West Long Beach are affected most by truck and rail traffic related to the ports.

The Alameda Corridor provides a substantial long-term reduction in noise and vibration associated with rail operations in the vicinities of the Ports of Long Beach and Los Angeles. The Alameda Corridor consolidates the operations of UP and BNSF on 90 miles of existing branch line tracks into one 20-mile corridor along Alameda Street. This corridor provides a direct connection between the ports of Long Beach and Los Angeles and the UP and BSNF switching yards in eastern Los Angeles. The Alameda Corridor includes four overpasses and three underpasses at intersections south of State Route 91 (SR-91) that allow vehicles to pass above the trains. North of SR-91, trains pass through a 10-mile, 33-foot-deep trench. The construction of tracks in a below-grade trench, track construction on new base materials, and the use of continuous welded track reduce noise impacts on adjacent uses from freight trains associated with the ports. Also, the Alameda Corridor includes sound walls in certain locations to mitigate vehicle noise along Alameda Street in residential neighborhoods and other sensitive areas.

3.7.3.4.8 *Industrial, Manufacturing, and Construction*

Noise from industrial complexes, manufacturing plants, and construction sites are characterized as stationary, or point, sources of noise even though they may include mobile sources, such as forklifts and graders. Local governments typically regulate noise from industrial, manufacturing, and construction equipment and activities through enforcement of noise ordinance standards, implementation of general plan policies, and imposition of conditions of approval for building or grading permits.

Industrial complexes and manufacturing plants are generally located away from sensitive land uses, and, as such, noise generated from these sources generally has less effect on the local community. In contrast to industrial and manufacturing plants, construction sites are located throughout the region and are often located within, or adjacent to, residential districts. In general, construction activities generate high noise levels intermittently on and adjacent to the construction sites, and the related noise impacts are short-term in nature. The dominant source of noise from most construction equipment is the engine, usually a diesel engine, with inadequate muffling. However, in a few cases, such as impact pile driving or pavement breaking, noise generated that activity dominates. Construction equipment can be considered to operate in two modes, stationary and mobile. Stationary equipment operates in one location for one or more days at a time, with either a fixed-power operation (pumps, generators, compressors) or a variable noise operation (pile drivers, pavement breakers). Mobile equipment moves around the construction site with power applied in cyclic fashion (bulldozers, loaders), or movement to and from the site (trucks) (SCAG, 2008a).

Construction-related noise levels generally fluctuate depending on the construction phase, equipment type and duration of use, distance between noise source and receptor, and presence or absence of barriers between noise source and receptor. Standard convention is that noise levels decrease by approximately six dB with each doubling of distance from the construction site (e.g., noise levels from excavation might be approximately 83 dB at 100 feet from the site, and so the noise level at 200 feet from the site would be about 77 dB). Interior noise levels from construction are approximately 10 dB (open windows) to 20 dB (closed windows) less than exterior noise levels due to the attenuation provided by building facades (SCAG, 2008a).

3.7.3.5 Existing Vibration Sources

Similar to the environmental setting for noise, the vibration environment is typically dominated by traffic from nearby roadways and activity on construction sites. Heavy trucks can generate groundborne vibrations that vary depending on vehicle type, weight, and road/pavement conditions. Heavy trucks typically operate on major streets. Nonetheless, vibration levels adjacent to roadways are typically not perceptible.

SUBCHAPTER 3.8

SOLID AND HAZARDOUS WASTE

Regulatory Background

Solid Waste Management

Hazardous Waste Management

3.8 SOLID AND HAZARDOUS WASTE

3.8.1 Regulatory Background

The Regulatory Background is divided into two sections: Solid Waste and Hazardous Waste.

3.8.1.1 Solid Waste

3.8.1.1.1 *Federal*

The U.S. EPA is the primary federal agency charged with protecting human health and with safeguarding the natural environment: air, water, and land. The U.S. EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The U.S. EPA is also responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Since 1970, Congress has enacted numerous environmental laws including RCRA, CERCLA, and the Toxic Substances Control Act (TSCA). 40 CFR Part 258, Subpart D of the RCRA establishes minimum location standards for siting municipal solid waste landfills. Because California laws and regulations governing the approval of solid waste landfills meet the requirements of Subtitle D, the U.S. EPA delegated the enforcement responsibility to the State of California.

3.8.1.1.2 *State*

With regard to solid non-hazardous wastes, the California Integrated Waste Management Act of 1989 (AB 939), as amended, requires every city and county in the state to prepare a Source Reduction and Recycling Element (SRRE) with its Solid Waste Management Plan that identifies how each jurisdiction will meet the mandatory state waste diversion goals of 25 percent by the year 1995, and 50 percent by the year 2000. Senate Bill 2202 (SB 2202) mandates that jurisdictions continue 50 percent diversion on and after January 1, 2000. The purpose of AB 939 is to facilitate the reduction, recycling, and re-use of solid waste to the greatest extent possible. Penalties for non-compliance with the goals and timelines set forth within AB 939 can be severe, since the bill imposes fines of up to \$10,000 per day on cities and counties not meeting these recycling and planning goals (SCAG, 2012). AB 939 has recognized that landfills and transformation facilities are necessary components of any integrated solid waste management system and an essential component of the waste management hierarchy. AB 939 establishes a hierarchy of waste management practices in the following order and priority: 1) source reduction; 2) recycling and composting; and, 3) environmentally safe transformation/land disposal.

CalRecycle (formerly known as the California Integrated Waste Management Board) has numerous responsibilities in implementing the federal and state regulations summarized above. CalRecycle is the state agency responsible for permitting, enforcing and monitoring solid waste landfills, transfer stations, material recovery facilities (MRFs), and composting facilities within California. Permitted facilities are issued Solid Waste Facility Permits (SWFPs) by CalRecycle. CalRecycle also certifies and appoints Local Enforcement

Agencies (LEAs), county or city agencies which monitor and enforce compliance with the provisions of SWFPs. CalRecycle is also responsible for monitoring implementation of AB 939 by the cities and counties. In addition to these responsibilities, CalRecycle also manages the Recycled-Content Materials Marketing Program to encourage the use of specific recycled-content products in road applications, public works projects and landscaping. These products include recycled aggregate, tire-derived aggregate, rubberized asphalt concrete, and organic materials.

AB 939 requires that each county in the state of California prepare a countywide Integrated Waste Management Plan (CIWMP). The CIWMP is a countywide planning document that describes the programs to be implemented in unincorporated and incorporated areas of the county that will effectively manage solid waste, and promote and implement the hierarchy of CalRecycle. The CIWMPs consists of a Summary Plan, a SRRE, a Household Hazardous Waste Element, a Non-Disposal Facility Element, and a Countywide Siting Element.

3.8.1.1.3 Local

A Summary Plan is a solid waste planning document required by Public Resources Code §41751, in which counties or regional agencies provide an overview of significant waste management problems faced by the jurisdiction, along with specific steps to be taken, independently and in concert with cities within their boundaries (SCAG, 2012).

The SRRE consists of the following components: waste characterization, source reduction, recycling, composting, solid waste facility capacity, education and public information, funding, special waste and integration. Each city and county is required to prepare, adopt, and submit to CalRecycle an SRRE, which includes a program for management of solid waste generated within the respective local jurisdiction. The SRREs must include an implementation schedule for the proposed implementation of source reduction, recycling, and composting programs. In addition, the plan identifies the amount of landfill and transformation capacity that will be needed for solid waste which cannot be reduced, recycled, or composted (SCAG, 2012).

Each city and county is required to prepare, adopt and submit to CalRecycle a Household Hazardous Waste Element which identifies a program for the safe collection, recycling, treatment, and disposal of hazardous wastes that are generated by households. The Household Hazardous Waste Element specifies how household hazardous wastes generated within the jurisdiction must be collected, treated, and disposed. An adequate Household Hazardous Waste Element contains the following components: Evaluation of alternatives, program selection, funding, implementation schedule and education and public information (SCAG, 2012).

Each city and county is required to prepare, adopt and submit to CalRecycle, a Non-Disposal Facility Element which includes a description of new facilities and expansion of existing facilities, and all solid waste facility expansions (except disposal and transformation facilities) that recover for reuse at least five percent of the total volume. The Non-Disposal Facility Elements are to be consistent with the implementation of a local jurisdiction's

SRRE. Each jurisdiction must also describe transfer stations located within and outside of the jurisdiction, which recover less than five percent of the material received (SCAG, 2012).

Counties are required to prepare a Countywide Siting Element that describes areas that may be used for developing new disposal facilities. The element also provides an estimate of the total permitted disposal capacity needed for a 15-year period if counties determine that their existing disposal capacity will be exhausted within 15 years or if additional capacity is desired (PRC Sections 41700-41721.5) (SCAG, 2012).

Each county in the SCAG region has created a CIWMP in accordance with AB 939. Below is a brief description of the recent updates to these plans by county.

Los Angeles County

Los Angeles County is revising its Summary Plan and Siting Element to reflect changes in the county's policies and goals, including promotion of conversion technologies, formation of the Los Angeles Regional Agency, update of countywide jurisdiction assistance programs to meet diversion goals, expansion of existing disposal facilities, and development of additional non-disposal facilities for the use of out-of-county disposal facilities (SCAG, 2012).

The county's 2009 Annual Report details the revision process, assesses remaining permitted capacity for the mandated 15-year planning horizon, and outlines seven disposal capacity scenarios, two of which project sufficient capacity to meet future demand through the use of conversion technologies and out-of-county disposal facilities. The Annual Report outlines county solid waste management challenges, including a projected shortfall of permitted disposal capacity in the county, insufficient markets for recovered materials, and steps to promote and develop conversion technologies (SCAG, 2012).

Orange County

Orange County completed the first review of its CIWMP in April 2003. It found sufficient disposal capacity for the 15-year planning horizon, but identified other challenges, including the lack of an operational materials recovery facility in the southern portion of the county, changes in records management to comply with the Disposal Recovery System, and determination of accurate base year data (SCAG, 2012).

In addition to the CIWMP, Orange County's Integrated Waste Management Department has initiated a long-term strategic planning project, the Regional Landfill Options for Orange County, which assesses the solid waste disposal needs of Orange County for the next 40 years. The 2007 Strategic Plan Update for this planning project summarizes progress to maximize capacity at existing landfills, assess alternative technologies and potential out-of-county disposal sites, and expand the Frank R. Bowerman and Olinda Alpha landfills (SCAG, 2012).

Riverside County

Riverside County's CIWMP was approved in 1996, and its 2010 Annual Report found the original plan remained applicable, so no comprehensive update is planned. The Non-Disposal Facility Elements was updated in 2009 and includes plans for four possible solid waste material recovery and transfer facilities; two of which would include household hazardous waste disposal facilities. The Non-Disposal Facility Elements also includes an additional proposed solid waste material recovery facility with capacity for household hazardous waste disposal and one composting facility. The 2008 Five Year Review Report for the CIWMP concluded that the most effective allocation of available resources is to continue to utilize the existing CIWMP as a planning tool augmented by annual reports, and that a revision of the CIWMP is not warranted (SCAG, 2012).

San Bernardino County

San Bernardino County's CIWMP five-year review report was completed in 2007. The report reflects updates to the county's goals and policies, changes to its disposal facilities, and assesses disposal capacity for the mandated 15-year planning horizon. Updated policies include programs to help jurisdictions reach diversion goals, such as additional recycling and composting programs and the development of regional material recovery facilities. The 2007 review found that based on the remaining permitted refuse capacity and projected refuse generation for disposal, the landfills within the county have approximately 26 years of capacity (SCAG, 2012).

Regional Water Quality Control Boards (RWQCB)

New or expanded landfills must submit Reports of Waste Discharge to RWQCBs prior to landfill operations. In conjunction with CalRecycle's approval of SWFPs, RWQCBs issue Waste Discharge Orders which regulate the liner, leachate control and removal, and groundwater monitoring systems at Class III landfills (SCAG, 2012).

South Coast Air Quality Management District (SCAQMD)

The SCAQMD regulates emissions from landfills. Landfill owners/operators must obtain permits to construct and operate landfill flares, cogeneration facilities or other facilities used to combust landfill gas. Owner/operators also are subject to the provisions of SCAQMD Rule 1150.1 - Control of Gaseous Emissions from Landfills. This rule requires the submittal of a compliance plan for implementation of a landfill gas control system, periodic ambient monitoring of surface emissions and the installation of probes to detect the lateral migration of landfill gas (SCAG, 2012).

3.8.1.2 Hazardous Waste

3.8.1.2.1 Federal

Hazardous material, as defined in 40 CFR 261.20 and 22 CCR Article 9, is disposed of in Class I landfills. California has enacted strict legislation for regulating Class I landfills. The

California Health and Safety Code requires Class I landfills to be equipped with liners, a leachate collection and removal system, and a ground water monitoring system.

The HMTA is the federal legislation regulating the trucks that transport hazardous wastes. The primary regulatory authorities are the U.S. DOT, the FHWA, and the Federal Railroad Administration (FRA). The HMTA requires that carriers report accidental releases of hazardous materials to the Department of Transportation at the earliest practicable moment (49 CFR Part 171, Subpart C).

RCRA gives the U.S. EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste by "large-quantity generators" (1,000 kilograms/month or more). Under RCRA regulations, hazardous wastes must be tracked from the time of generation to the point of disposal. At a minimum, each generator of hazardous waste must register and obtain a hazardous waste activity identification number. If hazardous wastes are stored for more than 90 days or treated or disposed at a facility, any treatment, storage, or disposal unit must be permitted under RCRA. Additionally, all hazardous waste transporters are required to be permitted and must have an identification number. RCRA allows individual states to develop their own program for the regulation of hazardous waste as long as it is at least as stringent as RCRA. In California, the U.S. EPA has delegated RCRA enforcement to the State of California.

3.8.1.2.2 *State*

Authority for the statewide administration and enforcement of RCRA rests with CalEPA's DTSC. While the DTSC has primary responsibility in the state for regulating the generation, transfer, storage and disposal of hazardous materials, DTSC may further delegate enforcement authority to local jurisdictions. In addition, the DTSC is responsible and/or provides oversight for contamination cleanup, and administers state-wide hazardous waste reduction programs. DTSC operates programs to accomplish the following: 1) deal with the aftermath of improper hazardous waste management by overseeing site cleanups; 2) prevent releases of hazardous waste by ensuring that those who generate, handle, transport, store, and dispose of wastes do so properly; and, 3) evaluate soil, water, and air samples taken at sites. The DTSC conducts annual inspections of hazardous waste facilities. Other inspections can occur on an as-needed basis.

Caltrans sets standards for trucks transporting hazardous wastes in California. The regulations are enforced by the CHP. Trucks transporting hazardous wastes are required to maintain a hazardous waste manifest. The manifest is required to describe the contents of the material within the truck so that wastes can readily be identified in the event of a spill.

The storage of hazardous materials in USTs is regulated by CalEPA's State Water Resources Control Board (SWRCB), which has delegated authority to the RWQCB and, typically at the local level, to the local fire department.

The Hazardous Waste Control Act (HWCA) created the State hazardous waste management program, which is similar to but more stringent than the federal RCRA program. The act is

implemented by regulations contained in Title 26 of the CCR, which describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transportation; design and permitting of recycling, treatment, storage, and disposal facilities; treatment standards; operation of facilities and staff training; and closure of facilities and liability requirements. These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the HWCA and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with DTSC.

The Unified Program required the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency, a CUPA. The Program Elements consolidated under the Unified Program are: Hazardous Waste Generator and On-site Hazardous Waste Treatment Programs (also known as Tiered Permitting); Aboveground Petroleum Storage Tank SPCC; Hazardous Materials Release Response Plans and Inventory Program (also known as the Hazardous Materials Accidental Release Plan); UST Program; and Uniform Fire Code Plans and Inventory Requirements. The Unified Program is intended to provide relief to businesses complying with the overlapping and sometimes conflicting requirements of formerly independently managed programs. The Unified Program is implemented at the local government level by CUPAs. Most CUPAs have been established as a function of a local environmental health or fire department. Some CUPAs have contractual agreements with another local agency, a participating agency, which implements one or more Program Elements in coordination with the CUPA.

The Hazardous Waste Source Reduction and Management Review Act of 1989 requires generators of 12,000 kilograms per year of typical operational hazardous waste to conduct an evaluation of their waste streams every four years and to select and implement viable source reduction alternatives. This Act does not apply to non-typical hazardous waste such as asbestos and polychlorinated biphenyls.

3.8.1.2.3 Local

Fire departments and other agencies in the district have a variety of local laws that regulate reporting, storage and handling of hazardous materials and wastes. There are no hazardous waste disposal sites within the jurisdiction of the district. Hazardous waste generated at area facilities, which is not reused on-site, or recycled offsite, is disposed of at a licensed in-state hazardous waste disposal facility. Two such facilities are the Chemical Waste Management Inc. (CWMI) Kettleman Hills facility in King's County, and the Clean Harbors (formerly Safety-Kleen) facility in Buttonwillow (Kern County). Kettleman Hills has an estimated 2.5 million cubic yard capacity. Buttonwillow receives approximately 960 tons of hazardous waste per day and has an approximate remaining capacity of approximately nine million cubic yards.

3.8.2 Solid Waste Management

Permit requirements, capacity, and surrounding land use are three of the dominant factors limiting the operations and life of landfills. Landfills are permitted by the local enforcement

agencies with concurrence from CalRecycle. Local agencies establish the maximum amount of solid waste which can be received by a landfill each day and the operational life of a landfill. Landfills are operated by both public and private entities. Landfills in the district are also subject to requirements of the SCAQMD as they pertain to gas collection systems, dust and nuisance impacts.

Landfills throughout the region typically operate between five and seven days per week. Landfill operators weigh arriving and departing deliveries to determine the quantity of solid waste delivered. At landfills that do not have scales, the landfill operator estimates the quantity of solid waste delivered (e.g., using aerial photography). Landfill disposal fees are determined by local agencies based on the quantity and type of waste delivered.

Over the past thirteen years, disposal tonnage has decreased significantly in the SCAG region as the emphasis on recycling to meet the requirements of AB 939 has served to divert tonnage from landfills and conserve landfill capacity. Table 3.8-1 shows data from CalRecycle regarding the number of tons disposed in 2010 (the most recent year for which information is available), for each county within the jurisdiction of the district (SCAG, 2012).

TABLE 3.8-1

Solid Waste Disposed in 2010 by County

COUNTY	TOTAL TONNAGE
Los Angeles	6,516,738
Orange	3,522,125
Riverside	3,089,583 ^(a)
San Bernardino	1,236,744 ^(a)
Total	14,365,190

Source: CalRecycle, 2012

(a) Reflects landfills within the district; other landfills outside of the district have not been included.

In viewing facilities on a county-by-county basis, it is important to note that landfills in one county may import waste generated elsewhere. Currently, Orange County offers capacity to out-of-county waste at a “tipping fee” low enough to attract waste from Los Angeles and San Bernardino Counties. In Riverside County, the El Sobrante Landfill is licensed to accept up to 10,000 tons of waste per day from Riverside, Los Angeles, Orange, San Diego, and San Bernardino counties (SCAG, 2012).

Since the enactment of AB 939 in 1989, local governments have implemented recycling programs on a widespread basis, making efforts to meet the 25 percent and 50 percent diversion mandates of AB 939. Statewide, CalRecycle reports that diversion increased from 10 percent in 1989 to 42 percent in 2000 and to 48 percent in 2002. As of 2008, the counties in the SCAG region had met their disposal target rates for waste diversion (SCAG, 2012).

A total of 32 Class III active landfills and two transformation facilities are located within the district with a total capacity of 116,796 tons per day and 3,240 tons per day¹, respectively (see Tables 3.8-2 and 3.8-3). The status of landfills within each county in the district is described in Tables 3.8-6 through 3.8-9.

TABLE 3.8-2

Number of Class III Landfills Located and Related Landfill Capacity

COUNTY	NUMBER OF LANDFILLS	CAPACITY (TONS PER DAY)
Los Angeles	12	50,613
Orange	3	23,500
Riverside ^(a)	7	24,314
San Bernardino ^(a)	10	18,369
Total	32	116,796

Source: CalRecycle, 2012

(a) Data presented is for the entire county and not limited to the portion of the county within the SCAQMD jurisdiction.

TABLE 3.8-3

Waste Transformation Facilities within the District and Related Capacity

FACILITY	COUNTY	PERMITTED CAPACITY (TONS PER DAY)
Commerce Refuse-to-Energy Facility	Los Angeles	1,000
Southeast Resource Recovery Facility	Los Angeles	2,240
Total		3,240

Source: LACDPW, 2011a

3.8.2.1 Los Angeles County

The Los Angeles Countywide Siting Element addresses landfill disposal. The purpose of the Countywide Siting Element is to provide a planning mechanism to address the solid waste disposal capacity needed by the 88 cities in Los Angeles County and the unincorporated communities for each year of the 15-year planning period through a combination of existing facilities, expansion of existing facilities, planned facilities, and other strategies.

¹ This represents the sum of the permitted capacities of the Southeast Resource Recovery Facility at 2,240 tons per day and the Commerce Refuse-To-Energy Facility at 1,000 tons per day. <http://www.calrecycle.ca.gov/SWFacilities/Directory/19-AK-0083/Detail/>; <http://www.calrecycle.ca.gov/SWFacilities/Directory/19-AA-0506/Detail/>

In 2010, residents and businesses in the county disposed of 8.77 million tons of solid waste at Class III landfills and transformation facilities located in and out of the county (see Tables 3.8-4 and 3.8-5). In addition, the amount of inert waste disposed at permitted inert waste landfills totaled 124,820 tons (LACDPW, 2011).

TABLE 3.8-4

Annual Disposal Tonnage for 2010 (County of Los Angeles)

FACILITY TYPE	VOLUME	UNITS
In-County Class III Landfills	6,313,263	tons per year
Transformation Facilities	539,129	tons per year
Exports to Out-of-County Landfills	1,917,993	tons per year
Subtotal MSW^(a) Disposed	8,770,385	tons per year
Permitted Inert Waste Landfills	124,820	tons per year
Grand Total Disposed	8,895,205	tons per year

Source: LACDPW, 2011

(a) MSW = Municipal Solid Waste

TABLE 3.8-5Average Daily Disposal Rate for 2010 (Based on Six Operating Days)
(County of Los Angeles)

FACILITY TYPE	VOLUME	UNITS
In-County Class III Landfills	20,235	tons per day
Transformation Facilities	1,728	tons per day
Exports to Out-of-County Landfills	6,147	tons per day
Subtotal MSW^(a) Disposed	28,110	tons per day
Permitted Inert Waste Landfills	400	tons per day
Grand Total Disposed	28,510	tons per day

Source: LACDPW, 2011

(a) MSW = Municipal Solid Waste

3.8.2.1.1 Waste Generation

Based on each jurisdiction's approved diversion rate by CalRecycle, the 2006 countywide diversion rate is estimated at 58 percent. For the purpose of long-term disposal capacity planning, a conservative diversion rate of 55 percent will be assumed for 2010. Therefore, given 8.77 million tons were disposed, it is estimated that the county generates approximately 19.5 million tons or an average of 62,467 tpd based on six operating days per week. Translating it into per capita generation rate, each person in the county generated 10.86 lbs of solid waste each day (LACDPW, 2011).

The Los Angeles County Department of Public Works (LACDPW) conducted a survey requesting landfill operators in the county to provide updates to their estimated remaining disposal capacity based on permitted disposal levels and years of remaining operation. Based on the results of the survey, the total remaining permitted Class III landfill capacity in the county is estimated at 243 million tons (see Table 3.8-6).

TABLE 3.8-6
Los Angeles County Landfill Status^(a)

SOLID WASTE FACILITIES	TOTAL YR 2010 (MILLION TONS)	2010 AVERAGE TONS PER DAY	PROJECTED 2011 AVERAGE TONS PER DAY	PERMITTED TONS/DAY	REMAINING PERMITTED CAPACITY (MILLION TONS)	ESTIMATED YEAR OF CLOSURE^b
Landfills:						
Antelope Valley	0.154	492	453	1,800	15.5	2022
Burbank	0.038	121	117	240	2.846	2053
Calabasas	0.253	812	842	3,500	6.031	2025
Chiquita Canyon	1.090	3,493	3,718	6,000	65.673	2019
Lancaster	0.257	825	780	1,700	0.886	2012
Pebbly Beach (Avalon)	0.003	10	10	49	0.058	2020
Puente Hills	1.841	5,901	5,523	13,200	12.516	2013
Scholl Canyon	0.245	786	753	3,400	4.104	2024
Sunshine Canyon	2.448	7,845	7,577	12,100	80.805	2037
Whittier (Savage Canyon)	0.075	240	245	350	3.788	2048
Azusa ^(c)	0.125	400	379	6,500	50.844	--
Total	6.529	20,925	20,397	48,839	243.051	--
Transformation Facilities:						
Commerce Refuse-to-Energy Facility	0.101	322	326	1,000	467	Not Applicable
Southeast Resource Recovery Facility	0.489	1,566	1,483	2,240	1,602	Not Applicable
Total	0.59	1,888	1,809	3,240	2,069	

(a) Source: Los Angeles County Integrated Waste Management Plan, Los Angeles County Department of Public Works, 2011.

(b) Source: SCAG, 2012

(c) Currently only accepting inert waste.

Because of community resistance to the extension of operating permits for existing facilities and to the opening of new landfills in the county, and the dwindling capacity of those landfills with operating permit time left, the exact date on which landfill capacity within the

county will be exceeded is uncertain. Landfill remaining life based on Solid Waste Facility Permits in the county ranges from one year at one facility, to as many as 44 years at another (LACDPW, 2011).

Several landfills have proposed facility expansions. The City of Palmdale approved the expansion of the Antelope Valley Landfill for an additional 8.96 million tons of capacity and approximately eight years of landfill life. The Chiquita Canyon Landfill was given approval to expand in February 2009. Finally, the Lancaster Landfill is proposing to increase the daily permitted disposal to 3,000 tons per day and extend the 2012 closure date.

The LACDPW has reviewed the county's ability to meet daily disposal demands under different scenarios (e.g., landfill expansions, alternative technologies, waste-by-rail systems, and reduction/recycling). Under some of the scenarios, the county will have a difficult time meeting future disposal demands. In order to ensure disposal capacity to meet the county needs, jurisdictions in Los Angeles County must continue to pursue all of the following strategies: 1) expand existing landfills; 2) study, promote, and develop conversion technologies; 3) expand transfer and processing infrastructure; 4) develop a waste-by-rail system; and, 5) maximize waste reduction and recycling.

3.8.2.2 Orange County

Orange County currently has three active Class III landfills. They include the following: Prima Deshecha, Frank R. Bowerman and Olinda Alpha. The Prima Deshecha Landfill has a permitted capacity of 4,000 tons per day and an expected closure date of 2067. The Frank R. Bowerman Landfill has a maximum capacity of 11,500 tons per day, and an expected closure date of 2053. The Olinda Alpha Landfill has a permitted capacity of 8,000 tons per day. The current permit expiration of the Olinda Alpha Landfill is 2021 (see Table 3.8-7).

TABLE 3.8-7

Orange County Landfill Status

LANDFILL	TOTAL YR 2010	PERMITTED TONS/DAY	REMAINING PERMITTED CAPACITY (CUBIC YARDS)	ESTIMATED YEAR OF CLOSURE
Frank R. Bowerman	1,395,735	11,500	205,000,000	2053
Olinda Alpha	1,728,854	8,000	38,578,383	2021
Prima Deshecha	397,536	4,000	87,384,799	2067
Total	3,522,125	23,500	330,963,182	

Source: CalRecycle, 2012

CalRecycle is responsible for ensuring that the county's waste is disposed of in a way that protects public health, safety and the environment. Long-range strategic planning is necessary to ensure that waste generated by the county is safely disposed of and that the county's future disposal needs are met. The Regional Landfill Options for Orange County (RELOOC) program was created for this reason. RELOOC is a 40-year strategic plan being

prepared by the IWMD. The purpose of RELOOC is to evaluate options for solid waste disposal for Orange County citizens. The plan was last updated in September 2007 (RELOOC, 2007)

Orange County cities and unincorporated areas have completed, adopted and implemented a Countywide Integrated Waste Management Plan. Orange County cities and unincorporated areas have residential curbside recycling programs in place.

3.8.2.3 Riverside County

Riverside County has six active sanitary landfills with a total capacity of 23,914 tons per day. Each of these landfills is located within the unincorporated area of the county and is classified as Class III. El Sobrante Landfill is a privately operated landfill open to the public. Assuming no expansion, the six major sites have closure dates projected from as early as 2011 to as late as 2186. The projected date of closure for each landfill is tentative and could be affected by engineering, environmental, and waste flow issues (see Table 3.8-8).

TABLE 3.8-8
Riverside County Landfill Status

LANDFILL	TOTAL TONS YR 2010	PERMITTED TONS/DAY	REMAINING PERMITTED CAPACITY (CUBIC YARDS)	ESTIMATED YEAR OF CLOSURE
Badlands	516,675	4,000	14,730,025	2024
Blythe	16,256	400	4,159,388	2047
Desert Center	34	60	23,246	2011 ^a
El Sobrante	2,025,468	16,054.00	145,530,000	2045
Lamb Canyon	529,743	3,000	18,955,000	2021
Mecca II	0	0	0	Closed
Oasis	1,407	400	149,597	2186
Total	3,089,583	23,914	183,547,256	

Source: CalRecycle, 2012

(a) CalRecycle Solid Waste Information System database lists the Desert Center Landfill as active, but also lists a "ceased operation date" of January 1, 2011, which reflects the estimated closure date on the U.S. EPA permit. SWIS summary of report of inspection on August 2, 2012 states the facility is active.

3.8.2.4 San Bernardino County

The County of San Bernardino Solid Waste Management Division (SWMD) is responsible for the operation and management of the County of San Bernardino's solid waste disposal system which consists of five regional landfills and nine transfer stations.

San Bernardino County has seven public landfills within the district's boundaries with a combined permitted capacity of 18,129 tons per day. Mid-Valley/Fontana Landfill is

estimated to reach final capacity by the end of 2033, San Timoteo by 2016, Victorville by 2047, Barstow by 2071, Landers by 2018, California Street by 2042 and Colton Landfill by 2017 (see Table 3.8-9).

TABLE 3.8-9

San Bernardino County Landfill Status

LANDFILL	TOTAL TONS YR 2010	PERMITTED TONS/DAY	REMAINING PERMITTED CAPACITY (CUBIC YARDS)	ESTIMATED YEAR OF CLOSURE
Mid-Valley/Fontana	535,876	7,500	67,520,000	2033
San Timoteo	123,500	1,000	11,360,000	2016
Victorville Sanitary	249,657	3,000	81,510,000	2047
Barstow Sanitary	64,612	1,500	924,401	2071
Landers Sanitary	46,407	1,200	765,098	2018
California Street	79,435	829	6,800,000	2042
Colton Landfill	137,257	3,100	2,700,000	2017
Total	1,236,744	18,129	171,579,499	

Source: CalRecycle, 2012

3.8.3 Hazardous Waste Management

Hazardous material, as defined in 40 CFR 261.20 and 22 CCR Article 9, is disposed of in Class I landfills. California has enacted strict legislation for regulating Class I landfills. The California Health and Safety Code requires Class I landfills to be equipped with liners, a leachate collection and removal system, and a ground water monitoring system.

There are no hazardous waste disposal sites within the jurisdiction of the SCAQMD. Hazardous waste generated at area facilities, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facility. Two such facilities are the Chemical Waste Management (CWM) Kettleman Hills facility in King's County, and the Laidlaw Environmental Services facility in Buttonwillow (Kern County).

The Kettleman Hills landfill is operating close to capacity, with reportedly less than one percent of capacity remaining or about 30,000 to 40,000 cubic yards and has reduced the amount of hazardous waste accepted at the landfill (Fresno Bee, 2012). CWM has applied to DTSC for a modification to its RCRA permit at Kettleman Hills to allow for the expansion of its hazardous waste landfill, Unit B-18, by 14 acres and about five million cubic yards. CWM has also applied to the U.S. EPA to both renew and modify its existing permits to allow for the expansion of the landfill. The expansion would provide another 12-14 years of life. DTSC has put approval of the landfill expansion on hold as additional environmental investigations, studies and monitoring have continued.

Buttonwillow is operated by Laidlaw Environmental Services and receives approximately 900 tons of hazardous waste per day. Buttonwillow has an approximate remaining capacity

of approximately 8,890,000 cubic yards. The expectant life of the Buttonwillow Landfill is approximately 40 years².

Hazardous waste also can be transported to permitted facilities outside of California. The nearest out-of-state landfills are U.S. Ecology, Inc., located in Beatty, Nevada; Laidlaw Environmental Services located in Lake Point, Utah; Envirosafe Services, in Grandview, Idaho; Chemical Waste Management Inc. in Carlyss, Louisiana, and Waste Control Specialists in Andrews, Texas. Incineration is provided at Laidlaw Environmental Services, Inc., located in Deer Park, Texas.

In 2011, less than 1.25 million tons of hazardous waste were generated in the four counties that comprise the district, and about two million tons of hazardous waste were generated in California (see Table 3.8-10). Those amounts are reduced from the totals in 2005 by approximately 17 and 34 percent respectively. The most common types of hazardous waste generated in the district include waste oil, inorganic solid waste, contaminated soils, organic solids, asbestos-containing waste, and unspecified oil-containing wastes. Because of the population and economic base in southern California, a large portion of hazardous waste is generated within the district. Not all wastes are disposed of in a hazardous waste facility or incinerator. Many of the wastes generated, including waste oil, are recycled within the Basin.

² Personal communication, Marianna Buoni, Laidlaw Environmental Services, August 2012.

TABLE 3.8-10
Hazardous Waste Generation in the Basin – 2011
(By County) (tons per year)

WASTE NAME	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO	COUNTY TOTAL (BASIN) ^(A)	STATEWIDE TOTAL
Waste & Mixed Oil	237,722	8,624	2,955	45,182	294,483	525,308
Inorganic Solid Waste	159,070	30,383	1,027	20,372	210,852	284,252
Contaminated Soils	100,570	3,649	-- ^(b)	18,047	122,266	391,089
Organic Solids	60,179	45,970	1,529	5,742	113,420	119,263
Asbestos Waste	36,194	6,275	2,558	3,955	48,982	129,463
Unspecified Oil-Containing Waste	30,216	5,975	1,437	13,048	50,676	81,419
Unspecified Solvent Mixture	20,675	827	281	418	22,201	55,196
Aqueous Solutions w/Organic Residues	19,858	2,003	846	7,014	29,721	57,410
Polychlorinated Biphenyls	18,145	498	210	659	19,782	24,855
Polymeric Resin Waste	--	3,174	--	--	3,174	3,477
Household Waste	--	1,687	293	625	2,605	10,169
Unspecified Aqueous Solution	15,085	1,679	601	2,334	19,699	37,583
Unspecified Organic Liquid Mixture	16,345	984	363	1,741	19,433	20,910
Aqueous Solution with Metals ^(c)	--	734	691	751	2,176	38,052
Unspecified Sludge Waste	--	--	1,266	--	1,266	16,863
Alkaline Solution (pH >= 12.5) W/O Metals	--	--	688	--	688	7,843
Liquids w/Arsenic >= 500 mg/l ^(d)	270,813	--	--	--	270,813	135,521
Blank/Unknown	4,662	--	267	1,720	6,649	47,829
Totals	989,534	112,462	15,012	121,608	1,238,886	1,986,502

Source: DTSC, 2011

^(a) (--) Not on list of top twenty waste totals generated in the county.

^(b) Data presented is for county total and not limited to the portion of the county within SCAQMD jurisdiction.

^(c) Smaller than restricted levels.

^(d) The data for this waste code is as reported in the California Hazardous Waste Tracking System database; however, one or more of the data entries for this waste category appear to be in error.

SUBCHAPTER 3.9

TRANSPORTATION AND TRAFFIC

Introduction

Transportation Regulatory Framework

Existing Traffic Setting

3.9 TRANSPORTATION AND TRAFFIC

3.9.1 Introduction

Some of the proposed 2012 AQMP control measures intended to improve overall air quality may have direct or indirect traffic impacts associated with their implementation. Traffic concerns are related to modifications to the existing transportation system that may generate significant impacts, primarily during the construction phases. This section describes the current transportation system in southern California.

Comments were received on the NOP/IS for the 2012 AQMP that potentially significant impacts could occur as a result of implementing §182 (e) Control Measure ADV-01 - Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles. The comment suggested that constructing the overhead electrical catenary lines could adversely affect traffic. Therefore, this potential impact will be evaluated in this [Final](#) Program EIR.

3.9.2 Transportation Regulatory Framework

3.9.2.1 Federal Regulatory Framework

The Transportation Equity Act for the 21st Century (TEA-21), signed into law in 1998, provides the regulatory framework at the federal level for transportation planning in urban areas. This legislation requires that Metropolitan Planning Organizations (MPO) prepare long-range transportation plans. In federally designated air quality nonattainment and maintenance areas, the long-range transportation plan is to be updated every three years. The State of California has additional regulations for the preparation of long-range transportation plans. Otherwise, because transportation and traffic are generally local activities, there are no other federal regulations that are pertinent to the proposed project.

3.9.2.2 State Regulatory Framework

California Department of Transportation (Caltrans): Traffic management in the state of California is guided by policies and standards set at the state level, primarily by the California Department of Transportation (Caltrans). Caltrans is an executive department within California responsible for highway, bridge, and rail transportation planning, construction, and maintenance. Its purpose is to improve mobility across the state. Caltrans manages the state highway system (which includes the California Freeway and Expressway System) and is actively involved with public transportation systems throughout the state. For administrative purposes, Caltrans has divided the state of California into 12 districts supervised by district offices. In southern California, District 7 covers Los Angeles and Ventura counties, District 12 covers Orange County, and District 8 covers Riverside and San Bernardino counties.

Caltrans in conjunction with the California Highway Patrol (CHP) has created Transportation Management Centers (TMCs) to rapidly detect and respond to roadway incidents, while managing the resulting traffic congestion. With the help of intelligent

transportation system technologies, such as electronic sensors in the pavement, freeway call boxes, video cameras, ramp meter sensors, earthquake monitors, motorist cellular calls, and commercial traffic reports, as well as Caltrans highway crews, 911 calls and officers on patrol, each TMC provides coordinated transportation management for general commutes, special events and incidents affecting traffic. The TMCs are operated within each Caltrans district.

CARB’s Truck and Bus Regulation: CARB’s Truck and Bus Regulation was adopted in December 2008 to reduce PM and NOx emissions from existing diesel vehicles operating throughout California. The regulation applies to nearly all diesel fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds that are privately or federally owned and for privately and publicly owned school buses. The regulation requires all trucks and buses to have 2010 model year engines by 2023. As of January 1, 2012, heavier trucks would be required to meet the engine model year phase-in schedule and fleets that comply with the schedule would install the best available PM filter on 1996 model year and newer engines and would replace the vehicle eight years later. Trucks with 1995 model year and older engines would be replaced starting 2015. Replacements with a 2010 model year or newer engines meet the final requirements, but fleets could also replace with used trucks that would have a future compliance date on the schedule. In addition, fleets that report and use the phase-in option for heavier trucks, could take advantage of credits to delay requirements for other heavier trucks in the fleet until 2017 for the following:

- PM filters installed before July 2011;
- Early purchase of cleaner engines before 2012 (originally equipped with PM filters) ;
- Reducing the number of trucks since 2006; and,
- Adding fuel-efficient hybrids or alternative fueled engines to the fleet.

As part of the analysis of the phase-in option, CARB’s projections at the time the Truck and Bus Regulation was adopted estimated the number of plug-in hybrid vehicles, battery electric vehicles, and fuel cell vehicles that will be driving on district roadways will substantially increase between year 2013 and year 2025, as shown in Table 3.9-1.

TABLE 3.9-1

CARB's Projected Populations of Near-Zero and Zero Emission Vehicles in the District

YEAR	PLUG-IN HYBRID VEHICLE (PHEV)	BATTERY ELECTRIC VEHICLE (BEV)	FUEL CELL VEHICLE (FCV)	TOTAL
2013	15,088	7,196	771	23,055
2014	22,626	7,476	1,058	31,160
2015	33,217	9,725	2,204	45,146
2016	44,442	12,114	3,420	59,976
2017	55,708	14,496	4,635	74,839
2018	79,608	19,778	5,825	105,211
2019	108,615	30,754	8,398	147,767
2020	142,290	46,129	12,837	201,256
2021	178,827	64,365	19,049	262,241
2022	219,896	84,998	27,745	332,639
2023	265,310	108,206	38,839	412,355
2024	314,923	132,900	52,784	500,607
2025	368,087	157,414	69,896	595,397

Source: Communication with ARB Staff, Mobile Source Division, August 14, 2012.

3.9.2.3 Regional Regulatory Framework – Congestion Management Programs (CMPs)

In order to meet federal certification requirements, county Congestion Management Agencies (CMAs) have worked together to develop a congestion management process for the southern California area. In southern California, the Congestion Management System (CMS) is comprised of the combined activities of the Regional Transportation Plan (RTP), the CMP and the Regional Transportation Improvement Program (RTIP).

Under California law, CMPs are prepared and maintained by the CMAs. The Los Angeles County Metropolitan Transportation Authority (Metro), Orange County Transportation Authority (OCTA), Riverside County Transportation Commission (RCTC), and San Bernardino Associated Governments (SANBAG) are the designated CMAs of each county and are subject to State requirements.

In addition to the SCAG RTP and RTIP, the key elements of the federal Congestion Management Process are addressed through the counties' CMPs. Because the magnitude of congestion and degree of urbanization differ among the counties, each CMP differs in form and local procedure. By state law, all CMPs perform the monitoring and management functions summarized in the following bullet points, which also fulfill the federal CMP requirements:

- **Highway Performance:** The monitoring of the performance of an identified highway system as conducted by each CMA allows each county to track how their system, and

its individual components, is performing against established standards, and how performance changes over time.

- **Multi-Modal Performance:** Each CMP contains an element to evaluate the performance of other transportation modes including transit.
- **Transportation Demand Management:** Each CMP contains a Transportation Demand Management (TDM) component geared at reducing travel demand and promoting alternative transportation methods.
- **Land Use Programs and Analysis:** Each CMP incorporates a program for analyzing the effects of local land use decisions on the regional transportation system.
- **Capital Improvement Program:** Using data and performance measures developed through the activities identified above, each CMP develops a Capital Improvement Program (CIP) which is the first step in developing the RTIP. Under state law, projects funded through the RTIP must first be contained in the county CIP.
- **Deficiency Planning:** The CMP contains provisions for "deficiency plans" to address unacceptable levels of congestion. Deficiency plans can be developed for specific problem areas or on a system-wide basis. Projects implemented through the deficiency plans must, by statute, have both mobility and air quality benefits. In many cases, the deficiency plans capture the benefits of transportation improvements that occur outside the county TIPs and RTIP such as non-traditional strategies and/or non-regionally significant projects.
- The regional transportation planning process and the county congestion management process should be compatible with one another. To ensure consistency, SCAG and the CMAs have developed the Regional Consistency and Compatibility Criteria for CMPs. Information on the CMP activities and resulting data are updated on a biennial basis by each CMA and supplied to SCAG and air quality management districts.

3.9.2.4 Local Regulatory Framework – General Plans

Under state planning law, every city and county must adopt a General Plan that sets forth the goals, policies and implementation measures for future growth and development. General plans must include seven elements, among which is a circulation element. The circulation element must describe the existing transportation network and describes all planned future transportation improvements. Many local transportation elements, or their implementing ordinances, include criteria for measuring the functionality of current and future roadways, typically through a level-of-service (LOS) measurement system, a volume-to-capacity (VC) ratio, or other such approaches.

3.9.2.5 Transportation-related Policies in California

3.9.2.5.1 *METRANS Transportation Center*

The METRANS Transportation Center, a joint partnership between the University of Southern California and California State University Long Beach, is a University Transportation Center that was established in 1998 under the TEA-21 as a policy advocacy organization to foster independent, high quality research to solve the nation's transportation

problems. The mission of METRANS is to "solve transportation problems of large metropolitan regions through interdisciplinary research, education and outreach." METRANS conducts research in several areas relating to transportation, including safety, security, and vulnerability. In addition to performing research, one of the primary goals of METRANS is to disseminate the research information, as well as, best practices and technology to the professional community

3.9.2.5.2 *Intelligent Transportation System*

One way to incorporate safety and security into transportation planning is through greater collaboration between transportation planning and operations. An Intelligent Transportation System (ITS) is one method of establishing this collaborative relationship by creating an ITS Architecture. An ITS Architecture is a framework for ensuring institutional agreement and technical integration of technologies for the implementation of projects or groups of projects under an ITS strategy. ITS projects were originally designed to increase transportation efficiency and to enhance the safety, security and emergency response capabilities of the region.

Because the successful operation of ITS projects usually depend on multiple agencies and the systems they operate, a framework, made up of multiple ITS Architectures, has been developed at the state, regional, and local levels to help achieve cooperation, coordination and communication amongst participants in the most cost-effective manner. For example, at the state level, the California ITS Architecture and System Plan addresses those services that are managed at a state level or are interregional in nature. Project sponsors are responsible for ensuring that their projects maintain consistency with the regional architectures, regardless of which architecture applies, as a requirement for federally funded projects.

At the regional level, a Regional ITS Architecture provides a framework to address multi-county issues including those projects, programs, and services that require connectivity across county boundaries or are deployed at a multi-county level for ITS planning that promotes interoperability and communication across jurisdictional boundaries. Projects developed under a regional framework extend the usefulness of any single project by making information easily accessible for operators and users of the system. For example, the southern California ITS Regional Architecture is a Regional ITS Architecture that was developed specifically for all counties in the southern California area in order to document the ITS Architecture covering the region.

Local components to the ITS Architecture exist for Los Angeles County, Orange County, Riverside County, and San Bernardino County.

3.9.3 Existing Traffic Setting

The southern California transportation system is a complex intermodal network that consists of roads, highways, public transit, paratransit, bus, rail, airports, seaports and intermodal terminals designed to carry both people and goods. The regional highway system consists of an interconnected network of local streets, arterial streets, freeways, carpool lanes and toll roads. This highway network allows for the operation of private automobiles, carpools,

private and public buses, and trucks. Active transportation modes, such as bicycles and pedestrians share many of these facilities. The regional public transit system includes local shuttles, municipal and area-wide public bus operations, rail transit operations, regional commuter rail services, and interregional passenger rail service. The freight railroad network includes an extensive system of private railroads and several publicly owned freight rail lines serving industrial cargo and goods. The airport system consists of commercial, general, and military aviation facilities serving passenger, freight, business, recreational, and defense needs. The region's seaports support substantial international and interregional freight movement and tourist travel. Intermodal terminals consisting of freight processing facilities, which transfer, store, and distribute goods. The transportation system supports the region's economic needs, as well as the demand for personal travel.

Transit use is growing in southern California. As of 2009, transit agencies in the southern California area reported 747.3 million boardings (SCAG, 2012). This represents growth of nearly 20 percent in the ten years between 2000 and 2010, but only four percent growth in per capita trips due to population growth. Metrolink and Metro Rail (Los Angeles County) have seen ridership growth of six percent to eight percent per year.

3.9.3.1 Transportation Planning

Numerous agencies are responsible for transportation planning and investment decisions within the southern California area. SCAG helps integrate the transportation-planning activities in the region to ensure a balanced, multimodal plan that meets regional as well as county, subregional, and local goals.

Table 3.9-2 identifies local and state agencies that participate in the development of RTP. Seven major entities and agencies are involved including SCAG as the designated Metropolitan Planning Organization, the County Transportation Commissions, Subregional Councils of Governments, local and county governments, transit and transportation owners, operators and implementing agencies, resource/regulating agencies and other private non-profit organizations, interest groups and tribal nations.

TABLE 3.9-2

Stakeholders in Transportation Planning in the Southern California Area

COUNTY TRANSPORTATION COMMISSIONS
Los Angeles County Metropolitan Transportation Authority (Metro)
Orange County Transportation Authority (OCTA)
Riverside County Transportation Commission (RCTC)
SUBREGIONAL COUNCILS OF GOVERNMENTS
Southern California Association of Governments (SCAG)
San Bernardino Associated Governments (SANBAG)
City of Los Angeles
North Los Angeles County
Orange County Council of Governments
San Fernando Council of Governments
San Gabriel Valley Council of Governments
Western Riverside County Council of Governments
Westside Cities Council of Governments
OTHERS
Caltrans
Airport Authorities
Port Authorities
Transportation Corridor Agencies
Transit/Rail Operators

Each of the four counties within the jurisdiction of the SCAQMD has a Transportation Commission or Authority. These agencies are charged with countywide transportation planning activities, allocation of locally generated transportation revenues, and in some cases operation of transit services. In addition, there are many subregional Councils of Government within the southern California area. A Council of Government is a group of cities and communities geographically clustered (sometimes comprising an entire county, e.g., Orange County), which work together to identify, prioritize, and seek transportation funding for needed investments in their respective service areas.

3.9.3.2 Existing Circulation System

3.9.3.2.1 *Commute Patterns and Travel Characteristics*

The existing transportation network serving the southern California area supports the movement of people and goods. On a typical weekday in the four-county region, including those portions of the county not located within the jurisdiction of the SCAQMD, the transportation network supports a total of approximately 420 million vehicle miles of travel (VMT) and 12 million vehicle hours of travel (VHT). Of these totals, over half occur in Los Angeles County and less in Orange County, San Bernardino County, and Riverside County, respectively. Detailed summaries of the existing VMT and VHT for the area are presented in Table 3.9-3 and Table 3.9-4, respectively.

TABLE 3.9-3

Summary of Existing Daily Vehicle Miles

County	Vehicle Miles of Travel (VMT)					
	AM Peak Period		PM Peak Period		Daily	
	Miles	% of Region	Miles	% of Region	Miles	% of Region
Los Angeles	46,321,000	54%	74,635,000	54%	224,312,000	54%
Orange	15,589,000	18%	24,793,000	18%	75,224,000	18%
Riverside	12,099,000	14%	18,817,000	14%	60,494,000	14%
San Bernardino	12,242,000	14%	18,944,000	14%	61,010,000	14%
Total	86,251,000	100%	137,189,000	100%	420,980,000	100%

Source: SCAG 2012. Data presented are for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

TABLE 3.9-4

Summary of Existing Daily Vehicle Hours of Travel

County	Vehicle Hours of Travel (VHT)					
	AM Peak Period		PM Peak Period		Daily	
	Hours	% of Region	Hours	% of Region	Hours	% of Region
Los Angeles	1,627,000	60%	3,181,000	62%	7,428,000	60%
Orange	474,000	17%	879,000	17%	2,171,000	17%
Riverside	320,000	12%	542,000	11%	1,469,000	12%
San Bernardino	307,000	11%	512,000	10%	1,416,000	11%
Total	2,728,000	100%	5,114,000	100%	12,484,000	100%

Source: SCAG, 2012. Data presented are for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

Much of the existing travel in the southern California area takes place during periods of congestion, particularly during the morning (6:00 AM to 9:00 AM) and evening peak periods (3:00 PM to 7:00 PM). Congestion can be quantified as the amount of travel that takes place in delay (vehicle hours of delay or VHD), and alternately, as the percentage of all travel time that occurs in delay (defined as the travel time spent on the highway due to congestion, which is the difference between VHT at free-flow speeds and VHT at congested speeds). Table 3.9-5 presents the existing travel delays and percent of regional VHT in delay by County on freeways and arterials. As shown in Table 3.9-5, regional travel time in delay represents approximately 25 percent of all daily, 30 percent of all AM peak period, and 38 percent of all PM peak period travel times.

TABLE 3.9-5

Summary of Existing Vehicle Hours of Delay

County	Vehicle Hours of Delay			% of Travel in Delay		
	AM Peak Period	AM Peak Period	Daily	AM Peak Period	AM Peak Period	Daily
Los Angeles	554,000	1,387,000	2,204,000	34%	44%	4%
Orange	128,000	313,000	493,000	27%	36%	23%
Riverside	78,000	158,000	263,000	24%	29%	18%
San Bernardino	64,000	125,000	205,000	21%	24%	14%
Total	824,000	1,983,000	3,165,000	30%	38%	25%

Source: SCAG, 2012. Data presented are for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

The average vehicle home-to-work trip duration in each county is generally similar while a greater range of average work distances is found in the different counties of the region (from a low of 13 miles in Orange County to a high of 18 miles in San Bernardino and Riverside counties) (Table 3.9-6). Home-to-work trip duration and distance are both greater for the inland counties of Riverside and San Bernardino, reflecting regional housing and employment distribution patterns. A substantial portion of AM peak period travel in each county takes place in delay, ranging from a low of 21 percent in San Bernardino County to a high of 34 percent in Los Angeles County, as indicated in Table 3.9-5.

Based on average accident rates provided by Caltrans, transportation-related fatalities occur at an overall rate of 0.83 fatalities per 100 million vehicle miles traveled, taking into account the varying accident rates on different facility types (freeway, arterials) and travel modes (bus transit, rail transit) (SCAG, 2012). These specific accident rates and the resulting estimate of region-wide accidents are detailed in Table 3.9-7.

TABLE 3.9-6

Summary of Existing Vehicle Work Trip Length

County	Average Home to Work Trip Distance (miles)	Average Home to Work Duration (minutes)	
	Vehicle Trips (AM Only)	Vehicle Trips (AM Only)	Transit Trips (AM Only)
Los Angeles	14	26	69
Orange	13	21	78
Riverside	18	29	95
San Bernardino	18	29	116

Source: SCAG 2012-2035 RTP/SCS Program Draft EIR.

Data presented are for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

TABLE 3.9-7

Total Vehicle Fatalities

County	Fatalities (2009)	Fatalities per 100 Million Vehicle Miles Traveled	Annual Vehicle Miles Traveled per 100 Million
Los Angeles	589	0.76	778
Orange	154	0.59	261
Riverside	219	1.04	210
San Bernardino	236	1.11	212

Source: SCAG 2012-2035 RTP/SCS Program Draft EIR.

Data presented are for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

A summary of home-to-work trip characteristics by county is presented in Table 3.9-8. Single passenger occupancy vehicles is still the most common form of transportation for home to work trips, accounting for 76 percent of the trips in Los Angeles County, 81 percent of the trips in Orange County, and 82 percent of the trips in Riverside and San Bernardino County. Public transit in all forms (including school buses) carries approximately 2.4 percent of all trips in the southern California area. Of these, the greatest number of travelers is carried by buses, with lesser patronage on Metro Rail, paratransit, commuter rail and other forms of public transit services. Work trips made via public transit account for about 6.1 percent of all home-to-work trips in the area.

TABLE 3.9-8

Existing Travel Mode Split (% of County Total)

County	Person Trip Type	Drive Alone	2 Person Carpool	3 Person Carpool	Auto Passenger Trip	Transit	Non-Motorized	Total
Los Angeles	Home-Work/Univ	76%	3.4%	1.5%	7.1%	9.1%	3%	100%
	All Daily Trips	43%	8%	6.5%	24%	3.5%	14%	100%
Orange	Home-Work/Univ	81%	3.7%	1.5%	7.4%	3.4%	3%	100%
	All Daily Trips	46%	8.3%	6.8%	26%	1.4%	12%	100%
Riverside	Home-Work/Univ	82%	3.7%	1.8%	8%	1.5%	3.1%	100%
	All Daily Trips	42%	8.3%	7.3%	27%	0.72%	15%	100%
San Bernardino	Home-Work/Univ	82%	3.8%	1.8%	8.3%	1.4%	3%	100%
	All Daily Trips	43%	8.4%	7.3%	27%	0.58%	14%	100%

Source: SCAG, 2012.

Data presented is for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

3.9.3.2.2 *Regional Freeway, Highway and Arterial System*

The regional freeway and highway system as shown in Figure 3.9-1 is the primary means of person and freight movement for the region. This system provides for direct automobile,

bus and truck access to employment, services and goods. The network of freeways and State highways serves as the backbone of the system offering very high capacity limited-access travel and serving as the primary heavy duty truck route system.

Major freeways that transverse Los Angeles County in a generally north/south direction include the San Diego Freeway (I-405), the Golden State Freeway (I-5), the Hollywood Freeway (I-101), Pasadena Freeway (I-110), the Long Beach Freeway (I-710), and the San Gabriel Freeway (I-605). Major freeways that transverse Los Angeles County in a generally east/west direction include the Santa Monica Freeway (I-10), Century Freeway (I-105), Foothill Freeway (I-210), Ronald Reagan Freeway (I-118), Pomona Freeway (I-60), and Riverside Freeway (I-91).

Major freeways that transverse Orange County in a generally north/south direction include I-405, I-5, the Orange Freeway (I-57), and the Newport Freeway (I-55), as well as toll roads located in the south-eastern portion of the County (I-241 and 261). Major freeways that transverse Orange County in a generally east/west direction include the I-91, Garden Grove Freeway (I-22), and Corona Del Mar Freeway (I-73).

Major freeways that transverse Riverside County in a generally north/south direction include the Chino Valley Freeway (I-71), Ontario Freeway (I-15), and Escondido Freeway (I-215). Major freeways that transverse Riverside County in a generally east/west direction include the I-91, I-60, and I-10.

Major freeways that transverse San Bernardino County in a generally north/south direction include the Ontario Freeway (I-15), and I-215. Major freeways that transverse San Bernardino County in a generally east/west direction include the Needles Freeway (I-40) (outside of the air Basin).

The components of the regional highway and freeway system are summarized in Table 3.9-9.

TABLE 3.9-9

Existing Regional Freeway Route Miles and Lane Miles by County

County	Freeway Route Miles	Freeway Lane Miles
Los Angeles	637	4,583
Orange	167	1,294
Riverside	309	1,722
San Bernardino	471	2,512
Total	1,584	10,111

Source: SCAG, 2012.

Data presented are for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

3.9.3.2.3 *Regional High Occupancy Vehicle System and Park & Ride System*

The regional high occupancy vehicle (HOV) system consists of exclusive lanes on freeways and arterials, as well as bus ways and exclusive rights-of-way dedicated to the use of HOVs. It includes lanes on freeways, ramps and freeway-to-freeway connectors. The regional HOV system is designed to maximize the person-carrying capacity of the freeway system through the encouragement of shared-ride travel modes. HOV lanes operate at a minimum occupancy threshold of either two or three persons. Many include on-line and off-line park and ride facilities, and several HOV lanes are full "transitways" including on-line and offline stations for buses to board passengers. The current system is described in Table 3.9-10.

TABLE 3.9-10

Existing Regional Freeway ~~Route Miles and Lane~~ HOV Total Lane Miles by County

County	HOV Total Lane Miles
Los Angeles	479
Orange	241
Riverside	83
San Bernardino	105

Source: SCAG, 2012.

Data presented is for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

Park and ride facilities are generally located at the urban fringe along heavily-traveled freeway and transit corridors and support shared-ride trips, either by transit, by carpool or vanpool. Most rail transit stations have park and ride lots nearby. There are currently 168 park and ride lots in the southern California area, including Metrolink station parking lots. These facilities include: 106 in Los Angeles County, 20 park and ride facilities in Orange County, 25 in Riverside County, and 17 in San Bernardino County.

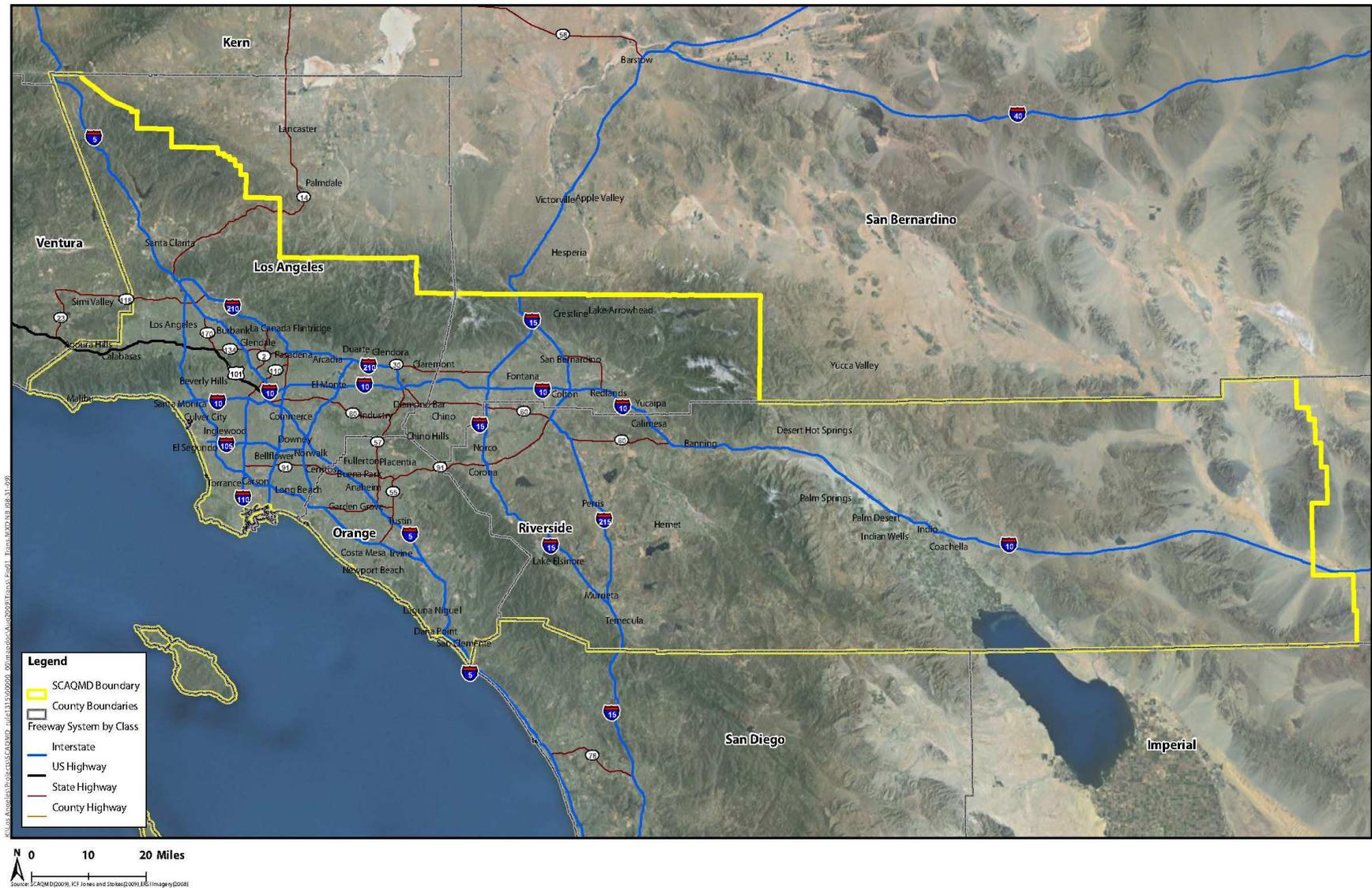


FIGURE 3.9-1

Major Freeway Routes within South Coast Air Quality Management District

3.9.3.2.4 Arterial Street System

The local street system provides access for local businesses and residents. Arterials account for over 80 percent of the total road network and carry a high percentage of total traffic. In many cases arterials serve as alternate parallel routes to congested freeway corridors. Peak period congestion on the arterial street system occurs generally in the vicinity of activity centers, at bottleneck intersections and near many freeway interchanges. The region's arterial street system is described in terms of number of miles in Table 3.9-11.

TABLE 3.9-11

Existing Regional Arterial Route Miles and Lane Miles by County

County	Arterials	Lane Miles
Los Angeles	Principal	8,843
	Minor	9,076
Orange	Principal	3,242
	Minor	3,147
Riverside	Principal	1,181
	Minor	3,235
San Bernardino	Principal	1,934
	Minor	4,365
Total	Principal	15,200
	Minor	19,823

Source: SCAG 2012-2035 RTP/SCS Program Draft EIR.

Data presented are for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

3.9.3.3 Goods Movement

Wholesale and retail trade, transportation, and manufacturing support over 3.3 million jobs in the region according to statistics provided by the California Employment Development Department. Goods movement includes trucking, rail freight, air cargo, marine cargo, and both domestic and international freight, the latter entering the country via the seaports, airports, and the international border with Mexico. Additionally, many cargo movements are intermodal (e.g., sea to truck, sea to rail, air to truck, or truck to rail). The goods movement system includes not only highways, railroads, sea lanes, and airways, but also intermodal terminals, truck terminals, railyards, warehousing, freight consolidation/de-consolidation terminals, freight forwarding, package express, customs inspection stations, truck stops, and truck queuing areas.

3.9.3.3.1 Railroads

The southern California area is served by two main line commercial freight railroads (e.g., the Burlington Northern/Santa Fe Railway Co. (BNSF) and the Union Pacific (UP) Railroad). These railroads link southern California with other United States regions, Mexico and Canada either directly or via their connections with other railroads. They also provide freight rail service within California. In 2011, railroads moved approximately 150 million

tons of cargo throughout California (SCAG, 2012). These railroads perform specific local functions and serve as feeder lines to the trunk line railroads for moving goods to and from southern California.

The two main line railroads also maintain and serve major facilities in the southern California area. Intermodal facilities in Commerce (BNSF-Hobart), East Los Angeles (UP), San Bernardino (BNSF), and Carson near the San Pedro Bay Ports (UP-ICTF), the Los Angeles Transportation Center (UP-LATC), and the UP-City of Industry yards serve on-dock rail capacity at the Port of Los Angeles (UP/BNSF) and Port of Long Beach (UP/BNSF).

BNSF and UP are both seeking approvals for new or expanded intermodal container facilities to help manage the estimated increase in container movements through the ports. BNSF is seeking approvals for the Southern California International Gateway facility, a new intermodal facility in the City of Los Angeles about four miles north of the Ports of Long Beach and Los Angeles and adjacent to the Alameda Corridor (LAHD, 2011). UP is seeking approvals to expand its existing Intermodal Container Transfer Facility near the City of Carson, adjacent to the Alameda Corridor (ICTF JPA, 2009)

All of the major rail freight corridors in the region have some degree of grade separation, but most still have a substantial number of at-grade crossings on major streets with high volumes of vehicular traffic. These crossings cause both safety and reliability problems for the railroads and for those in motor vehicles at the affected crossings. Trespassing on railroad rights-of-way by pedestrians is another safety issue affecting both freight and commuter railroads. As an example, the Colton Crossing, is an at-grade railroad crossing located south of I-10 between Rancho Avenue and Mount Vernon Avenue in the City of Colton, where BNSF's San Bernardino Line crosses UP's Alhambra/Yuma Lines. In 2008, the Colton Crossing saw on average 110 freight trains per day.

The southern California area is also served by two short line or switching railroads:

- The Pacific Harbor Line (formerly the Harbor Belt Railroad) handles all rail coordination involving the Port of Los Angeles and Port of Long Beach, including dispatching and local switching in the harbor area.
- Los Angeles Junction Railway Company, owned by BNSF, provides switching service in the Vernon area for both the BNSF and UP.

Another key component of the regional rail network is the Alameda Corridor, a 20-mile, four-lane freight rail expressway that began operations in April 2002. In 2010, approximately 14,177 intermodal trains transited the Alameda Corridor, an approximate increase of 8.6 percent since 2009 (SCAG, 2012).

3.9.3.3.2 *Marine Ports*

Southern California is served by three major deep-water seaports (e.g., Port of Los Angeles, Port of Long Beach, and Port of Hueneme). However, the Port of Hueneme is not within the jurisdiction of the SCAQMD. The Port of Los Angeles and Port of Long Beach handle trade

from Asia and North America, and are served by the two major railroads (e.g., BNSF and UP), as well as numerous trucking companies in southern California. The Port of Hueneme handles primarily automobile and agricultural products. Both the Port of Los Angeles and the Port of Long Beach are full service ports with facilities for containers, autos and various bulk cargoes. With an extensive landside transportation network, these three ports moved more than 310 million metric tons of cargo in 2010 (SCAG, 2012).

The Port of Los Angeles and Port of Long Beach dominate the container trade in the Americas by shipping and receiving more than 11.8 million twenty-foot Equivalent Units (TEUs) of containers in 2009. Together, these two ports rank third in the world, behind Rotterdam and Hong Kong, as the busiest maritime ports (SCAG, 2012).

3.9.3.4 Public Transit, Bicycle or Pedestrian Facilities

3.9.3.4.1 *Public Transit*

In southern California public transit service is comprised of local and express buses, transit ways, Rapid Bus, and urban rail, including subway and light rail, principally centered in the core of Los Angeles County. Transit service is provided by approximately 67 separate public agencies. Twelve of these agencies provide 91 percent of the existing public bus transit service. Local service is supplemented by municipal lines and shuttle services. Private bus companies provide additional regional service.

Transit ridership was approximately 708 million in 2010 in southern California (SCAG, 2012). The largest provider of public transit service in Los Angeles County is the Metro, which provides bus service and an urban light rail system and subway. In 2010, the Metro system experienced approximately 41.9 million average monthly boardings (SCAG, 2010).

The largest provider of public transit service in Orange County is OCTA, which operates 77 bus local and express routes and approximately 62,000 bus stops located throughout the urbanized portions of Orange County. In 2010, the OCTA system experienced approximately 4.8 million average monthly boardings (SCAG, 2010).

The largest provider of public transit service in Riverside County is the Riverside Transit Agency, which operates 231 buses on approximately 43 local and express routes. In 2010, the system experienced approximately 950,000 average monthly boardings (SCAG, 2010).

The largest provider of public transit service in San Bernardino County is Omnitrans, which operates 277 buses over approximately 27 routes. In 2010, the system experienced approximately 1.3 million average monthly boardings (SCAG, 2010).

3.9.3.4.2 *Metro Rail System*

Existing urban rail lines are located in Los Angeles County and operated by Metro. They include the Metro Blue Line (from Long Beach to downtown Los Angeles), the Metro Green Line (from Redondo Beach to Norwalk), the Metro Red Line subway (from Union Station to North Hollywood), Metro Purple Line (from Union Station to Western Avenue), the Metro Gold Line (from east Los Angeles to Pasadena), and the Metro Expo Line (from Union

Station to Culver City. The Metro Rail system has a total of 87 route miles that serve a total of 80 stations. Ridership on the system is about 303,000 boardings per day (SCAG, 2012)

3.9.3.4.3 *Regional Commuter Rail*

Metrolink is a commuter rail service that is governed and operated by the Southern California Regional Rail Authority (SCRRA), a joint powers authority that consists of five county agencies tasked with reducing highway congestion and improving mobility throughout southern California: Los Angeles County Metropolitan Transportation Authority (Metro), Orange County Transportation Authority, Riverside County Transportation Commission, San Bernardino Associated Governments and Ventura County Transportation Commission. Metrolink serves as the link between six Southern California counties by providing commuters seamless transportation connectivity options. Metrolink currently operates seven routes including five from downtown Los Angeles to Ventura, Lancaster, San Bernardino, Riverside and Oceanside; one from San Bernardino to Oceanside; and one from Riverside via Fullerton or City of Industry to downtown Los Angeles. The system operates about 144 trains on weekdays, 40 trains on Saturdays, and 26 trains on Sundays to 55 stations on 512 miles of track. Average weekday ridership is approximately 40,544 passengers (SCAG, 2012).

Amtrak provides regional and inter-regional service from San Diego to San Luis Obispo along the Pacific Surfliner corridor. Amtrak also operates four interstate routes within the region that on average have one daily trip.

3.9.3.4.4 *Bicycle and Pedestrian Facilities*

Biking and walking tend to play a bigger role in densely-populated, mixed land use areas of the region. However, in 2009, less than four percent of commuters within the SCAG region, of which the district is a subset, traveled to work via biking or walking (0.7 percent bicycled and 2.5 percent walked)¹. Current transit infrastructures provide 97 percent of residents in the SCAG region with access to transit via bicycle and 86 percent access to transit by walking.

The region's bikeways include Class I bikeways, which are shared-use paths that are also used by pedestrians. Class II bikeways are striped lanes in streets, and Class III bikeways are signed routes. Nearly 4,615 miles of Class I and II bikeways exist throughout the region, as well as mountain bike trails. The City of Los Angeles alone has more than 216 miles of Class I and II bikeways. In addition, local jurisdictions in the region have proposed an additional 4,980 miles of bikeways (SCAG, 2012).

Pedestrian access at and near public transit, in most major commercial areas, and many residential areas is facilitated by sidewalks, a number of pedestrian malls, and in some cases local jogging and pedestrian trails or paths.

¹ SCAG. 2012. 2012 – 2035 Regional Transportation Plan/Sustainable Communities Strategy, adopted April 2012, p. 53. <http://rtpscs.scag.ca.gov/Documents/2012/final/f2012RTPSCS.pdf>

CHAPTER 4.0

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Introduction

4.0 INTRODUCTION

The CEQA Guidelines require EIRs to identify significant environmental effects that may result from a proposed project [CEQA Guidelines §15126.2 (a)]. Direct and indirect significant effects of a project on the environment should be identified and described, with consideration given to both short- and long-term impacts. The discussion of environmental impacts may include, but is not limited to, the resources involved; physical changes; alterations of ecological systems; health and safety impacts caused by physical changes; and other aspects of the resource base, including water quality, public services, etc. If significant adverse environmental impacts are identified, the CEQA Guidelines require a discussion of measures that could either avoid or substantially reduce any adverse environmental impacts to the greatest extent feasible (CEQA Guidelines §15126.4).

The CEQA Guidelines indicate that the degree of specificity required in a CEQA document depends on the type of project being proposed (CEQA Guidelines §15146). The detail of the environmental analysis for certain types of projects cannot be as great as for others. For example, the EIR for projects, such as the adoption or amendment of a comprehensive zoning ordinance or a local general plan, should focus on the secondary effects that can be expected to follow from the adoption or amendment, but the analysis need not be as detailed as the analysis of the specific construction projects that might follow. As a result, this Program EIR analyzes impacts on a regional level, impacts on the subregional level, and impacts on the level of individual projects or individual facilities only where feasible.

Chapter 4 analyzes the potential environmental impacts of the 2012 AQMP. The primary purpose of the 2012 AQMP is for the [SCAQMD District](#) to demonstrate compliance with the federal 24-hour PM_{2.5} standard. As shown in Table 2-3, the [2012 AQMP](#) includes the following short-term PM_{2.5} Control Measures emissions: CMB-01, BCM-01, BCM-02, BCM-03, BCM-04, IND-01, EDU-01, and MCS-01. The 2012 AQMP also provides an update to the Basin's projections in making expeditious progress in attaining the federal 1-hour and 8-hour ozone standards. As shown in Table 2-3, the following control measures (referred to as [CAA](#) Section 182 (e)(5) implementation measures) are proposed to demonstrate expeditious progress in attaining ozone standards: CTS-01, CTS-02, CTS-03, CTS-04, CMB-02, CMB-03, FUG-01, FUG-02, FUG-03, MSC-01, MCS-02, MCS-03, INC-01, INC-02, EDU-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, OFFRD-05, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07.

This chapter is subdivided into the following sections based on the area of potential impacts: aesthetics, air quality, energy, hazards, hydrology and water quality, land use, noise, traffic and transportation, and solid and hazardous waste. Included for each impact category is a discussion of project-specific impacts, project-specific mitigation (if necessary and available), remaining impacts, and a summary of impacts for each resource. Also, included within each resource evaluation is a summary of impacts that would be expected for the short-term PM_{2.5} Control Measures and a summary of impacts for the ozone Control Measures.

In order to address the full range of potential environmental impacts several assumptions were made for purposes of evaluation. First, to provide a “worst-case” analysis, the environmental analysis contained herein assumes that the control measures contained in the AQMP apply to the entire district (e.g., the Basin and those portions of the MDAB and SSAB under the SCAQMD’s jurisdiction). If control equipment which has secondary adverse environmental impacts could be used to comply with a particular control measure, it was assumed that such equipment would be used even if it may not be the most appropriate technology or method of compliance. For example, the analysis assumes that all vehicles in ONRD-01 were assumed to be electrified in the analysis of energy impacts. However, they were also included in the analysis of alternative fuels, as alternative fuels (e.g., natural gas) could also be used to implement ONRD-01. This approach was taken for each environmental topic. In practice, there are typically a number of ways to comply with requirements of SCAQMD rules, but only one type of compliance option will actually be implemented. This approach has the potential to substantially overestimate impacts because only a single type of control equipment will be used.

Every control measure in the 2012 AQMP was evaluated to determine whether or not it has the potential to generate adverse environmental impacts. Each environmental topic subchapter in Chapter 4 contains a table identifying those control measures that have the potential to generate significant adverse impacts to that environmental topic. Table 4.0-1 lists the various control measures, which were evaluated and determined not to have significant adverse impacts on the environment and, therefore, were not evaluated further.

TABLE 4.0-1

Control Measures With No Expected Impacts

Control Measures	Control Measure Title (Pollutant)	Control Methodology	Reason Not Significant
BCM-01	Further Reductions from Residential Wood Burning Devices	The current mandatory wood burning curtailment threshold would be lowered, resulting in increased days when wood burning would be prohibited.	Increase in no burn days, no physical modifications.
BCM-02	Further Reductions from Open Burning	Prohibit open burning whenever PM _{2.5} concentrations are expected to exceed specific concentrations.	Increase in no burn days, no physical modifications.
FUG-03	Further VOC Reductions from Fugitive VOC Emissions	Require at least a self-inspection program and/or optical gas imaging-assisted leak detection and repair program and explore the use of new technologies to detect and verify VOC fugitive emissions.	Increased Inspection and monitoring.
EDU-01	Further Criteria Pollutant Reductions from Education, Outreach and Incentives	Voluntary program that provides outreach to consumers, business owners and residences on clean air practices.	Education

There are several reasons why the control measures in Table 4.0-1 are not expected to generate significant adverse impacts. First, the primary control methods of compliance do not involve control equipment that would generate any adverse secondary or cross media impacts. For example, BCM-01 and BCM-02 would limit wood burning and open burning activities during days when PM_{2.5} concentrations exceed specific thresholds. Since the

burning would likely be shifted to other days, no physical impacts are expected to occur. FUG-03 would largely control VOC emissions through enhanced inspection and maintenance practices to reduce fugitive emissions from material transfer, storage, and processing. Inspection and maintenance practices are not expected to generate secondary impacts because these are procedures to ensure proper operation of equipment. Finally, EDU-01 involves outreach and education so that consumers can make informed choices in purchases, conducting efficiency upgrades, installing clean energy sources, and approaches to energy conservation. EDU-01 is a voluntary measure that would educate the public in general. Any impacts are expected to be positive in terms of changing behavior, but are not expected to result in physical, adverse impacts.

In addition, one control measures proposed in the 2012 AQMP for which there is insufficient information regarding compliance options or how they would be implemented to determine the potential impacts (see Table 4.0-2). OFFRD-05 would impose fees but does not indicate how the fees would be used. The fees could be used for educational purposes or purchasing control equipment. Because the control measure is general in nature, it is difficult to determine what, if any, impacts could be expected from this control measure. Therefore, the impacts of OFFRD-05 would be considered speculative and no further environmental analysis is required (CEQA Guidelines §15145).

TABLE 4.0-2
Control Measures Whose Impacts Are Speculative

Control Measures	Control Measure Title (Pollutant)	Control Methodology	Reason Not Significant
OFFRD-05	Emission Reductions from Ocean-Going Marine Vessels	Would enhance Ports' existing financial incentive programs for early deployment of Tier 3 vessels calling at the Ports.	Economic Incentives

SUBCHAPTER 4.1

AESTHETICS

Introduction

2012 AQMP Control Measures with Potential Aesthetics Impacts

Significance Criteria

Potential Aesthetics Impacts and Mitigation Measures

Project-Specific Mitigation Measures

Summary of Aesthetics Impacts

4.1 AESTHETICS

4.1.1 Introduction

This subchapter examines impacts of the proposed control measures in the 2012 AQMP on aesthetic resources. All control measures in the 2012 AQMP were evaluated to determine whether or not they could generate aesthetic impacts based on the anticipated methods of control. Three control measures were determined to result in potential aesthetic impacts.

4.1.2 2012 AQMP Control Measures with Potential Aesthetics Impacts

The aesthetic impact analysis in this [Final](#) Program EIR identifies the net effect on aesthetic resources from implementing the 2012 AQMP. Implementing some of the 2012 AQMP control measures could potentially result in aesthetic impacts. Specifically, several control measures promote the use of zero and near-zero emission trucks and locomotives powered by electricity. In addition to electricity stored in batteries or produced onboard through a fuel cell, these control measures contemplate the use of “wayside” electricity from outside sources such as overhead catenary power lines, as currently used for transit buses, which could impact scenic highways and vistas.

Evaluation of control methods for each control measure indicated that there are three ozone control measures that could have potential aesthetic impacts, as shown below in Table 4.1-1.

TABLE 4.1-1

Control Measures with Potential Aesthetics Impacts

CONTROL MEASURES	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	AESTHETIC IMPACT
OZONE CONTROL MEASURES			
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards	Accelerated use of hybrid electric or fuel cells	Potential increase in amount of overhead power lines.
ADV-01	Actions for the Deployment of Zero and Near-Zero Emission On-Road Heavy-Duty Vehicles	Development and use of “wayside” electric or magnetic infrastructure.	Potential impacts from construction of “wayside” electric or magnetic infrastructure.
ADV-02	Actions for the Deployment of Zero and Near-Zero Emission Locomotives	Development and use of “wayside” electric or magnetic infrastructure.	Potential impacts from construction of “wayside” electric or magnetic infrastructure.

4.1.3 Significance Criteria

Implementation of the 2012 AQMP will be considered to have significant adverse aesthetic impacts if any of the following conditions occur:

- Substantially adversely affect a scenic vista;

- Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of a site and its surroundings; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

4.1.4 Potential Aesthetics Impacts and Mitigation Measures

PROJECT SPECIFIC IMPACTS: Control measures ONRD-05, ADV-01 and ADV-02 included in the 2012 AQMP relate primarily to emission reductions through the incorporation of electrically powered trucks and locomotives. To power this equipment, catenary lines (overhead power lines) could be constructed and could potentially result in aesthetic impacts. These lines are similar to “trolley car lines” associated with electrically powered trollies and buses common in metropolitan transportation.

The areas affected by the proposed zero and near-zero emission control measures that could result in the installation of catenary lines are expected to be located in commercial areas, industrial areas, along existing transportation corridors in areas within and adjacent to the Port of Los Angeles (e.g., Navy Way, and Port of Long Beach), around container transfer facilities (truck/train) near the Terminal Island Freeway and East Sepulveda Boulevard intersection, along the Alameda Corridor, as well as the railyards near downtown Los Angeles (East Washington Boulevard in the City of Commerce, which are located within three miles of the northern terminus of the Alameda Corridor and east of I-710). It is not expected that residential areas will be impacted by the installation of catenary lines.

Construction Activities: Construction activities may result in a temporary effect on businesses and residents along transportation corridors. Construction activities in these areas would be conducted with typical roadway construction equipment (bulldozers, graders, backhoes, cranes, etc.), which are not generally considered high profile, thus affecting views or visibility. Potential impacts would be temporary and would cease after completion of construction.

As shown in Table 3.1-2, the nearest officially designated Scenic Highway to either the Ports, the cargo transfer facilities serving the ports, along the Alameda Corridor, or the cargo transfer facilities in the City of Commerce, would be Route 2 (Angeles Crest Scenic Byway) near La Canada/Flintridge, in the northeastern portion of Los Angeles County. It is approximately 14 miles from the northern terminus of the Alameda Corridor and the cargo transfer railyards in the City of Commerce to the most southern portion of Route 2. The port area, Alameda Corridor or downtown railyards are not visible from Route 2 due to the distance, presence of numerous large buildings in downtown Los Angeles, and the intervening topography (hills and mountains) between downtown Los Angeles and the beginning of Route 2 near La Canada/Flintridge.

As shown in Table 3.1-3, the nearest roadway which is eligible for State Scenic Highway Designation, to either the Ports, the cargo transfer facilities serving the ports, along the Alameda Corridor, or the cargo transfer facilities in the City of Commerce, would be Route 1 (Pacific Coast Highway at State Route 19 – Lakewood Boulevard, in Long Beach) in the southernmost portion of Los Angeles County. It is approximately five miles from the cargo transfer facilities serving the Ports to the intersection of State Route 19 and Route 1 where it becomes eligible to become a State Scenic Highway. The potential locations for catenary overhead power lines (near Port facilities, transportation corridors and railyards) would not be visible to Route 1 at State Route 19 due to the numerous structures and topography between the two locations. There are no officially designated Scenic Highways or highways eligible for State Scenic Highway Designation in areas affected by construction of zero or near-zero emission equipment associated with the 2012 AQMP, therefore construction impacts on aesthetic impacts are considered to be less than significant.

Operational Activities: As discussed under construction activities, control measures associated with potential aesthetics impacts in the 2012 AQMP relate primarily to the potential installation of catenary lines (overhead power lines) to power zero and near-zero emission trucks and locomotives.

Aesthetic impacts from zero or near-zero emission equipment are primarily associated with the installation of catenary poles and overhead wires. The areas within the district where such equipment is being considered are primarily heavily industrialized areas and major transportation corridors. As noted in the previous section (Construction Activities), the heavily industrialized areas around the Ports, near the cargo transfer facilities serving the Ports, along existing transportation corridors such as the Alameda Corridor, and the cargo transfer railyards in the City of Commerce, are not near an officially designated Scenic Highway or a roadway eligible for State Scenic Highway Designation, i.e., the overhead lines would be at least five miles away. The overhead power lines and catenary system would not be visible from this distance to an officially designated Scenic Highway or to a roadway eligible for designation as a Scenic Highway. As such, implementation of the 2012 AQMP would not result in significant aesthetic impacts to scenic highways. Further, the catenary poles and overhead electric wires would largely be located in industrial areas and would be consistent with the existing industrial and urbanized visual setting. It is expected that electrical substations would also be located in industrial/commercial areas or near transportation corridors and would be appropriately designed (e.g., wood cladding on the exterior of substations, so that the substations would blend in with the existing environment).

Based on the above, implementation of the 2012 AQMP is not expected to result in a substantial adverse effect on scenic vistas, substantially damage any scenic resources, substantially degrade the existing visual character or quality of a site and its surroundings, or create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

4.1.5 Project-Specific Mitigation Measures

No significant aesthetic impacts were identified for the installation of catenary or overhead power lines associated with the 2012 AQMP so no mitigation measures are required.

REMAINING AESTHETIC IMPACTS: There are no remaining aesthetic impacts since no significant impacts are expected due to the installation of catenary or overhead power lines associated with the 2012 AQMP and, therefore, no mitigation measures are required.

4.1.6 Summary of Aesthetics Impacts

The following is the summary of the conclusions of the analysis of aesthetic impacts associated with implementation of the 2012 AQMP:

- The construction and operation of the catenary or overhead power lines that could be used to power zero and near-zero emission vehicles and locomotives are not expected to be visible to any Scenic Highway or any roadway eligible as a Scenic Highway. Additionally, the construction and operation of catenary or overhead power lines is not expected to result in substantial adverse effects on scenic vistas, substantially damage any scenic resources, substantially degrade the existing visual character or quality of a site and its surroundings, or create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Therefore, aesthetics impacts associated with the 2012 AQMP are less than significant.

Summary of PM_{2.5} Control Measure Impacts: PM_{2.5} Control Measures were evaluated in the NOP/IS and it was determined that the PM_{2.5} Control Measures would not generate any potentially significant aesthetic impacts.

Summary of Ozone Control Measure Impacts: Three Ozone Control Measures could result in the construction of overhead catenary lines. However, the potential aesthetic impacts associated with the Ozone Control Measures were determined to be less than significant, as no scenic resources, scenic vistas, or scenic highways would be adversely impacted.

SUBCHAPTER 4.2

AIR QUALITY

Introduction

2012 AQMP Control Measures with Potential Secondary Air Quality Impacts

Significance Criteria

Future Air Quality Emission Inventories

2012 AQMP Air Quality Modeling Results

Potential Secondary Air Quality Impacts and Mitigation Measures

Summary of Air Quality Impacts

4.2 AIR QUALITY

4.2.1 Introduction

The purpose of the 2012 AQMP is to establish a comprehensive program to lead the region into compliance with the federal 24-hour PM_{2.5} air quality standard, and to provide an update of the Basin's projections in meeting the federal 8-hour ozone standards. The 2012 AQMP proposes potential attainment demonstration of the federal PM_{2.5} standard by 2014 through adoption of all feasible measures. In addition, the 2012 AQMP would update specific elements of the previously approved 8-hour ozone SIP: 1) an updated emissions inventory and, 2) new control measures and commitments for emissions reductions to help fulfill the [CAA](#) Section 182 (e)(5) portion of the 8-hour ozone SIP.

This subchapter examines the secondary air pollutant emissions that could occur as a consequence of efforts to improve air quality (e.g., emissions from control equipment such as afterburners). The analysis is divided into the following sections: 2012 AQMP Control Measures with Secondary Air Quality Impacts, Future Air Quality Emission Inventories, 2012 AQMP Air Quality Modeling Results, Significance Criteria, Potential Impacts and Mitigation, Ambient Air Quality, and Summary of Secondary Air Quality Impacts.

4.2.2 2012 AQMP Control Measures with Potential Secondary Air Quality Impacts

The air quality impact analysis in this [Final](#) Program EIR identifies the net effect on air quality from implementing the 2012 AQMP. All control measures were analyzed to identify adverse impacts.

Evaluation of control measures was based on examination of the impact of the control measures and technologies focusing on potential secondary air quality impacts. Evaluation of control methods for each control measure indicated that there are 27 control measures that could have potential secondary air quality impacts. As shown in Table 4.2-1, four control measures are to reduce short-term PM_{2.5} emissions and 23 control measures are to reduce ozone formation.

TABLE 4.2-1

Control Measures with Potential Secondary Air Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	AIR QUALITY IMPACT
SHORT-TERM PM_{2.5} CONTROL MEASURES			
BCM-03 <i>(formerly BCM-05)</i>	Emission Reductions from Under-Fired Charbroilers	Add-On Control Equipment with Ventilation Hood Requirements (e.g., ESPs, HEPA filters, wet scrubbers, and thermal oxidizers).	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant, GHG emissions from operation of control technology and electricity generation.

TABLE 4.2-1 (CONTINUED)

Control Measures with Potential Secondary Air Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	AIR QUALITY IMPACT
OZONE CONTROL MEASURES			
BCM-04 (formerly MCS-04B)	Further Ammonia Reductions from Livestock Waste (NH ₃)	Reducing pH level in manure through the application of acidifier sodium bisulfate to	Potential increase in diesel fuel use for delivery and application of acidifier.
CMB-01	Further NO _x Reductions from RECLAIM – <i>Phase I and Phase II</i> (NO _x)	Cement kilns, glass furnaces, and gas turbines were not subject to reduction in the 2005 RECLAIM rule amendment. These sources will be examined for further reductions in this control measure and potential rule making. Selective catalytic reduction, low NO _x burners, NO _x reducing catalysts, oxy-fuel furnaces, and selective non-catalytic reduction.	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from operation of control technology and electricity generation. Potential increase in ammonia emissions.
IND-01 ^a	Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities (NO _x , SO _x , PM _{2.5})	Environmental lease conditions, port rules, tariffs or incentives.	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from and electricity generation. Additional emission controls could result in increased electricity use. Increased use of alternative fuels. Potential decrease in engine efficiency could reduce fuel economy. Potential increase in ammonia emissions.
MCS-01 ^a	Application of All Feasible Measures Assessment (All Pollutants)	District would adopt and implement new retrofit technology control standards as new BARCT standards become available.	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from operation of control technology and electricity generation.
MCS-02	Further Emission Reductions from Green Waste Processing (Chipping and Grinding Operations not associated with composting) (VOC)	Require chipped or ground greenwaste material to be covered after chipping or grinding or removed from site; and seasonal covering of chipped or ground greenwaste material.	Potential increase in truck trips.
CMB-02	NO _x Reductions from Biogas Flares (NO _x)	Replacement of existing biogas flares with more efficient biogas flares	Potential criteria pollutant and GHG emissions from construction.
CMB-03	Reductions from Commercial Space Heating (NO _x)	This control measure seeks emission reductions from unregulated commercial fan-type central furnaces used for space heating.	Potential criteria pollutant and GHG emissions from construction

TABLE 4.2-1 (CONTINUED)

Control Measures with Potential Secondary Air Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	AIR QUALITY IMPACT
OZONE CONTROL MEASURES			
CTS-01	Further VOC Reductions from Architectural Coatings (R1113) (VOC)	Reduce the allowable VOC content in product formulations by using alternative low-VOC products & use application techniques with greater transfer efficiency.	Potential change in use of VOC and toxic air contaminants from reformulation.
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants (VOC)	Reduce the allowable VOC content in product formulations by using alternative low-VOC products or non-VOC product/equipment.	Potential change in use of VOC and toxic air contaminants from reformulation.
CTS-03	Further VOC Reductions from Mold Release Products (VOC)	Limitation of VOC content for mold release products.	Potential change in use of VOC and toxic air contaminants from reformulation.
CTS-04	Further VOC Reductions from Consumer Products (VOC)	Eliminate or revise the exemption for low vapor pressure solvents in consumer products.	Potential change in use of VOC and toxic air contaminants from reformulation.
FUG-01	Further VOC Reductions from Vacuum Trucks (VOC)	VOC control devices such as carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers, liquid scrubbers and positive displacement (PD) pumps.	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from operation of control technology and catalyst replacement.
FUG-02	Emission Reduction from LPG Transfer and Dispensing – Phase II (VOC)	Expand applicability of rule to LPG transfer and dispensing at facilities other than those that offer LPG for sale to end users included currently exempted facilities.	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from vehicles used for inspection and monitoring.
FUG-03	Further VOC Reductions from Fugitive VOC Emissions (VOC)	Upgrade inspection/maintenance rules to at least a self-inspection program, or to an optical gas imaging-assisted LDAR program where feasible; use of new technologies to detect and verify VOC fugitive emissions	Potential criteria pollutant and GHG emissions from construction and monitoring/inspections.
MCS-01	Application of All Feasible Measures Assessment (All Pollutants)	SCAQMD would adopt and implement new retrofit technology control standards as new BARCT standards become available.	Potential criteria pollutant and GHG emissions from construction.

TABLE 4.2-1 (CONTINUED)

Control Measures with Potential Secondary Air Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	AIR QUALITY IMPACT
OZONE CONTROL MEASURES			
MCS-02	Further Emission Reductions from Green Waste Processing (Chipping and Grinding Operations not associated with composting) (VOC)	Require chipped or ground greenwaste material to be covered after chipping or grinding or removed from site, and seasonal covering of chipped or ground greenwaste material.	Potential criteria pollutant and GHG emissions from construction.
MCS-03	Improved Start-up, Shutdown and Turnaround Procedures (All Pollutants)	Diverting or eliminating process streams that are vented to flares, and installing redundant equipment to increase operational reliability	Potential criteria pollutant and GHG emissions from construction.
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies (NOx)	Installation of cleaner, more efficient combustion equipment, such as boilers, water heaters and commercial space heating or installation of control technologies including fuel cells, diesel particulate filters (DPF), NOx reduction catalysts, alternative electricity generation, such as wind and solar, battery electric, hybrid electric, and usage of low NOx and alternative fuels such as natural gas	Potential criteria pollutant and GHG emissions from construction and related filter and/or catalyst replacement.
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles (VOC, NOx, PM)	Incentives to replace older vehicles with electric or hybrid vehicles.	Potential criteria pollutant, toxic air pollutant and GHG emissions from and electricity generation.
ONRD-02	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles (VOC, NOx, PM)	Incentives to replace older light- and medium-duty vehicles with new or newer low-emitting vehicles.	Potential criteria pollutant, toxic air pollutant and GHG emissions from and electricity generation.
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium Heavy-Duty Vehicles (NOx, PM)	Incentives to replace older medium-duty vehicles with low-emitting vehicles. Highest priority would be given to zero-emission vehicles and hybrid vehicles with a portion of their operation in an "all electric range" mode.	Potential criteria pollutant, toxic air pollutant and GHG emissions from electricity generation.

TABLE 4.2-1 (CONTINUED)

Control Measures with Potential Secondary Air Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	AIR QUALITY IMPACT
OZONE CONTROL MEASURES			
ONRD-04	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles (NO _x , PM)	Incentives replace heavy-duty vehicles with newer or new vehicles. Priority would be placed on replacing older diesel trucks in Mira Loma.	Potential emissions from demolition of retired vehicles.
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards (NO _x , PM)	Incentives to replace up to 1,000 heavy-duty vehicles with low-emitting vehicles or zero-emission container movement systems.	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from electricity generation.
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment (NO _x)	Accelerate equipment replacement, use of air pollution control technologies (e.g., advanced fuel injection, air induction, and after-treatment technologies).	Potential increase in the use of alternative fuels.
OFFRD-02	Further Emission Reductions from Freight Locomotives (NO _x , PM)	Replace existing engines with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Potential criteria pollutant, toxic air pollutant and GHG emissions from electricity generation. Potential increased use of alternative fuels. Potential decrease in engine efficiency could reduce fuel economy. Potential increase in ammonia emissions.
OFFRD-03	Further Emission Reductions from Passenger Locomotives (NO _x , PM)	Repower existing engines with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Potential criteria pollutant, toxic air pollutant and GHG emissions from electricity generation. Potential increased use of alternative fuels. Potential decrease in engine efficiency could reduce fuel economy. Potential increase in ammonia emissions.
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels at Berth (VOC, NO _x , PM)	Shore power of vessels at berth, use of air pollution control technologies on exhaust gases from auxiliary engines and boilers (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Potential increase in electricity associated with increased use of shore-side power and additional air pollution control technologies. Construction emissions. Potential decrease in engine efficiency could reduce fuel economy and increase emissions. Potential ammonia emissions.

TABLE 4.2-1 (CONTINUED)

Control Measures with Potential Secondary Air Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	AIR QUALITY IMPACT
OZONE CONTROL MEASURES			
ADV-01	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles (NOx)	Construct "wayside" electric or magnetic infrastructure, construction battery charging and fueling infrastructure.	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from electricity generation. Potential increased use of alternative fuels.
ADV-02	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives (NOx)	Construct "wayside" electric, magnetic, battery-hybrid system, or fuel cell infrastructure, construct battery charging or fueling infrastructure.	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from electricity generation. Potential increased use of alternative fuels.
ADV-03	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment (NOx)	Construct electric gantry cranes, construct battery charging or fueling infrastructure, and use of alternative fuels.	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from electricity generation.
ADV-04	Actions for the Deployment of Cleaner Commercial Harborcraft (NOx)	Construct battery charging or fueling infrastructure, use of air pollution control equipment (e.g., SCR, and use of alternative fuels).	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from electricity generation. Potential increased use of alternative fuels. Potential decrease in engine efficiency could reduce fuel economy. Potential increase in ammonia emissions.
ADV-05	Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels (NOx)	Employ after treatment control technologies such as SCR and sea water scrubbers, and use of alternative fuels.	Potential criteria pollutant and GHG emissions from construction. Potential criteria pollutant, toxic air pollutant and GHG emissions from electricity generation. Potential increased use of alternative fuels. Potential decrease in engine efficiency could reduce fuel economy. Potential increase in ammonia emissions.

TABLE 4.2-1 (CONCLUDED)

Control Measures with Potential Secondary Air Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	AIR QUALITY IMPACT
OZONE CONTROL MEASURES			
ADV-06	Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment (NO _x)	Construct battery charging or fueling infrastructure, and increased use of alternative fuels.	Potential criteria pollutant, toxic air pollutant and GHG emissions from and electricity generation. Potential increased use of alternative fuels. Potential decrease in engine efficiency could reduce fuel economy. Potential increase in ammonia emissions.
ADV-07	Proposed Implementation Measures for the Deployment of Cleaner Aircraft Engines (NO _x)	Use alternative fuels, lean combustion burners, high rate turbo bypass, advanced turbo-compressor design, and engine weight reduction.	Potential increased use of alternative fuels.

^a The specific actions associated with the control measure are unknown and, therefore, the impacts are speculative. In order to provide a conservative analysis, it is assumed that the control measure could require air pollution control technologies that are similar to those that are currently required (e.g., SCR, electrification, use of alternative fuels, etc.), and would have the potential to require construction activities that would generate noise).

4.2.3 Significance Criteria

To determine whether or not air quality impacts from the 2012 AQMP are significant, impacts will be evaluated and compared to the significance criteria in Table 4.2-2. If impacts equal or exceed any of the criteria in Table 4.2-2, they will be considered significant.

TABLE 4.2-2

Air Quality Significance Thresholds

MASS DAILY THRESHOLDS^(a)		
POLLUTANT	CONSTRUCTION^(b)	OPERATION^(c)
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

TABLE 4.2-2 (CONCLUDED)
Air Quality Significance Thresholds

TOXIC AIR CONTAMINANTS, ODOR, AND GHG THRESHOLDS	
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Chronic and Acute Hazard Index ≥ 1.0 (project increment) Cancer Burden ≥ 0.5 excess cancer cases (in areas ≥ 1 in 1 million)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402
GHG	10,000MT/yr CO ₂ eq for industrial facilities
Ambient Air Quality for Criteria Pollutants^(d)	
NO₂ 1-hour average annual average	In attainment; significant if project causes or contributes to an exceedance of any standard: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)
PM₁₀ 24-hour annual average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^(e) and 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$
PM_{2.5} 24-hour average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^(e) and 2.5 $\mu\text{g}/\text{m}^3$ (operation)
SO₂ 1-hour average 24-hour average	0.255 ppm (state) and 0.075 ppm federal – 99 th percentile) 0.04 ppm (state)
Sulfate 24-hour average	25 $\mu\text{g}/\text{m}^3$ (state)
CO 1-hour average 8-hour average	In attainment; significant if project causes or contributes to an exceedance of any standard: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)
Lead 30-day average Rolling 3-month average Quarterly average	1.5 $\mu\text{g}/\text{m}^3$ (state) 0.15 $\mu\text{g}/\text{m}^3$ (federal) 1.5 $\mu\text{g}/\text{m}^3$ (federal)

a) Source: SCAQMD CEQA Handbook (SCAQMD, 1993)

b) Construction thresholds apply to both the SCAB and Coachella Valley (Salton Sea and Mojave Desert Air Basin)

c) For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

d) Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

e) Ambient air quality threshold based on SCAQMD Rule 403.

KEY: ppm = parts per million; $\mu\text{g}/\text{m}^3$ = microgram per cubic meter; lbs/day = pounds per day; MT/yr CO₂eq = metric tons per year of CO₂ equivalents; \geq greater than or equal to; $>$ = greater than

4.2.4 Future Air Quality Emission Inventories

Figure 4.2-1 and 4.2-2 show baseline and future projected emissions, respectively, by major source categories. These figures are included here to show projected air quality trends through 2023. Baseline emissions for major source categories (e.g., point, area, on-road, and off-road) in 2008 are provided in Figure 4.2-1. Figure 4.2-2 shows the projected future 2023 emission inventory that would be expected if no new AQMP control measures are promulgated as rules. It does, however, reflect emission reductions for existing rules with future compliance dates. A comparison of Figures 4.2-1 and 4.2-2 indicates the following:

- Consumer products continue to be the major contributor of VOC emissions with on-road vehicles declining from 19 percent in 2008 (121 tons per day) to 25 percent in 2023 (110 tons per day). The contribution to VOC emissions from off-road equipment decreases from 26 percent in 2008 (166 tons per day) to 25 percent in 2023 (110 tons per day). The on-road vehicle emissions decrease from 33 percent in 2008 (211 tons per day) to 16 percent (70 tons per day) due to more-stringent on-road standards in the future. Overall, on-road and off-road source combined contribution decreases from 59 percent (377 tons per day) in 2008 to 41 percent (180 tons per day) in 2023.
- The contribution of SO_x emissions from off-road sources including marine vessels decreases from 71 percent in 2008 (38 tons per day) to 32 percent in 2023 (six tons per day) due to more-stringent fuel standards.
- The contribution to NO_x emissions from off-road equipment increases from 29 percent in 2008 (~~209-208~~ tons per day) to ~~43-42~~ percent in 2023 (~~435-133~~ tons per day) as the on-road vehicle emissions decrease from 59 percent in 2008 (~~425-426~~ tons per day) to ~~37-36~~ percent (~~416-117~~ tons per day) due to more-stringent on-road standards in the future. It is important to note that the contribution of total NO_x emissions increases for off-road equipment, but the NO_x emissions from off-road equipment still decreases. Overall, on-road and off-road source combined contribution decreases from 88 percent (634 tons per day) of the emissions in 2008 to ~~80-82~~ percent in 2023 (250 tons per day).
- The contribution to CO emissions from off-road equipment decreases from 68 percent in 2008 (1,959 tons per day) to 52 percent in 2023 (823 tons per day). The on-road vehicle emissions increases from 27 percent in 2008 (778 tons per day) to 38 percent (602 tons per day) due to more-stringent on-road standards in the future. Overall, on-road and off-road source combined contribution decreases from 95 percent (2,737 tons per day) of the emissions in 2008 to 90 percent in 2023 (1,425 tons per day).

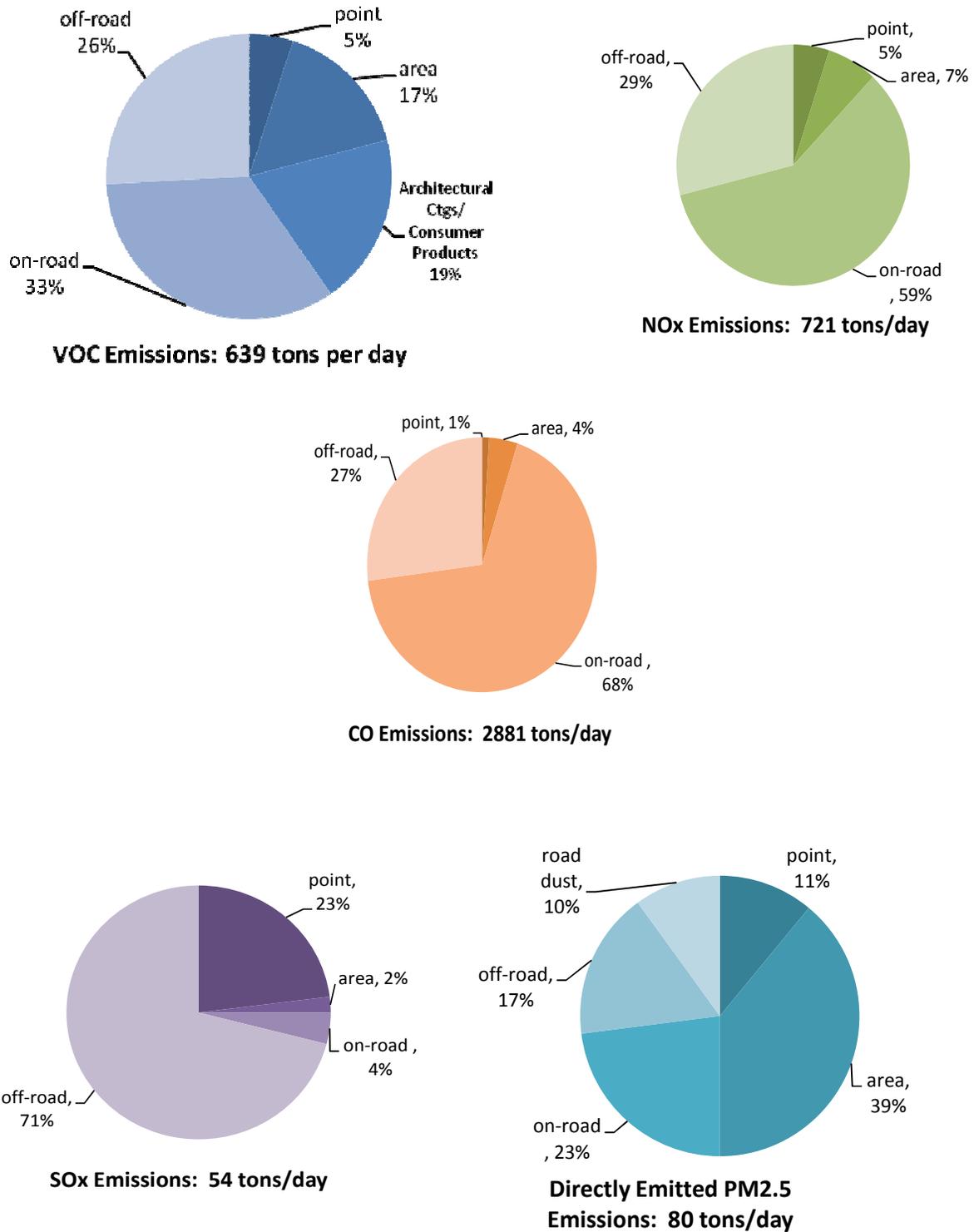


FIGURE 4.2-1

Relative Contribution by Source Category to 2008 Emission Inventory
(VOC & NOx – Summer Planning; CO, SOx, & PM2.5 – Annual Average Inventory)

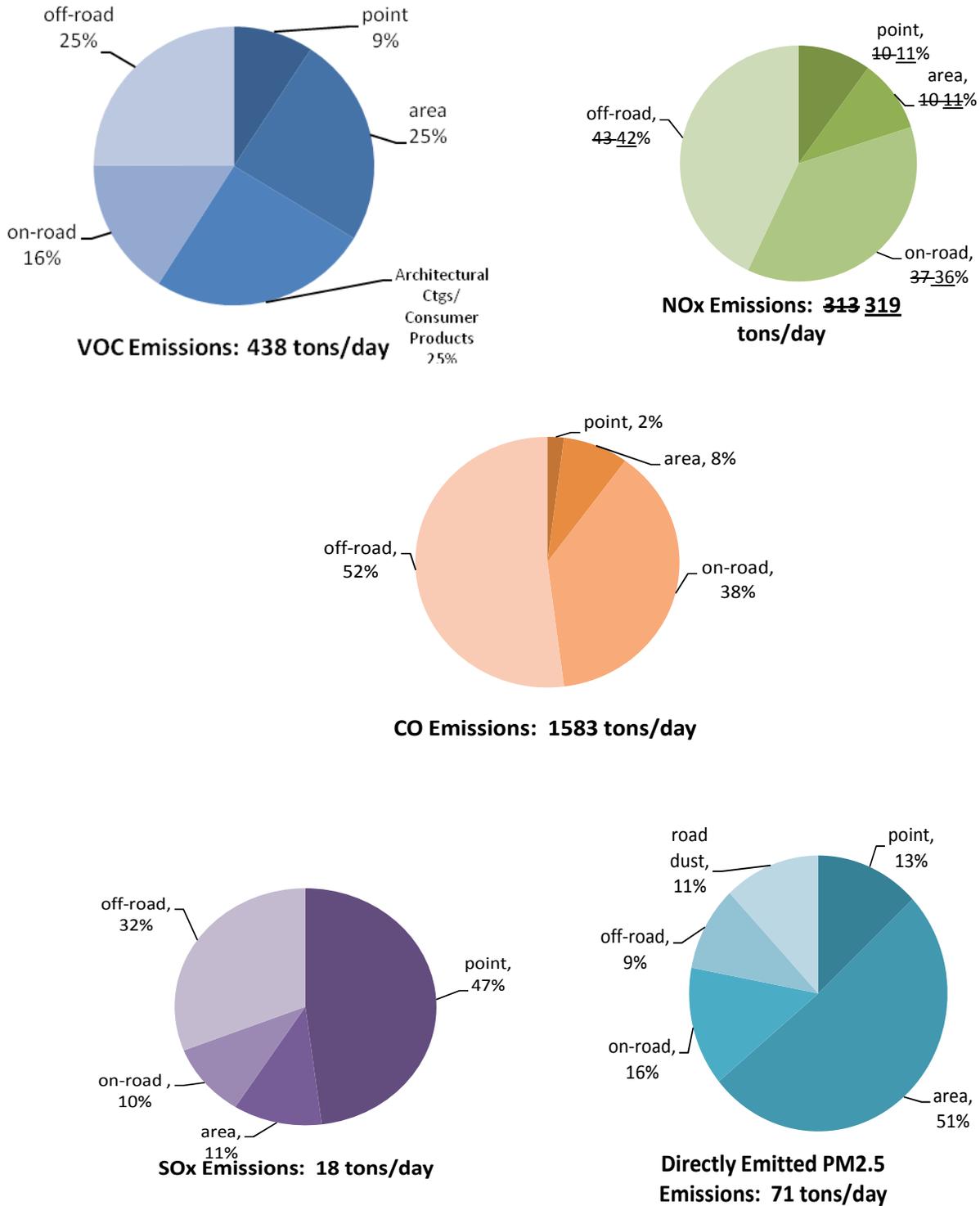


FIGURE 4.2-2

Relative Contribution by Source Category to 2023 Emission Inventory
(VOC & NOx – Summer Planning; CO, SOx, & PM2.5 – Annual Average Inventory)

- The major contributor of PM_{2.5} emissions is area sources at 39 percent in 2008 (31 tons per day), which increases to 51 percent in 2023 (36 tons per day) primarily due to the reduction in on- and off-road source emissions. The contribution to PM_{2.5} emissions from off-road equipment decreases from 17 percent in 2008 (14 tons per day) to nine percent in 2023 (six tons per day). The on-road vehicle emissions decrease from 23 percent in 2008 (18 tons per day) to 16 percent (11 tons per day) due to more-stringent on-road standards in the future. Overall, on-road and off-road source combined contribution decreases from 40 percent (32 tons per day) in 2008 to 25 percent (18 tons per day) in 2023.
- Emission reductions from the 2008 to 2023 are expected due to the effect of more-stringent on-road standards in the future.

4.2.5 2012 AQMP Air Quality Modeling Results

The objective of the 2012 AQMP is to attain and maintain ambient air quality standards. The purpose of the 2012 AQMP is to set forth a comprehensive and integrated program that will lead the Basin into compliance with the federal 24-hour PM_{2.5} air quality standard, and to provide an update of the Basin's projections in meeting the federal 8-hour ozone standards. The 2012 AQMP demonstrates attainment of the federal 24-hour PM_{2.5} standard by 2014 in the Basin through adoption of all feasible measures (see Table 4.2-3).

The Basin is currently designated nonattainment for PM_{2.5}, and extreme nonattainment for ozone. Table 4.2-3 shows the attainment designation and date when attainment would be achieved.

4.2.5.1 PM_{2.5} Air Quality

Within the Basin, PM_{2.5} particles are either directly emitted into the atmosphere (primary particles), or are formed through atmospheric chemical reactions from precursor gases (secondary particles). Primary PM_{2.5} includes road dust, diesel soot, combustion products, and other sources of fine particles. Secondary products, such as sulfates, nitrates, and complex carbon compounds are formed from reactions with oxides of sulfur, oxides of nitrogen, VOCs, and ammonia.

The U.S. EPA supported Community Multiscale Air Quality (CMAQ) (version 4.7) modeling platform with SAPRC99 chemistry and Weather Research and Forecasting Model (WRF) meteorology is used as the primary tool to demonstrate future year attainment of the 24-hour average PM_{2.5} standard in the 2012 AQMP. A detailed discussion of the features of the CMAQ approach is presented in Appendix V of the 2012 AQMP. The analysis was also conducted using the Comprehensive Air Quality Model with Extensions (CAMx) modeling platform using the "one atmosphere" approach comprised of the SAPRC99 gas phased chemistry and a static two-mode particle size aerosol module as the particulate modeling platform. Parallel testing was conducted to evaluate the CMAQ performance against CAMx and the results indicated that the two model/chemistry packages had similar performance. The CAMx results are provided in Appendix V of the 2012 AQMP as a component of the weight of evidence discussion.

TABLE 4.2-3

Expected Year of Compliance with Federal Ambient Air Quality Standards

CRITERIA POLLUTANT	AVERAGING TIME	DESIGNATION ^a	ATTAINMENT DATE ^b
1979 1-Hour Ozone^c	1-Hour (0.12 ppm)	Nonattainment (Extreme)	11/15/2010 (Not Attained) ^c
1997 8-Hour Ozone^d	8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024
2008 8-Hour Ozone	8-Hour (0.075 ppm)	Nonattainment (Extreme)	12/31/2032
CO	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007 (Attained)
NO₂^e	1-Hour (100 ppb)	Unclassifiable/Attainment	Attained
	Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998
SO₂^f	1-Hour (75 ppb)	Designations Pending	Pending
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	3/19/1979 (Attained)
PM10	24-hour (150 µg/m ³)	Nonattainment (Serious) ^g	12/31/2006 (Redesignation request submitted) ^g
PM2.5	24-Hour (35 µg/m ³)	Nonattainment	12/14/2014 ^h
	Annual (15.0 µg/m ³)	Nonattainment	4/5/2015
Lead	3-Months Rolling (0.15 µg/m ³)	Nonattainment (Partial) ⁱ	12/31/2015

U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable

- A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration
- 1-hour O₃ standard (0.12 ppm) was revoked, effective June 15, 2005 ; however, the Basin has not attained this standard based on 2008-2010 data and has some continuing obligations under the former standard
- The 1997 8-hour O₃ standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the 1997 O₃ standard and most related implementation rules remain in place until the 1997 standard is revoked by U.S. EPA
- New NO₂ 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO₂ standard retained
- The 1971 annual and 24-hour SO₂ standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO₂ 1-hour standard. Area designations are expected in 2012, with Basin designated Unclassifiable /Attainment
- Annual PM10 standard was revoked, effective December 18, 2006; redesignation request to Attainment of the 24-hour PM10 standard is pending with U.S. EPA
- Attainment deadline for the 2006 24-Hour PM2.5 NAAQS is December 14, 2014
- Partial Nonattainment designation – Los Angeles County portion of Basin only

The 2012 AQMP modeling attainment demonstrations using the CMAQ (and CAMx) platform were conducted in a vastly expanded modeling domain compared with the analysis conducted for the 2007 AQMP modeling attainment demonstration. In this analysis, the PM_{2.5} and ozone base and future simulations were modeled simultaneously. The simulations were conducted using a Lambert Conformal grid projection where the western boundary of the domain was extended to 084 UTM, over 100 miles west of the ports of Los Angeles and Long Beach. The eastern boundary extended beyond the Colorado river, while the northern and southern boundaries of the domain extend to the San Joaquin Valley and the Northern portions of Mexico (3543 UTM). The grid size has been reduced from five kilometers squared to four kilometers squared and the vertical resolution has been increased from 11 to 18 layers.

The final WRF meteorological fields were generated for the identical domain, layer structure and grid size. The WRF simulations were initialized from National Centers for Environmental Prediction (NCEP) analyses and run for three-day increments with the option for four dimensional data assimilation (FDDA). Horizontal and vertical boundary conditions were designated using a “U.S. EPA clean boundary profile.”

PM_{2.5} data measured as individual species at six-sites in the SCAQMD’s air monitoring network during 2008 provided the characterization for evaluation and validation of the CMAQ annual and episodic modeling. The six sites include the historical PM_{2.5} maximum location (Riverside- Rubidoux), the stations experiencing many of the highest county concentrations (among the four-county jurisdiction including Fontana, North Long Beach and Anaheim) and source oriented key monitoring sites addressing goods movement (South Long Beach) and mobile source impacts (Central Los Angeles). It is important to note that the close proximity of Mira Loma to Rubidoux and the common in-Basin air flow and transport patterns enable the use of the Rubidoux speciated data as representative of the particulate speciation at Mira Loma. Both sites are directly downwind of the dairy production areas in Chino and the warehouse distribution centers located in the northwestern corner of Riverside County. Speciated data monitored at the selected sites for 2006-2007 and 2009-2010 were analyzed to corroborate the applicability of using the 2008 profiles.

Day-specific point source emissions were extracted from the [SCAQMD’s District](#) stationary source and RECLAIM inventories. Mobile source emissions included weekday, Saturday and Sunday profiles based on CARB’s EMFAC2011 emissions model, CALTRANS weigh-in-motion profiles, and vehicle population data and transportation analysis zone (TAZ) data provided by SCAG. The mobile source data and selected area source data were subjected to daily temperature corrections to account for enhanced evaporative emissions on warmer days. Gridded daily biogenic VOC emissions were provided by CARB using BEIGIS biogenic emissions model. The simulations benefited from enhancements made to the emissions inventory including an updated ammonia inventory, improved emissions characterization that split organic compounds into coarse, fine, and primary particulate categories, and updated spatial allocation of primary paved road dust emissions.

Model performance was evaluated against speciated particulate PM_{2.5} air quality data for ammonium, nitrates, sulfates, secondary organic matter, elemental carbon, primary and total

particulate mass for the six monitoring sites (Rubidoux, Central Los Angeles, Anaheim, South Long Beach, Long Beach, and Fontana).

4.2.5.2 Ozone Air Quality

The 2007 AQMP provided a comprehensive 8-hour ozone analysis that demonstrated future year attainment of the 1997 federal ozone standard (80 ppb) by 2023 with implementation of short-term measures and CAA Section 182 (e)(5) long term emissions reductions. The analysis concluded that NO_x emissions needed to be reduced approximately 76 percent and VOC 22 percent from the 2023 baseline in order to demonstrate attainment. The 2023 base year VOC and NO_x summer planning emissions inventories included 536 and 506 tons per day, respectively.

As presented in Chapter 3 of the 2012 AQMP, the 2012 AQMP controlled 2023 emissions of both precursor pollutants are estimated to be lower than the 2023 baseline established in the 2007 AQMP. The 2023 baseline VOC and NO_x emission summer planning emissions have been revised to 434 and 313 tons per day, respectively. The emissions revision incorporated changes made to the on-road truck and off-road equipment categories that resulted from CARB rulemaking. The new emissions inventory also reflects the impact of the economic slowdown and revisions to regional growth estimates. As a consequence, it is important to revisit the projections of 2023 baseline ozone to investigate the impact of the inventory revision on the attainment demonstration and equally important, what is the impact on the size of the proposed long term NO_x emissions reduction commitment.

4.2.6 Potential Secondary Air Quality Impacts and Mitigation Measures

Secondary air quality impacts are potential increases in air pollutant that can occur directly or indirectly from implementation of control measures in the 2012 AQMP. SCAQMD evaluated all 2012 AQMP control measures to identify those control measures that have the potential to generate secondary adverse air quality impacts. Table 4.2-1 identifies all control measures that have the potential to generate secondary air quality impacts. All air quality impacts identified in this subchapter are based on impacts from control measures identified in Table 4.2-1.

4.2.6.1 Criteria Pollutants - Construction Activities

Regulation of Port and Port-Related Sources: In 2006 the Ports of Los Angeles and Long Beach, with the participation and cooperation of the staff of the SCAQMD, CARB, and U.S. EPA, adopted the San Pedro Bay Ports Clean Air Action Plan (CAAP). The CAAP was further amended in 2010, updating many of the goals and implementation strategies to reduce air emissions and health risks associated with port operations while allowing port development to continue. In addition to addressing health risks from port-related sources, the CAAP sought the reduction of criteria pollutant emissions to the levels that assure port-related sources decrease their “fair share” of regional emissions to enable the Basin to attain state and federal ambient air quality standards. The IND-01 control measure is the “backstop” for the CAAP.

IND-02 would establish enforceable nonattainment pollutant emission reduction goals for the ports in order to ensure attainment of the 24-hr PM_{2.5} attainment strategy in the 2012 AQMP. IND-02 would be implemented if aggregate emissions from port-related sources exceed specified emissions targets. If emissions do not exceed such targets, the ports would have no further control obligations and this control measure would not need to be implemented.

The overall impact of the CAAP is beneficial to air quality; however, implementation of some of the control measures in the CAAP will generate secondary impacts to air quality from infrastructure projects construction, increased electricity usage, and increased production of alternative fuels. Although the secondary air quality impacts from construction of infrastructure projects cannot be quantified from data in the CAAP, it is expected that construction to install the electrical distribution network in the Ports of Long Beach and Los Angeles as well as implement other control measures will require an intensive effort and is expected to have short-term significant air quality impacts.

4.2.6.1.1 *General Construction Emissions from Control Measures*

While implementing the 2012 AQMP control measures is expected to reduce operational emissions, construction-related activities associated with installing or replacing equipment, for example, are expected to generate emissions from construction worker vehicles, trucks, and construction equipment. Implementation of some of the measures in the 2012 AQMP would require constructing the following types of new infrastructure including: 1) additional infrastructure to support alternative-fueled vehicles (electric, hydrogen, natural gas); 2) additional infrastructure to support electrification of new sources (e.g., additional on-road vehicles and marine vessels, "wayside" electric or magnetic power such as catenary lines); and, 3) construction of controls at stationary sources (e.g., SCRs, particulate controls, and vapor recovery systems). The following control measures in the 2012 AQMP may require construction activities in connection with implementing the emission control requirements, BCM-03 - Emission Reductions from Under-Fired Charbroilers, CMB-01 - Further NO_x Reductions from RECLAIM – *Phase I and Phase II*, CMB-02 - NO_x Reductions from Biogas Flares, CMB-03 - Reductions from Commercial Space Heating, IND-01 - Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities, FUG-01 - ~~Further~~ VOC Reductions from Vacuum Trucks, FUG-02 - Emission Reduction from LPG Transfer and Dispensing – Phase II, FUG-03 - Further ~~VOC~~ VOC Reductions from Fugitive VOC Emissions, MCS-01 - Application of All Feasible Measures Assessment, MCS-03 - Improved Start-up, Shutdown and Turnaround Procedures, INC-01 - Economic Incentive Programs to Adopt Zero and Near-Zero Technologies, OFFRD-01 - Extension of the SOON Provision for Construction/Industrial Equipment, OFFRD-04 - Further Emission Reductions from Ocean-Going Marine Vessels at Berth, ONRD-03 - Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium Heavy-Duty Vehicles, ONRD-05 - Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards, ADV-01 - Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles, ADV-02 - Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives, ADV-03 - Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment, ADV-04 - Actions for the Deployment

of Cleaner Commercial Harborcraft, ADV-05 - Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels, and ADV-06 - Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment.

The inventory prepared for the 2012 AQMP includes emissions estimates associated with construction activities, which are summarized in Table 4.2-4 for the key years of 2014 and 2023. It is assumed that the following types of construction activities to implement AQMP control measures contribute to construction activities emission inventories: 1) additional infrastructure to support electric and alternative fuel vehicles; 2) additional infrastructure for stationary source controls; and, 3) additional infrastructure to support electrification of new sources. Table 4.2-4 also presents comparisons of the future construction emission inventories to the year 2008 baseline emissions inventory. For 2023, emissions of CO and PM10 are expected to be significant without an estimate of construction associated with the proposed control measures. The scope of the construction to implement the proposed control measures is not known at this time. However, additional construction to implement the proposed measures could potentially increase the construction emissions and, therefore would be considered potentially significant.

TABLE 4.2-4

Annual Average Construction Emissions by Source Category in the District
(tons/day)

Source Category	VOC	CO	NO_x	SO_x	PM10	PM2.5
2008 Emission Inventory						
Construction and Demolition	--	--	--	--	21	2
Off-Road Equipment	64	606	94	0.08	5.8	5.4
2008 Total	64	606	94	0.08	27	7.5
2014 Emission Inventory						
Construction and Demolition	--	--	--	--	19	1.9
Off-Road Equipment	49	594	66	0.08	4.3	4.0
2014 Total	49	594	66	0.08	24	5.9
Emission Increase (emissions in 2014 – emission in 2008)	-15	-12	-28	0	-3.3	-1.6
Emissions Increase (lbs/day)	-30,320	-23,620	-56,980	0	-6,500	-3,120
SCAQMD Significance Thresholds (lbs/day)	75	550	700	150	150	55
Significant?	NO	NO	NO	NO	NO	NO
2023 Emissions Inventory						
Construction and Demolition	--	--	--	--	27	2.7
Off-Road Equipment	43	633	44	0.11	3.0	2.8
2023 Total	43	633	44	0.11	30	5.5
Emission Increase (emissions in 2023 – emission in 2008)	-21	27	-50	0.03	3.0	-2.0
Emissions Increase (lbs/day)	-42,820	53,300	-100,200	60	6,040	-3,920
SCAQMD Significance Thresholds (lbs/day)	75	550	100	150	150	55
Significant?	NO	YES	NO	NO	YES	NO

Source: SCAQMD, 2012

Note: Negative numbers represent emissions reductions.

The SCAQMD has developed localized significance thresholds for criteria pollutant emissions to determine whether or not a project may generate significant adverse localized air quality impacts. An analysis of localized air quality impacts for criteria pollutant emissions is not applicable to regional projects such as local general plans, specific plans, or AQMPs (SCAQMD, 2008) because the details of the individual projects to implement these types of plans and their locations are not known at this time. Therefore, a localized air quality impact analysis has not been performed for the 2012 AQMP in this [Final](#) Program EIR.

PROJECT-SPECIFIC MITIGATION: Mitigation measures are required to minimize the significant air quality impacts associated with the potential significant construction impacts on air quality. The following feasible mitigation measures are required:

On-Road Mobile Sources:

AQ-1 Develop a Construction Emission Management Plan for the proposed project. The Construction Emission Management Plan shall be submitted to SCAQMD CEQA for approval prior to the start of construction. The Plan shall include measures to minimize emissions from vehicles including, but not limited to consolidating truck deliveries, description of truck routing, description of deliveries including hours of delivery, description of entry/exit points, locations of parking, and construction schedule. At a minimum the Construction Emission Management Plan would include the following types of mitigation measures.

Off-Road Mobile Sources:

AQ-2 Maintain construction equipment tuned up and with two to four degree retard diesel engine timing or tuned to manufacturer's recommended specifications that optimize emissions without nullifying engine warranties.

AQ-3 The project proponent shall survey and document the proposed project's construction areas and identify all construction areas that are served by electricity. This documentation shall be provided as part of the Construction Emissions Management Plan. Electric welders shall be used in all construction areas that are demonstrated to be served by electricity.

AQ-4 The project proponent shall survey and document the proposed Project's construction areas and identify all construction areas that are served by electricity. This documentation shall be provided as part of the Construction Emissions Management Plan. Onsite electricity rather than temporary power generators shall be used in all construction areas that are demonstrated to be served by electricity.

AQ-5 The project proponent shall use cranes rated 200 hp or greater equipped with Tier 3 or equivalent engines. Engines equivalent to Tier 3 may consist of Tier 2 engines retrofitted with diesel particulate filters and oxidation catalysts, selective catalytic reduction, or other equivalent NOx control equipment. Retrofitting cranes rated 200 hp or greater with PM and NOx control devices must occur before the start of construction. If cranes rated 200 hp or greater equipped with Tier 3 engines are not available or cannot be retrofitted with PM and NOx control devices, the project

proponent shall use cranes rated 200 hp or greater equipped with Tier 2 or equivalent engines. The project proponent shall provide documentation that cranes rated 200 hp or greater equipped with Tier 3 or equivalent engines are not available in the Construction Emissions Management Plan.

- AQ-6 For off-road construction equipment rated 50 to 200 hp that will be operating for eight hours or more, the project proponent shall use equipment rated 50 to 200 hp equipped with Tier 3 or equivalent engines. Engines equivalent to Tier 3 may consist of Tier 2 engines retrofitted with diesel particulate filters and oxidation catalysts, selective catalytic reduction, or other equivalent NOx control equipment. Retrofitting equipment rated 50 to 200 hp with PM and NOx control devices must occur before the start of construction. If equipment rated 50 to 200 hp equipped with Tier 3 engines are not available or cannot be retrofitted with PM and NOx control devices, the project proponent shall use equipment rated 50 to 200 hp equipped with Tier 2 or equivalent engines. The project proponent shall provide documentation that equipment rated 50 to 200 hp equipped with Tier 3 or equivalent engines are not available in the Construction Emissions Management Plan or associated subsequent status reports as information becomes available.
- AQ-7 Suspend use of all construction activities that generate air pollutant emissions during first stage smog alerts.

As improved emission reduction technologies become available, construction mitigation measures will be updated and implemented as specific control measures are developed and projects proposed.

REMAINING CONSTRUCTION AIR QUALITY IMPACTS: The air quality analysis concluded that significant adverse construction air quality impacts could be created by the proposed project because future construction inventories for CO and PM10 emissions indicate these pollutants would exceed the SCAQMD's applicable significance thresholds of 550 and 150 pounds per day, respectively. Since it is expected that construction activities to implement 2012 AQMP control measures would contribute to these exceedances, construction air quality impacts were concluded to be significant. In spite of implementing the above mitigation measures, construction CO and PM10 air quality impacts would likely remain significant.

4.2.6.2 Criteria Pollutants - Operational Activities

4.2.6.2.1 *Secondary Impacts from Increased Electricity Demand*

PROJECT-SPECIFIC IMPACTS Electricity is often used as the power source to operate various components of add-on control equipment, such as electrostatic precipitators, ventilation systems, fan motors, vapor recovery systems, etc. Increased demand for electrical energy may require generation of additional electricity, which in turn could result in increased indirect emissions of criteria pollutants in the district and in other portions of California. The stationary source measures that may result in increased demand for electrical energy due to operation of add-on control equipment are included in Table 4.2-1.

Control Measure BCM-03 calls for emission reductions from PM control devices (e.g., electrostatic precipitators (ESP)) for under-fired charbroiler restaurant operations, which could increase electricity demand. Other control measures that could result in an increase in electricity include measures that would require add-on controls or retrofit and replacement of equipment, including CMB-01, IND-01, INC-01, FUG-01, and MCS-01. The required emissions reduction may be achieved through various types of add-on control equipment such as selective catalytic reduction (SCR) technology, PM filters, refrigerated condensers, liquid scrubbers, and positive displacement pumps. Each of the possible control types may have potential adverse energy impacts because the control technology uses electricity. The analysis of the effect of energy resources and electricity demand due to implementation of the 2012 AQMP can be found in Subchapter 4.3 of this [Final Program EIR](#).

Several of the control measures would require support facilities and potentially increased use of electricity for on-road vehicles and off-road vehicles (e.g., ONRD-01, ONRD-02, ONRD-03, ONRD-05, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, and ADV-06). An increase in electric vehicles would require the generation of additional electricity in the district and other areas of California. In addition, shore-side electricity may be required associated with “cold ironing” of marine vessels (e.g., use of shore-side electricity while at berth, instead of use of diesel-fired auxiliary engines). As detailed in Subsection 4.3 of this [Final Program EIR](#), the potential increase in the amount of electricity is expected to be 1,691.2 gigawatt-hours (GWh). The criteria pollutant emissions associated with the increase in energy demand is shown in Table 4.2-5 for the control measures which can be quantified.

TABLE 4.2-5

Estimated Criteria Pollutant Emissions from Increased Electricity Demand

CONTROL MEASURE	ESTIMATED EMISSIONS INCREASE (lbs/day) ^(a)					
	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
ONRD-01	0.71	6.9	2.1	0.24	0.83	0.82
ONRD-02	1.4	14	4.2	0.48	1.7	1.6
ONRD-03	1.5	15	4.5	0.51	1.8	1.8
ONRD-05	0.91	8.9	2.7	0.31	1.1	1.1
ADV-01	10	101	31	3.5	12	12
ADV-02	16	158	48	5.5	19	19
Total Emissions Increase	31	303	92	10	36.	36

(a) The emission estimates are ratioed from the 2008 inventory emissions reported for Electric Utilities and Cogeneration from Appendix III of the 2012 AQMP (SCAQMD, 2012).

Two of the on-road control measures, ONRD-01 and ONRD-02, target emission reductions from transportation measures that would accelerate the penetration and deployment of partial zero-emission vehicles in the light- and medium-duty vehicles categories. One on-road control measure, ONRD-03, targets early deployment of partial zero-emission and zero-emission light- and medium-heavy duty vehicle. One on-road control measure,

ONRD-05, seeks emission reductions at near-dock railyards through the deployment of zero-emission heavy-duty vehicles. All four of these control measures are expected to increase the use of electric and advanced hybrid electric vehicles, which would increase the demand for electricity and result in the increase in indirect emissions associated with electricity production. The amount of electricity generated is described in the energy impact Subchapter 4.3 of this [Final Program](#) EIR.

Electrification of motor vehicles and other commercial and industrial equipment would greatly reduce fossil fuel usage in the district. At that time, there may be an increase in emissions due to increased electric power generation due to increased demand. Although the control measures include projections regarding the penetration rate of electric vehicles, the actual number of electric vehicles is unknown and would need to be calculated during any rule development for these control measures. An incremental increase in electricity demand is not expected to create significant adverse air quality impacts compared to emission reductions from mobile and stationary sources. However, if electricity demand exceeds available power, additional sources of electricity would be required. Additional power plants would be required to supply the projected electricity due to general population growth, both in California and outside of California. Currently, there are a number of power plant projects planned in southern California to meet future needs. Relative to the existing electricity use and the projected future peak electricity demand, implementation of all the control measures is expected to result in an overall worst-case increase from the year 2008 baseline of approximately 1.5 percent (see Subsection 4.3 of this [Final Program](#) EIR).

Electricity generation within the district is subject to applicable SCAQMD rules such as Rule 1134 – Emissions Oxides of Nitrogen from Stationary Gas Turbines, Rule 1135 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, and Regulation XX – RECLAIM. These rules and regulations regulate NO_x emissions (the primary pollutant of concern from natural gas combustion to generate electricity) from existing power generating equipment. Although emissions from electric utilities in the district are capped under the RECLAIM program (and under Rule 1135), any new power generating facilities in the district to accommodate increased electricity demand would be subject to SCAQMD Regulation XIII – New Source Review, or Rule 2005 which requires installation of BACT, air quality modeling would be required to demonstrate that new emissions would not result in significant ambient air quality impacts (so there would be no localized impacts), and emission offsets (through either emission reduction credits or RECLAIM trading credits) before permits could be issued emissions offsets, which for NO_x emissions, for example, would be at a ratio of 1.2 to 1.0, or 1.2 pounds of emission reduction credits required for every new pound of NO_x emitted from the power generating source or a ratio of 1.0 to 1.0 for RECLAIM sources. Any new power generating projects would be incorporated into the emission inventories used in future AQMPs and additional control measures would be identified if necessary and feasible. While the control measures may cause an increase in NO_x emissions from power plants, overall the 2012 AQMP is expected to achieve net NO_x emission reductions to maintain attainment of all NO₂ ambient air quality standards and continue making expeditious progress in achieving the federal one-hour and eight-hour standards. Further, emissions from the combustion of gasoline or diesel fuels are generally the emissions that would be reduced when electrification is proposed and replaced with emissions from the combustion of natural gas (as would generally occur from electricity

generating facilities in the district). Emissions from diesel combustion (e.g., marine vessel engines) are orders of magnitude higher than emissions from the combustion of natural gas. So, overall emissions are expected to decrease. No significant adverse impacts to air quality are expected from control measures requiring increased demand for electricity.

There could be an increase in emissions from generators that may be used to charge batteries in remote locations where no grounded power source is available. Generators are regulated sources in the district. Existing SCAQMD regulations that apply to generators and emergency generators would apply to generators used to charge batteries. New generators would be subject to Regulation XIII or Rule 2005. Existing generators are subject to SCAQMD Rule 1110.2 – Emissions from Gaseous and Liquid Fueled Internal Combustion Engines. Rule 1110.2 does not establish a facility emission cap, but establishes a stringent NO_x emission rate. Truly portable equipment may also be regulated under the state registration program, which establishes emission limitations on NO_x, VOCs, and CO.

The emissions from electrical generation have been included in the emissions inventory prepared for the 2012 AQMP. Table 4.2-6 summarizes the emissions associated with electric generation in the key years 2104 and 2023.

TABLE 4.2-6

Annual Average Operational Emissions for Electric Generation in the District (tons/day)

Source Category	VOC	CO	NO _x	SO _x	PM10	PM2.5
2008 Emission Inventory						
Electric Utilities	1.0	9.9	2.7	0.33	1.2	1.2
Cogeneration	0.05	0.04	0.43	0.03	0.05	0.05
2008 Total	1.1	10	3.1	0.34	1.2	1.2
2014 Emission Inventory						
Electric Utilities	0.88	8.7	2.4	0.29	1.0	1.0
Cogeneration	0.05	0.39	0.43	0.03	0.05	0.05
2014 Total	0.93	9.1	2.8	0.32	1.1	1.1
Emission Increase (emissions in 2014 – emission in 2008)	-0.13	-0.87	-0.31	-0.03	-0.14	-0.13
Emissions Increase (lbs/day)	-260	-1,740	-620	-60	-280	-260
1.5% Emissions Increase from Control Measures (lbs/day)	31	303	92	10	36	36
Total Emissions Increase (lbs/day)	-229	-1,437	-528	-50	-244	-224

TABLE 4.2-6 (CONCLUDED)

Annual Average Operational Emissions for Electric Generation in the District (tons/day)

Source Category	VOC	CO	NO _x	SO _x	PM10	PM2.5
2023 Emissions Inventory						
Electric Utilities	0.86	8.5	2.3	0.28	1.0	1.0
Cogeneration	0.05	0.41	0.43	0.03	0.05	0.05
2023 Total	0.91	8.9	2.7	0.31	1.1	1.1
Emission Increase (emissions in 2023 – emission in 2008)	-0.15	-1.07	-0.40	-0.05	-0.17	-0.16
Emissions Increase (lbs/day)	-300	-2,140	-800	-100	-340	-320
1.5 % Emissions Increase from Control Measures (lbs/day)	31	303	92	10	36	35
Total Emissions Increase (lbs/day)	-269	-1,837	-708	-90	-304	-284

Source: SCAQMD, 2012

Note: Negative numbers represent emissions reductions.

The inventory prepared for the 2102 AQMP includes estimates for electric utilities and cogeneration facilities in key years 2014 and 2023. It is assumed that the emissions associated with electrical generation that are part of the [2012 AQMP](#) control measures would contribute to the emission changes identified in the emission inventories. The inventory also accounts for growth in population. It has been estimated that implementation of all the control measures is expected to result in an overall increase in electricity in 2023 of approximately 1.5 percent, relative to the projected peak electricity demand in 2008. As shown in Table 4.2-6, the estimated VOC, CO, NO_x, SO_x, PM10, and PM2.5 emissions are expected to decline between 2014 and 2023.

Table 4.2-7 shows total emissions from 2012 AQMP. As shown in Table 4.2-7, overall, emissions from 2012 AQMP control measures are not expected to exceed the SCAQMD's daily regional significance thresholds and, ultimately, would provide an emission reduction benefit.

TABLE 4.2-7

Total Annual Average Operational Emissions from Implementation
of the 2012 AQMP in the District
(tons/day)

Source Category	VOC	CO	NO _x	SO _x	PM10	PM2.5
2008 Emission Inventory						
2008 Total	593	2,881	757	54	167	80
2014 Emission Inventory						
2014 Total	451	2095	502	19	155	70
Emissions Increase from Implementation of the 2012 AQMP	-142	-786	-256	-36	-12	-10
Emissions Increase from Implementation of the 2012 AQMP (lbs/day)	-283,260	-1,572,020	-511,180	-71,460	-23,780	-19,880
SCAQMD Significance Thresholds (lbs/day)	55	550	55	150	150	55
Significant?	NO	NO	NO	NO	NO	NO
2023 Emissions Inventory						
2023 Total	406	1,583	322 <u>328</u>	18	164	71
Emissions Increase from Implementation of the 2012 AQMP	-187	-1,297	435 <u>429</u>	-36	-2.9	-9.1
Emissions Increase from Implementation of the 2012 AQMP (lbs/day)	-373,820	-2,594,860	870,520 <u>850,000</u>	-72,020	-5,780	-18,280
SCAQMD Significance Thresholds (lbs/day)	55	550	55	150	150	55
Significant?	NO	NO	NO	NO	NO	NO

Source: SCAQMD, 2012

Note: Negative numbers represent emissions reductions.

The SCAQMD does not regulate electricity generating facilities outside of the district so the rules and regulations discussed above do not apply to electricity generating facilities outside of the district. In 2010, about 71 percent of the electricity used in California was generated in-state and about 29 percent was imported (see Section 3.2.3). While these electricity generating facilities would not be subject to SCAQMD rules and regulations, they would be subject to the rules and regulations of the local air pollution control district and the U.S. EPA. These agencies also have established New Source Review regulations for new and modified facilities that generally require compliance with BACT or lowest achievable emission reduction technology. Most in-state electricity generating plants use natural gas, which provides a relatively clean source of fuel (as compared to coal- or diesel-fueled plants). The emissions from these power plants would also be controlled by local, state, and federal rules and regulations, minimizing overall air emissions. These rules and regulations may differ from the SCAQMD rules and regulations because the ambient air quality and emission.

Power plants in California provided approximately 71 percent of the total in-state electricity demand in 2010 of which 15 percent came from renewable sources such as biomass, geothermal, small hydro, solar, and wind, which are clean sources of energy. These sources of electricity generate little, if any, air emissions. Increased use of these and other clean technologies will continue to minimize emissions from the generation of electricity. State law requires increasing the use of renewable energy to 20 percent by 2017 (modified from 2010 as presented in the 2007 AQMP) and to 33 percent by 2020. Further, adopted state laws will prohibit using electricity produced by coal-fired plants.

PROJECT-SPECIFIC MITIGATION: To the extent that electricity demand from 2012 AQMP control measures, no significant secondary air quality impacts from increased electricity demand were identified so mitigation measures are not required.

REMAINING SECONDARY AIR QUALITY IMPACTS: The air quality analysis concluded that potential secondary air quality impacts from increased electricity demand would be less than significant, no mitigation measures were required, so secondary air quality impacts remain less than significant.

4.2.6.2.2 *Secondary Impacts from Control of Stationary Sources*

PROJECT-SPECIFIC IMPACTS: Emission reductions from the control of emissions at several stationary sources could result in secondary emissions.

Control Measure CMB-01 includes further NO_x reduction such as reducing the NO_x allocation for some NO_x RECLAIM facilities. Under the RECLAIM regulations, operators of affected facilities are currently able to choose how to reduce NO_x emissions. Options to further reduce NO_x emissions could include addition of control equipment (e.g., SCR, low-NO_x Burners, NO_x reducing catalysts, oxy-fuel furnaces, and selective non-catalytic reduction) by focusing on periodic best available retrofit control technology (BARCT) evaluation.

While some control measures may cause small increases in NO_x emissions, the 2012 AQMP would achieve enough NO_x reductions overall to continue making expeditious progress in attaining the federal one-hour and eight-hour ambient air quality standards for ozone. Selective catalytic reduction (SCR) has been used to control NO_x emissions from stationary sources for many years. Like an oxidation catalyst, SCR promotes chemical reactions in the presence of a catalyst. However, unlike oxidation catalysts, a reductant (e.g., ammonia) is added to the exhaust stream in order to convert NO_x to elemental nitrogen and oxygen in an oxidizing environment. As exhaust gases along with the reductant pass over the catalyst, 75 to 90 percent of NO_x emissions, 50 to 90 percent of the VOC emissions, and 30 to 50 percent of the PM₁₀ emissions are reduced.

There is the potential for secondary particulate formation from ammonia slip in sources that use SCR for control. Anticipating that SCR units would become widespread to comply with the NO_x control rules under development over 20 years ago, the CEQA documents prepared by the SCAQMD for these new NO_x control rules evaluated the potential for secondary PM₁₀ formation from SCR systems. As part of analyses prepared for the EIRs for the NO_x

control rules, the SCAQMD conducted an extensive literature review and contacted a number of SCR manufacturers and vendors. The results of this data collection effort indicated that ammonia slip depends on a variety of factors including space velocity, ammonia to NO_x molar ratio, temperature, and NO_x inlet concentration.

The analysis also indicated that, SCRs in use at that time typically had an ammonia slip level ranging from approximately ten to 20 ppm. Ammonia slip levels in this range were the result of the following factors. First, to ensure maximum NO_x reduction efficiency, SCR operators at that time typically injected excess ammonia (e.g., a higher ammonia to NO_x molar ratio, into the flue gas to ensure achieving the appropriate NO_x reduction reaction). The excess ammonia that does not react with the NO_x passes or “slips” through the reactor vessel and is released into the atmosphere. With a decline in catalyst activity, to achieve the same NO_x reductions, it often became necessary to increase the amount of ammonia injected into the flue gas, which in turn increases ammonia slip. Similarly, the analysis found that one of the main operational problems that contributed to ammonia slip was the uneven distribution of NO_x in the duct ahead of the catalyst, creating a non-uniform mixture of ammonia and NO_x over the entire cross-section of the duct and resulting in high levels of ammonia slip. Finally, the early NO_x control EIRs prepared by the SCAQMD indicated that formation of ammonium nitrate (NH₄NO₃) could be a problem if temperatures were less than 169 °C.

The SCAQMD’s early NO_x control EIRs concluded that ammonium nitrate (NH₄NO₃) formation would not be a significant adverse air quality impact if ammonia slip is reduced to ten ppm or less by maintaining uniform ammonia injection. Ensuring adequate mixing of ammonia in the flue gas can alleviate this problem. Ammonia slip can also be reduced by maintaining the proper ammonia to NO_x molar ratio, decreasing the exhaust gas flow rate, maintaining consistent exhaust velocity, and maintaining an optimal temperature regime.

The SCR technology has progressed such that ammonia slip can now be limited to five ppm. For example, SCR vendors have developed better injection systems that result in a more even distribution of NO_x ahead of the catalyst so that the potential for ammonia slip has been reduced. Similarly, ammonia injection rates are more precisely controlled by model control logic units that are a combination of feed-back control and feed forward control using a proportional/integral controller that sets flow rates by predicting SCR outlet ammonia concentrations and calibrating them to a set reference value.

Subsequent to the preparation of the early EIRs for the SCAQMD’s NO_x control rules, catalyst research has focused on reducing SO₂ oxidation. Even over 20 years ago, SCR vendors reported that SO₂ oxidation of their catalyst was less than one to four percent (SCAQMD, 1990). SO₂ to SO₃ conversion has been reduced by decreasing the amount of active ingredient (typically vanadium pentoxide), adding an active element as a promoter and improving the dispersion of active elements. SCR vendors have indicated that problems with ammonium particulates tend to be minimal if the amount of ammonia slip in the flue gas averages less than five to ten ppm. Particulate problems with ammonium bisulfate (NH₄H₂SO₄), and ammonium sulfate ((NH₄)₂SO₄), can be alleviated by reducing ammonia slip (SCAQMD, 1990).

In summary, in the early EIRs for the SCAQMD's NO_x control rules (e.g., the EIR for Rule 1135), SCAQMD staff determined that the impacts related to secondary PM₁₀ formation would be less than significant if ammonia slip were limited to five to ten ppm because ammonia would then be a limiting factor in producing secondary particulates. Based on substantial improvements in the SCR control technology, as well as improvements in ammonia monitoring equipment, minimizing ammonia slip to five ppm or less is feasible and is now a standard design parameter for SCR and catalyst manufacturers and secondary particulate emissions from SCR units has ceased to be a potentially significant adverse air quality impact with the standard imposition of ammonia limits less than ten ppm.

The SCAQMD has permitted numerous SCR systems within the district since the early 1990's and, therefore, has a longstanding practice of imposing permit conditions limiting ammonia slip. The current SCAQMD limit for ammonia slip for new, modified, or relocated equipment is five ppm, thus, minimizing the potential formation of secondary particulates, ammonium nitrate, in particular.

Based on the above, no new or substantially more severe significant air quality impacts related to ammonia emissions and secondary PM₁₀ formation from the increased use of SCR systems is expected. The five ppm ammonia limit would be included as an enforceable permit condition on the SCAQMD permit to construct/operate. Operators would be required to monitor ammonia slip by conducting an annual source test and maintain a continuous monitoring system to accurately indicate the ammonia-to-emitted-NO_x mole ratio at the inlet of the SCR.

Control Measure FUG-01 may result in an increase in natural gas used to combust VOC emissions from vacuum trucks used to remove materials from storage tanks, vessels, sumps, boxes and pipelines. VOC emissions may be controlled by using carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers, liquid scrubbers and positive displacement (PD) pumps. SCAQMD staff estimates that 27 million cubic feet per year of natural gas (thermal oxidizers) and 2,100 gallons of gasoline (internal combustion engines) may be used per year to combust fugitive VOCs from storage tanks, vessels, sumps, boxes and pipelines pulled by a vacuum truck. Criteria emissions from FUG-01 are included in Table 4.2-7.

Control Measure FUG-02 would require emission reductions from fugitive emissions associated with the transfer and dispensing of liquefied petroleum gas (LPG). FUG-02 would be implemented in two phases: Phase I, which was implemented with the adoption of Rule 1177 on June 1, 2012 and required the use of low emission fixed liquid level gauges (FLLGs) and low emission connectors for transfer and dispensing; and Phase II, which would expand the applicability of Rule 1177 to include LPG transfer and dispensing at other facilities, including currently exempted facilities. Implementation of Phase I of Rule 1177 is expected to result in a reduction of VOC emissions of 6.1 tons per day with an additional one to two tons per day with the implementation of Phase II. No significant secondary air quality impacts associated with VOC reductions from Control Measure FUG-02 are expected.

Control Measure BCM-03 would reduce PM_{2.5} emissions from under-fired charbroilers. Under-fired charbroilers are comprised of three main components: a heating source, a high temperature radiant surface, and a slotted grill. The grill holds the meat or other food while exposing it to the radiant heat. PM and VOC emissions occur when grease from the meat falls onto the high temperature radiant surface. Most under-fired charbroilers burn natural gas; however, solid fuels, such as charcoal or wood with or without the addition of ceramic stones, are sometimes used. This category includes: broilers, grill charbroilers, flamebroilers, and direct-fired barbecues. Potential control technologies that could generate secondary air quality impacts include the following.

- HEPA filters trap small particles by one of three mechanisms: interception (particles come within one radius of a fiber and adhere to it); impaction (particles are forced to embed in one of the fibers), or diffusion (an enhancing mechanism resulting from gas molecules collision with small particles which slows their flow). Diffusion is the predominate mechanism below the 0.1 ([micrometer](#)) μm diameter particle size. Impaction and interception predominate above 0.4 μm . In the 0.3 μm range, diffusion and interception predominate. Currently, there are no HEPAs with SCAQMD permits to control emissions from charbroilers in the Basin.
- Wet scrubbers rely on a finely atomized stream of liquid to capture particulate and gaseous pollutants from an exhaust stream, such as from a restaurant charbroiler. Heat and mass transfer are accomplished by direct contact of the exhaust gas with finely atomized droplets of the scrubbing liquid. The gas stream is cooled and moistened as the scrubbing liquid evaporates. PM removal efficiencies of 90 percent or higher have been achieved in service depending on particle size, load, flows and pressure drop. Presently, there are nine wet scrubbers permitted at restaurants located in the Basin.
- ESPs rely on imparting a 220-volt AC power supply transformed to high voltage direct current (DC) charge to the particulate materials while simultaneously ionizing the carrier gas, producing an electric corona. The particles, either negatively or positively charged, are attracted to the ESP electrode of the opposite charge and finally removed from the electrodes by rapping or washing the electrodes. An after filter is sometimes used to provide back pressure and ensure good gas distribution in the ESP. Collection efficiencies exceeding 90 percent are common in many applications. At present, there are 27 ESPs permitted and operating at restaurants located in the Basin.
- Regenerative thermal oxidizers (RTOs) consist of a combustion chamber located adjacent to several energy recovery chambers. The VOC-laden air enters an inlet header and is directed to one of the energy recovery chambers through the inlet control valve. The air passes through the heat exchange media, adsorbing heat from the media. It then enters the combustion chamber at a temperature close to the oxidation temperature. The oxidation process is completed in the combustion chamber. At least one chamber is always on inlet mode and another on outlet mode to allow the RTO to continuously process a VOC-laden air stream.

Based on the above information, installation of various types of control devices to comply with the requirements of 2012 AQMP control measure. HEPA filter and ESP technologies

may result in increased demand for electricity, resulting in secondary emissions from electricity production. RTOs could increase demand for natural gas, producing secondary combustion emissions.

Control Measure MCS-01 would require the SCAQMD to adopt and implement new retrofit technology control standards (BARCT) as new BARCT standards become available. Although it is currently unknown what the new BARCT standards would be, to the extent that they require installation of control technologies, potential secondary air quality impacts could be generated. For example, potential construction air quality impacts from construction activities to install future BARCT equipment, from on-road vehicles (e.g., worker commute trips, haul truck delivery trips, etc.) and off-road construction equipment could be generated. Similarly, to the extent that BARCT technologies operate using electricity to run the equipment or natural gas combustion as part of the control process, secondary emissions from electricity generation or natural gas combustion could be generated. Although SCR is BARCT for controlling NO_x emissions from a variety of combustion sources, if it is determined to be BARCT for other types of combustion sources ammonia slip emissions could be generated. However, since the source of emissions and the BARCT is unknown at this time, SCAQMD staff is unable to estimate secondary emission from Control Measure MCS-01.

Control Measure INC-01 may result in the replacement of existing combustion equipment with more efficient or zero emission technologies. INC-01 may also result in the installation of control technologies or the use of alternative fuels. Zero emission technologies are likely to be powered by electricity. Control technology may include diesel particulate filters and NO_x reduction catalysts. However, since the source of emissions, control technology and energy requirements are unknown at this time; SCAQMD staff is unable to estimate secondary emission from Control Measure INC-01.

PROJECT-SPECIFIC MITIGATION: Based on the above information, potential secondary air quality impacts from control technologies associated with stationary sources were concluded to be less than significant so no mitigation measures are required.

REMAINING SECONDARY AIR QUALITY IMPACTS: The air quality analysis concluded that potential secondary air quality impacts from control technologies associated with stationary sources would be less than significant, no mitigation measures were required, so secondary air quality impacts remain less than significant.

4.2.6.2.3 *Secondary Impacts from Change in Use of Lower VOC Materials*

PROJECT-SPECIFIC IMPACTS: Several control measures are aimed at reducing VOC emissions by reformulating certain products including architectural coatings (CTS-01); miscellaneous coating adhesives, solvents, and lubricants (CTS-02); and, mold release products (CTS-03). An additional control measure, CTS-04, would further reduce VOC emissions by revising or eliminating the exemption for low vapor pressure solvents in consumer products. Consumer products include, but are not limited to: detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products such as

antiperspirants and hairsprays; home, lawn, and garden products; disinfectants; sanitizers; automotive specialty products; and, aerosol paints.

The analysis of secondary emissions from changes in use of lower VOC materials is focused on emissions from reducing the VOC from reformulated coatings (such as flat, non-flat, and primer sealer undercoaters (PSU)). To obtain further VOC emission reductions from these products it is expected the products would be reformulated with water-based or exempt compound formulations. The following subsections identify potential secondary air quality impacts from lowering the VOC content limit further. Although the following discussion focused primarily on coatings, some of its topics (e.g., substitution, more reactivity, and low vapor pressure), could apply to other types of consumer products.

Control Measure CTS-01 is expected to lower the VOC content from 50 grams per liter to 25 grams per liter. It is expected that this reduction would not substantially change the primary components of the coatings. As a result, the issues discussed below may no longer be applicable. Control Measures CTS-02 and CTS-03 are expected to lower the VOC content in miscellaneous coatings, adhesives, solvents, and lubricants as well as mold release products by requiring the lowering the VOC-content of the products. Control Measure CTRS-04 is expected to reduce VOC emissions from consumer products by revising the exemptions for the use of low vapor pressure VOC solvents. The following issues have raised with regard to reformulated coatings in both the 2003 and 2007 AQMPs.

The potential secondary air quality impacts associated with reformulation of coatings has been extensively evaluated in both the 2003 and 2007 AQMPs, as well as in a number of amendments to existing coatings rules. At the time, reformulations were shifting coatings from primarily solvent-based to water-based and exempt-solvent formulations. Secondary air quality impacts discussed previously in the 2007 AQMP were relative to more thickness of the coating, illegal thinning to reduce the viscosity of the reformulated coatings, more priming, more topcoats, more touch-ups and repair work, more frequent recoating, substitution, more reactivity, and synergistic effects of the eight issues. Each issue is summarized in the following bullet points along with the associated conclusions reached in the 2007 AQMP for each issue:

- **More thickness** - reformulated compliant water- and solvent-borne coatings are very viscous (e.g., are formulated using a high-solids content) and, therefore, are difficult to handle during application, tending to produce a thick film when applied directly from the can. A thicker film indicates that a smaller surface area is covered with a given amount of material, thereby increasing VOC emissions per unit of area covered.

Response - Compliant low-VOC coatings are not necessarily formulated with higher solids content than conventional coatings. A low-VOC coating is expected to cover the same or larger surface area than a high-VOC coating. Further, there is no evidence that there is an inverse correlation between solids content and coverage area (SCAQMD, 2007).

- **Illegal thinning** - thinning occurs in the field in excess of what is allowed by the SCAQMD rule limits. It is asserted that, because reformulated compliant water- and

solvent-borne coatings are more viscous (e.g., high-solids content), painters have to adjust the properties of the coatings to make them easier to handle and apply. In particular for solvent-borne coatings this adjustment consists of thinning the coating as supplied by the manufacturer by adding solvent to reduce its viscosity. The added solvent increases VOC emissions back to or sometimes above the level of older formulations.

Response - SCAQMD staff conducted extensive research prior to 1998 to determine whether or not thinning of materials beyond the allowable levels occurred in the field. SCAQMD staff conducted unannounced site visits to evaluate contractor practices, collected samples as applied and supplied from contractors, analyzed paint samples from retail outlets. No thinning beyond SCAQMD rule limits was identified. In addition, the CARB 2005 Architectural Coating Survey provided results of compliance with the CARB Suggested Control Measure for Architectural Coatings. In most cases the percent of complying market share from the 2005 survey improved or was approximately the same as the 2001 CARB survey. Therefore, the 2007 Final [Program](#) EIR concluded that widespread thinning does not happen often; when it does occur, it is unlikely to occur at a level that would lead to a substantial emissions increase when compared to emissions from higher VOC coatings (SCAQMD, 2007).

Currently, the majority of the architectural coatings currently available in the marketplace are waterborne. Thinning is not an issue for waterborne coatings as thinning with water would not increase the VOC content of those coatings. Of the total coatings sold in 2008, only seven percent of were solvent-based which equates to approximately three million gallons. Architectural Coatings sold in small containers with a VOC content greater than the VOC limits for those categories represented 15 percent of the total volume or slightly more than 0.4 million gallons. The proposed elimination of the small container exemption would therefore result in more waterborne coatings, further lessening the potential adverse impact of thinning with solvent. In addition, large containers would already comply with applicable VOC content limits so there would be no widespread thinning of small container coatings to meet small container needs. For the years between 2009 and 2011, the overall volume of solvent-based coatings was reduced by an additional 22 percent, and the potential for thinning was reduced by an equivalent amount. Further, adoption and implementation of Rule 1143 – Consumer Paint Thinner and Multi-Purpose Solvents, requires the use of paint thinners that have a VOC content of less than or equal to 25 grams per liter, resulting in paint thinners that are based on exempt solvents, further reducing the impacts from thinning of solvent-based architectural coatings.

- **More priming** - reformulated compliant low-VOC water- and solvent-borne topcoats do not adhere as well as higher-VOC solvent-based topcoats to unprimed substrates. Therefore, the substrates must be primed with typical solvent-based primers to enhance the adherence quality. Industry representatives have testified that the use of water-borne compliant topcoats could require more priming to promote adhesion. Additionally, it has been asserted that water-borne sealers do not penetrate and seal porous substrates like wood, as well as traditional solvent-borne sealers. This allegedly results in three or four

coats of the sealer per application compared to one coat for a solvent-based sealer would be necessary, resulting in an overall increase in VOC emissions for the coating system.

Response - SCAQMD staff evaluated surface preparation in coating product data sheets and recent studies on the topic. It was determined that low-VOC coatings do not require substantial different surface preparation than conventional coatings. Both low-VOC and conventional coatings for both architectural and industrial maintenance applications were demonstrated to have the ability to adhere to a variety of surfaces. Based on the coating sheets, the material needed and the tie necessary to prepare a surface for coating was approximately equivalent for low-VOC and conventional coatings (SCAQMD, 2007).

In addition, a recent trend for coating manufacturers is to produce ultra low-VOC coatings that are primer and topcoat in one, hence eliminating an entire step in the coating process. Most major coatings manufacturers now offer such products, some of which are as low as 5.0 grams per liter. Therefore, any impacts from priming have been significantly reduced.

- **More topcoats** - reformulated compliant water- and low-VOC solvent-borne topcoats may not cover, build, or flow-and-level as well as the solvent-borne formulations. Therefore, more coats are necessary to achieve equivalent cover and coating build-up.

Response - Based on information in product data sheets, SCAQMD staff found that the average drying time for lower-VOC coatings did increase compared to conventional coatings; however, with the development of non-volatile, reactive diluents combined with hypersurfactants, performance of the lower-VOC coatings equaled or outperformed traditional, solvent containing coatings. Resistance to chemicals, corrosion, chalk, impact and abrasion, adhesion and the ability to retain gloss and color was found to be similar in lower-VOC and conventional coatings. Coating manufacturer data indicated that low-VOC and conventional coatings for both architectural and industrial maintenance applications are durable and long lasting. More frequent recoating was not found for low-VOC coatings when compared to conventional coatings (SCAQMD, 2007).

- **More touch-ups and repair work** - reformulated compliant water- and low-VOC solvent-borne formulations dry slowly, and are susceptible to damage such as sagging, wrinkling, alligating, or becoming scraped and scratched. Claims have been made that the high-solids solvent-borne alkyd enamels tend to yellow in dark areas, and that water-borne coatings tend to blister or peel, and also result in severe blocking problems. All of these problems were reported to require additional coatings for repair and touch-up.

Based on SCAQMD staff's evaluation of the durability characteristics information contained in the coating product data sheets, low-VOC coatings and conventional coatings have comparable durability characteristics. These conclusions are supported by the UMR, NTS and other coating studies. As a result, it is not anticipated that more touch up and repair work will need to be conducted with usage of low-VOC coatings.

- **More frequent recoating** - the durability of the reformulated compliant water- and low-VOC solvent-based coatings is inferior to the durability of the traditional solvent-borne coatings. Durability problems include cracking, peeling, excessive chalking, and color fading, which all typically result in more frequent recoating. As a result, they claim more frequent recoating would be necessary resulting in greater total emissions than would be the case for conventional coatings.

Response - The latest data from coating manufacturers obtained by SCAQMD staff indicate that the new generation of waterborne coatings is performing as well if not better than their solvent-based counterparts. These commercialized products are formulated with better performing raw materials, including superior resin chemistry and higher performing pigments, resulting in better hiding and coverage and overall durability, therefore, a reduction in coating usage is expected.

- **Substitution** - reformulated compliant water- and low-VOC solvent-borne coatings are inferior in durability and are more difficult to apply, so consumers and contractors will substitute better performing high VOC coatings in other categories for use in categories with low compliance limits. An example of this substitution could be the use of a higher VOC product (e.g., clear wood coatings) currently sold under the small container exemption, which has a higher VOC content limit requirement, in place of a lower-VOC clear wood coatings.

Response - SCAQMD staff determined that substitution would not occur because based on product data sheets and studies, there are, generally a substantial number of low-VOC coatings in a wide variety of coating categories that are currently available; and CARB and SCAQMD rules prohibit the application of certain coatings in specific settings.

In the rare event that substitution does occur, it is expected that future coatings would still achieve overall VOC emission reductions. Substitution would only result in lesser emission reductions than expected, it would not increase emissions compared to the existing setting. Consequently, it is not expected that control measures requiring a lower overall VOC content of coatings will result in significant adverse air quality impacts from the substitution of low-VOC coatings with higher-VOC coatings (SCAQMD, 2007).

- **Reactivity** - reformulated compliant low-VOC water- and solvent-borne coatings contain solvents that are more reactive than the solvents used in conventional coating formulations. Water-borne coatings perform best under warm, dry weather conditions, and are typically recommended for use between May and October. Since ozone formation is also dependent on the meteorological conditions, use of waterborne coatings during this period increases the formation of ozone.

Response - SCAQMD staff has continued to monitor all reactivity-related research since the 2007 AQMP. However, based on the latest research and analysis, as well as the recommendations of the research, staff supports the continuation of a mass-based ozone control strategy, with future consideration for a reactivity-based approach.

- **Synergetic Effects of the Eight Issues** – Individually each of the eight issues does not result in a significant adverse air quality impact; therefore, the synergistic effect of all eight issues were determined not to result in a significant air quality impact. The Final [Program EIR](#) for the 2007 AQMPD stated that even if it is assumed that some of the alleged activities do occur, the net overall effect of reducing the VOC content of coatings and other consumer products is expected to be a reduction in VOC emissions.

Based on the preceding analysis of potential air quality impacts from implementing future coatings rules, it is concluded that the overall air quality effects would be a VOC emission reduction and beneficial to air quality in the district.

PROJECT-SPECIFIC MITIGATION: Potential secondary adverse air quality impacts from future coating or consumer product regulations were evaluated and it was concluded that impacts would be less than significant, so no mitigation measures are required.

REMAINING SECONDARY AIR QUALITY IMPACTS: The air quality analysis concluded that potential secondary air quality impacts from future reformulated coatings and solvent products would be less than significant, no mitigation measures were required, so secondary air quality impacts remain less than significant.

4.2.6.2.4 *Secondary Impacts from Mobile Sources*

PROJECT-SPECIFIC IMPACTS: Three control measures, ONRD-01, ONRD-02, and ONRD-03, are aimed at reducing emissions from mobile sources by accelerating the penetration of partial zero-emission and zero emission vehicles. These control measures do not directly generate secondary air quality impacts, but generate indirect air quality impacts from the generation of electricity required to operate the additional partial zero-emission and zero emission vehicles. The secondary air quality impacts associated with the increase in electrical demand have been discussed in the beginning of this subsection under “Secondary Impacts for Increased Electricity Demand”.

Control Measure ONRD-04 accelerates the replacement of heavy duty diesel vehicles (26,001 pounds and greater gross vehicle weight) with newer, lower-emissions vehicles. The early replacement of these vehicles could potentially increase the number of vehicles being scrapped. Scrapping activities generate secondary air quality impacts from the shredding of the vehicle and the electricity to perform the scrapping. During the Rule 1610 rulemaking, emissions associated with vehicle scrapping were estimated to be 0.088 pound of PM10 emissions per vehicle scrapped (SCAQMD, 1992). The actual number of vehicles scrapped would depend on the actual number of vehicles participating in the program. Emissions impacts would also depend on the number of vehicles scrapped instead of relocated outside the district, the number of vehicles scrapped at facilities within the district, and the available capacity within the district to scrap the vehicle at the time it is retired. Based on the number of factors that affect the quantification of the secondary emissions, quantification of the secondary air quality impacts would be speculative. However, the quantity of PM10 generated per vehicle scrapped is approximately the same as a diesel truck driving 50 miles.

Control Measure ONRD-05 would accelerate the replacement of up to 1,000 older heavy-duty vehicles with zero-emission vehicles or zero-emissions container movement systems. This control measure does not directly generate secondary air quality impacts, but generates indirect air quality impacts from the generation of electricity required to operate the additional partial zero-emission and zero emission vehicles. The secondary air quality impacts associated with the increase in electrical demand have been discussed in the beginning of this subsection under “Secondary Impacts for Increased Electricity Demand.” As with ONRD-04, retirement of the older heavy-duty vehicles could potentially increase the vehicle scrapping and the same uncertainties as to the disposition of the retired vehicle would occur. A conservative estimate of the emissions associated with retirement of 1,000 vehicles would be if all 1,000 were scrapped in a single day within the district (e.g., 0.088 pound of PM10 per vehicle x 1,000 vehicles = 88 pound of PM10, which is less than the PM10 significance threshold of 150 pounds per day). Using the CEIDARS profile 900 ratio of 0.6 pound of PM2.5 per pound of PM10, results in 52.8 pounds per day of PM2.5 emissions, which is below the PM2.5 significance threshold of 55 pounds per day. Therefore, secondary air quality impacts associated with the vehicle scrapping would be less than significant.

Control Measure OFFRD-01 would accelerate the replacement or retrofit of approximately 1,200 pieces of older construction equipment. As with ONRD-04, retirement of the older heavy-duty vehicles could potentially increase the vehicle scrapping and the same uncertainties as to the disposition of the retired vehicle would occur. However, construction equipment is typically refurbished and a new engine installed, so no scrapping of construction equipment is expected. Therefore, quantification of the secondary air quality impacts would be speculative. Retrofit methods could include add-on devices such as, particulate filters and SCRs.

Add-on devices, such as particulate filters have an increase in fuel use, typically estimated at less than one percent, associated with the decrease in fuel economy associated with the type of device. Therefore, there is a potential for an increase in emissions from the increase in fuel use. It is not known how much construction equipment will be retrofitted with particulate filters versus replaced. Therefore, quantification of the secondary air quality impacts would be speculative.

In the case of exhaust pollutants, Manufacturers of Emission Controls Association (MECA) reports that the use of oxidization catalysts to reduce PM10 emissions from diesel-fueled vehicles should not increase other exhaust pollutants. In fact, combining an oxidation catalyst with engine management techniques can be used to reduce NOx emissions from diesel engines. This is achieved by adjusting the engine for low NOx emissions, which is typically accompanied by increased CO, VOC, PM10, and PM2.5 emissions. An oxidation catalyst can be added to offset these increases, thereby lowering the exhaust levels for all of the pollutants. Often, the increases in CO, VOCs, and PM10 can be reduced to levels lower than otherwise could be achieved. In fact, a system which uses an oxidation catalyst combined with proprietary ceramic engine coatings and injection timing retard can achieve significant NOx reductions (e.g., greater than 40 percent) while maintaining low PM10 and PM2.5 emissions (MECA, 1999).

In the case of the use of SCRs, potential adverse air quality impacts associated with the use of SCRs in diesel-fueled vehicles could occur if this technology resulted in the increase of other exhaust pollutants at the expense of reducing PM10 and PM2.5 or a reduction in fuel economy. However, applying SCR to diesel-powered vehicles provides simultaneous reductions of NOx, PM10, PM2.5, and VOC emissions.

Like an oxidation catalyst, SCR promotes chemical reactions in the presence of a catalyst. However, unlike oxidation catalysts, a reductant is added to the exhaust stream in order to convert NOx to elemental nitrogen and oxygen in an oxidizing environment. The reductant can be ammonia but in mobile source applications, urea is normally preferred. As exhaust gases along with the reductant pass over the catalyst, 75 to 90 percent of NOx emissions, 50 to 90 percent of the VOC emissions, and 30 to 50 percent of the PM10 and PM2.5 emissions are reduced. SCR also reduces the characteristic odor produced by a diesel engine and the diesel smoke.

In the case of exhaust pollutants, the catalyst composition of SCR and its mode of operation are such that sulfates could form. However, with the use of ultra-low sulfur diesel fuel, which has been required for stationary and on-road applications since September 2006, sulfate formation is expected to be negligible. In particular, even at temperatures in excess of 500 degrees Centigrade, only five percent of the sulfur in the fuel would be converted to sulfate, which still allows for significant net PM10 and PM2.5 emission reductions. Applying SCR to diesel-powered vehicles also provides simultaneous reductions of NOx, PM10, PM2.5, and VOC emissions.

As to a reduction in fuel economy, because of the large NOx reductions afforded by SCR, it is possible that low NOx emissions can be achieved with an actual fuel economy benefit. Compared to internal engine NOx abatement strategies like exhaust gas recirculation and timing retard, SCR offers a fuel economy benefit in the range of three to 10 percent as a result of being able to optimize engine timing for fuel economy and relying on the SCR system to reduce NOx emissions. Therefore, no significant adverse air quality impacts were identified from the use of particulate filters or SCRs in conjunction with ultra-low sulfur diesel fuel to potentially comply with the applicable control measures.

Control Measures OFFRD-02 and OFFRD-03 would accelerate the replacement of 440 and 52 locomotive engines in freight and passenger service, respectively, or employ add-on devices to meet the lower emission standard, as such, the potential secondary air quality impacts from add-on devices. Therefore, the impacts of the replacement of locomotives and use of add-on devices are similar to those discussed for OFFRD-01. Similar to Control Measure OFFRD-01, locomotives are typically refurbished and a new engine installed so no scrapping of the locomotives are expected. Add-on devices, such as particulate filters have an increase in fuel use associated with the decrease in fuel economy associated with the type of add-on device, which is estimated to be less than one percent. Therefore, there is a potential for an increase in emissions from the increase in fuel use. However, the number of locomotives to be equipped with add-on devices versus replaced is not known. Therefore, quantification of the secondary air quality impacts would be speculative.

Control Measure OFFRD-04 would increase the amount of shorepower used for “cold ironing” by 25 percent. However, the demand for electricity varies based on the type of vessel. Therefore, the increase in electricity demand cannot be quantified. However, stationary power generating facilities can use alternative fuels such as natural gas, reducing emissions to low levels when compared to marine diesel. Therefore, the overall impact of using shorepower is expected to be a beneficial impact on air quality.

Control Measure ADV-07 would accelerate the replacement of aircraft engines with cleaner burning engines. Aircraft engines when retired from service are typically returned to the engine manufacturer for recycling. The early retirement and recycling of aircraft engines is not expected to generate secondary air quality impacts as no “shredding” like automobiles is necessary.

Control Measures OFFRD-02, OFFRD-03, ADV-04, ADV-05, ADV-06, and ADV-07 have the potential to use alternative fuels such as biodiesel, LNG, CNG, methanol, ethanol, and hydrogen. The availability of the producers of alternative fuels to meet the increase in demand has the potential for an increase in air emissions associated with the increased production. Production of the alternative fuels such as LNG, CNG require little processing with less air emissions than the production of refined petroleum products such as gasoline, diesel, and jet fuel. While biodiesel, ethanol, and methanol production do require more processing than LNG and CNG, the production processes are less complicated than petroleum refining. Biodiesel and methanol are made from a catalytic chemical process similar to one or two processes in a typical refinery, which will have many units to produce refined products from crude oil. Ethanol is produced by fermentation. Biodiesel, methanol, and ethanol can be made from renewable sources such as vegetable oils, sugar cane, corn, and animal fats. Therefore, the production of alternative fuels typically produces less air emissions. The increase in air emissions from the increase in production of alternative fuels would be offset by the reduction in the production of petroleum fuels and the transport reduced of crude oil primarily from overseas, as diesel and gasoline demand decreases. Therefore, no increase air emissions associated with meeting the increase in demand for alternative fuels is expected and no significant secondary air quality impacts are expected.

Mobile source control measures are expected to result in changes in emissions related to mobile sources. The inventory prepared for the 2012 AQMP include emissions estimates associated with mobile sources discussed in this section, which are summarized in Table 4.2-7.

The inventory prepared for the 2012 AQMP includes estimates for on-road vehicles in 2008, 2014, and 2023. The inventory also accounts for growth in population that also includes growth in the number of mobile sources and an increase in the vehicle miles traveled. The estimated VOC, CO, NO_x, SO_x, PM₁₀, and PM_{2.5} emissions associated with on-road mobile sources in the Basin are expected to be reduced between the 2008 and the 2014, and 2023 inventories. Therefore, the overall impact of mobile source control measures is expected to be a beneficial impact on air quality.

PROJECT-SPECIFIC MITIGATION: The overall impact of mobile source control measures is expected to be beneficial by providing large emission reductions from mobile

sources. Therefore, air quality impacts associated with mobile source control measures are expected to be less than significant and no mitigation measures are required.

REMAINING SECONDARY AIR QUALITY IMPACTS: The air quality analysis concluded that potential secondary air quality impacts from mobile sources would be less than significant, no mitigation measures were required, so secondary air quality impacts remain less than significant.

Secondary Impacts from Miscellaneous Sources

PROJECT-SPECIFIC IMPACTS: Miscellaneous source control measures would regulate a variety of different types of emissions sources including both area and point sources. As a result, these control measures are expected to reduce VOC, criteria pollutant, and precursor emissions. The following control measures were identified to as having the potential to generate secondary air quality impacts.

TABLE 4.2-8

Annual Average Emissions for On-Road and Other Mobile Sources in the District
(tons/day)

Source Category	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
2008 Emission Inventory						
On-Road Motor Vehicles	209	1,966	462	2.1	32	19
Other Mobile Sources ^(a)	127	778	204	38	15	13
2008 Total	336	2,744	666	40	47	32
2014 Emission Inventory						
On-Road Motor Vehicles	117	1,165	272	2.1	25	12
Other Mobile Sources ^(a)	100	766	157	4.3	9.1	8.2
2014 Total	217	1,931	429	6.4	34	20
Emission Increase (emissions in 2014 – emission in 2008)	-119	-1,112	-236	-34.0	-12	-11
Emissions Increase (lbs/day)	-237,100	-2,224,060	-471,400	-67,980	-23,960	-22,880
Emission Increase from Control Measures Implementation	0	-4,000	0	0	0	0
Total Emissions Increase (lbs/day)	-237,100	-2,228,060	-471,400	-67,980	-23,960	-22,880
SCAQMD Significance Thresholds (lbs/day)	55	550	55	150	150	55
Significant?	NO	NO	NO	NO	NO	NO

TABLE 4.2-8 (CONCLUDED)

Annual Average Emissions for On-Road and Other Mobile Sources in the District
(tons/day)

Source Category	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
2023 Emissions Inventory						
On-Road Motor Vehicles	67	591	126	1.9	25	11
Other Mobile Sources ^(a)	85	826	130	5.8	7.4	6.6
2023 Total	153	1,417	255	7.7	32	18
Emission Increase (emissions in 2023 – emission in 2008)	-183	-1,326	-407	-33	-18	-15
Emissions Increase (lbs/day)	-366,260	-2,651,740	-814,360	-65,540	-35,600	-30,860
Emission Increase from Control Measures Implementation	-12,080	-52,620	0	0	0	0
Total Emissions Increase (lbs/day)	-378,340	-2,704,360	-814,360	-65,540	-35,600	-30,860
SCAQMD Significance Thresholds (lbs/day)	75	550	700	150	150	55
Significant?	NO	NO	NO	NO	NO	NO

Source: SCAQMD, 2012

Note: Negative numbers represent emissions reductions.

(a) Other Mobile Sources include aircraft, trains, ocean going vessels, commercial harbor crafts, recreational boats, off-road recreational vehicles, off-road equipment, farm equipment, and fuel storage and handling.

Control Measure MCS-02 would implement all feasible mitigation measures including: 1) requiring cover of chipped or ground greenwaste material as early as operationally possible; 2) requiring chipped or ground greenwaste material to remain covered until it is removed from the site within the required 48 hours pursuant to Rule 1133.1; 3) potential requiring season covering of chipped or ground greenwaste material during the summer months; and, 4) strengthening the reporting requirements in Rule 1133 Registration/Annual Update and Rule 1133.1 Recordkeeping. MCS-02 would be implemented in two phases: Phase 1 would be a re-evaluation of greenwaste material handling operations and inventory, and Phase 2 would be development of a rule to incorporate technically feasible and cost-effective best management practices (BMPs). MCS-02 is expected to reduce VOC emissions by 1.0 to 1.34 tons per day by 2014. However, to comply with covering requirements, early movement of the material may occur. While there is a potential for additional shipments to be made in lieu of covering, it is not expected to be a preferred, cost effective approach over covering of the material. Therefore, MCS-02 is expected not to generate additional vehicle trips that could create significant secondary air quality impacts.

Control Measure BCM-04 could require the application of sodium bisulfate (SBS), an acidifier, on livestock waste. SBS is being considered for use in animal housing areas where high concentrations of fresh manure are located. Research indicates best results with the use of SBS on “hot spots.” SBS can also be applied to manure stock piles and at fence lines, and upon scraping manure to reduce ammonia spiking from the leftover remnants of manure and urine. SBS application may be required seasonally or episodically during times when high

ambient PM_{2.5} levels are of concern. Additional delivery truck trips would be required to deliver SBS and SBS may be applied by hand or by tractor.

Control Measure FUG-03 may require additional vehicle trips to detect, verify or repair equipment with fugitive emissions at oil and gas production facilities, petroleum and chemical products processing, storage and transfer facilities, marine terminals, and other sources. Most of these facilities already have utilize self-inspection program for Inspection/Maintenance or leak detection and repair (LDAR) that involve individual screening of all of their piping components. The control measure would explore the use of new technologies to detect and verify VOC fugitive emissions in order to supplement existing programs in achieving additional emission reductions. Work practices for Rule 462 – Organic Liquid Loading, Rule 1142 - Marine Vessel Tank Operations and Rule - 1148.1 Oil Well Enhanced Drilling would be upgraded to a self-inspection program that requires repairs and maintenance to be documented with records and, where appropriate, reported. LDAR elements may also be added to Rules 1142 and 1148.1. LDAR elements may also be added to Rule 463 - Storage of Organic Liquids and 1178 - Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities, Rule 1173 - Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum and Chemical Plants and Rule 1176 - Sumps and Wastewater Separators. Since control measure would enhance existing self-inspection programs, few additional vehicle trips associated with additional detection, verification and repairing of leaking are likely.

As indicated above, Control Measures MSC-02 and FUG-03 are not expected to generate a substantial number of new vehicle trips, if any, related to control requirements. Control Measure BCM-04 could require additional vehicle travel to deliver and apply acidifier. At this time, it is not known what controls may be applied, which facilities may require additional trips or how often these trips may be necessary. Therefore, no emission estimates could be prepared at this time. However, while these trips routine, they are not expected to be frequent; therefore, these emissions are not expected to be significant.

PROJECT-SPECIFIC MITIGATION: Overall, potential secondary air quality impacts from miscellaneous source control measures, in particular increased vehicle trips, are not expected to increase substantially. Therefore, potential secondary air quality impacts associated with miscellaneous source control measures are expected to would be less than significant and no mitigation measures are required.

REMAINING SECONDARY AIR QUALITY IMPACTS: The air quality analysis concluded that potential secondary air quality impacts from miscellaneous sources would be less than significant, no mitigation measures were required, so secondary air quality impacts remain less than significant.

4.2.6.3 Toxic Air Contaminants

PROJECT-SPECIFIC IMPACTS: A number of control measures that are proposed in the 2012 AQMP may result in the use of ammonia in SCR. Ammonia slip from SCR units is restricted to five ppm or less, which has been shown through source-specific permit modeling to have no significant impact on surrounding communities. Therefore, the impact

from the use of ammonia as proposed in the 2012 AQMP is expected to be less than significant.

In general, it is expected that the 2012 AQMP control measures would reduce emissions of TACs. The basis for this conclusion is that many TACs are also classified as VOCs. To the extent that control measures reduce VOC emissions, associated TAC emission reduction could occur as well. CTS-01, CTS-02, CTS-03 and CTS-04 are expected to reduce VOCs by reducing solvent content of coatings, mold release and consumer products.

As Subchapter 4.4, the toxicity of future coating formulations is generally less or no worse than conventional solvents overall but if a facility changes from using water-based products to using products that are reformulated with chemicals that may have new or different health hazards, significant adverse health hazard impacts could occur from using some low VOC reformulated products. However, as with the use of all chemicals, facilities and their workers would be required to continue to comply with existing health protective procedures when handling both flammable and toxic materials. Further, water-based coatings and products tend to contain less flammable and less toxic materials than solvent-based coatings and products. Consequently, future reformulated coatings and solvents are not expected to increase exposures to TAC emissions.

FUG-01, FUG-02 and FUG-03 would reduce VOCs from vacuum trucks; LPG transfer and dispensing; and equipment with fugitive emissions at oil and gas production facilities, petroleum and chemical products processing, storage and transfer facilities, marine terminals, and other sources. MCS-01 would adopt additional retrofit technology, which depending on the source and control technology, would reduce criteria pollutants.

BCM-01, BCM-03, CMB-01, CMB-02, CMB-03, INC-01, IND-01, MSC-03 would reduce combustion emissions through the replacement of existing equipment with more efficient equipment, emission control technology or changes to processes at refineries. The reduction of combustion emission would reduce combustion TACs.

Some measures for motor vehicle and transportation source categories (ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06 and ADV-07) would reduce emissions of diesel exhaust particulate, which is a known carcinogen, and toxic components of gasoline such as benzene, toluene, and xylene. These control measures would result in replacing existing vehicles or equipment with more efficient vehicle or equipment, zero emission electric vehicles or equipment, or alternative fueled vehicles or equipment. Combustion emissions of alternative fuels have trace amounts of methanol and aldehyde, but, generally, are considered to be cleaner and less toxic than diesel or gasoline fueled vehicles. Emissions from power generating equipment may include trace amounts of benzene, aldehydes, metals, and polynuclear aromatic hydrocarbons. However, if the process being electrified was previously powered by direct combustion of fossil fuels, then electrification is expected to result in an overall decrease in toxic emissions.

The overall impacts associated with implementation of the 2012 AQMP are an overall reduction in TACs. Therefore, no significant impacts from TACs have been identified.

PROJECT-SPECIFIC MITIGATION: No significant secondary air quality impacts from TACs have been identified so no mitigation measures are required.

REMAINING SECONDARY AIR QUALITY IMPACTS: The air quality analysis concluded that potential secondary air quality impacts from TACs would be less than significant, no mitigation measures were required, so secondary air quality impacts from TACs remain less than significant.

4.2.6.4 Global Warming

The 2012 AQMP as a whole is expected to promote a net decrease in GHG emissions, in part, because most GHG emissions in the district are generated by combustion processes. To the extent that 2012 AQMP control measures reduce or eliminate combustion processes in favor of near zero or zero emission technologies, GHG emission reduction co-benefit would also be expected to occur. The control measures that have potential GHG emissions impacts are presented in Table 4.2-8. The relative impacts (e.g., either an increase (+) or decrease (-)) are presented along with the activities associated with the impact (e.g., construction necessary to implement the control measure).

TABLE 4.2-9

Potential Impacts on Climate Change and Global Warming
from Implementation of 2012 AQMP Control Measures

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	CONTROL MEASURE GHG IMPACT ^(a)
SHORT-TERM PM2.5 CONTROL MEASURES			
BCM-03	Emission Reductions from Under-Fired Charbroilers	Add-On Control Equipment with Ventilation Hood Requirements (e.g., ESPs, HEPA filters, wet scrubbers, and thermal oxidizers).	+ (afterburners, construction, increased energy)
CMB-01	Further NOx Reductions from RECLAIM – <i>Phase I and Phase II</i>	Selective catalytic reduction, low NOx burners, NOx reducing catalysts, oxy-fuel furnaces, and selective non-catalytic reduction.	+ (increased energy, construction)
IND-01	Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities	Environmental lease conditions, port rules, tariffs, or incentives.	+ (afterburners, increased energy, reduced fuel economy associated with add-on pollution control equipment) - (conversion to alt fuels/reduction in conventional fuels)
MCS-01	Application of All Feasible Measures Assessment	District will adopt and implement new retrofit technology control standards as new BARCT standards become available.	+ (afterburners, increased energy)

TABLE 4.2-9 (CONTINUED)

Potential Impacts on Climate Change and Global Warming
from Implementation of 2012 AQMP Control Measures

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	CONTROL MEASURE GHG IMPACT^(a)
OZONE CONTROL MEASURES			
CMB-02	NO _x Reductions from Biogas Flares (NO _x)	Replacement of existing biogas flares with more efficient biogas flares	+ (construction) (1) (more efficient flares)
CMB-03	Reductions from Commercial Space Heating (NO _x)	This control measure seeks emission reductions from unregulated commercial fan-type central furnaces used for space heating.	+ (construction) (2) (more efficient commercial fan-type central furnaces)
MCS-02	Further Emission Reductions from Green Waste Processing (Chipping and Grinding Operations not associated with composting)	Require chipped or ground greenwaste material to be covered after chipping or grinding or removed from site, and seasonal covering of chipped or ground greenwaste material.	+ (construction)
MCS-03	Improved Start-up, Shutdown and Turnaround Procedures (All Pollutants)	Diverting or eliminating process streams that are vented to flares, and installing redundant equipment to increase operational reliability	+ (construction) - (potentially less flaring)
FUG-01	Further VOC Reductions from Vacuum Trucks	VOC control devices such as carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers, liquid scrubbers and positive displacement (PD) pumps.	+ (construction, increased energy) + (afterburners, increased energy with add-on pollution control equipment)
FUG-02	Emission Reduction from LPG Transfer and Dispensing – Phase II	Expand applicability of rule to LPG transfer and dispensing at facilities other than those that offer LPG for sale to end users included currently exempted facilities.	+ (construction, increased energy, inspection vehicles)
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles (NO _x)	Incentives to replace older vehicles with electric or hybrid vehicles.	+ (scrapping) - (electrification, conversion to alt fuels/reduction in conventional fuels)
ONRD-02	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles (NO _x)	Incentives to replace older light- and medium-duty vehicles with new or newer low-emitting vehicles.	- (scrapping) - (electrification, conversion to alt fuels/reduction in conventional fuels)
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium Heavy-Duty Vehicles (NO _x)	Incentives to replace older medium-duty vehicles with low-emitting vehicles. Highest priority would be given to zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode.	- (electrification, conversion to alt fuels/reduction in conventional fuels)

TABLE 4.2-9 (CONTINUED)

Potential Impacts on Climate Change and Global Warming
from Implementation of 2012 AQMP Control Measures

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	CONTROL MEASURE GHG IMPACT^(a)
ONRD-04	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles (NOx, PM)	Incentives replace heavy-duty vehicles with newer or new vehicles. Priority would be placed on replacing older diesel trucks in Mira Loma.	- (conversion to alt fuels/reduction in conventional fuels) - (replacement with more efficient engines,
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards (NOx, PM)	Incentives to replace up to 1,000 heavy-duty vehicles with low-emitting vehicles or zero-emission container movement systems.	+ (construction) - (electrification, conversion to alt fuels/reduction in conventional fuels)
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment (NOx)	Accelerate Tier 0 and Tier 1 equipment replacement with Tier 4 equipment, use of air pollution control technologies (e.g., advanced fuel injection, air induction, and after-treatment technologies).	+ (increased energy, reduced fuel economy associated with add-on control equipment) - (replacement with more efficient engines, conversion to alt fuels/reduction in conventional fuels)
OFFRD-02	Further Emission Reductions from Freight Locomotives (NOx, PM)	Replace existing engines (Tier 0 through Tier 3 engines) with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	+ (increased energy, alt fuels, reduced fuel economy associated with add-on control equipment) - (replacement with more efficient engines)
OFFRD-03	Further Emission Reductions from Passenger Locomotives (NOx)	Repower existing Tier 0 and Tier 2 engines with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	+ (engine repower, increased energy, reduced fuel economy associated with add-on control equipment) - (replacement with more efficient engines,
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels at Berth	Shore power of vessels at berth, use of air pollution control technologies on exhaust gases from auxiliary engines and boilers (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	+ (construction, increased energy, reduced fuel economy associated with add-on control equipment) - (electrification)
ADV-01	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles (NOx)	Construct "wayside" electric or magnetic infrastructure, construction battery charging and fueling infrastructure. Alternatively, if battery, fuel cell or other zero/near zero emission technologies progress sufficiently, the need for wayside power for rail or trucks may be diminished or eliminated.	+ (construction, increased energy) - (electrification, conversion to alt fuels/reduction in conventional fuels)

TABLE 4.2-9 (CONCLUDED)

Potential Impacts on Climate Change and Global Warming
from Implementation of 2012 AQMP Control Measures

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	CONTROL MEASURE GHG IMPACT^(a)
ADV-02	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives (NOx)	Construct "wayside" electric, magnetic, battery-hybrid system, or fuel cell infrastructure, construct battery charging or fueling infrastructure.	+ (construction, increased energy) - (electrification, conversion to alt fuels reduction in conventional fuels)
ADV-03	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment (NOx)	Construct electric gantry cranes, construct battery charging or fueling infrastructure, and use of alternative fuels.	+ (construction, increased energy) - (electrification, conversion to alt fuels reduction in conventional fuels)
ADV-04	Actions for the Deployment of Cleaner Commercial Harborcraft (NOx)	Construct battery charging or fueling infrastructure, use of air pollution control equipment (e.g., SCR, use of alternative fuels).	+ (construction, increased energy, reduced fuel economy associated with add-on control equipment)
ADV-05	Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels (NOx)	Employ after treatment control technologies such as SCR and sea water scrubbers, and use of alternative fuels.	+ (construction, increased energy, reduced fuel economy associated with add-on control equipment)
ADV-06	Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment (NOx)	Construct battery charging or fueling infrastructure, and increased use of alternative fuels	+ (construction, increased energy) - conversion to alt fuels/reduction in conventional fuels)
ADV-07	Proposed Implementation Measures for the Deployment of Cleaner Aircraft Engines (NOx)	Use alternative fuels, lean combustion burners, high rate turbo bypass, advanced turbo-compressor design, and engine weight reduction.	- (conversion to alt fuels/reduction in conventional fuels)

- (a) + Control measure is expected to result in an increase in GHG emissions
- Control measure is expected to result in a decrease in GHG emissions

A number of mobile source control measures would reduce GHG emissions through accelerated penetration of partial zero-emission and zero emission vehicles and use of alternative fuels such as natural gas, the combustion of which generates less GHG emissions than diesel fuel. The 2012 AQMP reported a 2008 GHG inventory of 154.82 million metric tons, of which 11.66 million metric tons are associated with power generation. Implementation of the proposed control measures is expected to reduce GHG emissions consistent with the AB32 scoping plan. However, an increase in electricity demand to implement Control Measures ONRD-01, ONRD-02, ONRD-03, ADV-01, and ADV-02 is expected to be about 1,691.2 GWh in 2023 and produce approximately 0.171 million metric tons of greenhouse gas emissions or approximately 0.11 percent of the 2008 greenhouse gas inventory for the district.

The reduction in petroleum fuels demand from implementation of Control Measures ONRD-01, ONRD-02, ONRD-03, and ONRD-04 is expected to be 60,150,808 gallons in 2023 (see Table 4.3-6), of which it is assumed 27,608,834 gallons would be motor gasoline

with a CO₂ emission factor of 8.78 kg/gal and 40,087,519 gallons would be diesel fuel with a CO₂ emission factor of 10.05 kg/gal. The greenhouse gas emissions would be reduced by slightly more than 0.648 metric tons in 2023 when adjusting for nitrous oxide and methane emissions. Therefore, overall reduction in GHG emissions from implementation of Control Measures ONRD-01, ONRD-02, ONRD-03, and ONRD-04 would be approximately 0.477 million metric tons and no significant impact to GHG emissions would be expected as shown in Table 4.2-9.

TABLE 4.2-10

Estimated GHG Emission Impacts from
Control Measures ONRD-01, ONRD-02, ONRD-03, and ADV-02

Description	CO ₂ Emissions (million metric tons)	CO ₂ eq Emissions (million metric tons)
Increased Electricity	0.1712	0.1715
Change in Gasoline Use	-0.2424	-0.2447
Change in Diesel Use	-0.4029	-0.4033
Net Change in Emissions	-0.4741	-0.4765

(a) Source: 2012 AQMP Appendix III.

Negative numbers represent emission reductions.

Control Measures BCM-03, CMB-01, CMB-02, CMB-03, IND-01, MCS-01, MCS-02, MCS-03, INC-01, FUG-01, FUG-02, FUG-03, OFFRD-01, OFFRD-04, OFFRD-05, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, and ADV-06 are expected to have GHG emissions associated with construction. Construction emissions impacts are amortized over a 30-year timeframe. As such, individual projects typically do not generate significant GHG impacts during the construction phase.

Control Measures BCM-03, CMB-01, IND-01, MCS-01, FUG-01, FUG-02, INC-01, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, and ADV-05 have the potential to increase energy demand by implementing control measures that would use electricity to power add-on control devices or power catenary systems for fixed-route mobile sources. Projects involving catenary systems would reduce diesel combustion emissions. As with the on-road control measures discussed previously, converting from diesel-fired sources to electricity generated by primarily natural gas, GHG emissions are expected to decrease. Projects to install catenary systems are expected to require project-specific CEQA review where global climate change and ozone depletion would be analyzed. Add-on control devices are sized for the specific source that is being controlled, as such the additional energy demand is highly variable from source to source. The energy to power these control measures is expected to be provided by public utility companies. As discussed in Subchapter 4.3 of this [Final Program EIR](#), additional power generating facilities are expected due to general growth, but no new power generating facilities are expected as a result of implementing the 2012 AQMP. Power generating facilities are subject to AB-32 and will be required to reduce GHG emissions by 2020. Therefore, the additional energy necessary to implement add-on control devices and catenary systems are not expected to have significant GHG emissions.

Control Measures IND-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-06, and ADV-07 have the potential to require the use of alternative fuels. Both the use and production of alternative fuels is expected to decrease emissions as discussed previously in the Potential Impacts from Mobile Sources. Alternative fuels generate less GHG emissions when combusted compared to gasoline and diesel and generate less GHG emissions from production when compared to petroleum products. Therefore, no increase in GHG emissions is expected from the use of alternative fuels and no significant impacts are expected.

Based on the analysis presented above, global climate change and ozone depletion impacts are expected to be less than significant.

PROJECT-SPECIFIC MITIGATION: No significant air quality impacts from GHG emissions have been identified so no mitigation is required.

REMAINING AIR QUALITY IMPACTS: The air quality analysis concluded that potential secondary air quality impacts from GHG emissions would be less than significant, no mitigation measures were required, so secondary air quality impacts from GHG emissions remain less than significant.

4.2.6.5 Stratospheric Ozone Depletion

PROJECT-SPECIFIC IMPACTS: None of the control measures are expected to require the use of stratospheric ozone depleting substances. None of the control measures are expected to require additional control of stratospheric ozone depleting substances. Therefore, no adverse stratospheric ozone depleting impacts are expected from the proposed project.

PROJECT-SPECIFIC MITIGATION: No significant air quality impacts from stratospheric ozone depletion have been identified so no mitigation is required.

REMAINING AIR QUALITY IMPACTS: The air quality analysis concluded that potential secondary air quality impacts from stratospheric ozone depletion would be less than significant, no mitigation measures were required, so secondary air quality impacts from stratospheric ozone depletion remain less than significant.

4.2.7 Summary of Air Quality Impacts

The following is the summary of the conclusions of the analysis of secondary air quality impacts associated with implementation of the 2012 AQMP.

- **Construction Activities:** The emissions associated with construction activities due to the implementation of the control measures in the 2012 AQMP were considered to be significant for CO and PM10 emissions.
- **Secondary Emissions from Increased Electricity Demand:** While there may be an increase in electricity, the existing air quality rules and regulations are expected to

minimize emissions associated with increased generation of electricity. The impacts associated with secondary emissions from increased electricity demand are expected to be less than significant.

- Secondary Emissions from the Control of Stationary Sources: No significant secondary air quality impacts from control of stationary sources were identified associated with implementation of the 2012 AQMP.
- Secondary Emissions from Change in Use of Lower VOC Materials: The secondary air quality impacts associated with reformulated products are expected to be less than significant.
- Secondary Emissions from Mobile Sources: The overall impact of mobile sources due implementation of the control measures has been considered less than significant for all pollutants.
- Secondary Emissions from Increased Use of Fuels due to Reduction in Fuel Economy: The reduction in fuel economy is expected to be about one percent for the affected sources so a potential increase in fuel use could occur. However, the overall focus of the 2012 AQMP is to reduce PM_{2.5} and ozone emissions, which is primarily driven by increasing use of cleaner fuels. Therefore, the impact of fuel economy is expected to be less than significant.
- Secondary Emissions from Miscellaneous Sources: The impacts of the control measures on secondary emissions from miscellaneous sources were determined to be less than significant.
- Non-Criteria Pollutants: Electrification may cause greater emissions of benzene, aldehydes, metals, and polycyclic aromatic hydrocarbons from fuel-based power generating facilities. However, if the process being electrified was previously powered by direct combustion of fossil fuels, then electrification may result in an overall decrease in toxic emissions. No significant secondary air quality impacts were identified from non-criteria pollutants, so no mitigation measures are required.
- Global Warming and Ozone Depletion: The 2012 AQMP is expected to have a net effect of reducing emissions of compounds that contribute to global warming and ozone depletion so that no significant adverse impacts are expected.
- Ambient Air Quality: The 2012 AQMP is expected to: 1) attain the 24-hour federal PM_{2.5} by 2014 (see Figure 4.2-3); 2) implement specific measures to implement Clean Air Action §182 (e)(5) to assist in attaining the eight-hour ozone standard by 2023; 3) maintain compliance with state and federal NO₂ standards (even considering the increase in population growth); 4) maintain compliance with state and federal SO₂ standards (even considering the increase in population growth); and, 5) maintain compliance with the federal 24-hour average PM₁₀ standard.

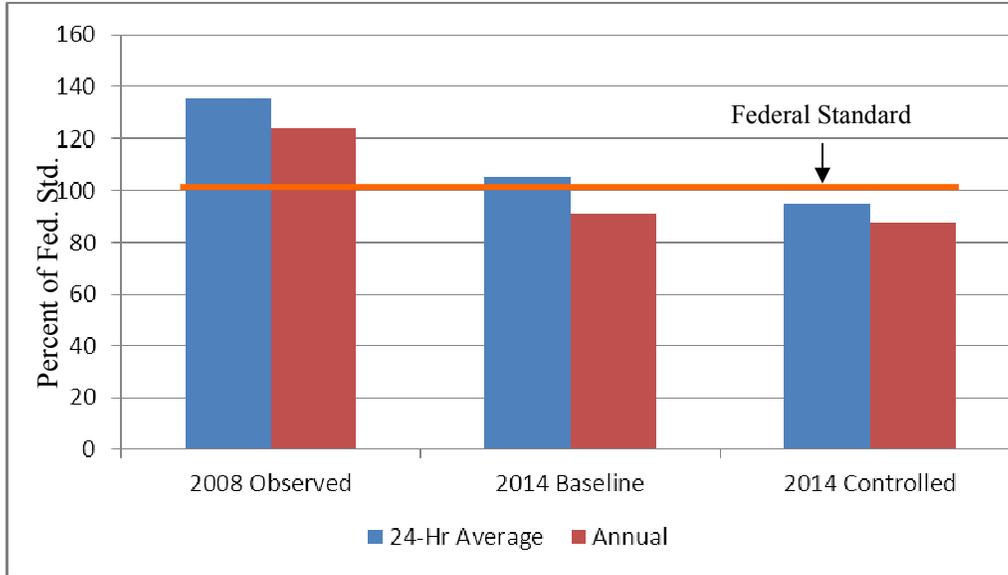


FIGURE 4.2-3

Projection of Future Air Quality in the Basin in Comparison with the Federal Standards.

Summary of PM2.5 Control Measure Impacts: The air quality impacts associated with PM2.5 Control Measures (BCM-03, CMB-01, IND-01, and MCS-01) were evaluated and determined to be significant for construction activities and less than significant for secondary emissions from increased electricity demand, control of stationary sources, change in use of lower VOC materials, mobile sources, increase in use of fuels due to reduction in fuel economy, miscellaneous sources, non-criteria pollutants, and global warming and ozone depletion.

Summary of Ozone Control Measure Impacts: The air quality impacts associated with the 23 Ozone Control Measures (see Table 4.2-1) were evaluated and determined to be significant for construction activities and less than significant for secondary emissions from increased electricity demand, control of stationary sources, change in use of lower VOC materials, mobile sources, increase in use of fuels due to reduction in fuel economy, miscellaneous sources, non-criteria pollutants, and global warming and ozone depletion.

SUBCHAPTER 4.3

ENERGY

Introduction

2012 AQMP Control Measures with Potential Energy Impacts

Significance Criteria

Potential Energy Impacts and Mitigation Measures

Summary of Energy Impacts

4.3 ENERGY

4.3.1 Introduction

This subchapter examines impacts on the supply and demand of energy sources from proposed control measures in the 2012 AQMP. All control measures in the 2012 AQMP were evaluated to determine whether or not they could generate direct or indirect energy impacts based on the anticipated methods of control. Some of the measures would require increased energy use, for example through increased pumping loads or more extensive exhaust filtering systems. Other measures would alter the form of energy used, for example switching from gasoline or diesel power to alternative fuels such as hydrogen, natural gas, and electricity.

4.3.2 2012 AQMP Control Measures with Potential Energy Impacts

The energy impact analysis in this [Final](#) Program EIR identifies the net effect on energy resources from implementing the 2012 AQMP. All control measures were analyzed to identify both beneficial effects (energy conserving) and adverse impacts (energy consuming).

Implementing some of 2012 AQMP control measures could increase energy demand in the region from affected facilities. Specifically some types of control equipment would increase demand for electrical power to operate the equipment, natural gas for combustion devices, natural gas used as an alternative clean fuel for mobile sources, etc.

Evaluation of control measures was based on examination of the impact of the control measures and technologies in light of current energy trends. Evaluation of control methods for each control measure indicated that there are 25 control measures that could have potential energy consumption or conserving impacts. As shown in Table 4.3-1, three control measures related to PM2.5 emission reductions and 22 control measures related to emission reductions from ozone precursors are expected to have energy impacts.

4.3.3 Significance Criteria

Implementation of the 2012 AQMP would be considered to have significant adverse energy impacts if any of the following conditions occur:

- The project would result in the use of renewable and non-renewable fuel or energy resources, in a wasteful manner.
- The project conflicts with adopted energy conservation plans or standards.
- The project would result in substantial depletion of existing energy resource supplies.
- The project would increase demand for utilities impacts the current capacities of the electric and natural gas utilities.

- The project would increase demand for energy resources by one percent or more of the baseline energy demand.

TABLE 4.3-1

Control Measures with Potential Secondary Energy Impacts

CONTROL MEASURES	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	ENERGY IMPACT
Short-Term PM2.5 Control Measures			
BCM-01	Further Reductions from Residential Wood Burning Devices (NOx)	Lower current mandatory Basin-wide wood burning curtailment threshold from 35 $\mu\text{g}/\text{m}^3$ to 30 $\mu\text{g}/\text{m}^3$.	Potential increased demand for natural gas.
BCM-03 (formerly BCM-05)	Emission Reductions from Under-Fired Charbroilers (PM2.5)	Add-On Control Equipment with Ventilation Hood Requirements (e.g., ESPs, HEPA filters, wet scrubbers, or thermal oxidizers)	Potential increase in electricity and/or natural gas for control technologies. Potential increase in diesel-fuel demand during construction and/or filter replacement.
BCM-04 (formerly MCS-04B)	Further Ammonia Reductions from Livestock Waste (NH3)	Reducing pH level in manure through the application of acidifier sodium bisulfate to	Potential increase in diesel fuel demand use for delivery and application of acidifier.
CMB-01	Further NOx Reductions from RECLAIM – Phase I and Phase II (NOx)	RECLAIM sources will be examined for further reductions for this control measure and potential rule making. Control technologies could include: elective catalytic reduction, low NOx burners, NOx reducing catalysts, oxy-fuel furnaces, and selective non-catalytic reduction	Potential increase in electricity and/or natural gas for control technologies. Potential increase in diesel-fuel demand during construction and related ammonia and/or catalyst replacement.
CMB-02	NOx Reductions from Biogas Flares (NOx)	Replacement of existing biogas flares with more efficient biogas flares	Potential increase in diesel-fuel demand during construction.
CMB-03	Reductions from Commercial Space Heating (NOx)	This control measure seeks emission reductions from unregulated commercial fan-type central furnaces used for space heating.	Potential increase in diesel-fuel demand during construction.
IND-01	Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities (NOx, SOx, PM2.5)	Environmental lease conditions, port rules, tariffs or incentives	Additional emission controls could result in increased electricity. Incentives to purchase electric or gaseous fueled equipment could cause potential increase in electricity and natural gas demand. Potential increase in alternative fuels. Potential increase in diesel-fuel demand during construction.

TABLE 4.3-1 (CONTINUED)

Control Measures with Potential Secondary Energy Impacts

CONTROL MEASURES	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	ENERGY IMPACT
Ozone Control Measures			
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants (VOC)	Reduce the allowable VOC content in product formulations by using alternative low-VOC products or non-VOC product/equipment	Potential increase in electricity use for application and/or control
FUG-01	Further VOC Reductions from Vacuum Trucks (VOC)	VOC control devices such as carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers, liquid scrubbers and positive displacement (PD) pumps	Potential increase in electricity and/or natural gas for control technologies. Potential increase in diesel-fuel demand during construction and related ammonia and/or catalyst replacement.
FUG-02	Emission Reduction from LPG Transfer and Dispensing – Phase II (VOC)	Expand applicability of rule to LPG transfer and dispensing at facilities other than those that offer LPG for sale to end users included currently exempted facilities	Potential increase in diesel-fuel demand during construction and inspection and monitoring.
FUG-03	Further VOC Reductions from Fugitive VOC Emissions (VOC)	Upgrade inspection/maintenance rules to at least a self-inspection program, or to an optical gas imaging-assisted LDAR program where feasible; use of new technologies to detect and verify VOC fugitive emissions	Potential increase in electricity and/or natural gas for control technologies. Potential increase in diesel-fuel demand during construction and inspection and monitoring/inspections.
MCS-01	Application of All Feasible Measures Assessment (All Pollutants)	Control measure could require new retrofit technology control standards as new BARCT standards become available.	Potential increase in electricity and/or natural gas for control technologies. Potential increase in diesel-fuel demand during construction and/or related transportation.
MCS-02	Further Emission Reductions from Green Waste Processing (Chipping and Grinding Operations not associated with composting) (VOC)	Require chipped or ground greenwaste material to be covered after chipping or grinding or removed from site; and seasonal covering of chipped or ground greenwaste material.	Potential increase in diesel-fuel related transportation.
MCS-03	Improved Start-up, Shutdown and Turnaround Procedures (All Pollutants)	Diverting or eliminating process streams that are vented to flares, and installing redundant equipment to increase operational reliability.	Reduction of process gas vented to flares. Potential increase in diesel-fuel during construction.

TABLE 4.3-1 (CONTINUED)

Control Measures with Potential Secondary Energy Impacts

CONTROL MEASURES	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	ENERGY IMPACT
Ozone Control Measures			
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies (NOx)	Installation of cleaner, more efficient combustion equipment, such as boilers, water heaters and commercial space heating or installation of control technologies including fuel cells, diesel particulate filters (DPF), NOx reduction catalysts, alternative electricity generation, such as wind and solar, battery electric, hybrid electric, and usage of low NOx and alternative fuels such as natural gas	Incentives to purchase electric or gaseous fueled equipment could cause potential increase in electricity and natural gas demand. Potential increase in electricity and/or natural gas for control technologies. Potential increase in diesel-fuel during construction and related filter and/or catalyst replacement.
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles (VOC, NOx, PM)	Incentives to replace older vehicles with electric or hybrid vehicles	Incentives to purchase electric vehicle could result in an increase in electricity.
ONRD-02	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles (VOC, NOx, PM)	Incentives to replace older light- and medium-duty vehicles with low-emitting vehicles.	Incentives to purchase electric vehicle could result in an increase in electricity.
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium Heavy-Duty Vehicles (NOx, PM)	Incentives to replace older medium-duty vehicles with low-emitting vehicles. Highest priority would be given to zero-emission vehicles and hybrid vehicles with a portion of their operation in an "all electric range" mode.	Incentives to purchase electric vehicle could result in an increase in electricity and increase the use of alternative fuels.
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards (NOx, PM)	Incentives to replace older medium- and heavy-duty vehicles with low- and zero emitting vehicles.	Incentives to purchase low emission vehicles could result in an increase in electricity and increase the use of alternative fuels.
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment (NOx)	Accelerate equipment repowering; use of air pollution control technologies (e.g., advanced fuel injection, air induction, and after-treatment technologies).	Potential increase in the use of alternative fuels.

TABLE 4.3-1 (CONTINUED)

Control Measures with Potential Secondary Energy Impacts

CONTROL MEASURES	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	ENERGY IMPACT
Ozone Control Measures			
OFFRD-02	Further Emission Reductions from Freight Locomotives (NO _x , PM)	Repower existing engines with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Potential increase in fuel use from the use of more efficient engines; minor decrease in fuel use from loss of efficiency to control technologies, and increase in alternative fuels associated with repowered engines.
OFFRD-03	Further Emission Reductions from Passenger Locomotives (NO _x , PM)	Repower existing engines with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Potential increase in fuel use from the use of more efficient engines; minor increase in fuel economy from loss of efficiency to control technologies, and increase in alternative fuels associated with repowered engines.
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels at Berth (VOC, NO _x , PM)	Shore power of vessels at berth; use of air pollution control technologies on exhaust gases from auxiliary engines and boilers (e.g., SCRs, DPM filters, electric batteries, and alternative fuels). May increase the use or installation of new local electricity generation.	Potential increase in electricity use associated with increased use of shore-side power and additional air pollution control technologies and minor increase in fuel economy from loss of efficiency to control technologies. Potential increase in diesel-fuel during construction.
OFFRD-05	Emission Reductions from Ocean-Going Marine Vessels (NO _x)	Enhance Ports' existing financial incentive programs for early deployment of Tier 2 and Tier 3 vessels calling at the Ports.	Potential increase in electricity use associated with increased use of shore-side power and additional air pollution control technologies and minor decrease in fuel use from loss of efficiency to control technologies. Potential increase in diesel-fuel demand during construction.
ADV-01	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles (NO _x)	Construct "wayside" electric or magnetic infrastructure; construction battery charging and fueling infrastructure	Reduced emission standards could result in an increase in electricity and increase the use of alternative fuels. Potential increase in diesel-fuel demand during construction.

TABLE 4.3-1 (CONCLUDED)

Control Measures with Potential Secondary Energy Impacts

CONTROL MEASURES	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	ENERGY IMPACT
Ozone Control Measures			
ADV-02	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives (NO _x)	Construct "wayside" electric or magnetic infrastructure; construct battery charging or fueling infrastructure.	Measure could result in an increase in electricity and increase the use of alternative fuels. Potential increase in diesel-fuel demand during construction.
ADV-03	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment (NO _x)	Construct electric gantry cranes; construct battery charging or fueling infrastructure; use of alternative fuels and fuel additives	Measure could result in an increase in electricity and increase the use of alternative fuels. Potential increase in diesel-fuel demand during construction.
ADV-04	Actions for the Deployment of Cleaner Commercial Harborcraft (NO _x)	Construct battery charging or fueling infrastructure; use of air pollution control equipment (e.g., SCR; use of alternative fuels and fuel additives).	Measure could result in an increase in electricity and increase the use of alternative fuels. Potential increase in diesel-fuel demand during construction. Increase in fuel consumption from loss of efficiency from control equipment.
ADV-05	Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels (NO _x)	Employ aftertreatment control technologies such as SCR and wet/dry scrubbers; use of alternative fuels.	Measure could result in an increase in electricity and increase the use of alternative fuels. Potential increase in diesel-fuel demand during construction. Increase in fuel consumption from loss of efficiency from control equipment.
ADV-06	Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment (NO _x)	Construct battery charging or fueling infrastructure; increased use of alternative fuels and fuel additives.	Measure could result in an increase in electricity and increase the use of alternative fuels.
ADV-07	Proposed Implementation Measures for the Deployment of Cleaner Aircraft Engines (NO _x)	Use alternative fuels and fuel additives, lean combustion burners, high rate turbo bypass, advanced turbo-compressor design, and engine weight reduction.	Measure could result in an increase use of alternative fuels.

4.3.4 Potential Energy Impacts and Mitigation Measures

4.3.4.1 Electricity

Potential electric energy impacts relative to the energy baseline are discussed below. The potential increase in electricity use due to implementation of the 2012 AQMP is partially associated with the potential installation of add-on control equipment. A number of control measures could result in the installation of add-on control equipment including BCM-03 - Emission Reductions from Under-Fired Charbroilers, CMB-01 - Further NO_x Reductions from RECLAIM –Phase II, IND-01 - Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities (if triggered), FUG-01 - ~~Further~~ VOC Reductions from Vacuum Trucks, FUG-03 - Further ~~VOC~~ Reductions from Fugitive VOC Emissions, MCS-01 - Application of All Feasible Measures Assessment, and INC-01 -- Economic Incentive Programs to Adopt Zero and Near-Zero Technologies. There is also a potential increase in electricity use associated with the electrification of mobile sources or control equipment for mobile sources, including IND-01, INC-01, ONRD-01 - Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles, ONRD-02 - Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles, ONRD-03 - Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium Heavy-Duty Vehicles, ONRD-05 - Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards, OFFRD-01 - Extension of the SOON Provision for Construction/Industrial Equipment, OFFRD-02 - Further Emission Reductions from Freight Locomotives, OFFRD-03 - Further Emission Reductions from Passenger Locomotives, OFFRD-04 - Further Emission Reductions from Ocean-Going Marine Vessels at Berth, ADV-01 - Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles, ADV-02 - Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives, ADV-03 - Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment, ADV-04 - Actions for the Deployment of Cleaner Commercial Harborcraft, ADV-05 - Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels, and ADV-06 - Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment.

Stationary and Area Sources - A number of control measures could result in the installation of add-on control equipment including BCM-03, CMB-01, IND-01, CTS-02, FUG-01, FUG-03, MCS-01, and INC-01. Add-on control equipment can reduce air emissions in a number of different ways (e.g., filters to remove particulates, or units that produce a chemical reaction to remove a pollutant), but they generally require energy to function. The use of add-on air pollution controls (e.g., wet scrubbers, low NO_x burners, and catalysts) could result in an increase in electricity demand. For example, a wet gas electrostatic precipitator (ESP) and wet gas scrubber (WGS) were installed on the Fluid Catalytic Cracking Unit (FCCU) at the ConocoPhillips Los Angeles Refinery. The estimated electricity required to operate the ESP and WGS was about 715 kilowatts (kW) (SCAQMD, 2007). FCCUs are large emission sources and the electricity used for the ESP and WGS at the ConocoPhillips Refinery would be representative of control equipment for large sources. Energy use for smaller sources would be less. The specific potential increase in the amount of electricity use due to the implementation of the 2012 AQMP is unclear at

this time as specific information regarding the number and size of the control units are currently unknown. Additionally, alternative processing equipment is expected to be the primary method of control for some of the control measures. For example, the primary method of control of VOC emissions from coatings and solvents (CTS-01 and CTS-02) is expected to be reformulation of coatings and solvents along with more efficient application techniques, and not add-on control equipment which would be largely expected to be energy neutral.

Mobile Sources - Mobile source control measures in the 2012 AQMP are expected to increase the electricity demand in the district. A number of control measures would result in an increase in electricity demand associated with the electrification of mobile sources, including IND-01, ONRD-01, ONRD-02, ONRD-03, ONRD-05, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, and ADV-06. This is expected to shift some of the fuel source of cars, trucks, off-road vehicles and marine vessels to electricity, as well as, create an additional electrical load demand due to CNG recharging. The CEC estimates there were about 10,000 electric vehicles on the road operating in California in 2011 with an estimated electricity consumption of 100 gigawatts per hour (gWh). The CEC projects anywhere from 835,000 to 3,575,000 electric vehicles by 2022 depending on the energy demand scenario. These vehicles will require 2,200 gWh for the low demand scenario and more than 7,000 gWh in the high scenario (CEC, 2012j).

The estimated baseline electricity use in Los Angeles, Orange, Riverside, and San Bernardino counties was about 115,000 gWh in 2010 (CEC, 2012b). Therefore, currently electric vehicles are a small portion of the overall electricity used (less than 0.1 percent). CEC estimates that an increase in electricity demand of about 18 percent will occur between 2010 and 2023 with an annual average growth rate of about 1.3 percent (CEC, 2012j). Assuming a similar annual growth rate between 2023 and 2030, about 148,750 gWh will be required in 2030 (see Table 4.3-2).

The potential increase in electricity can be estimated for Control Measures ONRD-01, ONRD-02, ONRD-03, and ONRD-05 where the increase in the number of hybrid/zero emission vehicles introduced can be estimated (see Table 4.3-2)¹. As shown in Table 4.3-2, the estimated increase in electricity associated with associated with ONRD-01, ONRD-02, ONRD-03, and ONRD-05 is about 446.2 gWh. In 2023, the increase in electricity would represent a 0.4 percent increase in electricity since 2010 (baseline). ADV-01 could result in the construction of "wayside" electric or magnetic power built into roadway infrastructure to boost the pulling capacity or range of the heavy-duty vehicles. The "wayside" electric or magnetic power for appropriately equipped heavy-duty trucks would require additional electricity. The recently circulated Draft EIR for the I-710 Corridor Project included an alternative that evaluated impacts from installing "wayside" electric roadway infrastructure and an estimated electricity demand between 157 and 183 GWh per year (Caltrans, 2012) In addition to the I-710 Corridor Project, ADV-01 identifies the 60 freeway as an east-west

¹ It should be noted that the specific technologies to be employed to comply with these 2012 AQMP control measures is unknown. However, to present a worst-case analysis of potential electricity demand impacts, for the purposes of this analysis, it is assumed that all affected mobile sources would be powered by electricity. Similarly, this worst-case assumption does not assume that the SCAQMD endorses electricity technologies over other compliant technologies.

corridor that has potential location for additional “wayside” electric roadway infrastructure. There is currently a pilot project under consideration to install catenary lines at one of two sites, a site along the Terminal Island Freeway or on Navy Way at the Port of Los Angeles. To estimate the potential electrical demand for a “wayside” electric roadway infrastructure on the 60 freeway, it is assumed that the electrical demand per mile would be equivalent to that estimated for the I-710 Corridor Project with a distance twice as long. Therefore, the estimated electrical demand for the 60 freeway would be between 320 and 380 GWh. The use of “wayside” electric roadway infrastructure elsewhere in the district would be speculative at this time. Therefore, the estimated electrical demand associated with ADV-01 is 563 GWh (see Table 4.3-2).

ADV-02 could result in the construction of "wayside" electric or magnetic power built into railway infrastructure to convert diesel locomotives to electrical traction motors. The “wayside” electric or magnetic power would require additional electricity. ADV-02 would convert 300 line haul, 140 switcher, and 52 passenger diesel locomotives to “wayside” electric infrastructure. Based on an annual fuel use of 34.7 million gallons of diesel fuel, the estimated electrical demand would be 880 GWh (see Table 4.3-2). The 880 GWh assumes 56 percent diesel engine efficiency, 95 percent electrical traction efficiency, and seven percent transmission loss.

TABLE 4.3-2

Electricity Impacts for Los Angeles, Orange, Riverside, and San Bernardino Counties
(GW-h)

CONTROL MEASURE	2010	2023 ^A
Baseline	115,000	136,079
ONRD-01 – Incentivize light- and medium-duty trucks (9,000 vehicles) ^c	--	38.6
ONRD-02 – Accelerated retirement and replacement of pre-1992 light- and medium-duty vehicles (18,000 vehicles) ^b	--	77.1
ONRD-03 – Encourage the introduction of hybrid and zero-emission vehicles (5,000 vehicles) ^c	--	83
ONRD-05 – Replace 1000 trucks with zero-emission vehicles (1000 vehicles) ^e	--	49.5
ADV-01 – “Wayside” Electric Roadway Infrastructure of the I-710 and 60 Freeways		563
ADV-02 – “Wayside” Electric Rail Infrastructure		880
Total of Mobile Source Measures	--	1,691
Percent of Baseline	--	1.5%

Source: CEC, 2012a

^a Projections based on CEC, 2012j

^b Based on 12,600 miles/year and 0.34 kWh/mile.

^c Based on 16,600 miles/year and one kWh/mile.

^d Based on 16,600 miles/year and one kWh/mile.

^e Table 3.3-1

ADV-03 would result in the deployment of zero and near-zero emission cargo handling equipment which could result in an increase in electricity use (e.g., electric gantry cranes).

The Southern California International Gateway Project (Los Angeles Harbor Department, 2011) is proposing to use electric gantry cranes to move cargo from trucks to rail. The estimated increase in electricity to operate the electric gantry cranes ranges from 5,500,000 to 8,700,000 kWh for industrial uses that include electric gantry crane operations (as well as rail track signals/ lighting, site and security lighting, administrative offices, and maintenance and repair building operations). The use of the electric gantry cranes are the largest portion of the estimated electricity use at this facility. While this is only an example of electricity use for cargo handling equipment, the electrification of cargo handling equipment throughout the ports could require a substantial amount of electricity.

Control Measure IND-01 is a backstop measure that would require the ports to control stationary and mobile sources at the port and port-related facilities in the event that controls at the ports are needed or the emission targets assumed in the 2012 AQMP for the port-related sources are not met. One goal of the ports' Clean Air Action Plan and IND-01 is to move all container berths, cruise ship operations, and other frequent visitors calling at the ports to shore-side power and to move other vessel types toward alternative hotelling emissions reduction technologies. With regard to shore-side power, the two ports are in different positions from an infrastructure standpoint. Generally, the Port of Los Angeles has the main electrical trunk lines in place from which to "step down" and condition power for ships. The Port of Long Beach, on the other hand needs to bring new electrical service lines from Interstate 405 into the Harbor District to supply the appropriate power, which will require significant infrastructure improvements (PLAX/PLB, 2010).

Over the next five years, the Port of Los Angeles proposes to conduct a massive infrastructure improvement program to make alternative marine power (referred to as AMP) available at a number of berths at container, liquid bulk terminals, cruise terminals, and dredge plug-in locations. The Port of Los Angeles is expected to have alternative marine power available at 24 berths by 2014 (PLAX/PLB, 2010). However, since IND-01 is a backstop measure so it is unclear if it would need to be implemented and, if it would need to be implemented, to what extent it would need to be implemented. Further, details of the measure and the means for reducing emissions have not been identified; electricity usage from this measure cannot be estimated at this time.

OFFRD-05 - Emission Reductions from Ocean-Going Marine Vessels may increase electricity use to shore power marine vessels at berth. This control measure would provide incentives for the cleanest marine vessels (e.g., Tier III) to visit the ports. Although not anticipated, electrical power for hotelling operations could be provided to these ships via electrical cables using shorepower. Shorepower can be locally generated at the port or obtained from the grid. Shorepower can be locally generated using clean technologies such as fuel cells, gas turbines, microturbines, and combined cycle units. Due to technical and operational (e.g., frequency of calls) reasons, however, cold ironing may not be a viable option for all types of ships.

The Port of Long Beach is actively implementing its shore power program. In 2006, the port began improvements on the shore power infrastructure at the BP terminal at berth T121. Construction is completed and since mid-2009, the shore power infrastructure has been operational and is being used. Over the next five years, the port will continue to undergo

electrical infrastructure improvements, constructing an additional 6.6 kV sub-transmission line to serve the Port of Long Beach Harbor District, and completing infrastructure improvements for the remaining container terminals, electric dredge plug-ins, and additional infrastructure for electrification of certain types of yard equipment. Over 23 berths at container terminals at the Port of Long Beach are scheduled to be shore power ready by the end of 2014 (PLAX/PLB, 2010).

The EIR prepared for the Middle Harbor development in the Port of Long Beach estimated that the electricity consumption would be about 986 megawatt-hours for the Middle Harbor container terminal operations that would include shore-to-ship power (“cold-ironing”) and connections to buildings and other wharf structures (e.g., lighting). While the increase demand was considered extensive, it was determined to not be substantial relative to the existing and project regional electricity supply (Port of Long Beach, 2009).

Based on the above information, since the means of reducing emissions and the details of whether local or grid power have not been established, electricity usage associated with OFFRD-05 cannot be estimated at this time.

In spite of energy conservation programs in California, it is likely that additional power plants will be required to supply the projected electricity due to general population growth, both in California and outside of California. Increased demand for electricity would occur with or without implementing the 2012 AQMP. Currently, there are a number of power plant projects planned in southern California to meet future needs. Relative to the existing electricity use and the projected future peak electricity demand, implementation of all the control measures is expected to result in an overall increase in 2023 of approximately 1.5 percent of the existing electricity use of 115,000 GW-h (see Table 4.3-2). While this increase is expected to be within the electric generating capacity of the region, an increase in electricity of one percent or greater exceeds the SCAQMD’s energy significance threshold. Thus, the electric energy impacts from the implementation of the 2012 AQMP are expected to be significant.

Conclusion: Electricity - The electric energy impacts presented above for those control measures where sufficient data exist, are expected to be conservative. The demands for electricity associated with increased electrification of mobile sources could be partially offset by charging equipment (e.g., electric vehicles) at night when the electricity demand is low, thus minimizing impacts on peak electricity demands. Further, the analysis assumes that all sources affected by a control measure that has the potential to increase demand for electricity, would use electricity rather than the more likely result of multiple types of energy being used. In addition, any increase in electricity demand would likely result in a concurrent reduction in demand for other types of fuels, particularly petroleum-based fuels. The 2012 AQMP is not expected to result in the use of large amounts of fuel or energy resources or result in the use of fuel or energy resources in a wasteful manner. However, the 2012 AQMP includes incentives to shift from diesel and gasoline fuel use to increased electrification of stationary and mobile sources. Depending on the location and the amount of energy use (e.g., port projects), electricity portions of energy conservation plans may need to be updated. Therefore, the proposed project may conflict with existing adopted energy conservation plans. Therefore, the 2012 AQMP could result in a substantial increase in

electricity (greater than one percent of the existing electricity use in the Basin), and increased electricity demand is potentially significant.

The 2012 AQMP includes strategies that promote energy conservation (EDU-01) without identifying specific targets; therefore, its benefits have not been quantified in this analysis. Nonetheless, the 2012 AQMP impacts on electricity resources are potentially significant.

Project-Specific Mitigation: Mitigation measures are required as potentially significant impacts on electricity demand associated with the 2012 AQMP have been identified. As individual control measures are promulgated as new rules or rule amendment, specific mitigation measures will be identified as necessary to minimize electricity impacts. Mitigation measures are expected to include the following:

- E-1 Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation.
- E-2 Utilities should increase capacity of existing transmission lines to meet forecast demand that supports sustainable growth, where feasible and appropriate in coordination with local planning agencies.
- E-3 Project sponsors should submit projected electricity calculations to the local electricity provider for any project anticipated to require substantial electricity consumption. Any infrastructure improvements necessary should be completed according to the specifications of the electricity provider.
- E-4 Project sponsors should include energy analyses in environmental documentation with the goal of conserving energy through the wise and efficient use of energy.
- E-5 Project sponsors should evaluate the potential for reducing peak energy demand by encouraging charging of electrical vehicles and other mobile sources during off-peak hours.
- E-6 Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of catenary or way-side electrical systems developed for transportation systems to operate during off-peak hours.
- E-7 Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of electrified stationary sources during off-peak hours (e.g., cargo handling equipment).

Remaining Electricity Impacts: The preceding analysis concluded that significant adverse electricity consumption impacts could be created by the proposed project because the potential 2023 electricity usage increase would exceed baseline electricity consumption by 1.5 percent. In spite of implementing the above mitigation measures, electricity consumption impacts would remain significant.

4.3.4.2 Natural Gas

Project-Specific Impacts: Control measures in the 2012 AQMP may result in an increase in demand for natural gas associated with stationary sources due to the need for additional emission controls (e.g., BCM-03, CMB-01, IND-01, FUG-01, MCS-01, INC-01, ADV-01, ADV-02, ADV-03, ADV-04, and ADV-05). Other control measures are expected to encourage the use of natural gas as a fuel to offset the use of petroleum fuels including ONRD-01, ONRD-02, ONRD-03, ONRD-05, ADV-04, and ADV-06. In addition, increased demand for electricity will require additional natural gas, as most of the power plants in California are operated using natural gas.

Total natural gas (utility) consumption in California in 2010 was approximately 4,729 million cubic feet per day with about 36.5 percent of the natural gas consumed in Los Angeles, Orange, Riverside, and San Bernardino counties (see Table 4.3-3). The residential, commercial, industrial, and electrical generation sectors account for approximately 25, 10, 17, and 39 percent, respectively, of total statewide natural gas (utility) consumption. The demand for natural gas in southern California is expected to increase by approximately 0.20 percent from 2010 to 2020². The projected per capita consumption is lower than previously projected because of higher natural gas prices than previously anticipated. Natural gas for vehicle fuel use has steadily grown to where it totaled about 33 million cubic feet per day, which is about, about 0.70 percent of the total statewide natural gas (utility) use (California Gas Report, 2010).

TABLE 4.3-3

Natural Gas (Utility) Impacts for Los Angeles, Orange, Riverside, and San Bernardino Counties (Million Cubic Feet/Year)

NATURAL GAS USE	2010	2020 ^a	2030 ^a
Baseline	1,726	1,730	1,735

Source: California Gas Report, 2012

^a Projections based on CEC, 2012j

Mobile Sources - According to the CEC, there were about 24,819 light-duty natural gas vehicles and about 11,500 heavy-duty natural gas vehicles in California in 2009 (CEC, 2011). The CEC expects a steady increase in natural gas consumption used as an alternative fuel (see Table 4.3-4), but since there is currently no policy mandate to directly incentivize the production of more natural gas vehicles, penetration of these vehicles in the light-duty sector is relatively low compared to other alternative fuel technologies (CEC, 2012j).

Some of the control measures in the 2012 AQMP could result in an increase in the use of natural gas in medium- and heavy-duty on road vehicles. Expanded use of alternative fuels in medium-duty and heavy-duty trucks using more efficient, advanced natural gas engine

² [Review of the 2012 California Gas Report, indicates SoCalGas projects total gas demand to grow at an annual rate of 0.12% from 2011 to 2030. Over the forecast period 2012-2030, demand is expected to exhibit annual decline \(of 0.13%\) from the level in 2012 due to modest economic growth. However, since the CEC's future natural gas demand provides a conservative analysis and future natural gas demand impacts are concluded to be significant, it is not necessary to revise the analysis.](#)

technologies would be expected to reduce projected diesel-fuel use. Natural gas medium- and heavy-duty vehicles are an attractive environmental option to diesel fueled vehicles because they emit fewer criteria pollutants and toxic components. However, the limited availability of refueling facilities and typically higher vehicle purchase prices has affected the sale of light-duty natural gas fuel vehicles (CEC, 2011). Further, hybrid vehicles and zero emission electric vehicles are further along in the development phase and expected to be the preferred source of power as opposed to natural gas.

TABLE 4.3-4

Projected Petroleum Fuel Displaced with Natural Gas in California

FUEL TYPE	2010	2020
Natural Gas Vehicle Fuel Consumption in California (billion cubic feet)	12.1	16.1
Estimated Natural Gas Vehicle Fuel Consumption in Southern California (billion cubic feet)	9.9	12.8
Petroleum Fuel Displaced in California (million gallons gasoline equivalents)	95.5	127.1
Petroleum Fuel Displaced in Southern California (million gallons gasoline equivalents)	78.2	101.0

Source: California Gas Report, 2012

Stationary Sources - For stationary sources, natural gas is already BACT, so new equipment would already be required to use natural gas. Under the 2012 AQMP control measures, a slight increase in natural gas demand is expected from the use of add-on air pollution controls associated with NO_x emission reduction, add-on controls associated with VOC emission reductions, and add-on controls associated with particulate matter control. The amount of natural gas to run these control devices is unknown because the number of equipment required and the equipment sizes are not known. ~~Alternative processing~~ Replacement or retrofitted equipment is expected to be the primary method of control (e.g., the primary method of control for CMB-01 is expected to be new low NO_x burners). Low NO_x burners ~~which~~ are not expected to result in an increase in natural gas consumption, because this would require replacing one type of burner with a more efficient burner.

Approximately 39 percent of the natural gas consumed in California is used at power plants to generate electricity. Southern California Edison will need to add additional electricity generating capacity to accommodate the increase in population growth. The increased electricity demand expected in the Basin would be generated by natural gas fueled power plants resulting in an increased demand for natural gas, the amount of which is currently unknown.

FUG-01 may result in an increase in natural gas used to combust VOC emissions from vacuum trucks used to remove materials from storage tanks, vessels, sumps, boxes and pipelines. SCAQMD staff estimates that 27 million cubic feet per year of natural gas may be used to combust fugitive VOCs from storage tanks, vessels, sumps, boxes and pipelines pulled by a vacuum truck. The amount of natural gas used to combust fugitive VOCs in FUG-01 would be less than the amount of natural gas reductions expected from other

control measures (see Table 4.3-6). The increased demand for an additional 27 million cubic feet per year [associated with implementing](#) 2012 AQMP Control Measure FUG-01 would represent an increase in natural gas demand of 1.6 percent compared to the year 2010 natural gas baseline demand of the 1,726 million cubic feet per year. Therefore, the proposed project could be significant for natural gas use.

Project-Specific Mitigation: Mitigation measures are required as potentially significant impacts on natural gas resources associated with the 2012 AQMP have been identified. As individual control measures are promulgated as new rules or rule amendment, mitigation measures will be identified as necessary to ensure that natural gas impacts remain less than significant. Mitigation measures are expected to include the following:

- E-8 Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation.
- E-9 Utilities should increase capacity of existing natural gas lines to meet forecast demand that supports sustainable growth, where feasible and appropriate in coordination with local planning agencies.
- E-10 Project sponsors should submit projected natural gas calculations to the local natural gas provider for any project anticipated to require substantial natural gas consumption. Any infrastructure improvements necessary should be completed according to the specifications of the natural gas provider.
- E-11 Project sponsors should include energy analyses in environmental documentation with the goal of conserving energy through the wise and efficient use of energy.
- E-12 Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of natural gas stationary sources during off-peak hours.

Remaining Natural Gas Energy Impacts: The preceding analysis concluded that significant adverse natural gas consumption impacts could be created by the proposed project because natural gas usage would exceed the 2010 natural gas consumption by 1.6 percent. In spite of implementing the above mitigation measures, natural gas consumption impacts would remain significant.

4.3.4.3 Petroleum Fuels

General growth in the district is expected to result in a substantial increase in the use of petroleum fuels between current conditions and 2035. Table 4.3-5 summarizes the expected increases in fuel usage, as predicted by SCAG's transportation and air quality model, between 2011 and 2035 with the investments in the Regional Transportation Plan (RTP) and without the RTP.

TABLE 4.3-5

Projected Transportation Fuel Consumption in Southern California
(thousand gallons per day)

YEAR	FUEL CONSUMPTION	PERCENT INCREASE OVER 2011
2011	16,630	--
2035 (without 2012-2035 RTP/SCS)	20,274	8.8
2035 (with 2012-2035 RTP/SCS)	15,342	-17.6

Source: California Gas Report, 2012

Implementation of the 2012 AQMP is expected to result in a decrease in the future increased demand for petroleum fuels (e.g., diesel, distillate, residual oil, and gasoline) due to mobile source control measures (Tables 4.3-5 and 4.3-6), as well as a potential increase in engine efficiency associated with the retrofit of new engines. Control measures that are expected to result in a decrease in the demand for petroleum fuels include control measures that would result in the installation of new engines in mobile sources, which tend to be more fuel efficient, result in the use of alternative fuels, or result in an increase in electrification of mobile sources, which would eliminate the use of petroleum fuels from mobile sources. Control Measures ONRD-01, ONRD-03, and ONRD-05 are expected to encourage the introduction of about 15,000 zero to partial zero emissions vehicles. The estimated reduction in fuel use is shown in Table 4.3-6. Other control measures that are expected to result in a decrease in petroleum fuel use include OFFRD-01 (repower at least 1,200 locomotive engines with Tier 4 engines using control equipment), OFFRD-03 (replace 30 tier zero locomotives with Tier 4 engines using control equipment), and OFFRD-04 (an additional 25 percent of vessel calls would deploy shorepower technologies or alternative forms of emission reductions). Specific reduction in fuel use from these three control measures, however, is not known at this time. ADV-01 and ADV-02 may result in a decrease in diesel fuel use should “wayside” electrical infrastructure be implemented for specific freeway routes and locomotives (e.g., 300 line haul, 140 switcher, and 52 passenger). The estimated diesel fuel reduction from ADV-01 is not known, however, ADV-02 is estimated to reduce diesel fuel use by 34.7 million gallons per year.

TABLE 4.3-6

Estimated Reduction in Petroleum Fuels Associated with 2012 AQMP Control Measures
(gallons per year)

CONTROL MEASURE	2013	2023
ONRD-01 – Incentivize light- and medium-duty trucks (9,000 vehicles) ^a	663,157	5,968,421
ONRD-02 – Accelerated retirement and replacement of pre-1992 light- and medium-duty vehicles (18,000 vehicles) ^a	1,326,315	11,936,842
ONRD-03 – Encourage the introduction of hybrid and zero-emission vehicles (5,000 vehicles) ^b	1,509,091	7,545,455
ADV-02 – Electrification of 492 locomotive engines ^c		34,700,000
Total	3,498,563	60,150,718

^a Based on 12,600 miles/year and 19 miles/gallon.

^b Based on 16,600 miles/year and 11 miles/gallon.

^c Estimated assuming electrification of locomotives is the selected technology.

Some of the control measures are also expected to result in the installation of retrofit equipment (catalysts, PM traps, etc.) including OFFRD-01, OFFRD-02, and OFFRD-03 (Table 4.3-7). These control measures would be expected to result in both reductions as well as increases in petroleum fuel use. An increase in the use of add-on control equipment associated with mobile sources could result in an increase in the use of petroleum fuels because add-on control devices, such as diesel particulate filters, SCRs, catalytic controls, etc., generally result in a decrease in engine efficiency. The use of SCR and diesel particulate filters on construction equipment, for example, could result in an increase in fuel use for the retro-fitted equipment. The amount of additional fuel that would be required would be dependent on the type of control equipment installed and the energy requirement to operate the equipment. However, mobile sources that would have newer engines installed would be expected to result in an increase in efficiency and decrease in fuel use, the amount of which is currently unknown.

Additional diesel fuel may also be required for operational activities under control measures such as FUG-03 - Further ~~VOC~~ Reductions from Fugitive VOC Emissions, which would require additional monitoring and inspection; MCS-02, which may require additional haul trips to remove green waste; and BCM-04, which would require delivery and application of acidifiers. Details of these activities and which facilities may be affected are not known at this time, so the amount of additional diesel fuel cannot be estimated at this time.

TABLE 4.3-7

Off-Road Equipment and Related Control Equipment

CONTROL MEASURE	TYPE OF EQUIPMENT	TYPES OF EMISSION CONTROLS	ASSUMED NUMBER OF UNITS AFFECTED
OFFRD-01	Off-road diesel construction vehicles	SCR, Diesel particulate filters	1,200
OFFRD-02	Freight locomotive (line haul)	SCR, Diesel particulate filters	300
OFFRD-02	Freight locomotive (switcher)	SCR, Diesel particulate filters	140
OFFRD-03	Passenger locomotives	SCR, Diesel particulate filters	52

Construction activities that could be required to implement control measures in the 2012 AQMP would also increase the use of gasoline and diesel, including BCM-03, CMB-01, CMB-02, CMB-03, IND-01, FUG-01, FUG-02, FUG-03, MCS-01, MCS-02, MCS-03, INC-01, ONRD-05, OFFRD-01, OFFRD-05, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, and ADV-06. Construction activities could be required under a number of the control measures to develop transportation infrastructure (e.g., overhead catenary lines), install air pollution control equipment, and further develop electricity to support electrification of sources. The amount of petroleum fuels required would depend on the extent of the specific construction activities. Larger construction projects, which would use the most fuels, are likely to require project specific CEQA review and their specific energy requirements would be evaluated at that time. However, there are currently adequate fuel supplies in California. In fiscal year 2011, 14,728,734,063 gallons of gasoline and 2,564,017,901 gallons of diesel were sold in California (California State Board of Equalization, 2012). Construction activities are temporary and all construction equipment will cease once construction activities are finished. As the use of petroleum fuels in other mobile sources decreases, there is likely to be an excess availability of gasoline and diesel. Implementation of the 2012 AQMP is expected to result in an overall reduction in the use of petroleum fuels (see Table 4.3-6). Therefore, no significant adverse impacts on petroleum fuels are expected due to implementation of the 2012 AQMP.

Emissions from mobile sources are the largest contributors to emissions in the district. Overall, implementation of the 2012 AQMP is expected to result in a large reduction in emissions from mobile sources. Many of the emission reductions associated with the 2012 AQMP are expected to come from mobile sources. In order to achieve the necessary emission reductions, it is expected that a reduction in the use of petroleum fuels would be necessary. Therefore, overall the 2012 AQMP is expected to result in a reduction in the use of gasoline and diesel fuels, because of requirements resulting in higher energy efficiencies or displacement by alternative clean fuels. The largest reductions in use of petroleum-based fuels are expected from the on-road mobile source sector switching to electricity or alternative clean fuels. For on-road mobile sources, the combination of fleet standards for

both light- and heavy-duty vehicles, as well as trip reduction measures, produce these large reductions in the use of petroleum-based fuels (see Tables 4.3-4 and 4.3-6). Therefore, implementation of the 2012 AQMP is not expected to result in a significant increase on petroleum fuel use.

Project Specific Mitigation Measure: No significant impacts on petroleum fuels associated with the 2012 AQMP were identified because of anticipated reduction in future demand so that no mitigation measures are required.

Remaining Petroleum Fuel Impacts: Since potential petroleum fuel energy demand impacts are expected to be less than significant and no mitigation measures are required, impacts remain less than significant.

4.3.4.4 Alternative Fuels

General growth in the district is expected to result in a substantial increase in the use of petroleum fuels between current conditions and 2035. Table 4.3-5 summarizes the expected increases in fuel usage, as predicted by SCAG's transportation and air quality model, between 2011 and 2035 with the investments in the RTP and without the RTP.

The 2012 AQMP continues to call for progressively lower vehicle emissions through the lowering of vehicle emission standards. These proposed control measures for on- and off-road mobile sources are expected to cause a shift from conventional petroleum fuels to alternative fuels such as CNG and hydrogen. (Please note that the impacts associated with reformulated petroleum fuels (e.g., emulsified diesel fuels and reformulated fuels) are included under the discussion of petroleum fuels as they are predominately comprised of petroleum-based fuels). Control measures [that](#) may increase the use of alternative fuels include IND-04, ONRD-03, ONRD-05, OFFRD-01, OFFRD-03, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07.

The use of alternative fuels in California's transportation energy market continues at a gradual pace, but could be limited by a variety of market and regulatory uncertainties. Continuing progress in reducing new gasoline vehicle emissions is having an important effect on auto industry development and marketing of alternative fuel vehicles. The use of cleaner-burning alternative fuels such as CNG is not receiving as much emphasis in light-duty vehicle emission-reducing strategies as previously expected. The combination of gasoline reformulation and advances in automotive emission control technology appears to be making the exhaust emission levels required by California's low-emission vehicle standards achievable without relying on the use of alternative fuels. Therefore, the demand for alternative fuels would depend on their marketing strategies and the development of infrastructure to affect consumer choice.

4.3.4.4.1 *Electricity and Natural Gas*

The use of electricity and natural gas as alternative fuels for mobile vehicles was discussed in the previous subsections 4.3.4.1 Electricity and 4.3.4.2 Natural Gas.

4.3.4.4.2 *Biodiesel*

The advantages of biodiesel include decreased net carbon dioxide, hydrocarbon, carbon monoxide, and particulate matter emissions, and fuel properties similar to petroleum diesel for ease of use in diesel engines. Its disadvantages include poorer cold flow characteristics, lower heating values, and mostly reported higher NOx emissions. There are 16 biodiesel production facilities in California with an annual production capacity of 84.5 million gallons. This production capacity is sufficient to supply California's total "proportional share" of biodiesel under the 2007 Renewable Fuel Standard (RFS2) under EISA of 2007. The CEC states that demand for biodiesel may be necessary by obligated parties in California to help achieve compliance with the California Low Carbon Fuel Standard (LCFS) requirements (CEC, 2011). However, to the extent that low and zero emission technologies are implemented as a result of implementing 2012 AQMP control measures, it is likely that biodiesel demand would decline similar to any declines in demand for diesel fuel.

4.3.4.4.3 *Ethanol and E85*

There are a number of 2012 AQMP control measures that identify alternative fuels as a potential compliance option. Since many of the control measures ultimately call for low or zero emitting equipment it is unclear whether or not ethanol or ethanol blends would be used as a compliance option, but it is assumed that there could be increased demand for ethanol and ethanol blends as combustion fuels.

Currently, most of the ethanol used in California is imported from corn based ethanol plants in the Midwest. There are two facilities in Southern California (one in Carson and one in Colton) that are capable of receiving unit trains of ethanol. Together, they import 672,000 gallons per year of ethanol (CEC, 2011). In addition, there are five corn-based ethanol facilities in California. Three of the five California corn-based ethanol facilities are operating with a collective production capacity of nearly 170 million gallons per year (CEC, 2011). Two of the California facilities remain idle, because of poor economic conditions, with a combined capacity of 71 million gallons per year. All California facilities that are currently idle are assumed to be fully operational at their rated nameplate capacity of nearly 71 million gallons per year beginning January 2013 (CEC, 2011). The potential production capacity, including future ethanol production facilities, for advanced biofuels ethanol production in California is estimated by CEC staff at approximately 502 million gallons per year (CEC, 2011). Based on this information, it is likely that there is sufficient ethanol production capacity to meet any increased demands by 2012 AQMP control measures.

4.3.4.4.4 *Methanol and M85*

Since M85 is no longer sold in California, M85 is not expected to be affected by AQMP control measures.

4.3.4.4.5 *Hydrogen*

There is growing interest and financial support for the use of hydrogen-powered fuel cells to power cars, trucks, homes and business. Hydrogen vehicles in California consist of

demonstration fuel cell passenger cars, internal combustion engine passenger cars, fuel cell buses, and hybrid fuel cell buses. The California Fuel Cell Partnership, a public-private partnership between interested industry and state and local government agencies, has been leading the coordination of fuel cell vehicle demonstrations in California. To date, 250 hydrogen fuel cell vehicles have been placed on California's roads in demonstration projects (CEC, 2011).

Hydrogen fuel cells are proven technology, but more work is needed to make them cost-effective for use in cars, trucks, homes or businesses. Hydrogen fuel cells create electricity to power cars with minimal pollution. California has been developing the infrastructure of a hydrogen highway, the California Hydrogen Highway Network (CaH2Net). The mission of CaH2Net is to assure that hydrogen fueling stations are in place to meet the demands of fuel cell and other hydrogen vehicle technologies. The first hydrogen station was opened on April 20, 2004 and there are now 23 hydrogen fueling stations in California. Although the specific station numbers originally called for 50 to 100 stations by 2010, there has been a strategic refocusing on putting additional emphasis on creating clusters of hydrogen fueling stations in key urban areas such as Los Angeles and Orange counties, Sacramento, and the San Francisco Bay area (CARB, 2011).

One of the goals of the 2012 AQMP is to shift from conventional petroleum based fuels to less polluting alternative transportation fuels, including hydrogen. Although the 2012 AQMP does not mandate hydrogen fuel use by fleet operators, it does call for further technology demonstration and deployment. Therefore, without regulatory requirements or market incentives, the use of hydrogen fuel in the 2020 timeframe attributable to the 2012 AQMP, increased demand impacts for hydrogen fuel is not expected to be significant.

4.3.4.4.6 *Propane (LPG)*

There are a number of 2012 AQMP control measures that identify alternative fuels as a potential compliance option. Since many of the control measures ultimately call for low or zero emitting equipment it is unclear whether or not LPG would be used as a compliance option, but it is assumed that there could be increased demand for LPG as combustion fuels. Propane is an unregulated fuel in California (except for storage and safety issues), no data is collected by the state on LPG sales or usage.

Propane vehicle conversions were negatively affected by the EPA's addendum to Memorandum 1A, which led to decreases in the number of vehicle conversions. The supply of propane used in transportation is expected to be sufficient in the near future, both worldwide and in the United States (U.S. DOE, 2010), should LPG-fueled vehicles meet the applicable vehicle tailpipe standards.

Project Specific Mitigation: Based on the above information, potential alternative energy demand impacts are expected to be less than significant so that no mitigation measures are required.

Remaining Alternative Energy Impacts: Since potential alternative energy demand impacts are expected to be less than significant and no mitigation measures are required, impacts remain less than significant.

4.3.4.5 Renewable Energy

A number of 2012 AQMP control measures would encourage the use of clean fuels and alternative fuels or electrification of equipment. For example, Control Measures INC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-05, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, and ADV-06 may result in the use of more electric or hybrid vehicles or equipment.

There are number of different types of renewable energy sources such as wind turbines, windmills, windpumps, or sails; hydroelectric; geothermal; and solar thermal and photovoltaic. No 2012 [AQMP](#) control measures were identified that would directly or indirectly adversely affect these renewable sources of electricity. With regard to potential electricity impacts from the 2012 AQMP, refer to subsection 4.3.4.1.

Two control measures may affect biomass/biogas sources: CMB-02 and MCS-02. CMB-02 would require the replacement of existing biogas flares with new biogas flares. The new biogas flares would be more efficient, but would not alter the amount of biogas combusted in the flares. MCS-02 would require that chipped or ground greenwaste be covered to the extent possible. MCS-02 may also require additional best management practices or controls, but is not expected to affect the amount of biomass processed.

California's Renewables Portfolio Standard requires the use of 33 percent renewable energy by 2020. No control measures in the 2012 AQMP would interfere with complying with the renewable energy requirement. Control measures in the 2012 may increase demand for electricity, but this would have no effect on electricity generating sources, either renewable or conventional energy generating sources.

Project Specific Mitigation: Based on the above information, potential renewable energy impacts are expected to be less than significant so that no mitigation measures are required.

Remaining Renewable Energy Impacts: Since potential renewable energy demand impacts are expected to be less than significant and no mitigation measures are required, impacts remain less than significant.

4.3.5 Summary of Energy Impacts

The following is the summary of the conclusions of the analysis of energy impacts associated with implementation of the 2012 AQMP.

- **Electricity:** Implementation of the 2012 AQMP control measures is expected to result in an overall increase. While this increase is expected to be within the electric generating capacity of the region, an increase in electricity of greater than one percent represents a substantial increase in electricity use. Thus, the energy impacts associated with electricity demand from the implementation of the 2012 AQMP are considered to be significant.
- **Natural Gas:** The energy impacts associated with implementation of the control measures and strategies in the 2012 AQMP are expected to result in an increase in

natural gas demand. The increased demand for natural gas is considered to be significant.

- **Petroleum Fuels:** The energy impacts associated with implementation of the control measures and strategies in the 2012 AQMP are expected to result in a reduction in use (less demand) of petroleum fuels so that no significant impacts on petroleum fuels are expected.
- **Alternative Fuels:** Although an increase in demand for hydrogen as a transportation fuel is expected due to implementation of the control measures and strategies in the 2012 AQMP, this increase is not expected to be significant since hydrogen is not widely available and its use is currently limited. Hydrogen is available or the feedstock that produces it is generally available. Future demand is expected to be met through increased production. The energy impacts associated with the future use of hydrogen is expected to be less than the current strategy that uses predominately petroleum based fuels so that no significant hydrogen demand impacts are expected.
- **Renewable Energy:** No 2012 AQMP control measures were identified that would adversely affect renewable energy production or interfere with the goals and requirements of the Renewables Portfolio Standard.

Summary of PM2.5 Control Measure Impacts: Energy impacts associated with PM2.5 control measures were evaluated and determined to be less than significant for electricity, natural gas, petroleum fuels, and alternative fuels impacts.

Summary of Ozone Control Measure Impacts: Energy impacts associated with the ozone control measures (22 control measures, see Table 4.3-1) were evaluated and determined to be significant for electricity and natural gas; and less than significant for petroleum fuels, and alternative fuels impacts.

SUBCHAPTER 4.4

HAZARDS AND HAZARDOUS MATERIALS

Introduction

2012 AQMP Control Measures with Potential Hazards and Hazardous Materials Impacts

Significance Criteria

Potential Hazards and Hazardous Materials Impacts and Mitigation Measures

Summary of Hazards and Hazardous Materials Impacts

4.4 HAZARDS AND HAZARDOUS MATERIALS

4.4.1 Introduction

Hazards and hazardous materials impacts are related to the risks of explosions or the release of hazardous substances in the event of an accident or upset conditions. The Initial Study for the 2012 AQMP identified the following types of control measures as having potentially significant hazards and hazardous materials impacts: 1) use of reformulated coatings, solvents, and consumer products; 2) increase in the transportation and disposal of reformulated products; 3) the use of ammonia in selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) air pollution control technology; 4) use of alternative fuels; and, 5) use of catalysts.

4.4.2 2012 AQMP Control Measures with Potential Hazards and Hazardous Materials Impacts

The 2012 AQMP continues the air quality management strategy of advancing clean technologies and promoting their use. In particular, some control measures in the 2012 AQMP promote greater use of reformulated low VOC consumer products such as coatings, adhesives, solvents and lubricants, potentially resulting in additional hazards associated with their use while other control measures encourage the use of alternative fuels which could increase hazards associated with the use of these fuels. Each control measure proposed in the 2012 AQMP was evaluated and 24 control measures were identified as having potential adverse hazard impacts. Table 4.4-1 contains a summary of the 2012 AQMP control measures (e.g., three PM_{2.5} control measures and 21 ozone precursor control measures) which may result in the use of compliance options that could generate significant hazard impacts.

TABLE 4.4-1

Control Measures with Hazards and Hazardous Materials Impacts

Control Measure	Control Measure Title (Pollutant)	Control Methodology	Hazard Impact
SHORT-TERM PM_{2.5} CONTROL MEASURES			
CMB-01	Further NO _x Reductions from RECLAIM (NO _x)	Cement kilns, glass furnaces, and gas turbines were not subject to reduction in the 2005 RECLAIM rule amendment. These sources will be examined for further reductions in this control measure and potential rule making. SCR, SNCR, low NO _x burners, and NO _x reducing additives (catalysts).	Potential exposure to toxic air contaminant (ammonia) associated with SCRs and SNCR during storage, transport, use and accidental release. Potential increase in the quantity of hazardous materials (e.g., catalysts) associated with shipping, handling, storage, use, and disposal.

TABLE 4.4-1(Continued)

Control Measures with Hazards and Hazardous Materials Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	HAZARD IMPACT
SHORT-TERM PM2.5 CONTROL MEASURES			
IND-01	Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities	Environmental lease conditions, port rules, tariffs or incentives.	Use of alternative fuels can result in hazard impacts. Potential exposure to toxic air contaminant (ammonia) associated with SCRs during with storage, transport, use and accidental release.
MCS-01	Application of All Feasible Measures	SCAQMD would adopt and implement new retrofit technology control standards as new BARCT standards become available.	Use of alternative fuels can result in hazard impacts. Potential exposure to toxic air contaminant (ammonia) associated with SCRs during with storage, transport, use and accidental release. Reformulating coatings with more toxic or flammable solvents could cause fire, accidental release, offsite/onsite exposure and worker risk.
OZONE CONTROL MEASURES			
CTS-01	Further VOC Reductions from Architectural Coatings (Rule 1113) (VOC)	Reduce the allowable VOC content in product formulations by using alternative low-VOC products and use application techniques with greater transfer efficiency.	Reformulating coatings with more toxic or flammable solvents could cause fire, accidental release, offsite/onsite exposure and worker risk.
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants (VOC)	Reduce the allowable VOC content in product formulations by using alternative low-VOC products or non-VOC products/equipment.	Reformulating coatings with more toxic or flammable solvents could cause fire, accidental release, offsite/onsite exposure and worker risk.
CTS-03	Further VOC Reductions from Mold Release Products (VOC)	Limitation of VOC content for mold release products.	Reformulating coatings with more toxic or flammable solvents could cause fire, accidental release, offsite/onsite exposure and worker risk.
CTS-04	Further VOC Reductions from Consumer Products (VOC)	Eliminate or revise the exemption for low vapor pressure solvents in consumer products.	Reformulating consumer products with more toxic or flammable solvents could cause fire, accidental release, offsite/onsite exposure, and worker risk.
FUG-01	Further VOC Reductions from Vacuum Trucks (VOC)	VOC control devices such as carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers, liquid scrubbers and positive displacement (PD) pumps.	Hazardous waste from spent carbon, use of ammonia to operate condensers, hazardous waste from operating scrubbers, hazardous waste of spent catalyst from operating thermal oxidizers.

TABLE 4.4-1 (Continued)

Control Measures with Hazards and Hazardous Materials Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	HAZARD IMPACT
OZONE CONTROL MEASURES			
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies (NOx)	Installation of cleaner, more efficient combustion equipment, such as boilers, water heaters and commercial space heating or installation of control technologies including fuel cells, diesel particulate filters (DPF), NOx reducing additives (catalysts), alternative electricity generation, such as wind and solar, battery electric, hybrid electric, and usage of low NOx and alternative fuels such as natural gas.	Use of alternative fuels can result in hazard impacts. Potential increase in the quantity of hazardous materials (e.g., catalysts) associated with shipping, handling, storage, use, and disposal.
MCS-03	Improved Start-up, Shutdown and Turnaround Procedures (All Pollutants)	Diverting or eliminating process streams that are vented to flares, and installing redundant equipment to increase operational reliability	Equipment modifications may pose safety issues.
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles (NOx)	Incentives to replace older vehicles with electric or hybrid vehicles.	Use of alternative fuels can result in hazard impacts.
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium Heavy-Duty Vehicles (NOx)	Incentives to replace older medium-duty vehicles with low-emitting vehicles. Highest priority would be given to zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode.	Use of alternative fuels can result in hazard impacts.
ONRD-04	Accelerated Retirement of Older Heavy-Duty Vehicles (NOx)	Incentives replace heavy-duty vehicles with newer or new vehicles. Priority would be placed on replacing older diesel trucks in Mira Loma.	Use of alternative fuels can result in hazard impacts.
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards (NOx, PM)	Incentives to replace up to 1,000 heavy-duty vehicles with low-emitting vehicles or zero-emission container movement systems.	Use of alternative fuels can result in hazard impacts.

TABLE 4.4-1 (Continued)

Control Measures with Hazards and Hazardous Materials Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	HAZARD IMPACT
OZONE CONTROL MEASURES			
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment (NOx)	Accelerate Tier 0 and Tier 1 equipment replacement with Tier 4 equipment, use of air pollution control technologies (e.g., advanced fuel injection, air induction, and after-treatment technologies).	Use of alternative fuels can result in hazard impacts.
OFFRD-02	Further Emission Reductions from Freight Locomotives (NOx)	Replace existing engines (Tier 0 and Tier 2 engines) with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Use of alternative fuels can result in hazard impacts. Potential exposure to toxic air contaminant (ammonia) associated with SCRs during storage, transport, use and accidental release.
OFFRD-03	Further Emission Reductions from Passenger Locomotives (NOx)	Repower existing Tier 0 and Tier 2 engines with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Use of alternative fuels can result in hazard impacts. Potential exposure to toxic air contaminant (ammonia) associated with SCRs during storage, transport, use and accidental release.
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels While at Berth (NOx)	Shore power of vessels at berth, use of air pollution control technologies on exhaust gases from auxiliary engines and boilers (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Use of alternative fuels can result in hazard impacts. Potential exposure to toxic air contaminant (ammonia) associated with SCRs during storage, transport, use and accidental release.
ADV-01	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles (NOx)	Construct "wayside" electric or magnetic infrastructure; construct battery charging and fueling infrastructure. Alternatively, if battery, fuel cell or other zero/near zero emission technologies progress sufficiently, the need for wayside power for rail or trucks may be diminished or eliminated.	Use of alternative fuels can result in hazard impacts.
ADV-02	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives (NOx)	Construct "wayside" electric, magnetic, battery-hybrid system, or fuel cell infrastructure, construct battery charging or fueling infrastructure.	Use of alternative fuels can result in hazard impacts.

TABLE 4.4-1 (Concluded)

Control Measures with Hazards and Hazardous Materials Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	HAZARD IMPACT
OZONE CONTROL MEASURES			
ADV-03	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment (NOx)	Construct electric gantry cranes, construct battery charging or fueling infrastructure, and use of alternative fuels.	Use of alternative fuels can result in hazard impacts.
ADV-04	Actions for the Deployment of Cleaner Commercial Harborcraft (NOx)	Construct battery charging or fueling infrastructure, use of air pollution control equipment (e.g., SCR, and use of alternative fuels).	Potential exposure to toxic air contaminant (ammonia) associated with SCRs during storage, transport, use and accidental release.
ADV-05	Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels (NOx)	Employ aftertreatment control technologies such as SCR and sea water scrubbers, and use of alternative fuels.	Potential exposure to toxic air contaminant (ammonia) associated with SCRs during storage, transport, use and accidental release.
ADV-06	Actions for the Deployment of Cleaner Off-Road Equipment (NOx)	Construct battery charging or fueling infrastructure, and increased use of alternative fuels.	Use of alternative fuels can result in hazard impacts.
ADV-07	Actions for the Deployment of Cleaner Aircraft Engines (NOx)	Use alternative fuels, lean combustion burners, high rate turbo bypass, advanced turbo-compressor design, and engine weight reduction.	Use of alternative fuels can result in hazard impacts.

4.4.3 Significance Criteria

Impacts associated with hazards and hazardous materials will be considered significant if any of the following criteria are met:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

4.4.4 Potential Hazards and Hazardous Materials Impacts and Mitigation Measures

4.4.4.1 Reformulated Coatings, Solvents, and Consumer Products

PROJECT-SPECIFIC IMPACTS: The 2012 AQMP control measures that could require reformulation of coatings, adhesives, solvents, lubricants, mold release agents, and consumer products are MCS-01, CTS-01, CTS-02, CTS-03, and CTS-04. To meet the lowered future VOC content limits, these products are expected to be reformulated. While reformulated products would be expected to have lower VOC contents, the reformulations could have widely varying flammability and health effects, depending on the chemical characteristics of the replacement solvents chosen. While most reformulations are expected to be made with water, which is not flammable and does not have adverse health impacts, other reformulations could be made with an exempt, but extremely flammable solvent, such as acetone. Acetone is an exempt compound from air quality rules and regulations because of its low reactivity. In addition, coatings, solvents and consumer products can also be reformulated with other solvents that are not exempted from the definition of a VOC in SCAQMD's Rule 102, but that also have flammability and health effects issues.

Table 4.4-2 identifies a list of typical conventional solvents and possible replacement solvents that may be used in the manufacture of coatings, adhesives, solvents, lubricants, mold release agents, and consumer products along with their chemical characteristics pertaining to whether each substance is fire hazard.

As illustrated in Table 4.4-2, the flammability classifications by the NFPA are the same for acetone as well as for other conventional solvents that are currently used in existing formulations such as tertiary butyl acetate (T-BAc), toluene, xylene, methyl ethyl ketone (MEK), isopropanol, butyl acetate, and isobutyl alcohol. Because acetone has the lowest flash point of all the chemicals listed, from a flammability perspective, reformulations made with acetone would represent the worst-case. However, it is important to note that acetone also has one of the highest LEL, 2.6 percent by volume, which means that acetone vapors will not cause an explosion unless the vapor concentration exceeds 26,000 ppm.

In contrast, a conventional solvent such as toluene can cause an explosion at 1.3 percent by volume or 13,000 ppm, which poses a much greater risk of explosion when compared to acetone. Similarly, the concentration of xylene, another conventional solvent, that can cause an explosion is even lower than toluene at 1.0 percent by volume or 10,000 ppm. However, facility operators are required to follow operating guidelines when working with flammable chemicals. These guidelines specify well-ventilated areas, as prescribed by the fire department codes, so that it would be difficult to achieve the LEL concentrations when working with flammable chemicals.

TABLE 4.4-2

Chemical Characteristics for Conventional and Potential Replacement Coating Solvents

CAS No.	Chemical Compound	Auto-ignition Temperature (°F)	Boiling Point (@760 mmHg, °F)	Evaporation Rate @ 25 °C (Butyl Acetate = 1)	Flash Point (°F)	LEL/UEL ^a (% by Vol.)	Vapor Pressure (mmHg @ 20 °C)	NFPA Flammability Rating ^b	Flammability ^c
Conventional Solvents									
67-64-1	Acetone	538	56	6.1	-4	2.6/12.8	180	3	Extremely Flammable
80-05-7	Bisphenol A	N/A	428	N/A	N/A	N/A	N/A	0	N/A
123-86-4	n-Butyl acetate	N/A	257	1	73	1.7/7.6	15	3	Extremely Flammable
111-79-2	2-Butoxyethanol	471.2	340.7	N/A	141.8	1.1/12.7	0.8	2	Combustible
78-92-2	sec-Butyl alcohol	N/A	208	N/A	81	1.7/9.8	11.5	3	Flammable
108-94-1	Cyclohexane	788	312.1	N/A	111	1.1/9.4	0.53	2	Combustible
25265-71-8	Diethylene glycol	444	471	N/A	255	1.6/10.8	1	1	Combustible
34590-94-8	Dipropylene glycol methyl ether	278.6	408	N/A	180	1.1/3	0.5	3	Combustible
29911-28-2	Dipropylene glycol monobutyl ether	N/A	441	N/A	205	N/A	0.06	1	Combustible
100-41-4	Ethylbenzene	809.6	276.8	0.84	70	0.8/7	6.75	3	Flammable
103-09-3	2-Ethylhexyl acetate	N/A	390	N/A	185	N/A	N/A	2	Combustible
107-21-1	Ethylene glycol	748	388	0.01	232	3.2/15.3	0.06	1	Combustible
109-59-1	Ethylene glycol isopropyl ether	N/A	109.5	N/A	109	1.6/13	2.6	2	Combustible
50-00-0	Formaldehyde	806	- 2	N/A	147	N/A	N/A	4	Combustible
78-83-1	Isobutyl alcohol	780	226	0.82	82	1.2/10.9	9	3	Flammable
108-21-4	Isopropyl acetate	N/A	109.5	N/A	39	1.8/8	47	3	Flammable
67-63-0	Isopropyl alcohol	399	180	2.3	53	2/12.7	33	3	Extremely Flammable
64742-95-6	Light aromatic hydrocarbons	880	335	0.3	180	0.6/7	11	2	Combustible
110-43-0	Methyl amyl ketone	N/A	301	N/A	106	1.1/7.9	2.14	2	Combustible
78-93-3	Methyl ethyl ketone	474	80	4	16	1.8/11.5	8.7	3	Extremely Flammable
108-10-1	Methyl isobutyl ketone	860	291	0.46	97	1/8.2	5	3	Flammable
107-87-9	Methyl n-propyl ketone	N/A	271.5	N/A	45	1.5/8.2	27	3	Flammable

TABLE 4.4-2 (Continued)

Chemical Characteristics for Conventional and Potential Replacement Coating Solvents

CAS No.	Chemical Compound	Auto-ignition Temperature (°F)	Boiling Point (@760 mmHg, °F)	Evaporation Rate @ 25 °C (Butyl Acetate = 1)	Flash Point (°F)	LEL/UEL ^a (% by Vol.)	Vapor Pressure (mmHg @ 20 °C)	NFPA Flammability Rating ^b	Flammability ^c
Conventional Solvents									
64741-41-9	Mineral spirits (Stoddard)	232	154-188	0.1	109-113	1.0 / 7	1.1	2	1. Combustible; 2. Special Hazards Labeling per 16 CFR Part 1500.14 (a)(3) & (b)(3)
64742-94-5	Heavy aromatic naphtha	830	719.6	>0.1	145	1.8/11.7	1	2	Combustible
91-20-3	Naphthalene	978.8	424	N/A	176	0.9/5.9	0.03	2	Combustible
8002-05-9	Petroleum distillate (Naphtha)	N/A	86-460	N/A	20 - 100	1.1/5.9	40	3	Extremely Flammable
108-88-3	Toluene	538	111	2	41	1.3/7	22	3	1. Flammable; 2. Special Hazards Labeling per 16 CFR Part 1500.14 (a)(3) & (b)(3)
108-67-8	1,3,5-Trimethylbenzene	550	329	0.01	122	2.6/12.5	2	2	Combustible
95-63-6	1,2,4-Trimethylbenzene	932	337	0.01	112	0.9/6.4	1	2	Combustible
64742-89-8	V.M.&P Naphtha	288	266.9	1.2	53.1	1.2/6	20	3	Flammable
1330-20-7	Xylene	499	139	0.8	81	1.0/6.6	6	3	1. Flammable; 2. Special Hazards Labeling per 16 CFR Part 1500.14 (a)(3) & (b)(3)

TABLE 4.4-2 (Continued)

Chemical Characteristics for Conventional and Potential Replacement Coating Solvents

CAS No.	Chemical Compound	Auto-ignition Temperature (°F)	Boiling Point (@760 mmHg, °F)	Evaporation Rate @ 25 °C (Butyl Acetate = 1)	Flash Point (°F)	LEL/UEL ^a (% by Vol.)	Vapor Pressure (mmHg @ 20 °C)	NFPA Flammability Rating ^b	Flammability ^c
Potential Replacement Solvents									
67-64-1	Acetone	538	56	6.1	-4	2.6/12.8	180	3	Extremely Flammable
100-51-6	Benzyl alcohol	817	401	0.006	199	1.3/13	0.15	2	Combustible
71-36-3	n-Butanol	N/A	242.5	N/A	95	1.4/11.2	4	3	Flammable
123-86-4	n-Butyl acetate	N/A	257	1	73	1.7/7.6	15	3	Extremely Flammable
85-68-7	Butyl benzyl phthalate	797	698	N/A	390	N/A	8.6E-6	1	Combustible
616-38-6	Dimethyl carbonate	869	194	3.2	64	4.2/12.9	42	3	Flammable
108-01-0	2-Dimethylaminoethanol	455	282	N/A	104	1.6/11.9	3.18	2	Combustible
117-81-7	Dioctyl phthalate	735	446	N/A	405	0.3/	< 0.01	1	Combustible
25265-71-8	Dipropylene glycol	590	449	N/A	250	2.9/12.6	0.03	1	Combustible
763-69-9	Ethyl 3-Ethoxypropionate	N/A	338	N/A	138	N/A	< 1	2	Combustible
141-78-6	Ethyl acetate	800	171	N/A	25	2.2/9	73	3	Extremely Flammable
64-17-5	Ethyl alcohol	685	173	1.4	55	3.3/19	44	3	Extremely Flammable
111-76-2	Ethylene glycol monobutyl ether	460	340	0.07	144	1.1/12.7	0.8	2	Combustible
111-80-5	Ethylene glycol monoethyl ether	455	275	0.41	120	1.7/15.6	4	2	Combustible
109-86-4	Ethylene glycol monomethyl ether	545	256	0.53	100	1.8/19.8	6	2	Combustible
2807-30-9	Ethylene glycol monopropyl ether	455	300	0.22	124	1.3/15.8	1.3	2	Combustible
149-57-5	2-Ethylhexanoic acid	699	442	N/A	244	1/8.6	< 0.01	1	Combustible
822-06-0	Hexamethylene diisocyanate	N/A	415	N/A	284	1/	0.5	1	Combustible
64742-53-6	Hydrotreated light naphthenic distillate	>600	500	N/A	295	N/A	0.04	1	Combustible
79-20-9	Methyl acetate	501	135	5.3	14	3.1/16	173	3	Extremely Flammable
96-29-7	Methyl ethyl ketoxime	N/A	306	N/A	1380	N/A	0.9	2	Combustible
101-68-8	Methylene bisphenyl diisocyanate	464	597	N/A	390	N/A	5E-6	1	Combustible
98-56-6	Parachlorobenzotrifluoride	>500	282	0.9	109	0.9/10.5	5.3	1	Combustible
57-55-6	Propylene glycol	700	370	0.01	210	2.6/12.5	0.08	1	Combustible

TABLE 4.4-2 (Concluded)

Chemical Characteristics for Conventional and Potential Replacement Coating Solvents

CAS No.	Chemical Compound	Auto-ignition Temperature (°F)	Boiling Point (@760 mmHg, °F)	Evaporation Rate @ 25 °C (Butyl Acetate = 1)	Flash Point (°F)	LEL/UEL ^a (% by Vol.)	Vapor Pressure (mmHg @ 20 °C)	NFPA Flammability Rating ^b	Flammability ^c
Potential Replacement Solvents									
108-65-6	Propylene glycol monomethyl ether acetate	N/A	294	N/A	109	1.1/13.1	2.53	2	Combustible
770-35-4	Propylene glycol phenyl ether	923	469	0.002	239	0.8/6.0	0.01	3	Flammable
1569-01-3	Propylene glycol propyl ether	N/A	302	N/A	118	N/A	N/A	2	Combustible
100-42-5	Styrene	914	293	0.5	88	1.1/6.1	4.5	3	Flammable
540-88-5	Tertiary butyl acetate	N/A	208	2.8	62	1.5 /N/A	N/A	3	Flammable
25265-77-4	Texanol	730	471	< 0.01	248	0.6/4.2	0.01	1	Combustible
26471-62-5	Toluene diisocyanate	1148	478	N/A	250	0.9/9.5	0.025	1	Combustible
121-44-8	Triethylamine	480	194	5.6	16	1.2/8.0	57.1	3	Extremely Flammable
144-19-4	Trimethyl 1,3-pentanediol	572	450	N/A	235	N/A	N/A	1	Combustible

^a Lower Explosive Limit / Upper Explosive Limit

^b NFPA Flammability Rating: 0 = Not Combustible; 1 = Combustible if heated; 2 = Caution: Combustible liquid flash point of 100° to 200°F; 3 = Warning: Flammable liquid flash point below 100°F; 4 = Danger: Flammable gas or extremely flammable liquid

^c The Consumer Products Safety Commission (CPSC) has Labeling and Banning Requirements for Chemicals and Other Hazardous Substances which are located in 15 U.S.C. §1261 and 16 CFR Part 1500. Specifically, the flammability of a product is defined in 16 CFR Part 1500.3 (c)(6) and is based on flash point. For example, a flammable liquid needs to be labeled as: 1) "Extremely Flammable" if the flash point is below 20 °F; 2) "Flammable" if the flash point is above 20 °F but less than 100°F; or, 3) "Combustible" if the flash point is above 100 °F up to and including 150 °F.

While a “worst-case” flammability scenario could be that all of the affected 2012 AQMP coatings, solvents and consumer products would be reformulated with acetone to meet the interim and final VOC content limits, due to lower costs, most future reformulated products will likely be reformulated using primarily water. Water-based coatings are generally not flammable and typically have a lower NFPA classification, and a lower CPSC classification, when compared to coatings formulated with conventional solvents.

Chemistry classes at all levels from grade school to universities, as well as industrial laboratories, use acetone for wiping down counter tops and cleaning glassware. Additional uses for acetone include solvent for paint, varnish, lacquers, inks, adhesives, floor coatings, and cosmetic products including nail polish and nail polish remover. Further, it is currently used widely in coating and solvent formulations.

Labels and MSDSs accompanying acetone-based products caution the user regarding acetone’s flammability and advise the user to “*keep the container away from heat, sparks, flame and all other sources of ignition. The vapors may cause flash fire or ignite explosively. Use only with ventilation.*” All of the large coating manufacturers currently offer pure acetone for sale with similar warnings. The Uniform Fire Code (UFC) treats solvents such as acetone, butyl acetate, and MEK as Class I Flammable Liquids. Further, the UFC considers all of these solvents to present the same relative degree of fire hazard (SCAQMD, 2003).

A list of conventional and potential replacement solvents and their related health hazards information are shown in Table 4.4-3. As illustrated in Table 4.4-3, some of the potential replacement solvents have lower or less severe TLVs, PELs, IDLHs than some of the conventional solvents. For example, acetone would be considered to have less health hazards than all of the conventional solvents listed. However, there are some replacement solvents that could have higher, more severe, or unknown toxicological effects. For example, the diisocyanate group of solvents appear to have more severe toxicological effects than the listed traditional solvents.

In addition to the health hazard values summarized in Table 4.4-3, there are several chemicals listed that are toxics, identified as TACs, including but not limited to the following: ethylbenzene, formaldehyde, methyl ethyl ketone (MEK), methyl isobutyl ketone (MIBK), toluene, triethylamine, and xylene. The use of materials that contain toxic compounds is of particular concern, in both existing formulations as well as reformulated products, to the SCAQMD and other agencies such as EPA, CARB, OSHA, and the Office of Environmental Health Hazard Assessment (OEHHA) (which is part of the California Environmental Protection Agency (Cal/EPA)), because some of the TACs used in some coatings are considered carcinogens (cancer-causing) such as formaldehyde while others may have other non-cancer health effects¹.

¹ Formaldehyde, toluene, triethylamine, and xylene are classified as having both chronic and acute health effects; ethylbenzene as having chronic health effects and zinc oxide proposed as having chronic health effects; MEK as having acute health effects with future proposed risk value for chronic; and, cobalt compounds as having future proposed risk values. In addition, MIBK is classified by EPA as a HAP, but the toxicology assessment is not finalized.

TABLE 4.4-3
Health Hazards of Conventional and Potential Replacement Solvents

CAS No.	Chemical Compound	NFPA Health Rating ^a	TLV (ACGIH) ^b (ppm)	PEL (OSHA) ^c (ppm)	IDLH (NIOSH) ^d (ppm)	Health Effects
Conventional Solvents						
67-64-1	Acetone	1	500	1,000	2,500	Mild irritation - eye, nose, throat, skin; narcosis
80-05-7	Bisphenol A	2	N/A	N/A	N/A	Mild irritation - eyes and skin
123-86-4	n-Butyl acetate	2	150	150	1,700	Moderate irritation – eye, nose, throat; narcosis
111-79-2	2-Butoxyethanol	1	20	50	5	Mild irritation - eyes, skin and respiratory
78-92-2	sec-Butyl alcohol	2	100	150	2,000	Mild irritation - eye, nose, throat, skin; narcosis
108-94-1	Cyclohexane	2	20	50	700	Moderate irritation- eye, skin, nose and throat
25265-71-8	Diethylene glycol	1	N/A	N/A	N/A	Mild irritation - eyes and skin
34590-94-8	Dipropylene glycol methyl ether	0	100	100	100	Mild irritation – eye, skin, respiratory, digestion
29911-28-2	Dipropylene glycol monobutyl ether	1	N/A	N/A	N/A	Potential severe irritation to eyes, nose and throat; moderate skin and digestion irritation
100-41-4	Ethylbenzene	2	100	100	800	Moderate irritation – eye, skin, nose, throat
103-09-3	2-Ethylhexyl acetate	2	N/A	N/A	N/A	Mild irritation – eye, skin, respiratory, digestion
107-21-1	Ethylene glycol	2	100	50	N/A	Mild irritation – respiratory, skin, kidney, reproductive
109-59-1	Ethylene glycol isopropyl ether	2	25	25	N/A	Mild irritation – eye, skin, respiratory, digestion
50-00-0	Formaldehyde	3	0.30	1	0.016	Irritation - skin, eyes, nose, and throat. High levels of exposure may cause some types of cancers.
78-83-1	Isobutyl alcohol	1	50	100	8,000	Mild irritation – eye, nose, throat; suspect carcinogen
108-21-4	Isopropyl acetate	1	100	250	1,800	Mild irritation – eye, skin, nose, throat
67-63-0	Isopropyl alcohol	1	200	400	2,000	Mild irritation – eyes, nose, throat; narcosis
64742-95-6	Light aromatic hydrocarbons	2	10-100	10-100	25-100	Mild irritation – eye, skin, respiratory, digestion
110-43-0	Methyl amyl ketone	1	50	100	100	Mild irritation - eyes and skin
78-93-3	Methyl ethyl ketone	1	200	200	3,000	Mild irritation – eye, nose, throat; narcosis; skin
108-10-1	Methyl isobutyl ketone	2	50	50	50	Potential serious eye irritation; mild skin and respiratory irritation
107-87-9	Methyl n-propyl ketone	2	150	200	150	Moderate irritation – eye, skin, respiratory

TABLE 4.4-3 (Continued)
Health Hazards of Conventional and Potential Replacement Solvents

CAS No.	Chemical Compound	NFPA Health Rating ^a	TLV (ACGIH) ^b (ppm)	PEL (OSHA) ^c (ppm)	IDLH (NIOSH) ^d (ppm)	Health Effects
Conventional Solvents						
64741-41-9	Mineral spirits (Stoddard)	1	100	500	5,000	Narcosis; mild irritant
64742-94-5	Heavy aromatic naphtha	2	N/A	N/A	N/A	Mild irritation – eye, skin, respiratory, digestion
91-20-3	Naphthalene	4	10	10	10	Moderate irritation - eye, skin; fatal if inhaled
8002-05-9	Petroleum distillate (Naphtha)	1	400	500	1,100	Mild irritation; narcosis
108-88-3	Toluene	2	50	200	500	Moderate irritation – eye, nose, throat; narcosis; skin; suspect teratogen; mutagen, nervous system
108-67-8	1,3,5-Trimethylbenzene	2	25	25	25	Mild irritation - skin, eye; harmful if inhaled
95-63-6	1,2,4-Trimethylbenzene	2	25	25	25	Mild irritation - skin; serious irritation- eye; harmful if inhaled
64742-89-8	V.M.&P Naphtha	1	300	500	N/A	Mild irritation - skin, eye
1330-20-7	Xylene	2	100	100	1,000	Mild irritation – eye, nose, throat; narcosis; skin
Potential Replacement Solvents						
67-64-1	Acetone	1	500	1,000	2,500	Mild irritation - eye, nose, throat, skin; narcosis
100-51-6	Benzyl alcohol	2	N/A	N/A	N/A	Mild irritation - skin, respiratory; severe eye and ingestion irritation
71-36-3	n-Butanol	2	20	100	1,400	Potential severe irritation to eyes, nose and throat; moderate skin, digestion and respiratory irritation
123-86-4	n-Butyl acetate	2	150	150	150	Mild irritation - skin, eye, respiratory, digestion
85-68-7	Butyl benzyl phthalate	1	N/A	N/A	N/A	Mild irritation - eye, nose, throat, skin
108-01-0	2-Dimethylaminoethanol	3	N/A	N/A	N/A	Potential severe irritation to eyes, skin, throat and digestion; high risk to unborn child
616-38-6	Dimethyl carbonate	0	N/A	N/A	N/A	Mild irritation - respiratory, skin, eye, digestive
117-81-7	Dioctyl phthalate	0	N/A	N/A	N/A	Mild irritation - respiratory, skin, eye, digestive
25265-71-8	Dipropylene glycol	1	N/A	N/A	N/A	Mild irritation - respiratory, skin, eye, digestive, nausea, dizziness; may cause liver and kidney damage
763-69-9	Ethyl 3-Ethoxypropionate	1	0.3	N/A	0.01	Mild irritation - respiratory, skin, eye, digestive

TABLE 4.4-3 (Continued)
Health Hazards of Conventional and Potential Replacement Solvents

CAS No.	Chemical Compound	NFPA Health Rating ^a	TLV (ACGIH) ^b (ppm)	PEL (OSHA) ^c (ppm)	IDLH (NIOSH) ^d (ppm)	Health Effects
Potential Replacement Solvents						
141-78-6	Ethyl acetate	1	400	400	400	Mild irritation - respiratory, skin, eye, digestive; may cause acute inhalation
64-17-5	Ethyl alcohol	2	1,000	1,000	1,000	Mild irritation - respiratory, skin, eye, digestive
111-76-2	Ethylene glycol monobutyl ether	2	20	50	700	Mild irritation – eye, nose, throat; anemia; skin
111-80-5	Ethylene glycol monoethyl ether	2	5	200	500	Cumulative blood damage; moderate irritation of eyes, throat, skin
109-86-4	Ethylene glycol monomethyl ether	2	5	25	N/A	Cumulative CNS; skin; suspect reproductive effects; blood disorders
2807-30-9	Ethylene glycol monopropyl ether	2	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
149-57-5	2-Ethylhexanoic acid	2	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
822-06-0	Hexamethylene diisocyanate	4	0.005	N/A	0.005	Potential fatality if inhaled; moderate skin, eye irritation; toxic if swallowed
64742-53-6	Hydrotreated light naphthenic distillate	1	N/A	N/A	N/A	Mild irritation - eye, skin, respiratory, digestive
79-20-9	Methyl acetate	2	200	200	200	Mild irritation - eye, nose, skin, respiratory, digestive
96-29-7	Methyl ethyl ketoxime	2	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
101-68-8	Methylene bisphenyl diisocyanate	3	0.01	0.02	40	Mild irritation – respiratory
98-56-6	Parachlorobenzotrifluoride	2	N/A	N/A	N/A	Mild irritation - eye, nose, respiratory, digestive
57-55-6	Propylene glycol	0	100	100	N/A	Mild irritation – slight eye, anesthesia
108-65-6	Propylene glycol monomethyl ether acetate	1	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
770-35-4	Propylene glycol phenyl ether	2	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
1569-01-3	Propylene glycol propyl ether	2	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
100-42-5	Styrene	2	20	100	5,000	Mild irritation – eye, respiratory, neurotoxicity

TABLE 4.4-3 (Concluded)
Health Hazards of Conventional and Potential Replacement Solvents

CAS No.	Chemical Compound	NFPA Health Rating ^a	TLV (ACGIH) ^b (ppm)	PEL (OSHA) ^c (ppm)	IDLH (NIOSH) ^d (ppm)	Health Effects
Potential Replacement Solvents						
540-88-5	Tertiary butyl acetate	2	200	200	200	Mild irritation - eye, nose, skin, respiratory, digestive; prolonged exposure may cause dermatitis, blood effects, central nervous system and kidney problems
25265-77-4	Texanol	1	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive
26471-62-5	Toluene diisocyanate	3	0.005	0.02	10	Mild irritation – respiratory
121-44-8	Triethylamine	3	1	25	200	Mild irritation - eye; Cumulative eye, respiratory, and hematological effects.
144-19-4	Trimethyl 1,3-pentanediol	0	N/A	N/A	N/A	Mild irritation - eye, nose, skin, respiratory, digestive

^a NFPA Health Rating: 0 = No unusual hazard; 1 = Caution: May be irritating; 2 = Warning: May be harmful if inhaled or absorbed; 3 = Warning: Corrosive or toxic. Avoid skin contact or inhalation; 4 = Danger: May be fatal on short exposure. Specialized protective equipment required.

^b TLV = Threshold Limit Value, a recommended guideline established by the American Conference of Governmental Industrial Hygiene (ACGIH)

^c PEL = Permissible Exposure Limit, established by OSHA

^d IDLH = Immediately Dangerous to Life and Health, established by NIOSHA

For these reasons, there are two local rules that regulate TAC emissions in coatings: SCAQMD Rule 1401 – New Source Review of Toxic Air Contaminants, and SCAQMD Rule 1402 – Control of Toxic Air Contaminants From Existing Sources. Rule 1401 applies to new and modified facilities, including coating facilities, and Rule 1402 applies to facility-wide risk at existing facilities. Since the majority of coating facilities located within SCAQMD’s jurisdiction are existing sources, the requirements in Rule 1402 are the main drivers for reducing overall risk and, therefore, TAC emissions from this industry.

For reasons of cost and to provide flexibility with stringent coating VOC content requirements the SCAQMD has received requests to exempt two chemicals from the definition of a VOC in SCAQMD’s Rule 102: tertiary butyl acetate (T-Bac) and dimethyl carbonate (DMC). T-BAc is not currently identified in any of SCAQMD’s rules as a TAC. T-BAc has been delisted as a VOC by the U.S. EPA², but it has not been delisted as a VOC by CARB or the SCAQMD. When delisting a compound from the definition of VOC, EPA only considers reactivity and does not address whether the compound is toxic or has global warming or stratospheric ozone depleting potential. T-BAc is not currently classified as a hazardous air pollutant under the federal Clean Air Act. T-BAc possesses a low photochemical reactivity as well as some other physical and chemical properties that are considered desirable by its manufacturer’s representatives. However, T-BAc may be unsuitable for consideration as a potential replacement for all conventional solvents because of T-BAc’s potential toxicity. Specifically, T-BAc has the potential to form a metabolite called tert-butyl alcohol (TBA) which has cancer potency and acute noncarcinogenic values established by OEHHA. According to Acute Toxicity and Cancer Risk Assessment Values for TBA, (Budroe, et al., 2004), “TBA should be considered to pose a potential cancer risk to humans because of the metabolic conversion to TBA.”

Under limited and prescribed circumstances, the SCAQMD incorporated limited use exemptions for T-BAc into SCAQMD Rules 1113 - Architectural Coatings, and 1151 - Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations) to provide potential compliance flexibility while limiting use of T-BAc because of the potential toxic concerns.

DMC is also not currently identified in any of SCAQMD’s rules as a TAC. EPA revised the federal VOC definition to exclude DMC based on its negligible photochemical reactivity³. DMC is also currently not identified as a HAP under the federal Clean Air Act nor is it classified as an ozone depleting substance. No exposure guidelines have been established for DMC by the American Conference of Governmental Industrial Hygienists (ACGIH), or by the National Institute for Occupational Safety and Health (NIOSH). DMC is of concern because it forms a metabolite (an intermediate product of metabolism) consisting of methanol, which is a carcinogen.

² U.S. EPA. 2004. Revision to Definition of Volatile Organic Compounds – Exclusion of t-Butyl Acetate, 40 CFR Part 51, Federal Register 69298, November 29, 2004. (<http://www.gpo.gov/fdsys/pkg/FR-2004-11-29/pdf/04-26069.pdf>)

³ U.S. EPA. 2009. Air Quality: Revision to Definition of Volatile Organic Compounds- Exclusion of Propylene Carbonate and Dimethyl Carbonate, 40 CFR Part 51, Federal Register 3437, January 21, 2009. (<http://www.gpo.gov/fdsys/pkg/FR-2009-01-21/pdf/E9-1150.pdf>)

Thus, when coatings and other products are reformulated as part of implementing the various control measures proposed in the 2012 AQMP, manufacturers could potentially use replacement chemicals that could pose new or different health risks, but SCAQMD Rule 1401 and 1402 would limit potential exposures to nearby receptors. Further, as was the case with the limited use exemption of T-Bac in Rules 1113 and 1151, future SCAQMD rulemaking would require individual evaluation of replacement chemicals that could pose health risks.

When comparing the conventional solvents listed in Table 4.4-3, some of the replacement solvents (e.g., triethylamine) are likely to be present in trace amounts and accidental releases would be considered a one-time event that would be neutralized and cleaned up before all the solvent has evaporated, so no new chronic health risk is expected. As shown in Table 4.4-3, the toxicity of replacement materials is generally less or no worse than conventional solvents overall but if a facility changes from using water-based products to using products that are reformulated with chemicals that may have new or different health hazards, significant adverse health hazard impacts could occur from using some low VOC reformulated products. However, as with the use of all chemicals, facilities and their workers would be required to continue to comply with existing health protective procedures when handling both flammable and toxic materials. In addition, any increase in the future use of low VOC compliant coating materials that are reformulated with water would be expected to result in a concurrent reduction in the number of accidental releases of high VOC coating materials. As a result, the net number of accidental releases would be expected to remain constant, allowing for population growth in southern California.

Regarding fire hazards, if manufacturers use solvents such as Texanol, propylene glycol, etc., in future compliant water-borne coatings, significant adverse hazard impacts would not be expected to occur because in general these solvents are either equivalent or less flammable solvent per the NFPA ratings. However, if manufacturers reformulate with acetone, then more acetone-based (and extremely flammable) products would be on the market. Similarly, if manufacturers reformulate with products that have increased flammability than products manufactured with conventional solvents, consumers who may be used to a higher VOC product with lower flammability, may be unaware that the reformulated products may have chemicals with increased flammability and an increased risk when used.

Lastly, in general, water-based coatings and products tend to contain less flammable and less toxic materials than solvent-based coatings and products. While the continued and potentially increased use of waterborne coatings and products would generally be expected to reduce the overall hazard impacts associated with solvent-based products, a switch from currently using water-based products to reformulated solvent-based products could offset any reduction realized. Without knowing how many facilities currently using water-based products would switch to using reformulated solvent-based products as a result of implementing the 2012 AQMP control measures, significant impacts on fire hazards associated with reformulated coatings, solvents and consumer products could occur. Therefore, hazards and hazardous materials impacts associated with increased flammability of potential replacement solvents are concluded to be significant.

PROJECT-SPECIFIC MITIGATION: Since hazards and hazardous materials impacts associated with increased flammability of potential replacement solvents, reformulated coatings and consumer products were identified, the following mitigation measures are necessary and required as part of future rule development pertaining to reformulated products:

HZ-1: Add consumer warning requirements for all flammable and extremely flammable products; and,

HZ-2: Add requirements to conduct a public education and outreach program in joint cooperation with local fire departments regarding flammable and extremely flammable products that may be included in consumer paint thinners and multi-purpose solvents.

REMAINING IMPACTS: The fire hazard impacts are expected to be significant prior to mitigation. While the SCAQMD cannot predict which coatings, solvents and consumer products each affected facility might choose to use in the future as reformulations become available, the mitigation measure is expected to be effective at informing consumers about the potential fire hazards associated with reformulated products. Thus, after mitigation, no remaining significant impacts on fire hazards are expected.

4.4.4.2 Use of Alternative Fuels

The 2012 AQMP would establish in-use strategies that may require or promote the use of alternative fuels including Control Measures IND-01, INC-01, ONRD-01, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07. Control Measure IND-01 is the only control measure developed for PM_{2.5} emission reductions and the rest of the control measures were developed for ozone precursor reductions. Use of alternative fuels in place of conventional fuels may present a potential safety issue due to the increased transport, use and handling of alternative fuels. All fuels are flammable; therefore, their use could result in increased hazards associated with their transport and use.

4.4.4.2.1 *Methanol/Methanol Blends*

Methanol or methyl alcohol is a clear colorless liquid which is commercially manufactured from natural gas in the U.S. At its peak, nearly six million gasoline gallon equivalents of methanol blends were used annually in alternative fuel vehicles in the U.S. Methanol use in vehicles has declined dramatically since the early 1990s, and automakers no longer manufacture methanol vehicles (DOE, 2012).

Methanol is often designated at M100, which is 100 percent methanol, or M85, which are 85 percent methanol and 15 percent gasoline. Pure methanol has low flame luminosity, making it difficult to see fires, particularly in daylight. However, the addition of gasoline to M85 increases both the luminosity and the fuel volatility. The increased luminosity produces a visible flame, and the latter effect generally makes the vapors present in the fuel tank too rich to be flammable.

The bulk transfer of methanol is usually done in standard petroleum tanker trucks. There is no reason to expect that methanol transport will be more dangerous than gasoline or diesel transport. There are, however, certain physical properties of methanol that must be addressed during transport and storage when compared to gasoline or diesel. First, methanol (M100 and M85) is incompatible with several types of materials typically used in petroleum storage and transfer systems. Therefore, it is necessary to take special precautions in selecting material for these purposes. Second, pure methanol (M100) vapor/air mixtures at ambient temperatures and pressures can create a flammable mixture in the ullage space of a storage tank. Therefore, it is important to ensure that there are strong safeguards against any ignition sources inside tanks and that vent lines or other openings have flame arrestors. Furthermore, any fill lines must extend below the liquid methanol level to provide a seal between an external ignition source and the vapor/air mixture in the tank. M85 vapors are primarily composed of gasoline, and should not change the fire hazard of transfer and storage relative to gasoline (DOT, 1995).

Methanol has been used for car racing in the U.S. The main reason for this choice was its safety compared to gasoline. Methanol is harder to ignite, creates less radiant heat, can be controlled/extinguished with water, and burns without producing black smoke, facilitating rescue. For regular driving, methanol offers a substantial decrease in the risks of fuel fire deaths compared to gasoline for the same reasons as in racing. For M100 a 90 percent reduction in fuel related automotive fires is projected, while a smaller reduction of 40 percent is projected for M85 (MIT, 2010).

PROJECT-SPECIFIC IMPACTS - METHANOL: Compared with diesel fuel and gasoline the following can be stated with respect to methanol:

- Diesel fuel and gasoline contain components that are considerably more hazardous than methanol. For example, diesel fuel contains highly toxic polynuclear aromatic hydrocarbons (PAHs) and gasoline contains an array of toxic compounds, including benzene, a known carcinogen;
- Diesel fuel and gasoline vapors are heavier than air (for a specific gravity of air =1, gasoline is 3.4 and diesel is greater than 4). Methanol is heavier than air but lighter (specific gravity is 1.11) than gasoline and diesel fuel and disperses more readily in air than gasoline or diesel fuel;
- Methanol has a higher auto ignition temperature (793 degrees Fahrenheit [°F]) than diesel fuel (500 °F) or gasoline (500 °F);
- Methanol is more difficult to ignite since it has a “lower flammability limit” that is higher (5.5 percent) than gasoline (approximately one percent) or diesel fuel (0.5 percent);
- Unlike gasoline, methanol can ignite in enclosed spaces such as fuel tanks since its upper flammability limit is 15 percent and it is slightly heavier than air. For gasoline in a confined space, the vapor concentration exceeds the higher flammability limit (7.6 percent) and is therefore too high to ignite in the tank. Modifications such as materials

inside the fuel tank that can arrest and quench flame propagation and modifications to isolate the tank from sparks and ignition sources are required to avoid ignition in the fuel tanks; and,

- In case of fire, methanol can be extinguished with water while water on gasoline or diesel fuel spreads the fire.

In 2005 California stopped the use of methanol after 25 years and 200,000,000 miles of operation. There are currently no fueling stations in the state. Although there is still some interest in methanol as a vehicle fuel, there is great emphasis on research and development of other alternative fuels. Consequently, it is not expected that methanol use will increase substantially.

PROJECT-SPECIFIC MITIGATION - METHANOL: Less than significant impacts on hazards associated with the use of methanol as an alternative fuel are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS - METHANOL: The hazard impacts associated with using methanol as an alternative fuel are expected to be less than significant. Thus, no remaining hazard impacts associated with methanol use are expected.

4.4.4.2.2 *Ethanol/Ethanol Blends*

Like methanol, ethanol is a clear colorless organic liquid with physical and chemical properties which do not change from source to source like conventional fuels. In the U.S., ethanol is typically produced from corn or other grain products, while some imported ethanol is produced from sugar cane. For commercial or industrial use, pure ethanol (E100) is usually denatured with a small amount of gasoline or similar substance to avoid federal alcoholic beverage tax and intentional ingestion. Heavy duty vehicles use E95 (95 percent ethanol and five percent gasoline) or E93 (93 percent ethanol, five percent methanol, and two percent kerosene). Light and medium duty vehicles use E85 (85 percent ethanol and 15 percent gasoline). Vapors from ethanol blended fuels will exhibit similar flammability characteristics as gasoline. There are currently 48 E85 fueling stations that are open to the public in California (U.S. DOE, 2012).

The bulk transfer of ethanol is usually done in standard petroleum tanker trucks. Since the NFPA classification of ethanol is the same as gasoline or diesel (Class IB flammable liquid), there is no reason to expect that ethanol transport will be more dangerous than gasoline or diesel transport. There are, however, certain physical properties of ethanol that must be addressed during transport and storage when compared to gasoline or diesel. First, ethanol is incompatible with some types of materials used in petroleum storage and transfer systems; therefore, it is necessary to take some precaution to assure ethanol capable materials are used. Second, like M100, E100 vapor/air mixtures at ambient temperatures and pressures can create a flammable mixture in the ullage space of a storage tank. Therefore, it is important to ensure that there are strong safeguards against any ignition sources inside tanks and that vent lines or other openings have flame arrestors. Furthermore, any fill lines must extend below the liquid ethanol level to provide a seal between an external ignition source

and the vapor/air mixture in the tank. Ethanol blended fuel vapors are primarily composed of gasoline, and should not change the fire hazard of transfer and storage relative to gasoline (DOT, 1995).

PROJECT-SPECIFIC IMPACTS – ETHANOL/ETHANOL BLENDS: Compared with diesel fuel and gasoline the following can be stated with respect to ethanol:

- Diesel fuel and gasoline contain components that are considerably more hazardous than ethanol. For example, diesel fuel contains highly toxic polynuclear aromatic hydrocarbons (PAHs) and gasoline contains an array of toxic compounds, including benzene, a known carcinogen;
- Diesel fuel and gasoline vapors are heavier than air (for a specific gravity of air =1, gasoline is 3.4 and diesel is greater than 4). Ethanol is heavier than air but lighter (specific gravity is 1.6) than gasoline and diesel fuel and disperses more readily in air than gasoline or diesel fuel;
- Ethanol has a higher auto ignition temperature (684 degrees Fahrenheit [°F]) than diesel fuel (500 °F) or gasoline (500 °F);
- Ethanol is more difficult to ignite since it has a “lower flammability limit” that is higher (3.3 percent) than gasoline (approximately one percent) or diesel fuel (0.5 percent);
- Unlike gasoline, ethanol can ignite in enclosed spaces such as fuel tanks since its upper flammability limit is 15 percent and it is slightly heavier than air. For gasoline in a confined space, the vapor concentration exceeds the higher flammability limit (7.6 percent) and is therefore too high to ignite in the tank. Modifications such as materials inside the fuel tank that can arrest and quench flame propagation and modifications to isolate the tank from sparks and ignition sources are required to avoid ignition in the fuel tanks; and,
- In case of fire, ethanol can be extinguished with water while water on gasoline or diesel fuel spreads the fire.

Based upon the preceding information, hazards associated with ethanol are approximately equivalent or less compared to conventional fuels. Therefore, increased usage of ethanol with a concurrent decline in usage of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased usage of ethanol is not expected to generate significant adverse hazard impacts.

PROJECT-SPECIFIC MITIGATION – ETHANOL/ETHANOL BLENDS: Less than significant impacts on hazards associated with the use of ethanol or ethanol blends as an alternative fuel are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS – ETHANOL/ETHANOL BLENDS: The hazard impacts associated with using ethanol and ethanol blends as an alternative fuel are expected to be

less than significant. Thus, no remaining hazard impacts associated with ethanol and ethanol blend use are expected.

4.4.4.2.3 *Compressed Natural Gas (CNG)*

Natural gas is a mixture of hydrocarbons, mainly methane, that are in gaseous form at ambient temperature and pressure. It is also odorless and tasteless; therefore, an odorant is added so personnel in the vicinity of a leak can detect the presence of natural gas before it has reached the flammability limit in the area. Unlike other alternative fuels, natural gas already has an extensive distribution system and supply network. The issues of bulk transfer and storage are very different from other fuels, which are usually transported via tanker truck. CNG is generally produced onsite using compressors fed from a nearby natural gas pipeline. The typical range of methane in pipeline quality natural gas is approximately 80 to 95 percent. However, CARB has specified that the methane content to be greater than 88 percent for vehicular grade CNG. Typical on-board pressures for CNG range from 3,000 to 3,600 pounds per square inch gauge (psig) (DOT, 1995). There are currently 140 CNG refueling stations that are open to the public in California, and a few manufactures offer home refueling options (U.S. DOE, 2012).

The SCAQMD has had a history of promoting the use of CNG in the past and few issues have arisen from the transport of CNG, as most refueling applications have relied on the existing natural gas pipeline infrastructure. Furthermore, CNG compositions and storage cylinders in vehicles follow NFPA 52 (CNG Vehicular Fuel Systems) and Society of Automotive Engineers (SAE) J1616 (Recommended Practice for CNG Fuel) specifications. These specifications limit the potential hazards related to CNG leaks related to fuel storage and use in vehicles. Furthermore, natural gas has a higher flammability limit (five percent) than gasoline (one percent) or diesel (0.5 percent). Natural gas also has a lower ignition temperature (1,200 °F) than gasoline or diesel (500 °F). Other hazards associated with compressed fuels are projectiles from openings and freeze burns from rapid vaporization.

The main additional hazard associated with the use of CNG versus conventional fuels is the exposure to high pressures employed during storage, dispensing and operations. Due to these high pressures a large amount of gas could escape in a short amount of time and, if present under flammable conditions, could explode in the presence of an ignition source. Another potentially significant hazard is a release of natural gas during vehicle maintenance (DOT, 1995).

PROJECT-SPECIFIC IMPACTS - CNG: Compared with diesel fuel and gasoline the following can be stated with respect to CNG:

- Diesel fuel and gasoline are toxic to the skin and lungs while CNG is not;
- Diesel fuel and gasoline vapors are heavier than air (for specific gravity of air =1, gasoline is 3.4 and diesel fuel is >4). CNG is lighter than air (specific gravity is 0.55) and disperses more readily in air;

- CNG has a higher auto ignition temperature (1,200 °F) than diesel fuel (500 °F) or gasoline (500 °F);
- CNG is more difficult to ignite since it has a “lower flammability limit” that is higher (5.3 percent) than gasoline (one percent) or diesel fuel (0.5 percent); and,
- Natural gas can be directly shipped via pipelines to the compressor station, rather than by on-road delivery trucks, and has less delivery accident risk than vehicle shipments.
- Based upon the preceding information, hazards associated with CNG are approximately equivalent or less compared to conventional fuels. Therefore, increased usage of CNG with a concurrent decline in usage of conventional fuels will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased usage of CNG is not expected to generate significant adverse hazard impacts.

PROJECT-SPECIFIC MITIGATION – CNG: Less than significant impacts on hazards associated with the use of CNG as an alternative fuel are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS – CNG: The hazard impacts associated with using CNG as an alternative fuel are expected to be less than significant. Thus, no remaining hazard impacts associated with CNG use are expected.

4.4.4.2.4 *Liquefied Natural Gas (LNG)*

Natural gas can be liquefied by refrigerating it below -160 degrees Celsius or -260 degrees Fahrenheit at relatively low pressure (20 to 150 psig). Like CNG, there are NFPA standards (NFPA 59A – Standards for Production, Storage, and Handling of LNG and NFPA 57 – Standard for LNG Vehicular Fuel Systems) for the handling, storage, production, and use of LNG, especially in vehicles. However, unlike CNG, most LNG is not generated on-site. Instead, LNG is typically delivered via insulated double walled tanker trucks to distribution facilities. The double walled construction of the LNG tanker trucks are more robust than standard petroleum tanker trucks, therefore, the transport of LNG is safer from spills and tank ruptures during accidents than conventional fuel tanker trucks.

PROJECT-SPECIFIC IMPACTS – LNG HEALTH IMPACTS: The safety issues associated with LNG are similar to CNG, with the added hazards of handling a cryogenic liquid and the vaporization of the liquid. The cryogenic liquids have the potential to burn workers who come into contact with the liquid or uninsulated surfaces. This hazard can be mitigated by proper personal protective equipment and training. The vaporization of LNG in storage tanks can potentially cause a boiling liquid expanding vapor explosion (BLEVE). For a BLEVE to occur there would need to be a catastrophic failure of all safety measures, including safety relief valves and burst discs, built into the vessel the design code.

The main additional hazard associated with the use of LNG versus conventional fuels are personal injuries from contact with a cryogenic liquid and the potential for a large fire

stemming from release in the case of an accident (e.g., a tanker truck accident or storage tank failure). Another potentially significant hazard is a release of natural gas during vehicle maintenance (DOT, 1995).

Hazards associated with LNG are that, under certain conditions, it may explode or catch on fire. LNG is not explosive or flammable in unconfined areas⁴. However, as it warms and expands to a gas it becomes flammable at a concentration between five and 15 percent.

LNG is comprised mostly of methane, but may contain ethane, propane and other heavier gaseous hydrocarbons. The main acute health effect associated with ammonia vapor is asphyxia. Asphyxia is the condition of severely depleting the oxygen supply to the body. Methane causes asphyxia by displacing oxygen in air. Asphyxiation can occur when oxygen concentrations drop below 18 percent. Oxygen is displaced to 18 percent at a concentration of 14 percent methane. Unconsciousness from central nervous system depression occurs at 30 percent methane⁵. The potential adverse health effects of oxygen deficiency are summarized in Table 4.4-4.

TABLE 4.4-4
Effects of Oxygen Deficiency

Amount of Oxygen Deficiency	Effects of Oxygen Deficiency
12-16 percent	Breathing and pulse rate are increased, with slight muscular incoordination
10-14 percent	Emotional upsets, abnormal fatigue from exertion, disturbed respiration
6-10 percent	Nausea and vomiting, inability to move freely, collapse, possible lack of consciousness
Below 6 percent	Convulsive movements, gasping, possible respiratory collapse and death

It is unlikely that off-site receptors would be exposed to LNG concentrations that would generate adverse health effects, because the lower explosive limit (LEL) for methane is five percent (50,000 ppm). The LEL is the concentration at which there is enough of the given gas to ignite or explode.

The methodology used for estimating the potential risk from a vapor explosion is that developed for off-site consequence analysis for the Risk Management Program (RMP) under 40 CFR 68 (EPA, 1999). For an RMP off-site consequence analysis, a gaseous release is assumed to produce a vapor explosion that results in a blast impact. For a vapor explosion, the significance level is a pressure wave (blast) of one pound per square inch (psi) and the metric examined is the modeled distance to the significant overpressure level.

⁴ Federal Energy Regulatory Commission, <http://www.ferc.gov/o12faqpro/default.asp?Action=Q&ID=470>

⁵ Canadian Centre for Occupational Health and Safety, http://www.ccohs.ca/oshanswers/chemicals/chem_profiles/methane/health_met.html

Other safety issues associated with LNG are similar to those discussed previously for CNG, with the added hazards associated with handling a cryogenic liquid. The hazards posed by the use of LNG versus gasoline and diesel fuel are:

- Diesel fuel and gasoline are toxic to the skin and lungs and LNG is not;
- Diesel fuel and gasoline vapors are heavier than air (for specific gravity of air = 1, gasoline is 3.4, diesel is greater than 4). LNG is lighter than air (specific gravity is 0.55) and disperses more readily in air;
- LNG has a higher auto ignition temperature (1,200 °F) than diesel (500 °F) or gasoline (500 °F). LNG is more difficult to ignite since it has a “lower flammability limit” that is higher (5.3 percent) than gasoline (one percent) or diesel fuel (0.5 percent);
- Cryogenic liquids such as LNG have the potential risk to workers of burns (frost-bite) that can be suffered if workers come in contact with the liquid or with surfaces that are not insulated. Proper safety equipment and training can minimize these hazards; and,
- Since LNG is a cryogenic liquid, in the event of a release from an aboveground storage tank or tanker truck, a fraction of the liquid immediately flashes off to gas while the remainder will pool and boil violently emitting dense vapor. The liquid transitions to dense vapor and the dense vapor transitions to gas as the liquid and vapor draw heat from the surroundings. If a source of ignition is present, the boiling liquid, vapor cloud and gas could explode and burn, threatening surrounding facilities and other storage vessels.

Based upon the preceding information, health hazards associated with LNG are approximately equivalent or less compared to conventional fuels. Therefore, increased usage of LNG with a concurrent decline in usage of conventional fuels will not significantly alter existing health hazards associated with mobile source fuels. Consequently, increased usage of LNG is not expected to generate significant adverse health hazard impacts.

PROJECT-SPECIFIC MITIGATION – LNG HEALTH IMPACTS: Less than significant impacts on health hazards associated with the use of LNG as an alternative fuel are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS – LNG HEALTH IMPACTS: The health hazard impacts associated with using LPG as an alternative fuel are expected to be less than significant. Thus, no remaining health hazard impacts associated with LPG use are expected.

PROJECT-SPECIFIC IMPACTS – LNG TRANSPORTATION RELEASE: LNG is non-toxic, disperses more readily in air than conventional fuels, and has more rigorous standards for transportation. It is expected that affected facilities will receive LNG from a local supplier located in the district. Deliveries of LNG would be made to the other affected facilities by tanker truck via public roads. The transport of LNG is regulated by the U.S. DOT. LNG trucks are double-walled aluminum and are designed to withstand accidents during the transport of LNG. LNG is loaded into delivery tanks at atmospheric pressure,

which would be at its boiling point of -260°F (-162°C). The LNG is maintained at this temperature by evaporation of the boiling LNG and venting of the evaporated LNG. Because the vent is closed during shipment, the pressure in the tank builds and the temperature of the LNG increases. The FMCSA analyzed releases from delivery tanks with an average pressure of 30 psig, which would be -230°F (-146°C). At 30 psig, approximately 30 percent of the LNG will flash into vapor when released.

Transportation Release Scenarios: These LNG transport release scenarios were analyzed in the December 2007 Final EA for Proposed Amended Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Internal Combustion Engines (ICEs) (SCAQMD No. 280307JK). The following description of LNG transportation and consequences is taken from the Federal Motor Carrier Safety Administration (FMCSA)⁶.

Four scenarios were identified as having major consequences:

1. Release of LNG into a pool that evaporates and disperses without ignition. Approximately 40 percent of the liquefied LNG immediately flashes into vapor. The temperature of the liquid pool would be -44 °F (-42°C) and would therefore damage exposed vegetation and people.
2. A flammable cloud is formed that contacts an ignition source. The flame front can flash back and set the liquid pool on fire. Quantities of LNG shipped by truck would not typically cause vapor cloud explosions.
3. A boiling liquid expanding vapor explosion (BLEVE) occurs. BLEVEs would occur when an LNG tank is exposed to fire and the increase in pressure within the tank exceeds the capacity of the relief valve.
4. The tank ruptures, rockets away and ignites.

RMPComp was used for the consequence analysis for these four scenarios. The adverse impacts from the four scenarios were determined to be:

1. The area of the pool was estimated by assuming a depth of one centimeter as described in Example 29 in the EPA's Risk Management Program Guidance for Offsite Consequence Analysis⁷. A 6,000 gallon LNG pool would be 24,448 square feet. This distance would be a "worst-case" since as the LNG pool expands from the tank it will warm and evaporate.
2. A pool fire of 6,000 gallons that is released in one minute would result in a heat radiation endpoint (five kilowatts/square meter) of 0.2 mile. If a vapor cloud fire occurs, the estimated distance to the lower flammability limit would be 0.3 mile.

⁶ Federal Motor Carrier Safety Administration, Comparative Risks of Hazardous Materials and Non-Hazardous Materials Truck Shipment Accidents/Incidents, Final Report, March 2001, www.fmcsa.dot.gov/documents/hazmatriskfinalreport.pdf.

⁷ U.S. EPA, Risk Management Program Guidance for Offsite Consequence Analysis, EPA 550-B-99-009, April 1989.

3. Based on 10,000 gallons the BLEVE would result in a fireball that may cause second-degree burns out to 0.3 mile.
4. The “worst-case” release estimate for 10,000 gallons in RMP*Comp is 0.3 mile from the vapor cloud explosion. Since, it is unclear as to how far away the tank would travel, it was assumed that the adverse impact would be 0.3 mile from where the tank lands. Damage to property and persons may occur from physical impact from the rocketing tank.

During transportation of LNG, it was estimated that the adverse impacts from various releases would extend 0.3 mile. Because sensitive receptors may be within the endpoints above, the accidental release of LNG during transport could cause significant adverse hazards.

Based upon the preceding information, increased transport of LNG may substantially alter existing transportation hazards associated with mobile source fuels. Consequently, increased usage of LNG is expected to generate significant adverse hazard impacts during transport.

PROJECT-SPECIFIC MITIGATION – LNG TRANSPORTATION RELEASE:

Potentially significant impacts on hazards impacts associated with the transportation of LNG as an alternative fuel are expected, so mitigation measures are necessary and required. Recommend mitigation would be to implement the following design measures that are typically required by local fire departments:

HZ-3: Install secondary containment (e.g., berms).

HZ-4: Install valves that fail shut.

HZ-5: Install emergency release valves and barriers around LNG storage tanks to prevent the physical damage to storage tanks or limit the release of LNG from storage tanks.

HZ-6: Perform integrity testing of LNG storage tanks to assist in preventing failure from structural problems. Construct a containment system to be used for deliveries during off-loading operations.

REMAINING IMPACTS – LNG TRANSPORTATION RELEASE: No additional mitigation measures were identified that would reduce the hazard and hazardous material impacts from a transportation release of LNG to less than significant. Therefore, the remaining hazardous and hazardous material impacts from exposure to the one psi overpressure from the cataclysmic destruction of the LNG storage tank are considered to be significant.

4.4.4.2.5 *Liquefied Petroleum Gas (LPG)*

LPG, which is also known as propane, is a mixture of natural gases which are liquefied at ambient temperatures by compressing the gases to pressures above 120 psig. Propane is the major component of LPG, with the minor components being propylene, butane, and butene.

In the U.S., almost all of the propane supply comes from stripping wellhead natural gas or as a by-product of petroleum refining. LPG for vehicle use is at least 95 percent propane and no more than 2.5 percent butane and heavier hydrocarbons. LPG has been used in fleet vehicles since the 1940s, so there is a substantial base of experience with LPG as an automotive fuel.

For a variety of reasons, however, LPG is not considered the alternative fuel of the future. Its place has been taken by natural gas. Consequently, there has been little development in dedicated LPG engine technology. On the other hand, other technologies and their emissions improved tremendously over the last decade. As a result of that development, some of the previous emission reduction advantages of LPG fuel, especially the low CO emissions, are now less pronounced⁸. Consequently, it is not likely that LPG would be used to any great extent providing the fuel for near zero- or zero-emission technologies.

PROJECT-SPECIFIC IMPACTS - LPG: Since LPG is a compressed fuel, it shares many of the physical hazards (projectiles, freeze burns, BLEVE, etc.) of CNG and LNG and storage regulations. However, since LPG is under less pressure and is stored at ambient temperatures, the physical hazards are not as high for storage and transport compared to CNG or LNG. Furthermore, the flammability limit range for LPG is similar to gasoline, but the ignition temperature (920 degrees Fahrenheit) is lower than gasoline or diesel (500 degrees Fahrenheit). Therefore, the hazard from transport and storage of LPG should not be significantly different from the transport and storage of gasoline or diesel (DOT, 1995).

The main additional hazard associated with the use of LPG versus conventional fuels is the potential of a large fire stemming from a release in the case of an accident (e.g., a tanker truck accident). Another potentially significant hazard is a release of LPG during vehicle maintenance.

Compared with diesel fuel and gasoline the following can be stated about LPG:

- Diesel fuel and gasoline are toxic to the skin and lungs and LPG is not;
- Diesel fuel and gasoline vapors are heavier than air (for specific gravity of air =1, gasoline is 3.4, diesel fuel is 4.0). LPG is lighter than gasoline and diesel fuel but heavier than air (specific gravity is 1.52). It disperses more readily in air than gasoline or diesel fuel;
- LPG has a higher auto ignition temperature (920 °F) than diesel fuel (500 °F) or gasoline (500 °F);
- LPG is more difficult to ignite since it has a “lower flammability limit” that is higher (2.0 percent) than gasoline (one percent) or diesel fuel (0.5 percent).

Based upon the preceding information, hazards associated with LPG are approximately equivalent or less as compared to conventional fuels. Therefore, increased usage of LPG with a concurrent decline in usage of conventional fuels will not significantly alter existing

⁸ Net Technologies, Inc. How Clean Are LPG Engines. <http://www.nett.ca/faq/lpg-3.html>.

hazards associated with mobile source fuels. Consequently, increased usage of LPG is not expected to generate significant adverse hazard impacts.

PROJECT-SPECIFIC MITIGATION – LPG: Less than significant impacts on hazards associated with the use of LPG as an alternative fuel are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS – LPG: The hazard impacts associated with using LPG as an alternative fuel are expected to be less than significant. Thus, no remaining hazard impacts associated with LPG use are expected.

4.4.4.2.6 *Biodiesel*

Biodiesel is a fuel derived from biological sources such as vegetable oils or animal fats. The process for creating biodiesel involves mixing the oil with alcohol (e.g., methanol or ethanol) in the presence of a chemical such as sodium hydroxide. This process produces a methyl ester if methanol is used or an ethyl ester if ethanol is used. Methyl ester from soy beans is more economical to produce, and, therefore, is more common in the U.S. Biodiesel can be used pure (B100) or blended with conventional diesel. The most common blended biodiesel is B20, which is 20 percent biodiesel and 80 percent conventional diesel.

PROJECT-SPECIFIC IMPACTS – BIODIESEL: Biodiesel fuels are derived from vegetable oils and/or animal fats, the transport of which do not pose any significant hazards, as compared to conventional fuels which are derived from crude oil. Biodiesel and biodiesel blends have a higher flash point and lower vapor pressure than conventional diesel. This makes biodiesel safer to store and transport than conventional diesel. Furthermore, biodiesel is less toxic and more biodegradable than conventional diesel, so the environmental impacts from a spill would be less than for a spill of conventional diesel fuel. However, biodiesel has some compatibility issues with certain rubbers and plastics when compared to conventional diesel. Those leak hazards can be mitigated by using the proper material for seals, fittings, and hoses used for storage and transport. Therefore, the hazard from transport and storage of biodiesel and biodiesel blends should not be significantly different from the transport and storage of conventional diesel (DOT, 1995).

Biodiesels are considered safer than conventional diesels; therefore, increased usage of biodiesel with a concurrent decline in usage of conventional diesel will not significantly alter existing hazards associated with mobile source fuels. Consequently, increased usage of biodiesel is not expected to generate significant adverse hazard impacts.

PROJECT-SPECIFIC MITIGATION – BIODIESEL: Less than significant impacts on hazards associated with the use of biodiesel as an alternative fuel are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS – BIODIESEL: The hazard impacts associated with using biodiesel as an alternative fuel are expected to be less than significant. Thus, no remaining hazard impacts associated with biodiesel use are expected.

4.4.4.2.7 *Hydrogen*

Hydrogen is the simplest, lightest and most plentiful element in the universe. In its normal gaseous state, hydrogen is a colorless, odorless, tasteless, non-toxic and burns invisible. Most hydrogen is made from natural gas through a process known as steam reforming. Reforming separates hydrogen from hydrocarbons by adding heat. Hydrogen can also be produced from a variety of sources including water and biomass. Hydrogen can be used as a combustion fuel or in fuel cell vehicles to produce electricity to power electric motors. There is currently one commercially available fuel cell vehicle sold in the U.S., the Honda Clarity. Honda planned to have about 200 Clarities available for lease by 2010, but the actual number of Clarities on the road is estimated at 50 (AP, 2010). The majority of hydrogen powered vehicles on the road at this time are used for research and development or fleet use.

PROJECT-SPECIFIC IMPACTS - HYDROGEN: The generation and distribution of hydrogen as a consumer product is also still in developmental stages. Currently there are 23 hydrogen refueling stations, nine of which have public access (U.S. DOE, 2012). Most of the refueling stations depend on bulk liquid hydrogen delivery; however, a few hydrogen gas pipeline stations and on-site steam reformer stations exist. The physical hazards associated with bulk liquid transport and storage are similar to LNG, as they are both cryogenic liquids. The physical hazards associated with pipeline and steam reformer stations are similar to CNG, as they are both compressed gases. In general, the fire hazards associated with hydrogen spills or leaks is higher than conventional fuels. This is due to the wide flammability range and low ignition energy of hydrogen. However, hydrogen tanks are built to more rigorous standards than conventional fuel tanks, which reduces the likelihood of spills or leaks.

The main additional hazard associated with the use of hydrogen versus conventional fuels is the difficulty in seeing hydrogen fires and potentiality of a large fire stemming from a release in the case of an accident (e.g., a tanker truck accident). Another potentially significant hazard is a release of hydrogen in an enclosed space (e.g., garage or vehicle maintenance facility).

Compared with diesel fuel and gasoline, the following can be stated about hydrogen:

- Diesel fuel and gasoline are toxic to the skin and lungs and hydrogen is non-toxic and non-reactive, so if released, it does not present a health hazard to humans.
- Diesel fuel gasoline vapors are heavier than air (for specific gravity of air = 1, gasoline is 3.4, diesel fuel is 4.0) while hydrogen is 14 times lighter than air. If released, hydrogen will quickly dissipate into the atmosphere.
- Hydrogen has an extremely low ignition energy requirement; about 20 microjoules can ignite hydrogen/air, which is about 10 times less than what is required to ignite a gasoline/air mixture (LLNL, 2007).
- Hydrogen is clear, odorless, and tasteless. It burns with an extremely hot, but nonluminous flame which is difficult to see. The flame of burning hydrogen has few warning properties.

- Hydrogen has an unusually large flammability range and can form ignitable mixtures between four and 75 percent by volume in air. Given confinement and good mixing, hydrogen can be detonated over the range of 18 to 59 percent by volume in air.

Hydrogen is non-toxic and disperses more readily in air than gasoline or diesel. Based upon the preceding information, hazards associated with hydrogen are approximately equivalent or less when compared to conventional fuels. Furthermore, hydrogen is limited in its use as a transportation fuel. In 2007, there were 6,675,888 automobiles, commercial vehicles, and motorcycles registered in the County of Los Angeles alone (LADOT, 2009). The 2012 AQMP projects that the population of zero or near-zero vehicles will increase by about 37,000 vehicles, which means hydrogen is expected to make up a very small portion of transportation fuel (e.g., less than 0.1 percent). While hydrogen fuel cell technology is promising, its use in the future is dependent on many things (cost-effectiveness of the technology, availability of hydrogen, etc.), so that the extent to which it may be used in the future to replace petroleum fuels is currently unknown and, therefore, speculative. For these reasons, the use of hydrogen fuel is not expected to generate significant adverse hazard impacts.

PROJECT-SPECIFIC MITIGATION – HYDROGEN: Less than significant impacts on hazards associated with the use of hydrogen as an alternative fuel are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS – HYDROGEN: The hazard impacts associated with using hydrogen as an alternative fuel are expected to be less than significant. Thus, no remaining hazard impacts associated with hydrogen use are expected.

4.4.4.2.8 *Electric/Hybrid*

Electric (EVs) and hybrid vehicles (hybrids) both use electricity as part of their fuel system. EVs rely purely on electric power stored in batteries. Hybrids also use batteries as part of their fuel supply; however, hybrids supplement their electric demand by using gasoline engines to generate either mechanical or electric power on demand. Since gasoline is a conventional fuel, any difference in hazards associated with hybrid vehicles would be from the batteries. The most common battery technologies used in modern EVs and hybrids are nickel-metal hydride (NiMH) and lithium ion (Li-ion) (Hybrid, 2008).

PROJECT-SPECIFIC IMPACTS – ELECTRIC/HYBRID: NiMH batteries can generate hydrogen gas if overcharged, which can lead to explosions without proper venting. In 1996, the International Center for Technology Assessment (ICTA) conducted a comprehensive review of the safety concerns associated with the use of EVs. The ICTA found risk of hydrogen emissions during stressful conditions has been virtually eliminated by the use of seals and proper valve regulation. By following the National Electric Codes (NECs) and the Society of Automotive Engineers (SAE) recommended safety practices and guidelines for the operation and maintenance of EVs and hybrids, any hydrogen gas risk during battery recharging would be eliminated (ICTA, 1996).

Li-ion batteries can be fire hazards. There are a few reported cases of fires caused by Li-ion batteries in EVs. In response to these fires, the National Highway Traffic Safety Administration (NHTSA) performed an investigation on the fire hazards associated with Li-ion batteries in EVs. The NHTSA concluded that EVs do not pose a greater risk of fire than gasoline-powered vehicles. The NHTSA also developed an interim guidance, with the assistance of the NFPA, Department of Energy, and others, to increase and identify the appropriate safety measures for handling an EV or hybrid automobile accident (NHTSA, 2012).

Furthermore, all electrical propulsion vehicles must comply with Federal Motor Vehicle Safety Standard (FMVSS) 305. FMVSS 305 specifies performance requirements for limitation of electrolyte spillage, retention of propulsion batteries, and electrical isolation of the chassis from the high-voltage system during a crash event. FMVSS assures that accidents involving EVs and hybrids cause no more electrical hazard than a gasoline- or diesel-powered vehicle.

Electric propelled vehicles are considered less hazardous than conventional fuel vehicles. The 2012 AQMP expects to replace 37,000 conventional fuel vehicles with alternative-fueled vehicles by 2025, which would generally result in a reduction in hazards associated with conventional fueled vehicles.

PROJECT-SPECIFIC MITIGATION – ELECTRIC/HYBRID: Less than significant impacts on hazards associated with the use of batteries in electric/hybrid vehicles are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS – ELECTRIC/HYBRID: The hazard impacts associated with using batteries in electric/hybrid vehicles are expected to be less than significant. Thus, no remaining hazard impacts associated with using batteries for these types of vehicles are expected.

4.4.4.2.9 *Summary of Hazards from Alternative Fuels*

PROJECT-SPECIFIC IMPACTS – ALTERNATIVE FUELS SUMMARY: As shown in Table 4.4-5, the energy content of alternative fuels is lower than conventional fuels which means that more fuel is needed in an alternative fuel-powered vehicle to achieve the same range as a conventional fuel-powered vehicle. Thus, more tanker deliveries to supply refueling stations would be required to provide the same available energy as conventional fuels. Since the probability of accidents is related to the amount of miles traveled, proportionally more delivery accidents can be expected with alternative fuels than conventional fuels (assuming that they are delivered from similar source locations in similar sized tankers). However, the truck accident rate is small, on the order of one accident per five million miles traveled and the accident rate with chemical releases is even less. Furthermore, any increase in alternative fuels use would decrease the use of conventional fuels, so hazards associated with transportation and storage of all of the alternative fuels, except LNG would not be a significant risk factor. During transportation of LNG, it was estimated that the adverse impacts from various releases would extend 0.3 mile. Because

sensitive receptors may be within the endpoints above, the accidental release of LNG during transport could cause significant adverse hazards.

TABLE 4.4-5

Equivalent Fleet Miles
Associated with Alternative Clean-Fuels

FUEL TYPE	BY MASS	BY VOLUME
Diesel	1.00	1.0
CNG/LNG	1.15	1.9
LPG	1.15	2.1
Ethanol	1.90	2.3
Methanol	2.50	2.7

Source: Clean Air Program: Summary of Assessment of the Safety, Health, Environmental and System Risks of Alternative Fuels. (DOT, 1995)

There are various existing regulations and recommended safety procedures that, when employed, will reduce any slightly higher hazards impacts associated with use of alternative clean fuels to the same or lower level as for conventional fuels. Table 4.4-6 summarizes some of the regulations and safety procedures associated with use of alternative fuels. When affected vehicle owners and maintenance personnel comply with existing regulations and recommended safety procedures, hazards impacts associated with the use of alternative fuels will be the same or less than those of conventional fuels. Accordingly, significant hazards impacts are not expected from the implementation of the 2012 AQMP control measures that encourage the use of alternative fuels.

TABLE 4.4-6

Summary of Hazards and Existing Safety Regulations/Procedures
Associated with Alternative Clean-Fuels

FUEL TYPE	HAZARD	REGULATION/PROCEDURE
Methanol	Methanol can ignite in enclosed spaces such as fuel tanks since its upper flammability limit is 15 percent and it is slightly heavier than air.	Modifications such as materials inside the fuel tank that can arrest and quench flame propagation and modifications to isolate the tank from sparks and ignition sources are required to avoid ignition in the fuel tanks.
Ethanol	Pure ethanol can ignite in enclosed spaces such as fuel tanks since its upper flammability limit is 19 percent and it is slightly heavier than air.	Modifications such as materials inside the fuel tank that can arrest and quench flame propagation and modifications to isolate the tank from sparks and ignition sources are required to avoid ignition in the fuel tanks.

TABLE 4.4-6 (Continued)

Summary of Hazards and Existing Safety Regulations/Procedures
Associated with Alternative Clean-Fuels

FUEL TYPE	HAZARD	REGULATION/PROCEDURE
CNG	CNG bottles are typically stored outside and are required to be above ground (NFPA 52) as opposed to below ground for gasoline or diesel tanks. There is a risk of vehicles colliding with the bottles causing a gas release.	Collisions can be mitigated by the installation of curbing and bollards to protect the tanks from vehicle operations (LAF57.42.16).
	Releasing gas in a maintenance shop can potentially create explosive hazards.	Installation of methane detection systems in the shop can provide early detection of leaks and alert the maintenance personnel. (If integrated with vent systems, vents are not required to operate continuously - CFC 2903.2.5). Ignition sources can be reduced/eliminated by ensuring that all electrical systems in the shop are explosion proof (smoking and open flames are prohibited under CFC 2901.7). Providing adequate ventilation can prevent the occurrence of explosive conditions (required under CFC 2903.1). Procedures can be established to ensure that all vehicles requiring maintenance are defueled and depressurized before admission to the maintenance depot.
LNG	LNG is a cryogenic liquid and has the potential risk to workers of burns (frostbite) that can be suffered if workers come in contact with the liquid or with surfaces that are not insulated.	Proper safety equipment and training can mitigate these hazards.
	Releasing LNG in an enclosed area where there are potential ignition sources such as a maintenance shop may pose an explosive hazard. (A flammable concentration within an enclosed space in the presence of an ignition source can explode).	Installation of flammable gas detection systems in a maintenance shop can provide early detection of leaks and alert the maintenance personnel (which is required for LNG under CFC2903.3). Ignition sources can be reduced/eliminated by ensuring that all electrical systems in the shop are explosion proof (smoking and open flames are prohibited under CFC 2901.7). Providing adequate ventilation can prevent the occurrence of explosive conditions (required under CFC2903.1). Vehicle fuel shut-off valves shall be closed prior to repairing any portion of the vehicle fuel system (CFC2903.4.1). Vehicles fueled by LNG, which may have sustained damage to the fuel system, shall be inspected for integrity with a gas detector before being brought into the garage (CFC2903.4.2). Procedures can be established to ensure that all vehicles are defueled prior to maintenance.

TABLE 4.4-6 (Concluded)
 Summary of Hazards and Existing Safety Regulations/Procedures
 Associated with Alternative Clean-Fuels

FUEL TYPE	HAZARD	REGULATION/PROCEDURE
LNG	LNG is generally stored above ground. Since it is a cryogenic liquid, in the event of a release, a fraction of the liquid immediately flashes off to gas while the majority of the remainder will pool and boil violently emitting dense vapor. If a source of ignition is present, the boiling liquid, dense vapor and gas could explode and burn threatening surrounding facilities and other storage vessels.	Tanks can be protected by containment dikes (required if neighboring tanks can be affected LAF57.42.11) and physically separated LAF57.42.10) so that they do not interact in case of a fire or explosion. Deluge systems can be installed to cool neighboring tanks in case of a fire.
Biodiesel	Certain materials used in conventional petroleum storage are not compatible with pure biodiesel.	Use biodiesel compatible plastic and rubber for fittings.
Hydrogen	Releasing gas in enclosed spaces with its related explosive hazards may pose an explosive hazard. (A flammable concentration within an enclosed space in the presence of an ignition source can explode).	Installation of combustible gas detection systems can provide early detection of leaks. Ignition sources can be reduced/eliminated by ensuring that all electrical systems in the shop are explosion proof. Providing adequate ventilation can prevent the occurrence of explosive conditions. Procedures can be established to ensure that all vehicles are defueled prior to maintenance.
EV and Hybrid Vehicles	Certain types of batteries that are used in commercially available electric vehicles emit hydrogen during the charging process. Emission of hydrogen gas in an enclosed setting such as a garage presents the potential for the accumulation of flammable concentrations.	Forced ventilation can prevent build-up but if ventilation fails, a hazardous condition can occur. NEC and SAE recommended practices provide strict guidance for eliminating hydrogen gas risk.
	Li-ion batteries that are used in some commercially available electric vehicles can combust spontaneously.	Reinforced casing and battery cooling systems can prevent the combustion of Li-ion batteries. FMVSS 305 and SAE recommendations provide guidance for eliminating combustion risk.

CWC = California Fire Code
 FMVSS = Federal Motor Vehicle Safety Standard
 NEC = National Electric Code
 LAF57 = City of Los Angeles Fire Code. It is expected that cities in Orange, Riverside, and San Bernardino Counties have in place similar regulations.

CWC = California Fire Code
 NFPA = National Fire Protection Association
 SAE = Society of Automotive Engineers

Use of alternative fuels will require additional knowledge and training of owners/operators of fueling stations regarding maintaining and operating alternative fuel refueling stations and emergency responders. Further, as use of alternative fuels increases in the district, use of conventional fuels such as gasoline and diesel will decline. As a result, explosion and flammability hazards associated with conventional fuels will also decline. In addition, hazards and hazardous clean-up associated with accidental releases of conventional fuels, especially diesel, are reduced with increasing use of alternative fuels.

PROJECT-SPECIFIC MITIGATION - ALTERNATIVE FUELS SUMMARY: When users of alternative fuels comply with existing regulations and recommended safety procedures, hazards impacts associated with the use of alternative clean-fuels are expected to be the same or less than those of conventional fuels. Accordingly, hazards impacts from the increased use of alternative fuels are expected to be similar to or less than hazards associated with conventional fuels. Therefore, significant hazard impacts are not expected from the increased use of alternative fuels and no mitigation measures are required.

The transportation analysis demonstrated that, of all the alternative fuels analyzed, only LNG was estimated to have significant adverse hazards impacts during various transportation release scenarios. Because significant hazard impacts during transportation of LNG are expected, mitigation measures are required to be identified.

Lastly, the hazard impacts associated with using batteries in electric/hybrid vehicles were concluded to be less than significant. Because no significant hazard impacts were identified that pertain to using batteries in electric/hybrid vehicles, no mitigation measures are required.

REMAINING IMPACTS – ALTERNATIVE FUELS SUMMARY: The hazard impacts associated with alternative fuels and using batteries in electric/hybrid vehicles are expected to be less than significant, except for LNG transportation which was shown to have significant hazards impacts requiring mitigation. However, no additional mitigation measures were identified that would reduce the hazard and hazardous material impacts from a transportation release of LNG to less than significant. Therefore, the remaining hazardous and hazardous material impacts from exposure to the one psi overpressure from the cataclysmic destruction of the LNG storage tank are considered to be significant.

For all other alternative fuels (e.g., other than LNG) and batteries for electric/hybrid vehicles, no remaining hazard impacts are expected.

4.4.4.3 Ammonia Use in SCRs and SNCRs

Implementation of some control measures proposed in the 2012 AQMP could result in the use of SCR or SNCR technology to reduce NO_x emissions including CMB-01, IND-01, MSC-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-04, and ADV-05. Greater use of SCRs and SNCRs may occur on industrial combustion sources such as boilers and heaters, as well as large diesel engines on mobile sources to reduce NO_x, including off-road diesel engines (e.g., locomotive engines and marine vessel engines).

SCR is post-combustion control equipment for NO_x control of existing combustion sources like boilers, steam generators and process heaters that is capable of reducing NO_x emissions by as much as 90 percent or higher. A typical SCR system design can consist of an ammonia storage tank, ammonia vaporization and injection equipment, an SCR reactor with catalyst, ancillary electronic instrumentation and operations control equipment. In some situations, an SCR system may also utilize a booster fan for the flue gas exhaust and an exhaust stack. The way an SCR system reduces NO_x is through a matrix of nozzles injecting a mixture of ammonia and air directly into the flue gas exhaust stream from the

combustion equipment. As this mixture flows into the SCR reactor that is replete with catalyst, ammonia and oxygen (from the air), the flue gas exhaust reacts primarily (i.e., selectively) with NO and NO₂ to form nitrogen and water in the presence of a catalyst. The amount of ammonia introduced into the SCR system is approximately a 1.0-to-1.05 molar ratio of ammonia to NO_x for optimum control efficiency, though the ratio may vary based on equipment-specific NO_x reduction requirements. The ammonia injection rate is also regulated by the fuel flow rate to the unit.

SNCR is another post-combustion control technique typically used to reduce the quantity of NO_x produced in the hot flue gas, by injecting ammonia. The main differences between SNCR and SCR is that the SNCR reaction between ammonia and NO_x in the hot flue gas occurs without the need for a catalyst, but at much higher temperatures (i.e., between 1200 °F to 2000 °F). With a control efficiency ranging between 80 and 85 percent, SNCR does not achieve as great of NO_x emission reductions as SCR. The need for the exhaust temperature to be high also limits the applicability of SNCR. SNCR would not be considered equivalent to BARCT alone, but it could be used if combined with other technologies.

In SCR and SNCR technology, ammonia or urea is used to react with the NO_x, either in the presence of a catalyst or without a catalyst, respectively, to form nitrogen gas and water. Ammonia is the primary hazardous chemical identified with the use of air pollution control equipment (e.g., SCR and SNCR systems). Ammonia, though not a carcinogen, can have chronic and acute health impacts. Therefore, a potential increase in the use of ammonia may increase the current existing risk setting associated with deliveries (i.e., truck and road accidents) and onsite or offsite spills for each facility that currently uses or will begin to use ammonia. Exposure to a toxic gas cloud is the potential hazard associated with this type of control equipment. A toxic gas cloud is the release of a volatile chemical such as anhydrous ammonia that could form a cloud that migrates off-site, thus exposing individuals. Anhydrous ammonia is heavier than air such that when released into the atmosphere, would form a cloud at ground level rather than be dispersed “Worst-case” conditions tend to arise when very low wind speeds coincide with the accidental release, which can allow the chemicals to accumulate rather than disperse. Though there are facilities that may be affected by the proposed 2012 AQMP control measures that are currently permitted to use anhydrous ammonia, for new construction, however, current SCAQMD policy no longer allows the use of anhydrous ammonia. Instead, to minimize the hazards associated with ammonia used in the SCR or SNCR process, aqueous ammonia (100 percent anhydrous ammonia diluted with water to 19 percent by volume), is typically required as a permit condition associated with the installation of SCR or SNCR equipment for the following reasons: 1) 19 percent aqueous ammonia does not travel as a dense gas like anhydrous ammonia; and, 2) 19 percent aqueous ammonia is not on any acutely hazardous material lists unlike anhydrous ammonia or aqueous ammonia at higher percentages. For these safety reasons, aqueous ammonia is recommended for use in these technologies.

In addition, safety hazards related to the transport, storage and handling of ammonia exist. Ammonia has acute and chronic non-cancer health effects and also contributes to the formation of ambient PM₁₀ and PM_{2.5} emissions under some circumstances. Since ammonia is not typically considered to be a flammable compound, other types of hazard

impacts such as fires and explosions are not expected to occur and, therefore, will not be evaluated as part of this hazards analysis. To further evaluate the potential for significant adverse environmental impacts due to an accidental release of ammonia, various scenarios were evaluated that could occur during the onsite storage, transportation, and transfer of ammonia. These scenarios and their consequences are discussed in detail below.

PROJECT-SPECIFIC IMPACTS – WATER QUALITY: A spill of any of the hazardous materials (including ammonia) used and stored at any of the affected facilities could occur under upset conditions such as an earthquake, tank rupture, or tank overflow. Spills could also occur from corrosion of containers, piping and process equipment; and leaks from seals or gaskets at pumps and flanges. A major earthquake would be a potential cause of a large spill. Other causes could include human or mechanical error. Construction of the vessels, and foundations in accordance with the California Building Code requirements helps structures to resist major earthquakes without collapse, but may result in some structural and non-structural damage following a major earthquake. As required by U.S. EPA's spill prevention control and countermeasure regulations, all of the affected facilities are currently required to have emergency spill containment equipment and would implement spill control measures in the event of an earthquake. Storage tanks typically have secondary containment such as a berm, which would be capable of containing 110 percent of the contents of the storage tanks. Therefore, should a rupture occur, the contents of the tank would be collected within the containment system and pumped to an appropriate storage tank.

Spills at affected industrial or commercial facilities would be collected within containment structures. Large spills outside of containment areas at affected facilities that could occur when transferring the material from a transport truck to a storage tank are expected to be captured by the process water system where they could be collected and controlled. Spilled material would be collected and pumped to an appropriate tank or sent off-site if the materials cannot be used on-site.

PROJECT-SPECIFIC MITIGATION – WATER QUALITY: Because of the containment system design, spills are not expected to migrate from the facility and as such, potential adverse water quality hazard impacts are considered to be less than significant. Since hazard impacts that would affect water quality are expected to be less than significant, no mitigation measures are necessary or required.

REMAINING IMPACTS – WATER QUALITY: The hazard impacts associated with ammonia use potentially impacting water are expected to be less than significant. Thus, no remaining hazard impacts are expected.

PROJECT-SPECIFIC IMPACTS – TRANSPORTATION RELEASE: It is expected that affected facilities will receive ammonia from a local ammonia supplier located in the greater Los Angeles area. Deliveries of aqueous ammonia would be made to the other affected facilities by tanker truck via public roads. The maximum capacity of an ammonia tanker truck is approximately 7,000 gallons.

Transportation Release Scenario 1: This aqueous ammonia truck transport release scenario is taken from the Final Environmental Impact Report for Los Angeles Department Of Water And Power's (LADWP) Installation Of Five Combustion Turbines At The Harbor Generating Station (HGS), Installation Of Three Selective Catalytic Reduction Systems At

The modeling⁹ was based on U.S. EPA's RMP Guidance for toxic releases and explosions. The RMP*Comp model was used to calculate size of the impact zones for explosions and toxic releases. Note that the concentration of aqueous ammonia used at the project sites was expected to be 29.5 percent. To calculate ammonia emissions for modeling purposes, U.S. EPA's data for aqueous ammonia with a 30 percent concentration was used since 29.5 percent concentration data were not available. Appendix D of the Final EIR for the LADWP project provides a more detailed discussion of the modeling approach and shows the results of the RMP*Comp model and the Screen3 model. For all toxic releases, the surrounding terrain was assumed to be "rural," consistent with SCAQMD guidance. This reduced the dispersion of the modeled compound with distance and is a more conservative assumption than assuming "urban" dispersion.

The hazard analysis for the HGS also evaluated the probability or frequency of an accidental release. The expected accident frequency of an accidental ammonia release was expected to increase because there would be one extra ammonia truck delivery per week. However, the truck accident rate is approximately one per 8.7 million miles traveled and a major release in an accident is about one in forty. One additional delivery per week of about 21 miles estimated distance would not introduce a significant incremental risk over the current situation. The frequency would change from about one per 300,000 years for a major 5,000-gallon release to one per 150,000 years. Because the HGS was already receiving 39.5 percent aqueous ammonia by truck, this result did not exceed the existing risks from an accidental release of ammonia and for this project, was concluded to be less than significant. Had this risk scenario represented a new hazard risk, the conclusion would most likely have been that hazard risks from the accidental release would have been considered significant.

The hazard analysis included an estimate for the HGS site of the impact of the unconfined release of 5,000 gallons of aqueous ammonia in a tanker truck accident in an open area (minimum dispersion with distance). The 5,000 gallons spreads in all directions in an unconfined manner to a depth of one centimeter on an impervious surface (U.S. EPA "worst-case" assumptions). Based on these extremely conservative assumptions, the toxic impact distance from the spill was estimated to be 2,300 meters.

The analysis of hazard impacts for the LADWP project also included an estimate for the accidental release of ammonia transported to the Valley Generating Station (VGS) site. The results were based on the impact of an unconfined release of 5,000 gallons of aqueous ammonia in a tanker truck accident in an open area (minimum dispersion with distance). The 5,000 gallons spread in all directions in an unconfined manner to a depth of one centimeter on an impervious surface (U.S. EPA "worst-case" assumptions). Based on these

⁹ This analysis uses the *Final Environmental Impact Report for the Scattergood Generating Station, And The Installation Of One Combustion Turbine At The Valley Generating Station* (SCH. No. 2000101008; SCAQMD, 2001), as a surrogate for transport release scenario 1.

extremely conservative assumptions and using the endpoint of an ammonia concentration of 200 ppm, the toxic impact distance from the spill was estimated to be 2,300 meters. Similar to the result for the HGS, this result represents an existing accidental release of ammonia consequence and, therefore, was concluded to be less than significant. Had this been the result for a new project the conclusion would likely have been significant. The expected accident frequency will be based on one delivery per month. The truck accident rate is approximately one per 8.7 million miles traveled and a major release in an accident is about one in 40. One delivery per month of about 36 miles distance would not introduce a significant risk. The expected frequency of a release is about one per 800,000 years.

Transportation Release Scenario 2: To evaluate the hazard impacts from an accidental release of ammonia during ammonia transport, this analysis uses as a surrogate the project at the ConocoPhillips Carson Refinery in which a SCR was installed on boiler #10 and an associated 10,000 gallon aqueous ammonia storage tank (19 percent ammonia) was constructed. This scenario¹⁰ is used as an example of the type of project that could occur in the future as a result of complying with 2007 AQMP measures. This project required approximately six additional aqueous ammonia truck transport trips per month. Although truck transport of aqueous ammonia and other hazardous materials is regulated for safety by the U.S. Department of Transportation, there is a possibility that a tanker truck could be involved in an accident that would cause its contents to spill. The factors that enter into accident statistics include distance traveled and type of vehicle or transportation system. Factors affecting automobiles and truck transportation accidents include the type of roadway, presence of road hazards, vehicle type, maintenance and physical condition, driver training, and weather. A common reference frequently used in measuring risk of an accident is the number of accidents per million miles traveled. Complicating the assessment of risk is the fact that some accidents can cause significant damage without injury or fatality and as a result are not always reported.

Every time hazardous materials are moved from the site of generation, opportunities are provided for an accidental (unintentional) release. A study conducted by the U.S. EPA indicates that the expected number of hazardous materials spills per mile shipped ranges from one in 100 million to one in one million, depending on the type of road and transport vehicle used. The U.S. EPA analyzed accident and traffic volume data from New Jersey, California, and Texas, using the Resource Conservation and Recovery Act Risk/Cost Analysis Model and calculated the accident involvement rates presented in Table 4.4-7. This information was summarized from the Los Angeles County Hazardous Waste Management Plan (Los Angeles County, 1988).

¹⁰ This scenario uses the *Final Negative Declaration for: ConocoPhillips Los Angeles Refinery Carson Plant SCR Unit Project*, SCH. No. 2004011066, SCAQMD 2004, as a surrogate for transport release scenario 2.

TABLE 4.4-7

Truck Accident Rates for Cargo On Highways

HIGHWAY TYPE	ACCIDENTS PER 1,000,000 MILES
Interstate	0.13
U.S. and State Highways	0.45
Urban Roadways	0.73
Composite ^a	0.28

Source: Environmental Protection Agency, 1984.

^a Average number for transport on interstates, highways, and urban roadways.

In the study completed by U.S. EPA, cylinders, cans, glass, plastic, fiber boxes, tanks, metal drum/parts, and open metal containers were identified as usual container types. For each container type, the expected fractional release en route was calculated. The study concluded that the release rate for tank trucks is much lower than for any other container type (Los Angeles County, 1988).

The accident rates developed based on transportation in California were used to predict the accident rate associated with trucks transporting aqueous ammonia to the facility. Assuming an average truck accident rate of 0.28 accident per million miles traveled (Los Angeles County, 1988), the estimated accident rate associated with transporting aqueous ammonia for the ConocoPhillips project is 0.00101, or about one accident every 992 years.

The actual occurrence of an accidental release of a hazardous material cannot be predicted. The location of an accident or whether sensitive populations would be present in the immediate vicinity also cannot be identified. In general, the shortest and most direct route that takes the least amount of time would have the least risk of an accident. Hazardous material transporters do not routinely avoid populated areas along their routes, although they generally use approved truck routes that take population densities and sensitive populations into account.

The hazards associated with the transport of regulated (CCR Title 19, Division 2, Chapter 4.5 or the California Accidental Release Prevention Program requirements) hazardous materials, including aqueous ammonia, would include the potential exposure of numerous individuals in the event of an accident that would lead to a spill. Factors such as amount transported, wind speed, ambient temperatures, route traveled, distance to sensitive receptors are considered when determining the consequence of a hazardous material spill.

In the unlikely event that the tanker truck would rupture and release the entire 7,000 gallons of aqueous ammonia, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a road accident, the roads are usually graded and channeled to prevent water accumulation and a spill would be channeled to a low spot or drainage system, which would limit the surface area of the spill and the subsequent evaporative emissions. Additionally, the roadside surfaces may not be paved and may absorb some of the spill. In a typical release scenario, because of the characteristics of most roadways, the pooling effect on an impervious surface would not typically occur. As a result, the spilled ammonia would not be expected to form

pools that could evaporate into a toxic cloud at concentrations that could significantly adversely affect residences or other sensitive receptors in the area of the spill.

Based on the low probability of an ammonia tanker truck accident with a major release and the potential for exposure to low concentrations, if any, the conclusion of this analysis was that potential impacts due to accidental release of ammonia during transportation are less than significant.

Transportation Release Scenario 3: This transportation release scenario uses as a surrogate analysis a project at the BP Carson refinery in which SCR was retrofitted onto an existing FCCU and an associated 12,660 gallon aqueous ammonia storage tank (19 percent NH₃) was constructed. The following summarizes the ammonia transport analysis for the BP FCCU project.

This scenario¹¹ consists of an SCR retrofitted onto an existing FCCU and construction of an associated 12,660 gallon aqueous ammonia storage tank (19 percent NH₃). It was estimated to require approximately 35 tanker truck deliveries of aqueous ammonia during the first year of operation (two deliveries after construction to fill the tank plus one delivery every 11 days to replenish the tank during operations). Truck accident rates are approximately one in 8.7-million miles (SCAQMD, 2002). Based upon the projected 35 ammonia deliveries the first year, and a distance of 30 miles from the supplier to the facility, the number of truck-miles associated with the transport of aqueous ammonia is 1,050 truck-miles per year. The expected number of truck accidents associated with the proposed BP Carson project is therefore approximately once every 8,300 years. The likelihood of any release in a transportation accident is one in 10, and that of a large release in a transportation accident is one in 40 (SCAQMD, 2002). The likelihood of a major transportation release after the project is constructed is therefore approximately once per 330,000 years (8,300 times 40). The probability of a transportation accident that would pose a significant risk to the public is therefore insignificant.

In the unlikely event that a major release occurred during a tanker truck accident, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. Roads are usually graded and channeled to prevent water accumulation, and a spill would be channeled to a low spot or drainage system, which would limit the surface area of the spill and the subsequent toxic emissions. Additionally, the roadside surfaces may not be paved and may absorb some of the spill. Without this pooling effect on an impervious surface, the spilled ammonia would not evaporate into a toxic cloud and impact residences or other sensitive receptors in the area of the spill. Therefore, potential impacts due to accidental release of ammonia during transportation are less than significant.

PROJECT-SPECIFIC MITIGATION – TRANSPORTATION RELEASE: The transportation release scenarios in this subsection do not include transport of anhydrous ammonia because SCAQMD has historically found the CEQA analysis of permit

¹¹ This scenario uses the *Final Negative Declaration for: BP Carson Refinery Fluid Catalytic Cracking Unit NOx Reduction Project*. SCH. No. 2002021068; SCAQMD, 2002, as a surrogate for transport release scenario 2.

applications for new projects requiring SCR equipment using anhydrous ammonia to have significant adverse hazards impacts. Anhydrous ammonia impacts can be substantially mitigated through use of aqueous ammonia, which is considered to be feasible mitigation. Similarly, accidental releases of ammonia during transport that may occur in connection with the proposed control measures impacts are considered to be less than significant because the concentration of ammonia transported will be less, at 19 percent by volume as compared to 29.5 percent by volume; consequences of an accidental release during transport would be less than for the LADWP project; although probability would increase, the probability of an accidental release remains relatively remote. SCAQMD Staff recommends that permit applicants use aqueous ammonia at 19 percent or less by volume for any new SCR systems.

REMAINING IMPACTS – TRANSPORTATION RELEASE: The hazard impacts associated with a transportation release are expected to be significant prior to mitigation. Requiring the use of aqueous ammonia, in lieu of anhydrous ammonia, is considered to be feasible mitigation. Thus, after mitigation, no remaining significant impacts on transportation release hazards are expected.

PROJECT-SPECIFIC IMPACTS – AMMONIA TANK RUPTURE ON-SITE:

Storage Tank Rupture Scenario 1: For this project¹², a 10,000 gallon storage tank constructed for an ammonia storage tank release scenario, impacts were calculated for an accidental release of 19 percent aqueous ammonia into a containment dike (see Appendix B of the Final Negative Declaration for the detailed hazards analysis). A series of release and dispersion calculations were completed to quantify the dispersion of ammonia gas evaporating from a pool of aqueous ammonia following a release from a storage tank on the premises of the ConocoPhillips Carson Plant. The dispersion calculations were performed until specific ammonia concentrations were reached in the downwind direction. Two ammonia concentrations were chosen for evaluation:

- **Emergency Response Planning Guide Level 2 (ERPG-2) (200 ppm):** The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their ability to take protective action.
- **Emergency Response Planning Guide Level 3 (ERPG-3) (1,000 ppm):** The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to one hour without experiencing or developing life-threatening health effects.

The hazard zones resulting from liquid releases into the storage containment areas were identified and evaluated to determine the extent and location of the gas cloud containing ammonia. Details on the accidental release modeling assumptions are included in Appendix B of the Final Negative Declaration. The dispersion analysis was completed for a

¹² This scenario uses the *Final Negative Declaration for: ConocoPhillips Los Angeles Refinery Carson Plant SCR Unit Project*, SCAQMD 2004, as a surrogate for a tank rupture scenario.

range of impoundment sizes ranging from 100 to 1,000 feet. The following conclusions were drawn from this analysis:

1. Under “worst-case” atmospheric conditions (e.g., low winds and stable air), the lowest ammonia concentration of interest (ERPG-2 level of 200 ppm), does not reach the closest property line. The liquid impounding area would have to be much larger than 1,000 square feet (ft²) to exceed the ERPG-2 level.
2. Under all other atmospheric conditions (e.g., high winds, less stable atmospheres), the distances to the 200 ppm ammonia concentration level would be shorter.
3. Under no condition does the 1,000 ppm ammonia concentration level extend further than 45 feet from the tank. This distance is always well within the Carson Plant property boundaries.

Based on the above, as long as the containment area is no larger than 1,000 square feet, a release of ammonia from the tank would remain within about 45 feet from the tank, which is well within the boundaries of the Carson Plant. ConocoPhillips proposed a concrete spill containment of 18 feet by 18 feet, for a total of 324 square feet. Therefore, the containment area is less than 1,000 square feet and a release from the ammonia tank is not expected to result in a significant adverse hazard impact.

The modeling analysis completed above for the ammonia tank release would also apply to a release of ammonia when the tank truck is unloaded and transferred to the storage tank. Containment facilities are provided at the truck loading rack to contain ammonia in the event of a spill during transfer activities. The ammonia concentration will be less than the ERPG 2 level of 200 ppm at the facility boundaries, as long as the containment area is limited to 1,000 ft².

Storage Tank Rupture Scenario 2: This tank rupture scenario¹³ is based on retrofitting an existing FCCU with SCR and constructing an associated 12,660 gallon aqueous ammonia storage tank. The following two off-site consequences analyses (OCA) were performed:

1. Complete release of the aqueous ammonia storage tank (10,413-gallon working volume) into a 1,000-square foot diked containment area (25 feet x 40 feet). The bermed area was assumed to empty quickly into a catch basin with sufficient capacity to contain the entire contents of the ammonia tank with freeboard for precipitation and 12,000 gallons of firewater.
2. Complete release of an aqueous ammonia tanker truck (7,000 gallons) into the bermed unloading area. The ammonia then immediately drains into the tank pad containment structure.

RMP guidelines require assessment of the catastrophic failure of the largest storage vessel in a process as part of a RMP analysis. An OCA was therefore performed for a catastrophic rupture of the ammonia tank as a “worst-case” release scenario. The “worst-case”

¹³ This scenario uses the *Final Negative Declaration for: BP Carson Refinery Fluid Catalytic Cracking Unit NOx Reduction Project*: SCH. No. 2002021068; SCAQMD, 2002, as a surrogate for a tank rupture scenario.

meteorological conditions of “F” stability (very stable dispersion conditions) and a wind speed of 1.5 meters per second (m/s) are defined by U.S. EPA to exist during a “worst-case” release (SCAQMD, 2002).

An unloading spill was evaluated as an alternative release scenario. The maximum potential surface area during an unloading spill is identical with that for the tank rupture scenario (1,000 square feet) since the unloading area drains to the storage tank containment structure. The meteorological conditions for an alternative release scenario are less restrictive than the “worst-case” conditions and are defined by U.S. EPA as “D” stability (neutral dispersion conditions) and a wind speed of 3.0 m/s (SCAQMD, 2002). The emission rate during the alternative release scenario is larger than during the “worst-case” release scenario because the wind speed is higher (3.0 m/s versus 1.5 m/s).

The U.S. EPA RMP*Comp (Version 1.06) program was used to perform the OCA hazard assessment for the BP FCCU project. The RMP*Comp model estimates the distance at which the downwind concentration of the spilled material falls below the Emergency Response Planning Guideline Level 2 (ERPG-2) concentration level of 0.14 mg/l (200 ppm). The minimum distance to the toxic threshold concentration allowed by RMP*Comp is 0.1 mile (approximately 200 m).

For the “worst-case” release scenario involving the rupture of the entire storage vessel, the estimated distance to the 200 ppm significance threshold concentration was 0.1 mile. As the tank is located approximately 685 feet (0.13 mile) from the nearest property boundary, the “worst-case” release scenario is not projected to have an off-site impact. Therefore, because the toxic threshold concentration does not extend off-site, the “worst-case” impact is not significant.

The Negative Declaration for the BP FCCU project noted further that the American Institute of Chemical Engineers (AIChE) Center for Chemical Process Safety (AIChE, 1989) has determined that the mean time to catastrophic failure for a metallic storage vessel at atmospheric pressure is 0.985 per million hours (approximately once per 112 years). For aqueous ammonia tanks used at power plants, the California Energy Commission concluded that the catastrophic failure of an aqueous ammonia storage tank is an extremely unlikely event because the probability of a complete tank failure is insignificant, and the risk of failure due to other causes such as external events and human error also is insignificant. In addition, there is no record of any aqueous ammonia storage tank having had a catastrophic failure in recent history. Therefore, the likelihood of a rupture of the aqueous ammonia storage tank occurring is extremely low (SCAQMD, 2002).

For the alternative release scenario involving a tanker-truck unloading accident, the surface area of the release is identical with that for the “worst-case” scenario, but the release rate is greater because of the higher wind speed assumed. However, because the meteorological conditions for an alternative release scenario are less restrictive than that for the “worst-case” scenario, the estimated distance to the toxic threshold concentration (less than 0.1 mile) is less than that for the “worst-case” scenario. This impact was not considered significant because there were no offsite exposure concentrations that exceeded the ERPG-2 level of 200 ppm.

The release of the entire truckload of 7,000 gallons of ammonia in an unloading accident is also a highly unlikely scenario. Leaks of ammonia from a bad connection or damaged hose would be very noticeable and quickly corrected. Should the connection suddenly break, the operator would be able to hit the emergency shut-off valve, hence substantially limiting the amount of spillage. Therefore, should an accident occur, it is likely that less than the entire load would be spilled before the release is controlled. The analysis concluded that both off-site release scenarios would be less than significant. It is expected that these results would be similar for any future SCR (or SNCR) projects at large industrial or commercial facilities.

Storage Tank Rupture Scenario 3: This scenario¹⁴ describes hazard impacts from an accidental release of ammonia from a 5,000 gallon storage tank constructed for an SCR project for a biogas facility. The retrofit of existing ICEs with SCR or NOxTech systems were determined to likely need to install ammonia storage tanks. Based on considerations like available area, amount of ammonia needed per year, etc., SCAQMD staff assumed that the largest ammonia tank installed would be 5,000 gallons. Due to local fire department safety regulations, storage tanks constructed at affected facilities would be surrounded by secondary containment designs (e.g., dykes, berms, etc.). These same containment facilities would be provided at truck loading racks to contain ammonia in the event of a spill during transfer of ammonia from the truck to the storage tank.

The worst-case release scenario would be a catastrophic storage tank failure. The rupture of an ammonia storage tank would release the ammonia into the secondary containment area. Ammonia would then form a liquid pool in the secondary containment area and evaporate. A modeling analysis was performed based on EPA's RMP Guidance for worst-case estimates for toxic releases and explosions. The RMPComp model was used to calculate the size of the impact zones. The EPA endpoint for ammonia exposure is the distance from the spill that is required to reduce the concentration to 0.14 micrograms per liter, the ERPG 2 endpoint for ammonia. The RMPComp program estimates were based on 20 percent aqueous ammonia, which is slightly higher concentration than the 19 percent ammonia proposed for this project. The 20 percent concentration is built into RMPComp and was the closest concentration available for use by the model.

To provide a “worst-case” case analysis for all ammonia tank release scenarios, the following assumptions were made:

- Ammonia tank dimensions were assumed to be twice as wide as they were high;
- The ammonia tank volume was assumed to be 10 percent larger than the nominal containment volume. (For a tank with 5,000-gallon contents, the tank volume was assumed to be 5,500 gallons);
- All dike areas were assumed to have excess capacity of 20 percent more than the tank contents. (The dike capacity for 5,000-gallon contents was assumed to be 6,000 gallons);

¹⁴ This scenario uses the December 2007 Final EA for Proposed Amended Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Internal Combustion Engines (ICEs) (SCAQMD No. 280307JK, as a surrogate for a tank rupture scenario.

- All dike walls were assumed to be three feet high;
- For unconfined ammonia spills, the liquid was assumed to spread to a thickness of one centimeter in all directions on a flat impervious surface;
- Rural conditions were conservatively assumed to reduce dispersion.

Based on these assumptions, RMPComp estimated that the toxic endpoint would be 0.1 mile (528 feet) from the ammonia tank. Since biogas engines typically have back-up flare systems, it was assumed that the ICEs would not be sited near the property boundaries. However, based on a survey of biogas facilities, several facilities were found to have biogas engines within 0.1 mile of the property line. Therefore, in the event of an accidental release of ammonia from an ammonia storage tank at affected biogas facilities, offsite receptors could be exposed to ammonia concentrations exceed the ERPG 2 for ammonia, 150 ppm.

According to the American Institute of Chemical Engineers (AIChE) Center for Chemical Process Safety¹⁵, the mean time to catastrophic failure for a metallic storage vessel at atmospheric pressure is 0.985 per million hours (approximately once per 112 years). For aqueous ammonia tanks used at power plants, the California Energy Commission concluded that the catastrophic failure of an aqueous ammonia storage tank is an extremely unlikely event because the probability of a complete tank failure is insignificant, and the risk of failure due to other causes such as external events and human error also is insignificant. In addition, SCAQMD staff is not aware of any aqueous ammonia storage tank that has had a catastrophic failure in recent history. As a result, the likelihood of a rupture of the aqueous ammonia storage tank occurring is extremely low. In spite of this, however, hazard impacts from exposure to ERPG 2 concentrations of ammonia are considered to be significant.

PROJECT-SPECIFIC MITIGATION - AMMONIA TANK RUPTURE ON-SITE: In the event of an accidental release of ammonia from on-site ammonia storage units, potentially significant adverse hazard impacts from exposure to could occur, even if aqueous ammonia is used rather than anhydrous ammonia. Therefore, since hazard impacts pertaining to on-site ammonia tank rupture are expected to be significant, mitigation measures are required. To mitigate potential adverse hazardous impacts from exposure to an accidental release of ammonia, mitigation for the storage of aqueous ammonia would be to require the construction of a combined delivery and storage aqueous ammonia system equipped with the following.

HZ-7: Install safety devices, including but not limited to: continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, leak monitoring and detection system, alarms, check valves, and emergency block valves.

HZ-8: Install secondary containment to capture 110 percent of the storage tank volume in the event of a spill:

¹⁵ AIChE, Guidelines for Process Equipment Reliability Data with Data Tables, Center for Chemical Process Safety 1989.

HZ-9: Install a grating-covered trench around the perimeter of the delivery bay to passively contain potential spills from the tanker truck during the transfer of aqueous ammonia from the delivery truck to the storage facility.

HZ-10: The truck loading/unloading area was designed to be equipped with an underground gravity drain that flows to a large on-site retention basin to provide sufficient ammonia dilution to the extent that no hazards impact is possible in the event of an accidental release during transfer of aqueous ammonia.

REMAINING IMPACTS – AMMONIA TANK RUPTURE ON-SITE: The hazard impacts associated with the potential for an ammonia tank rupturing on-site and causing a release are expected to be significant prior to mitigation. However, requiring the construction of a combined delivery and storage aqueous ammonia system with specific design features to capture any release of aqueous ammonia is considered to be feasible mitigation. Thus, after mitigation, no remaining significant impacts pertaining to on-site ammonia tank rupture hazards are expected.

4.4.4.4 Use of Catalysts

PROJECT-SPECIFIC IMPACTS – USE OF CATALYSTS: Implementing various control measures proposed in the 2012 AQMP could result in the increased use of catalysts as well as an increase in the quantity of catalyst disposed of hazardous materials: 1) in SCRs per Control Measure CMB-01; 2) in NO_x reducing additives (which are made of catalysts) per Control Measures CMB-01 and INC-01; and 3) in thermal oxidizers per Control Measures CMB-01, OFFRD-03, OFFRD-04, ADV-04, ADV-05, and FUG-01.

Catalysts Used in SCRs: There are two main types of catalysts used in SCRs: one in which the catalyst is coated onto a metal structure and a ceramic-based catalyst onto which the catalyst components are calcified. Commercial catalysts used in SCRs are available in two types of solid, block configurations or modules, plate or honeycomb type, and are comprised of a base material of titanium dioxide (TiO₂) that is coated with either tungsten trioxide (WO₃), molybdenic anhydride (MoO₃), vanadium pentoxide (V₂O₅), or iron oxide (Fe₂O₃). These catalysts are used for SCRs because of their high activity, insensitivity to sulfur in the exhaust, and useful life span of approximately five years. Ultimately, the material composition of the catalyst is dependent upon the application and flue gas conditions such as gas composition, temperature, et cetera. A typical catalyst dimension would be approximately 39" x 40" x 12" enclosed in 5" double-wall shell containing insulation. The number of catalyst blocks needed will depend on the quantity of flue gas being treated by the SCR.

The key hazards associated with catalyst use in SCRS are the crushing of the spent catalyst modules and transporting it for disposal or recycling. With respect to hazards and hazardous materials, this means that there will be an increase in the frequency of truck transportation trips to remove the spent catalyst as hazardous materials or hazardous waste from each affected facility. However, facilities that have existing catalyst-based operations currently recycle the catalysts blocks, in lieu of disposal. Moreover, due to the heavy metal content and relatively high cost of catalysts, recycling can be more lucrative than disposal. Thus,

facilities that have existing SCR units and choose to employ additional SCR equipment, in most cases already recycle the spent catalyst and subsequently may continue to do so with any additional catalyst that may be needed.

A number of physical or chemical properties may cause a substance to be hazardous, including toxicity (health), flammability, reactivity, and any other specific hazard such as corrosivity or radioactivity. Based on a hazard rating from 0 to 4 (0 = no hazard; 4 = extreme hazard) located on the MSDS, the hazard rating for silica/alumina catalyst, for example, health is rated 1 (slightly hazardous), flammability is rated 0 (none) and reactivity is rated 0 (none). However, if nickel is deposited on the catalyst, the hazard rating is 2 for health (moderately toxic), 4 (extreme fire hazard) for flammability, 1 for reactivity (slightly hazardous if heated or exposed to water). The particular composition of the catalyst used in the SCR units, combined with the metals content of the flue gas will determine the hazard rating and whether the spent catalyst is considered a hazardous material or hazardous waste. This distinction is important because a spent catalyst that qualifies as a hazardous material could be recycled or reused by another industry (such as in the manufacturing of California Portland cement). However, spent catalyst that is considered hazardous waste must be disposed of in a Class III landfill. Due to the recycling of catalysts, less than significant impacts on hazards and hazardous waste are expected. Refer to Subchapter 4.8 - Solid and Hazardous Waste for a discussion on the disposal of spent catalyst modules.

Use of NO_x Reducing Additives: SCONO_x/EM_xTM technology is a relatively new proprietary post-combustion catalytic oxidation and adsorption process that is undergoing development for controlling NO_x and CO emissions from boiler, steam generator, and process heater applications. The catalyst used in the SCONO_x/EM_xTM system consists of a platinum base with a potassium carbonate adsorption coating over a ceramic substrate and has a catalyst life of three years that is guaranteed by the manufacturer. The catalyst simultaneously oxidizes NO to NO₂, CO to CO₂, and VOCs to CO₂ and water. The NO₂ is adsorbed onto the catalyst surface where it is chemically converted to potassium nitrates and nitrites. The catalyst is then exposed to hydrogen gas produced from reformed natural gas with high pressure steam to regenerate the adsorption layer. Because hydrogen is used for the catalyst regeneration process, a low oxygen atmosphere is necessary to prevent dilution. As such, the catalyst bed is designed with multiple compartments that are equipped with dampers that close at the beginning of the regeneration cycle. The catalyst used in the SCONO_x/EM_xTM process has a life-span of approximately three years

As with catalysts used in SCRs, the key hazards associated with post-catalytic oxidation are associated with the crushing of the spent catalyst and transporting it for disposal or recycling. With respect to hazards and hazardous materials, this means that there will be an increase in the frequency of truck transportation trips to remove the spent catalyst as hazardous materials or hazardous waste from each affected facility. However, due to the high value of platinum (a precious metal), facilities employing post-catalytic oxidation will likely recycle the catalyst, in lieu of disposal, so little hazardous waste would be expected to be and disposed of at a hazardous waste landfill. Thus, due to the recycling of catalysts used in post-combustion catalytic oxidation, less than significant impacts on hazards and hazardous waste are expected.

Catalyst Used in Thermal Oxidizers: The 2012 AQMP could result in the increased use of catalyst used in thermal oxidizers to control emissions. The following control measures could rely on catalytic oxidation technologies for emission control including CMB-01, OFFRD-03, OFFRD-04, ADV-04, and ADV-05. Catalytic oxidation beds in thermal oxidizers generally use a precious metal to aid in the combustion of air pollutants at relatively low temperatures. Thermal oxidizers require periodic replacement of the catalyst bed. The expected life of the catalyst is approximately three to five years, depending on the concentration of materials and type of exhaust flows controlled. Metals used in the catalyst are generally recovered because they are made from precious and valuable metals (e.g., platinum and palladium). Metals can be recovered from approximately 60 percent of the spent catalyst generated from the operation of catalytic oxidizers (SCAQMD, 2003a). These metals could then be recycled. The remaining material would most likely need to be handled as hazardous waste and disposed of at a hazardous waste landfill.

If the catalyst is not hazardous, jurisdiction for its disposal then shifts to local agencies such as regional water quality control boards or county environmental agencies. The RWQCB has indicated that if a spent catalyst is not considered a hazardous waste, it would probably be considered a Designated Waste. A Designated Waste is characterized as a non-hazardous waste consisting of, or containing pollutants that, under ambient environmental conditions, could be released at concentrations in excess of applicable water objectives, or which could cause degradation of the waters of the state. The type of landfill that the material is disposed at will depend upon its final waste designation. Due to the recycling of catalysts used in catalytic oxidation and the fact that this technology is not expected to be widely used because of cost, less than significant impacts on hazards and hazardous waste are expected.

PROJECT-SPECIFIC MITIGATION – USE OF CATALYSTS: Less than significant impacts on hazards associated with the use of catalysts were identified so no mitigation measures are necessary or required.

REMAINING IMPACTS – USE OF CATALYSTS: The hazard impacts associated with the use of catalysts in various technologies are expected to be less than significant. Thus, no remaining hazard impacts associated with catalyst use are expected.

4.4.4.5 Start-up, Shutdown and Turnaround Procedures

PROJECT-SPECIFIC IMPACTS – START-UP, SHUTDOWN AND TURNAROUND PROCEDURES: The SCAQMD received a comment (see Comment 3-11 and Response to Comment 3-11) on the June 28, 2012 version of the NOP/IS asserting that implementation of Control Measure MCS-03 as proposed in the 2012 AQMP could result in the increased safety issues when diverting or eliminating process streams that are vented to flares, and installing redundant equipment to increase operational reliability during start-up, shutdown and turnarounds of process units. The comment, however, did not identify specify the safety issues of concern. Currently, SCAQMD Rule 1123 - Refinery Process Turnarounds, contains specific exemptions in the rule language that address (and prevent) situations that could potentially damage equipment, cause the malfunction of pollution control or safety devices, or cause violations of safety regulations. As with all control measures and the rule development process, participation by the affected parties, including the refineries and their

representatives, as well as other industries and their representatives, will be paramount in effectively and safely implementing MCS-03.

In its current form, MCS-03 is in its early stages and is very broad and there is insufficient information to be able to identify specific equipment or processes. Start-up, shutdown or turnaround often results in higher emission rates from pieces of equipment that are interconnected, either upstream or downstream, to the equipment undergoing start-up/shutdown. Refinery operations, for example, typically rely on flares to minimize the emissions impact resulting from start-up, shutdown and turnarounds. However, there are adverse environmental impacts associated with the use of flares as well. As a result, there is the potential that MCS-03 could reduce potential hazard impacts, at least at some types of facilities.

As such, to identify any impacts at this time without knowing the specific design features would be speculative. This measure would be implemented in two phases, beginning with a technical assessment to be completed in the 2012/2013 timeframe. Once the technical assessment is completed, phase 2 would include implementing MCS-03 begins, and if a proposed rule or rule amendment is developed as a result, the CEQA document for the proposed rule or rule amendment will identify and analyze the specific environmental impacts at that time.

In conclusion, due to the speculative nature of the potential safety hazards that may be associated with implementing Control Measure MCS-03, no safety hazards can be identified at this time. Thus, no hazard impacts associated with the safety of implementing start-up, shutdown, and turnaround procedures are expected.

PROJECT-SPECIFIC MITIGATION – START-UP, SHUTDOWN AND TURNAROUND PROCEDURES: No impacts on hazards associated with safety issues pertaining to implementing Control Measure MCS-03 were identified so no mitigation measures are necessary or required.

REMAINING IMPACTS – START-UP, SHUTDOWN AND TURNAROUND PROCEDURES: No remaining hazard impacts associated with safety issues pertaining to implementing Control Measure MCS-03 are expected.

4.4.5 Summary of Hazards and Hazardous Materials Impacts

The following is the summary of the conclusions of the analysis of hazard impacts associated with implementation of the 2012 AQMP.

- Reformulated Products: The analysis indicates that the fire hazard impacts associated with reformulated coatings, adhesives, solvents, lubricants, mold release, and consumer products are expected to be significant. While an increase of future compliant reformulated materials could be expected to result in a concurrent reduction in the amount of materials formulated with conventional solvents, the possibility exists that facilities currently using water-based products could switch to using reformulated solvent-based products made with acetone or other flammable or extremely flammable

chemicals. The analysis also indicates that the health hazard impacts associated with reformulated coatings, adhesives, solvents, lubricants, mold release, and consumer products are expected to be less than significant because even if manufacturers could potentially use replacement chemicals that could pose new or different health risks, SCAQMD Rule 1401 and 1402 would limit potential exposures to nearby receptors. Further, as with the use of all chemicals, conventional or reformulated, facilities and their workers would be required to continue to comply with existing health protective procedures when handling both flammable and toxic materials.

- Use of Alternative Fuels: The hazard impacts associated with the use of all alternative fuels except LNG and the use of batteries in electric/hybrid vehicles due to implementation of the 2012 AQMP control measures were determined to be less than significant when users comply with existing regulations and recommended safety procedures. Hazard impacts associated with the transportation of LNG were determined to be significant, requiring mitigation. Further, significant hazards impacts due to LNG transportation were determined to remain significant after mitigation. Lastly, any increase in the use of alternative fuels will result in a concurrent decrease in the amount of conventional fuels used in the district.
- Ammonia Use in SCRs and SNCRs: The use of ammonia in SCR and SNCR technologies could be potentially significant due to implementation of the control measures. While the use of aqueous ammonia at concentrations less than 20 percent by volume is expected to reduce hazard impacts associated with ammonia use, the potential for an on-site spill of aqueous ammonia could pose a significant hazards impact. Accordingly, significant hazard impacts are expected from the increased use of ammonia in SCR and SNCR technologies and mitigation measures are required.
- Start-up, Shutdown and Turnaround Procedures: No hazard impacts to pertaining to safety issues associated with implementing Control Measure MCS-03 were identified.
- Use of Catalysts: The analysis indicates that the hazard impacts associated with the use catalysts are expected to be less than significant.

Summary of PM2.5 Control Measure Impacts: The hazard impacts associated with PM2.5 Control Measures (CMB-01, IND-01, and MCS-01) were evaluated and determined to be less than significant for reformulated coatings, adhesives, solvents, lubricants, mold release, and consumer products; alternative fuels; ammonia use in SCRs, and fuel additives.

Summary of Ozone Control Measure Impacts: The hazard impacts associated with the Ozone Control Measures (21 control measures, see Table 4.4-1) were evaluated and determined to be less than significant for reformulated coatings, adhesives, solvents, lubricants, mold release, and consumer products; all alternative fuels except LNG, and start-up, shutdown and turnaround procedures. Significant hazards impacts due to LNG transportation were determined to remain significant after mitigation.

SUBCHAPTER 4.5

HYDROLOGY AND WATER QUALITY

Introduction

2012 AQMP Control Measures with Potential Hydrology and Water Quality Impacts

Significance Criteria

Potential Hydrology and Water Quality Impacts and Mitigation Measures

Summary of Hydrology and Water Quality Impacts

4.5 HYDROLOGY AND WATER QUALITY

4.5.1 Introduction

This subchapter identifies potential hydrology and water quality impacts that may be generated by implementing the 2012 AQMP. Some of the control measures in the 2012 AQMP may result in impacts on water quality and increased wastewater discharge; water quality impacts associated with the use of alternative fuels; water quality impacts associated with increased use of batteries; increased water demand; and, water quality impacts associated with the use and application of sodium bisulfate for livestock operations.

4.5.2 2012 AQMP Control Measures with Potential Hydrology and Water Quality Impacts

The hydrology and water quality analysis in this Program EIR identifies the potential hydrology and water quality impacts from implementing the 2012 AQMP. All control measures were analyzed to identify the potential hydrology and water quality impacts. The NOP/IS determined that the proposed project could result in potentially significant water quality and water demand impacts.

The evaluation of the control measures was based on an examination of the impacts of the control measures and technologies. The evaluation of the control methods indicate that there are 34 control measures that could have potential water quality and water demand impacts. As shown in Table 4.5-1, four control measures for PM_{2.5} emission reductions and 21 control measures for reduction of ozone precursors were identified as having potential hydrology and water quality impacts.

TABLE 4.5-1

Control Measures with Potential Secondary Hydrology and Water Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	WATER IMPACT
SHORT-TERM PM_{2.5} CONTROL MEASURES			
BCM-03 <i>(formerly BCM-05)</i>	Further PM Reductions from Under-Fired Charbroilers (PM _{2.5})	Add-On Control Equipment with Ventilation Hood Requirements (e.g., ESPs, HEPA filters, wet scrubbers, or thermal oxidizers).	Potential impacts on water demand and wastewater discharge from operating wet ESPs or wet scrubbers.
BCM-04	Further Ammonia Reductions from Livestock Waste	Reducing pH level in manure through the application of acidifier sodium bisulfate.	Potential water quality impacts from applying acidifier sodium bisulfate.
IND-01 ^a	Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities	Environmental lease conditions, port rules, tariffs or incentives.	Potential impacts on water demand and wastewater discharge from operating wet ESPs or wet scrubbers. Use of alternative fuels can result in water quality impacts.

TABLE 4.5-1 (Continued)

Control Measures with Potential Secondary Hydrology and Water Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	WATER IMPACT
SHORT-TERM PM2.5 CONTROL MEASURES			
MCS-01 ^a	Application of All Feasible Measures	SCAQMD District would adopt and implement new retrofit technology control standards as new BARCT standards become available.	Potential impacts on water demand and wastewater discharge from operating wet ESPs or wet scrubbers, use of alternative fuels can result in water quality impacts, increase water demand and wastewater discharges from increased use of water-based formulations.
OZONE CONTROL MEASURES			
CTS-01	Further VOC Reductions from Architectural Coatings (Rule 1113) (VOC)	Reduce the allowable VOC content in product formulations by using alternative low-VOC products and use application techniques with greater transfer efficiency.	Potential impact on water demand and wastewater discharge associated with increased use of water-based formulations.
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants (VOC)	Reduce the allowable VOC content in product formulations by using alternative low-VOC products or non-VOC products/equipment.	Potential impact on water demand and wastewater discharge associated with increased use of water-based formulations.
CTS-03	Further VOC Reductions from Mold Release Products (VOC)	Limitation of VOC content for mold release products.	Potential impact on water demand and wastewater discharge associated with increased use of water-based formulations.
CTS-04	Further VOC Reductions from Consumer Products (VOC)	Eliminate or revise the exemption for low vapor pressure solvents in consumer products.	Potential impact on water demand and wastewater discharge associated with increased use of water-based formulations.
FUG-01	Further VOC Reductions from Vacuum Trucks (VOC)	VOC control devices such as carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers, liquid scrubbers and positive displacement (PD) pumps.	Increased water demand and increased wastewater discharge associated with air pollution control equipment (e.g., wet scrubbers).
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles (NOx)	Incentives to replace older vehicles with electric or hybrid vehicles.	Use of alternative fuels can result in water quality impacts.
ONRD-02	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles (NOx)	Incentives to replace older light- and medium-duty vehicles with new or newer low-emitting vehicles.	Use of alternative fuels can result in water quality impacts.

TABLE 4.5-1 (Continued)

Control Measures with Potential Secondary Hydrology and Water Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	WATER IMPACT
OZONE CONTROL MEASURES			
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium Heavy-Duty Vehicles (NOx)	Incentives to replace older medium-duty vehicles with low-emitting vehicles. Highest priority would be given to zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode.	Use of alternative fuels can result in water quality impacts.
ONRD-04	Accelerated Retirement of Older Heavy-Duty Vehicles (NOx)	Incentives replace heavy-duty vehicles with newer or new vehicles. Priority would be placed on replacing older diesel trucks in Mira Loma.	Use of alternative fuels can result in water quality impacts.
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards (NOx, PM)	Incentives to replace up to 1,000 heavy-duty vehicles with low-emitting vehicles or zero-emission container movement systems.	Use of alternative fuels can result in water quality impacts.
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment (NOx)	Accelerate Tier 0 and Tier 1 equipment replacement with Tier 4 equipment, use of air pollution control technologies (e.g., advanced fuel injection, air induction, and after-treatment technologies).	Use of alternative fuels can result in water quality impacts.
OFFRD-02	Further Emission Reductions from Freight Locomotives (NOx)	Replace existing engines (Tier 0 and Tier 2 engines) with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Accidental release of ammonia and use of alternative fuels can result in water quality impacts; accidental release issues with acid spill from batteries could affect water quality.
OFFRD-03	Further Emission Reductions from Passenger Locomotives (NOx)	Repower existing Tier 0 and Tier 2 engines with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Accidental release of ammonia and use of alternative fuels can result in water quality impacts; accidental release issues with acid spill from batteries could affect water quality.
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels at Berth	Shore power of vessels at berth, use of air pollution control technologies on exhaust gases from auxiliary engines and boilers (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Accidental release of ammonia and use of alternative fuels can result in water quality impacts; accidental release issues with acid spill from batteries could affect water quality.

TABLE 4.5-1 (Concluded)

Control Measures with Potential Secondary Hydrology and Water Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	WATER IMPACT
OZONE CONTROL MEASURES			
ADV-01	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles (NOx)	Construct "wayside" electric or magnetic infrastructure; construct battery charging and fueling infrastructure. Alternatively, if battery, fuel cell or other zero/near zero emission technologies progress sufficiently, the need for wayside power for rail or trucks may be diminished or eliminated.	Use of alternative fuels can result in water quality impacts, potential water quality impacts from EV battery disposal.
ADV-02	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives (NOx)	Construct "wayside" electric, magnetic, battery-hybrid system, or fuel cell infrastructure, construct battery charging or fueling infrastructure.	Use of alternative fuels can result in water quality impacts, potential water quality impacts from EV battery disposal.
ADV-03	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment (NOx)	Construct electric gantry cranes, construct battery charging or fueling infrastructure, and use of alternative fuels.	Use of alternative fuels can result in water quality impacts, potential water quality impacts from EV battery disposal.
ADV-04	Actions for the Deployment of Cleaner Commercial Harborcraft (NOx)	Construct battery charging or fueling infrastructure, use of air pollution control equipment (e.g., SCR, and use of alternative fuels).	Use of alternative fuels can result in water quality impacts, potential water quality impacts from EV battery disposal.
ADV-05	Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx]	Employ aftertreatment control technologies such as SCR and sea water scrubbers, and use of alternative fuels.	Use of alternative fuels can result in water quality impacts, potential increased water demand and wastewater discharge associated with wet scrubbers.
ADV-06	Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment [NOx]	Construct battery charging or fueling infrastructure, and increased use of alternative fuels.	Use of alternative fuels can result in water quality impacts, potential water quality impacts from EV battery disposal.
ADV-07	Proposed Implementation Measures for the Deployment of Cleaner Aircraft Engines(NOx)	Use alternative fuels, lean combustion burners, high rate turbo bypass, advanced turbo-compressor design, and engine weight reduction.	Use of alternative fuels can result in water quality impacts.

- a The specific actions associated with the control measure are unknown and, therefore, the impacts are speculative. In order to provide a conservative analysis, it is assumed that the control measure could require air pollution control technologies that are similar to those that are currently required (e.g., SCR, electrification, use of alternative fuels, etc.), and would have the potential to require construction activities that would generate noise.

4.5.3 Significance Criteria

Potential impacts on water resources will be considered significant if any of the following criteria apply:

Water Demand:

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.
- The project increases total demand for water by more than five million gallons per day.

Water Quality:

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

4.5.4 Potential Hydrology and Water Quality Impacts and Mitigation Measures

4.5.4.1 Wastewater and Water Quality Impacts

4.5.4.1.1 Wastewater Impacts

PROJECT-SPECIFIC IMPACTS - WASTEWATER: The 2012 AQMP control measures that could require reformulation of coatings, adhesives, solvents, lubricants, mold release agents, and consumer products are MCS-01, CTS-01, CTS-02, CTS-03, and CTS-04. Emission reductions are expected to be achieved through the use of low or zero VOC formulations and reformulation of these materials may generate additional wastewater.

In addition, the 2012 AQMP includes stationary sources that may require add-on control equipment with the potential to generate additional wastewater (BCM-03, BCM-04, IND-01, MCS-01, FUG-01) associated with the use of wet electrostatic

precipitators (ESPs) or wet gas scrubbers (WGS). The extent of the use of these types of control equipment is unknown. However, the use of wet ESPs and WGSs has been shown to be effective at reducing PM_{2.5} emissions and is a potential control methodology.

To meet the lowered future VOC content limits as a result of implementing Control Measures MCS-01, CTS-01, CTS-02, CTS-03, and CTS-04, coatings, adhesives, solvents, lubricants, mold release products, and consumer products are expected to be reformulated. While reformulated products would be expected to have lower VOC contents, the reformulations could have widely varying compositions depending on the chemical characteristics of the replacement solvents chosen. For example, most reformulations are expected to be made with water, but other reformulations could be made with an exempt solvent such as acetone or other solvents that are not exempted from the definition of a VOC in SCAQMD's Rule 102. As a result, for those products reformulated with water, then water would also be used for clean-up and the resultant wastewater material could be disposed of into the public sewer system. Further, other reformulated products made with exempt or non-exempt solvents may also lead to adverse impacts to water resources if clean-up and disposal of reformulated solvents, coatings or products are not handled properly. However, the use of water to reformulate coatings, solvents and products would generally lead to products that would be less toxic than products reformulated with either exempt or non-exempt chemicals (that are typically petroleum-based) and as such, generate fewer impacts to water quality. Lastly, because the development of reformulated products is expected to require the same types of equipment (e.g., spray guns, rollers, and brushes) currently used in coating operations, the corresponding clean-up practices employed to clean the coating equipment would also not be expected to change.

Table 4.5-2 estimates the "worst-case" potential increase of wastewater likely to be received by wastewater treatment plants in the district as a result of the implementing the 2012 AQMP control measures that pertain to product reformulations. The estimated increase in wastewater generated is considered to be within the projected capacity of the local wastewater treatment plants within the district. Wastewater generated from the reformulation of coatings and products is estimated to be about 47,000 gallons per day as compared to the estimated wastewater treatment capacity of about 2,370 million gallons in the district. These are expected to be "worst-case" estimates because a number of these materials already in use are water-borne or low VOC materials. For example, most architectural coatings are already being sold with VOC content limits but Control Measure CTS-01 would further reduce the allowable VOC content from coatings that are already regulated. (The control measure may also require increased transfer efficiency of the coating equipment but no change in the formulation of coatings would be expected.) Further, low VOC mold release products are already being manufactured and sold, so the need for reformulation may be minor or not required at all, depending on the manufacturer.

TABLE 4.5-2

Projected Wastewater Impact from 2012 AQMP Control Measures

Control Measure	POTW Average Wastewater Flow^a (million gal per day)	POTW Treatment Capacity^a (million gal per day)	Estimated Affected Coating Usage (gal per year)	Projected Wastewater Flow (gallon per year)	Projected Wastewater Flow (gallons per day)	Total Impacts, Percent of POTW Average Daily Flow
CTS-01 Architectural Coatings	1,536	2,370	7,610,000 ^b	7,610,000	20,849	0.001
CTS-02 Misc. Coatings, Adhesives, Solvents, Lubricants	1,536	2,370	3,805,000	3,805,000	10,425	0.0007
CTS-03 Mold Release Products	1,536	2,370	1,902,500	1,902,500	5,212	0.0003
CTS-04 Consumer Products	1,536	2,370	3,805,000	3,805,000	10,425	0.0007
Total Wastewater from Reformulated Coatings:			17,122,500	17,122,500	46,911	0.003
BCM-03, BCM-04, IND-09, and MSC-01	1,536	2,370	--	--	2,016,000	0.131
Total for all Control Measures:					2,062,911	0.134

^a See Table 3.5-3.

^b SCAQMD, 2011. Assume 2004 volume to account for decline in economic activity in Southern California.

^c Architectural coatings are the largest coating category. This number represents the total universe of coating categories; however, it is likely that the control measure would only affect a small subset of the total number of coating categories. Miscellaneous Coatings, Consumer products and Consumer Products are assumed to be about 50 percent of the volume of architectural coatings, and mold release products are assumed to be about 25 percent of the volume of architectural coatings.

^d Assumes 20 large wet ESPs/WGSs are installed as part of the AQMP.

As indicated in Table 4.5-1, several control measures proposed in the 2012 AQMP may require add-on control equipment (BCM-03, BCM-04, IND-01, and MSC-01) for stationary sources such as wet ESPs and WGSs, which have been shown to be effective at reducing PM_{2.5} emissions. If installed, wet ESPs and WGSs would require water to operate and thus, would result in the generation of wastewater. However, the extent of the use of these types of control equipment to be used in the future is unknown.

One wet ESP with one WGS were installed on the Fluid Catalytic Cracking Unit (FCCU) at the ConocoPhillips Refinery to reduce SO_x emissions, as well as PM₁₀ and PM_{2.5} emissions. The FCCU is a large source of emissions and the wet ESP and WGS installed were sized accordingly. The environmental analysis for this

project indicated that the expected wastewater discharge from the combined operation of the wet ESP and WGS at ConocoPhillips was about 70 gallons per minute (about 100,800 gallons per day) (SCAQMD, 2007). Wet ESPs and WGSs of this size are primarily designed for large sources within the district (e.g., refineries and other large manufacturing facilities), but these technologies can also be scaled down for use on smaller sources. If the 2012 AQMP control measures encourage the installation of 20 additional wet ESP /WGS systems of this size, about two million gallons per day of wastewater would be generated. Wastewater from larger facilities such as refineries is often treated at existing wastewater treatment facilities operated by the facility, so increased wastewater may not be discharged to publicly owned treatment facilities. However, making the conservative assumption that the 2012 AQMP could result in the construction and installation of 20 large-scale wet ESP/WGS systems, the estimated increase in wastewater would be well within the existing wastewater treatment capacity within the district.

The potential increase in the volume of wastewater estimated as a result of implementing these control measures in the 2012 AQMP is also included in Table 4.5-2. The total increase in potential wastewater from implementing all of the control measures is estimated to be about 2.1 million gallons per day, which represents about a 0.1 percent increase in wastewater generated within the district. Further, the increase in wastewater is well within the capacity of the existing wastewater treatment plants of about 2,370 million gallons. Therefore, the wastewater impacts associated with the 2012 AQMP are expected to be less than significant.

PROJECT-SPECIFIC MITIGATION - WASTEWATER: Less than significant impacts on wastewater generation as a result of implementing the 2012 AQMP are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS - WASTEWATER: The wastewater impacts associated with wastewater generation are expected to be less than significant. Thus, no remaining wastewater impacts are expected.

4.5.4.1.2 *Water Quality Impacts*

PROJECT-SPECIFIC IMPACTS – WATER QUALITY: In the past, concerns have been raised that the increased use of waterborne technologies to meet the lower VOC content limits would result in a greater trend of coating applicators to improperly dispose of the waste generated from these coatings into the ground, storm drains, or sewers systems. However, there is no data to support this contention.

Results from a survey of contractors conducted by the SCAQMD for the November 1996 amendments to SCAQMD Rule 1113 determined that a majority of coating applicators either dispose of the waste material properly as required by the coating manufacturer's MSDS or recycle the waste material regardless of type of coating¹.

¹ SCAQMD, Final Subsequent Environmental Assessment, SCAQMD No. 960626DWS, October 1996.

The survey was prepared to evaluate the replacement of solvent-borne coatings with reformulated, water-borne coatings. In November 2008, a paint manufacturer conducted a survey of 180 Southern California residential and professional painters. The conclusion was that a majority professional painters use hazardous waste disposal services to dispose of coatings instead of air drying coatings and then disposing of as a solid waste. Based upon the survey results, there is no reason to expect that coating contractors would change their disposal practices, especially those contractors that already dispose of wastes properly. Similarly, there is also no evidence that there would be an increase in illegal disposal practices as a result of the proposed control measures.

Potential adverse water quality impacts associated with reformulated products are expected to be minimal since: 1) compliance with state and federal waste disposal regulations would substantially limit adverse impacts; 2) “turn-key” services are available for aqueous (water-based) cleaners; 3) some solvent cleaning operators may currently be disposing of spent material illegally, so one illegal activity would be replaced with another legal activity; and, 4) the amount of wastewater which may be generated from reformulated solvents and from air pollution control equipment is well within the projected receiving capacity of the Publicly Owned Treatment Works (POTWs) in the SCAQMD’s jurisdiction. The treatment of wastewater at POTWs is accomplished under the control of numerous regulatory permits (e.g., National Pollutant Discharge Elimination System Permits or NPDES Permits) which require monitoring of the quality of wastewater on a frequent basis. For example, NPDES permit requirements for a local refinery requires monthly sampling for arsenic, cadmium, chromium, copper, cyanides, lead, mercury, nickel, zinc, silver, total phenol, pH, dissolved sulfides, chlorides, suspended solids, chemical oxygen demand, biochemical oxygen demand and ignitability. Daily sampling is required for ammonia, oil and grease, selenium and thiosulfate.

Since the reformulation of materials or additional use of air pollution control equipment is not expected to generate significant adverse water quality impacts industry-wide, no changes to existing wastewater treatment permits are expected to be required. As a result, it is expected that operators of affected facilities would continue to comply with existing wastewater treatment requirements of the applicable Regional Water Quality Control Boards or sanitation district.

Coating operations currently generate wastewater as part of clean-up activities. In addition, industrial operations that would be expected to use wet ESP/WGS systems are likely to also be large manufacturing facilities that currently generate wastewater. As discussed above, the reformulation of coatings to water-based coatings could have a beneficial effect by reducing the levels of contaminants currently found in the wastewater from these operations because there is an increasing trend toward less toxic waterborne coatings as water-based products are generally less toxic than solvent-based products. The amount of increased wastewater generated from coating operations would be well within the capacity of the region’s POTWs. Consequently, water quality impacts from the 2012 AQMP control measures are not considered significant.

PROJECT-SPECIFIC MITIGATION - WATER QUALITY: Less than significant impacts on water quality as a result of implementing the 2012 AQMP are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS – WATER QUALITY: The water quality impacts associated with implementing the 2012 AQMP are expected to be less than significant. Thus, no remaining water quality impacts are expected.

4.5.4.2 Alternative Transportation Fuels

PROJECT-SPECIFIC IMPACTS – ALTERNATIVE TRANSPORTATION FUELS: The following control measures in the 2012 AQMP may contribute to the increased use of alternative fuels in the SCAQMD's jurisdiction: IND-01, MSC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07. These control measures would generally require the increased use of alternative fuels (e.g., biodiesel fuels, compressed natural gas, liquefied natural gas, and hydrogen).

The SCAQMD amended Rule 431.2 - Sulfur Content of Liquid Fuels, in September 2000, which limited the sulfur content in diesel fuel used in stationary sources to 15 ppm by weight, effective January 1, 2005. Federal law extended this same requirement to also apply to diesel fuel used by mobile sources, effective June 1, 2006. Diesel fuels currently used in California are low sulfur fuels. As such, there is no evidence that the use of low sulfur diesel fuels has resulted in any water quality impacts, as the only difference in the fuel available on the market is the reduced concentration of sulfur.

In general, alternative fuels are expected to be less toxic than conventional fuels and follow a similar path as the low sulfur diesel. Biodiesel is a fuel derived from biological sources such as vegetable oils or animal fats. Biodiesel can be used pure or blended with conventional diesel. Because the biodiesel typically comes from vegetable oils or animal fats, it is generally less toxic and more biodegradable than conventional diesel, so the water quality impacts from a spill of biodiesel would be less than a spill of pure conventional diesel. The most common blended biodiesel is B20, which is 20 percent biodiesel and 80 percent conventional diesel. Therefore, the potential water quality impacts from the transport and storage of biodiesel and biodiesel blends is not expected to be substantially different than the transport and storage of conventional diesel.

The other types of alternative fuels that may be used as part of implementing some control measures in the 2012 AQMP include compressed natural gas, liquefied natural gas and hydrogen. Because all of these fuels exist as a gas at standard temperatures and pressures, a leak of any of these fuels would result in an airborne release, and not a release that could adversely affect water and water quality. There are a number of rules and regulations currently in place that are designed to minimize the potential impacts from underground leaking storage tanks and spills

from fueling activities, including requirements for the construction of the storage tanks, requirements for double containment, and installation of leak detection systems. These regulations would also apply to any leaks of alternative fuels from storage tanks. Thus, the use of alternative fuels is not expected to result in any greater adverse water quality impacts than the use of conventional fuels like diesel or gasoline.

Lastly, none of the alternative fuels require water for their processing or distribution. Thus, any increased use of alternative fuels will not create an additional demand for water.

PROJECT SPECIFIC MITIGATION - ALTERNATIVE TRANSPORTATION FUELS: Less than significant hydrology and water quality impacts were identified from the use of alternative fuels as part of the 2012 AQMP so no mitigation measures are required.

REMAINING IMPACTS – ALTERNATIVE TRANSPORTATION FUELS: The hydrology and water quality impacts associated with implementing the 2012 AQMP are expected to be less than significant. Thus, no remaining hydrology or water quality impacts are expected from the projected increased use of alternative fuels.

4.5.4.3 Electric Vehicles

PROJECT-SPECIFIC IMPACT – ELECTRIC VEHICLES: Implementation of the 2012 AQMP could contribute to an increased use of electric vehicles. Table 4.5-3 estimates the number of electric vehicles that are expected to be put into service as part of implementing Control Measures ONRD-01, ONRD-03, ONRD-04, and ONRD-05. In addition to the control measures identified in Table 4.5-3, a number of other control measures would encourage the use of zero and near-zero emission vehicles and other equipment including ADV-01, ADV-02, ADV-03, ADV-04, ADV-06, and ADV-07. Since some batteries contain toxic materials, water impacts are possible if they are disposed of in an unsafe manner, such as by illegal dumping or by disposal in a landfill.

TABLE 4.5-3

Estimated Increase in Electric Vehicles

CONTROL MEASURE NO.	CONTROL MEASURE DESCRIPTION	ESTIMATED INCREASE IN VEHICLES
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles	Incentivize 9,000 light- and medium-duty vehicles
ONRD-03	Accelerated Penetration of Partial Zero Emission and Aero Emission Medium Heavy-Duty Vehicles	Encourage introduction of 5,000 vehicles
ONRD-04	Accelerated Retirement of Older Heavy Duty Vehicles	Replace 5,000 vehicles
ONRD-05	Further Emission Reductions for Heavy-Duty Vehicles Serving Near-Dock Railyards	Replace 1,000 trucks with zero emission technologies

As interest in the use of electric vehicles has increased over the years, battery technologies have been developing and improving. Most battery technologies employ materials that are recyclable, since regulatory requirements and market forces encourage recycling. California laws create incentives and requirements for disposal of recycling of batteries as follows.

- Under CARB regulations, to certify either a new ZEV or retrofit an existing ZEV, automakers must complete CARB's certification application, which must include a battery disposal plan. Thus, current regulations require ZEV manufacturers to take account for the full life-cycle of car batteries and to plan for safe disposal or recycling of battery materials (SCAQMD, 2007). For example, Toyota offers \$200 per battery to minimize illegal disposal of batteries.
- California law requires the recycling of lead-acid batteries (California Health & Safety Code §25215). Spent lead-acid batteries being reclaimed are regulated under 22 CCR §66266.80 and 66266.81, and 40 CFR part 266, Subpart G.
- California law requires state agencies to purchase car batteries made from recycled material (Public Resources Code §42440).
- As of February 8, 2006, household wastes such as batteries, electronic devices and fluorescent light bulbs may not be disposed of in a landfill by anyone.

Existing battery recovery and recycling programs have limited the disposal of batteries in landfills. For example, the recycling of lead-acid and nickel-cadmium batteries is already a well-established activity. Two secondary lead smelters (facilities that recycle lead-bearing materials) are located within the district. Both of these facilities receive spent lead-acid batteries and other lead bearing material and process them to recover lead and polypropylene (from the battery casings). Acid is collected and recycled as a neutralizing agent in the wastewater treatment system.

The availability of secondary lead smelters for battery recycling reduces the potential for the illegal disposal of batteries.

Implementation of the 2012 AQMP would be expected to result in an increased use of electric vehicles (EVs) and hybrid vehicles (hybrids) which use nickel-metal hydride (NiMH) and lithium ion (Li-ion) batteries, instead of lead-acid batteries. The most common battery technologies used in modern EVs and hybrids are NiMH and Li-ion batteries (Hybrid, 2008). EVs and hybrids both use electricity as part of their fuel system. EVs rely purely on electric power stored in batteries. Hybrids also use batteries as part of their fuel supply; however, hybrids supplement their electrical needs by using gasoline engines to generate either mechanical or electric power on demand. Since gasoline is a conventional fuel, any difference in water quality impacts associated with hybrid vehicles would be from the batteries. The electrolyte in NiMH batteries is an alkaline electrolyte, usually potassium hydroxide, the electrolyte in Li-ion batteries is a lithium salt in an organic solvent, while the electrolyte in lead-acid batteries is a sulfuric acid/water blend.

Batteries in hybrids are much larger than batteries in conventional vehicles. The current hybrid batteries weigh about 110 pounds and are composed of NiMH batteries which are charged by an internal combustion engine driven generator and/or by a regenerative braking system that captures power from deceleration and braking. These batteries have a longer life than conventional lead acid batteries. These high voltage batteries are warranted for 10 years or 150,000 miles under California regulations.

The earliest Toyota Prius and Honda Insight and Civic cars were initially sold through the 2003 model year. The batteries associated with these vehicles are just reaching 10 years of age, so most of the battery waste from the first generation of hybrid vehicles has not yet been created. Two recycling firms that will recycle advanced-technology automotive batteries include North American Operations for Umicore, a Belgium-based metals recycling company, and Toxco, ~~a with~~ U.S. company with a number of facilities located throughout the country.

The NiMH batteries found in hybrid vehicles are basically "zero-landfill" products, meaning that whatever cannot be recycled is typically consumed in the recycling process. The primary metals recovered during recycling are nickel, copper and iron. Some principal rare earth metals, neodymium and lanthanum (Edmunds, 2012), are also recovered. Improper disposal of NiMH batteries poses less environmental hazard than that of lead-acid or nickel-cadmium batteries because of the absence of lead and cadmium, which are considered to be toxic. Most industrial nickel is recycled, due to the relatively easy retrieval of the magnetic element from scrap using electromagnets, and due to its high value.

Li-ion batteries are between 70 and 100 percent recyclable, depending on the particular chemistry of the batteries. There are approximately six different types of Li-ion batteries in use, and more are being developed. The battery types available are differentiated by the chemical formulation of the electrodes including, but not

limited to, cobalt dioxide, nickel-cobalt-manganese (NCM), nickel-cobalt- aluminum (NCA), manganese oxide spinel (MnO), and iron phosphate (FePo). The components of Li-ion batteries that cannot be recycled are mostly consumed as fuel in the furnaces that are used to melt down the metals, which include cobalt, copper, iron, nickel, manganese and, in the future, lithium (Edmunds, 2012).

Because Li-ion batteries have a potential for after-automotive use, destructive recycling can be postponed for years even after an EV or hybrid battery can no longer hold and discharge sufficient electricity to power a car's motor, the battery pack can still carry a tremendous amount of energy. Battery manufacturers project that the battery packs will still be able to operate at approximately 80 percent of capacity at the time they must be retired from automotive use. Auto companies are partnering with battery, recycling and electronics firms to figure out and develop post-automotive markets and applications for Li-ion battery packs (Edmunds, 2012).

The switch to electric batteries has the potential to create water quality impacts from improper disposal. However, the increased use of EVs and hybrids will result in a decrease in the use of lead acid batteries, which use sulfuric acid/ blends as electrolytes and have a much shorter lifespan than NiMH or Li-ion batteries. NiMH and Li-ion batteries are generally recycled because the material within the batteries is valuable. Further some manufacturers offer incentives to prevent illegal disposal of the batteries. Toyota offers \$200 per battery to help prevent improper disposal of hybrid batteries.

While the switch to electric batteries has the potential to create water quality impacts from improper disposal, increased use of EVs and HVs will result in a concomitant decrease in the use of internal combustion engines and a reduction in the impacts of such engines. For instance, decreased use of internal combustion engines such as gasoline- or diesel-burning engines will also result in a decreased generation of used engine oil since electric motors do not employ oil as a lubricant.

Specifically, approximately 294,500 tons per year of waste oil was generated in the Basin in 2011 and about 525,300 tons was generated in California in 2005 (see Chapter 3.6, Solid/Hazardous Waste). Because of the widespread use and volume of waste oil, a portion of waste oil is illegally disposed of via sewers, waterways, on land, and disposed of in landfills. Waste oil that is illegally disposed can contaminate the environment (via water, land or air). The CIWMB has estimated that about 20 million gallons of used motor oil is disposed each year in an unknown manner (CIWMB, 2007). In addition, a substantial amount of motor oil leaks onto the highways from vehicles each year. This motor oil is washed into storm drains and eventually ends up in the ocean.

Since electric motors do not require motor oil as a lubricant, replacing internal combustion engines with electric engines will eliminate the impacts of motor oil use and disposal. For example, a 50 percent penetration of light-duty electric vehicles will result in a corresponding 50 percent reduction in the release of these contaminants into the environment due to illegal disposal (50 percent of 20 million

gallons is 10 million gallons). Release of contaminants due to engine oil that burns up in, or leaks from engines or due to burning of recovered engine oil for energy generation will also be correspondingly reduced. Additional use of electric vehicles is expected to have a beneficial environmental impact by reducing the amount of motor oil used, recycled, potentially illegally disposed, or washed into storm drains and ending up in the ocean.

In conclusion, the illegal disposal of electric batteries has the potential to result in significant water quality impacts by allowing toxic metals or acids to leach into surface or ground waters. However, most car batteries are recycled and EV and hybrid batteries are more valuable than lead-acid batteries, which increases the likelihood that these batteries will also be recycled. For this reason, virtually all of the EV and hybrid batteries will be recycled when compared to lead-acid batteries which do not have a comparable recycling value. Therefore, recycling of EV and hybrid batteries will be greater than for lead-acid batteries used in conventional vehicles, reducing the potential for illegal disposal and potential water quality impacts. Based on the foregoing analysis, less than significant adverse water quality impacts are expected from the increased use of EV and hybrid vehicles.

PROJECT-SPECIFIC MITIGATION – ELECTRIC VEHICLES: Less than significant hydrology/water quality impacts were identified from the increased use of electric vehicles as part of the 2012 AQMP so no mitigation measures are necessary or required.

REMAINING IMPACTS – ELECTRIC VEHICLES: The hydrology and water quality impacts associated with increased use of electric vehicles and hybrid vehicles are expected to be less than significant. Thus, no remaining hydrology or water quality impacts are expected from the projected increased use of these vehicles.

4.5.4.4 Water Demand Impacts

PROJECT-SPECIFIC IMPACT – AIR POLLUTION CONTROL EQUIPMENT: There are several control measures that may require or encourage the use of air pollution control technologies that could result in an increased use of water demand from condensers, carbon absorbers, wet scrubbers, and SCRs. As indicated in Table 4.5-1, the 2012 AQMP includes stationary sources that may require add-on control equipment with the potential to increasing water demand (BCM-03, BCM-04, IND-01, and MSC-01). The use of wet ESPs and WGSs would result in an increase in water demand. The extent of the use of these types of control equipment is unknown. However, the use of wet ESPs and WGSs has been shown to be effective at reducing PM_{2.5} emissions.

As mentioned earlier in this chapter, one wet ESP and one WGS were installed on the FCCU at the ConocoPhillips Refinery to control sulfur oxide emissions, as well as PM₁₀ and PM_{2.5} emissions. The environmental analysis for this project indicated that the expected water demand associated with the WGS was about 300 gallon per minute (432,000 gallons per day) (SCAQMD, 2007). The increase in

water use is greater than the significance threshold of 262,820 gallons of potable water per day. If the 2012 AQMP control measures were to encourage the development of 20 additional wet ESP/WGS systems of this size, the potential water demand would also exceed the five million gallon total water significance threshold. Therefore, the 2012 AQMP could result in potentially significant water demand impacts associated with wet ESP and WGS technologies.

The possible control methods for BCM-03 - Emission Reductions from Under-fired Charbroilers, have yet to be determined because cost-effective controls for the majority of under-fired charbroilers have not yet been developed. BCM-03 is focused on controlling PM10 and PM2.5 emissions; thus, water scrubbing or filtering devices could be employed as add on controls for charbroiler exhaust and these devices would require water for their operation. An alternative to these water-based control technologies is the replacement of under-fired charbroilers with a smokeless broiler, which would prevent grease from dripping onto hot burner components while cooking food. A smokeless broiler is estimated to result in a 75 percent reduction in PM10 emissions and a 71 percent reduction in VOC emissions. Thus, compliance with BCM-03 could be achieved by replacing older broilers with newer, more efficient broilers, which would not require water to operate.

Other types of control measures may have several control technology options to use for compliance, and these add-on control equipment options are generally not expected to result in a significant increase in water demand from their use. For example, particulate control devices such as baghouses and dry filters do not utilize water. These types of control technologies are likely to be used on smaller emission sources as they tend to be more cost effective than wet ESPs and WGSs.

Control Measure IND-01, a backstop measure for ports, could employ WGSs (which would require water to operate) for particulate control. However, IND-01 is expected to rely primarily on the use of a variety of other control methods that do not require water for operation, including cold ironing, alternative fuels, PM filters, et cetera. While there is a variety of add-on control technologies available, and not all of these technologies require water for their operation, implementation of some of the control measures proposed in the 2012 AQMP is expected to result in significant adverse water demand impacts in the event that wet ESP/WGS systems are installed on large emission sources. Table 4.5-4 contains a summary of the potential water demand associated with implementing Control Measures BCM-03, BCM-04, IND-01, and MSC-01.

PROJECT-SPECIFIC IMPACTS – REFORMULATED PRODUCTS: Historically, potential water demand to reformulate conventional coatings into waterborne coatings and to clean up waterborne coatings has not resulted in significant adverse impacts on water demand. Using “worst-case” assumptions, increase water demand from implementing the 2012 AQMP has been estimated in Table 4.5-4 for both manufacturers of waterborne coatings and water used by consumers to clean coating equipment. As shown in Table 4.5-4, water demand associated with the manufacture and clean-up of waterborne formulations is

estimated to be 93,821 gallons per day. This increased water demand does not exceed the SCAQMD's significance thresholds of 5,000,000 gallons per day of total water demand or 262,820 gallons per day of potable water demand.

TABLE 4.5-4

Projected Water Demand from 2012 AQMP Control Measures

CONTROL MEASURE	PROJECTED WATER DEMAND ^a (BILLION GAL PER YEAR)	PROJECTED WATER DEMAND WITH 20% REDUCTION ^b (BILLION GAL PER YEAR)	ESTIMATED COATING SALES ^c (GAL PER YEAR)	PROJECTED MFGR WATER DEMAND, ^d (GAL PER YEAR)	PROJECTED CLEAN UP WATER DEMAND, ^e (GALLONS PER YEAR)	TOTAL IMPACT, ^f (GALLONS PER DAY)
CTS-01 Architectural Coatings	2,517	2,014	7,610,000	7,610,000	7,610,000	41,698
CTS-02 Misc. Coatings, Adhesives, Solvents, Lubricants	2,517	2,014	3,805,000	3,805,000	3,805,000	20,849
CTS-03 Mold Release Products	2,517	2,014	1,902,500	1,902,500	1,902,500	10,425
CTS-04 Consumer Products	2,517	2,014	3,805,000	3,805,000	3,805,000	20,849
Estimated Total Water Demand from CTS-01, CTS-02, CTS-03, and CTS-04 :			17,122,500	17,122,500	17,122,500	93,821
BCM-03, BCM-04, IND-09, and MSC-01	2,517	2,014	--	--	--	8,640,000 ^g
Total Estimated Water Demand:						8,733,821

a See Table 3.5-1.

b On November 10, 2009, the state Legislature passed Senate Bill 7 as part of the Seventh Extraordinary Session referred to as SBX7-7. This new law is the water conservation component to the historic Delta legislative package, and seeks to achieve a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020. The projected water demand was reduce by 20 percent pursuant to this legislation.

c Architectural coatings are the largest coating category. Miscellaneous Coatings, Consumer products and Consumer Products are assumed to be about 50 percent of the volume of architectural coatings, and mold release products are assumed to be about 25 percent of the volume of architectural coatings. (SCAQMD, 2011.)

d Assumes that one gallon of water would be used to manufacture one gallons of coating applied. This estimate includes the water used in humidifiers and for purging lines. This volume also assumes as "worst-case" scenario, that all affected coatings used in the district were manufactured here and does not take into consideration the fact that some affect coatings are already waterborne coatings

e Assumes that one gallon of water would be used to clean-up equipment for every gallon of coating applied.

f Total amount of manufactured and clean-up water demand.

g Assumes 20 large ESPs/WGS are installed as part of the AQMP.

PROJECT-SPECIFIC CONCLUSION – WATER DEMAND: The water demand associated with certain air pollution control technologies along with the water demand associated with the use of waterborne coatings could exceed 262,820 gallons per day of potable water demand and could potentially exceed the total water demand of five million gallons per day and is therefore, potentially significant. The source of water will vary from jurisdiction to jurisdiction but can include additional use of ground water resources. Most of the ground water basins used for water supply are managed to minimize and prevent overdraft conditions. The increased water demand is expected to be associated with existing sources within the Basin which already have water conveyance infrastructure. Therefore, the construction of new water conveyance infrastructure is not expected to be required.

PROJECT-SPECIFIC MITIGATION – WATER DEMAND: The mitigation measures that would be implemented for water demand impacts would depend on the characteristics of individual projects, the volume of water expected to be used, and could vary amongst jurisdictions. Typical mitigation measures are expected to include the following types of measures:

- HWQ-1: Local water agencies should continue to evaluate future water demand and establish the necessary supply and infrastructure to meet that demand, as documented in their Urban Water Management Plans.
- HWQ-2: Project sponsors should coordinate with the local water provider to ensure that existing or planned water supply and water conveyance facilities are capable of meeting water demand/pressure requirements. In accordance with State Law, a Water Supply Assessment should be required for projects that meet the size requirements specified in the regulations. In coordination with the local water provider, each project sponsor will identify specific on- and off-site improvements needed to ensure that impacts related to water supply and conveyance demand/pressure requirements are addressed prior to issuance of a certificate of occupancy. Water supply and conveyance demand/pressure clearance from the local water provider will be required at the time that a water connection permit application is submitted.
- HWQ-3: Project sponsors should implement water conservation measures and use recycled water for appropriate end uses.
- HWQ-4: Project sponsors should consult with the local water provider to identify feasible and reasonable measures to reduce water consumptions.

REMAINING IMPACTS – WATER DEMAND: The impacts of the proposed project on water demand are expected to be significant prior to mitigation. While generally the mitigation measures could help minimize some of the water demand, on an individual facility-basis, the availability of water supplies varies throughout the region, thus, not all mitigation measures will be applied in all situations. For this reason, the mitigation measures are not expected to fully eliminate the potential

water demand impacts. Therefore, water demand impacts generated by the proposed project are expected to remain significant.

4.5.4.5 Application and Use of Sodium Bisulfate

PROJECT-SPECIFIC IMPACTS – SODIUM BISULFATE: Control Measure BCM-04 would control ammonia emissions from livestock operations through the application of sodium bisulfate (SBS). SBS is a hygroscopic salt that acts as an acidifier. SBS has been used to reduce pH levels in dairy bedding (e.g., hay or straw) and manure, which in turn reduces bacterial and ammonia levels. In California, SBS, has also been used by dairies in Tulare, Fresno, Merced, Stanislaus, San Joaquin, Kings, Kern, San Bernardino, Riverside, San Benito and Sacramento, to prevent cow lameness and nuisance flies.

When SBS is applied on manure, research indicates that most ammonia reductions occurred during the first day of SBS application and that ammonia emissions continued to decrease with increasing levels of SBS applications. However, after 24 hours, the reduction rates declined and by day three, the ammonia emissions reduction rates were no longer different between dosages. SBS is most effective in reducing ammonia emissions from dairy corrals at either an application rate of 50 pounds per 1,000 square feet, three times per week; or 75 pounds per 1,000 square feet, two times per week.

While SBS is considered an irritant because of its low pH, it is safe for use in water treatment. In particular, SBS has been used as a disinfectant to prevent damage of the membrane used in reverse osmosis during water treatment. SBS is certified for treating drinking water (e.g., for chlorine removal, corrosion and scale control, and pH adjustment). SBS is used to lower the pH of water for effective chlorination, including water in swimming pools. SBS is also approved as a general use feed additive, including companion animal food. Lastly, SBS is used as a urine acidifier to reduce urinary stones in cats.

SBS is considered Generally Recognized as Safe (GRAS) by the Food and Drug Administration (FDA) and meets their definition of a natural product (FDA, 1998). The FDA has approved of SBS as a food additive and food grade SBS bisulfate is used in a variety of food products, including beverages, dressings, sauces, cake mixes, and fillings. It is also widely used in meat and poultry processing and most recently in browning prevention of fresh cut produce.

Because SBS is a salt, the amount of SBS that is applied needs to be reviewed and controlled to prevent SBS contamination of water runoff that could result in water quality impacts and reduced pH levels. SBS use should be carefully considered in areas that are sensitive to salts and/or in areas with existing high salt loading in the soils. Because SBS loses its effectiveness over time, controlled and monitored application rates of SBS are needed to minimize the potential for water runoff and related water quality impacts.

PROJECT-SPECIFIC MITIGATION – SODIUM BISULFATE: Less than significant hydrology/water quality impacts were identified for the potential use of SBS as part of the 2012 AQMP so no mitigation measures are necessary or required.

REMAINING IMPACTS – SODIUM BISULFATE: The hydrology and water quality impacts associated with increased use of SBS are expected to be less than significant. Thus, no remaining hydrology or water quality impacts are expected from the projected increased use of this chemical.

4.5.4.6 Water Quality Impacts Associated with Increased Ammonia Storage

PROJECT-SPECIFIC IMPACTS – AMMONIA STORAGE: As discussed in Subchapter 4.4 – Hazards and Hazardous Materials, a spill of any hazardous materials including ammonia, could occur under upset conditions. Construction of the vessels and foundations in accordance with California Building Code requirements helps structures resist major earthquakes without collapse, but may result in some structural and non-structural damage following a major earthquake. As required by U.S. EPA's spill prevention control and countermeasure regulations, all affected facilities are currently required to have emergency spill containment equipment and would implement spill control measures in the event of an earthquake. Storage tanks typically have secondary containment such as a berm, which would be capable of containing 110 percent of the contents of the storage tanks. Therefore, should a rupture occur, the contents of the tank would be collected within the containment system and pumped to an appropriate storage tank.

Spills at affected industrial or commercial facilities would be collected within containment structures. Large spills outside of containment areas at affected facilities could occur when transferring the material from a transport truck to a storage tank; these spills are expected to be captured by the process water system where they could be collected and controlled. Spilled material would be collected and pumped to an appropriate tank or sent off-site if the materials cannot be used on-site.

PROJECT-SPECIFIC MITIGATION – AMMONIA STORAGE: Because of the state- and federally-mandated containment system design, spills are not expected to migrate from the facility in a way that would create significant adverse water quality impacts. Since less than significant hydrology/water quality impacts were identified for the potential storage of ammonia, no mitigation measures are necessary or required.

REMAINING IMPACTS – AMMONIA STORAGE: The hydrology and water quality impacts associated with ammonia storage are expected to be less than significant. Thus, no remaining hydrology or water quality impacts are expected from the projected increased storage of this chemical.

4.5.5 Summary of Hydrology and Water Quality Impacts

The following is the summary of the conclusions of the analysis of energy impacts associated with implementation of the 2012 AQMP.

- Wastewater treatment facilities are expected to have sufficient capacity to handle the estimated increase in wastewater that could be generated from reformulation of products and use of air pollution control equipment (e.g., wet ESPs and WGSs). Therefore, less than significant impacts associated with wastewater treatment or water quality is expected.
- The use of alternative fuels is not expected to result in greater adverse water quality impacts than the use of conventional fuels. Less than significant adverse hydrology and water quality impacts are expected from the increased use of alternative fuels.
- It is not expected that the recycling of EV and hybrid batteries would be greater than lead-acid batteries in conventional vehicles because although EV and hybrid batteries are typically larger than lead acid batteries, they typically have a much longer lifetime. As a result, potential illegal disposal and potential water quality impacts would be equivalent to, or possibly less for EV and hybrid batteries compared to lead-acid batteries. Therefore, less than significant adverse water quality impacts are expected from the increased use of EV and hybrid vehicles.
- Water demand associated with the manufacture and use of waterborne coatings, solvents, and other consumer products, and add-on air pollution control technologies such as wet ESPs and WGSs are potentially significant. While mitigation measures as available, they can vary from jurisdiction to jurisdiction, but it is expected that impacts would remain significant even after mitigation measures are implemented.
- The use and application of SBS should be controlled and monitored to prevent water quality runoff and related water quality impacts. Therefore, the use of SBS is expected to create less than significant water quality impacts.
- Potential spills associated with ammonia are expected to be contained on-site due to the requirement for secondary spill containment devices and berms. Therefore, potential ammonia spills that may affect water quality are expected to be less than significant.
- Summary of PM2.5 Control Measure Impacts: The hydrology and water quality impacts associated with PM2.5 Control Measures are potentially significant for water demand (BCM-03, IND-01, and MCS-01). The hydrology and water quality impacts associated with wastewater generation and related wastewater quality are less than significant. Further, the use and application of SBS (BCM-04) on water quality is also expected to be less than significant.

Summary of Ozone Control Measure Impacts: The hydrology and water quality impacts associated with Ozone Control Measures are potentially significant for water demand (CTS-01, CTS-02, CTS-03, CTS-04, and FUG-01). The water quality impacts associated with wastewater generation and related wastewater quality from 2012 AQMP Control Measures (CTS-01, CTS-02, CTS-03, CTS-04, and FUG-01) are less than significant. Less than significant adverse hydrology and water quality impacts are expected from the increased use of alternative fuels (IND-01, MSC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07). Similarly, less than significant adverse water quality impacts associated with increase battery use in EV and hybrid vehicles are expected (ONRD-01, ONRD-03, ONRD-04, ONRD-05, ADV-01, ADV-02, ADV-03, ADV-04, ADV-06, and ADV-07). Potential spills associated with ammonia are expected to be contained on-site due to the requirement for secondary spill containment devices and berms. Therefore, potential ammonia spills are expected to be less than significant.

SUBCHAPTER 4.6

LAND USE AND PLANNING

Introduction

2012 AQMP Control Measures with Potential Land Use Impacts

Significance Criteria

Potential Impacts and Mitigation

Summary of Land Use Impacts

4.6 LAND USE AND PLANNING

4.6.1 Introduction

This subchapter examines impacts on the potential land use impacts associated with implementation of the proposed control measures in the 2012 AQMP.

4.6.2 2012 AQMP Control Measures with Potential Land Use Impacts

All control measures in the 2012 AQMP were evaluated to determine whether or not they could generate land use impacts based on the anticipated methods of control. Control measures that may result in land use impacts are included in Table 4.6-1. Some of the control measures could require construction activities which could generate land use impacts. Specifically, ONRD-05, ADV-01, and ADV-02 propose to advance zero-emission and cleaner combustion emission technologies for on-road heavy-duty vehicles and locomotives. Possible methods associated with these control measures could result in the construction of "wayside" electric or magnetic power built into roadway infrastructure to boost the pulling capacity or range of the heavy-duty vehicles. This may include battery charging or fueling infrastructure as well as transportation infrastructure such as overhead electrical catenary lines.

4.6.3 Significance Criteria

Implementation of the 2012 AQMP will be considered to have significant adverse land use impacts if any of the following conditions occur:

- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Physically divide an established community.

4.6.4 Potential Impacts and Mitigation

Potential land use impacts associated with the 2012 AQMP are associated primarily with the construction of support systems (e.g., catenary overhead electrical lines or magnetic infrastructure related to operation of zero- and near-zero transport systems). For purposes of evaluating potential land use impacts, it has been assumed herein that no new rail or truck traffic routes would be constructed, but rather that existing truck and rail routes/corridors would be modified. The truck and rail corridors likely to be involved with the 2012 AQMP modifications are located primarily in commercial and industrial zones within the Southern California area. Examples of these areas include, but are not limited to, the Port of Los Angeles (e.g., Navy Way) Port of Long Beach, and industrial areas in and around container transfer facilities (railway and truck routes) near the Terminal Island Freeway, along the Alameda Corridor, as well as inland railyards near downtown Los Angeles. Since only existing transportation routes would be modified (e.g., electric lines installed) and no new

transportation routes are anticipated as part of the 2012 AQMP, no land use conflicts, or inconsistencies with any general plan, specific plan, local coastal program, or zoning ordinance are expected.

TABLE 4.6-1

Control Measures with Potential Land Use Impacts

CONTROL MEASURE	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	LAND USE IMPACT
OZONE CONTROL MEASURES			
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards (NOx, PM)	Incentives to replace older medium-duty vehicles with low-emitting vehicles.	Construction and operation of wayside power, catenary lines or other similar technologies could generate land use impacts and divide established communities.
ADV-01	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles (NOx)	Construct "wayside" electric or magnetic infrastructure, construction battery charging and fueling infrastructure.	Construction and operation of battery charging or fueling infrastructure, as well as transportation infrastructure, could generate land use impacts and divide established communities.
ADV-02	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives (NOx)	Construct "wayside" electric or magnetic infrastructure, construct battery charging or fueling infrastructure.	Construction and operation of wayside power, catenary lines or other similar technologies could generate land use impacts and divide established communities.

Construction activities would require the use of heavy equipment to install the electric or magnetic systems. Heavy construction equipment such as backhoes, cranes, aerial lifts, front end loaders, and other types of equipment would be required for installation. The electrical or magnetic systems would be installed within or adjacent to existing roadways. These construction activities are expected to occur along heavily travelled roadways (e.g., roads near the ports, such as Sepulveda Boulevard, Terminal Island Freeway, and Alameda Street). Construction activities may require barriers and closures to protect construction workers, prevent unintentional public entrance to the site, and avoid traffic conflicts.

Therefore, it is possible that construction activities could temporarily disrupt or divide a community. However, because construction of new traffic routes/corridors or widening of existing routes/corridors are not part of the proposed project, once construction activities are finished and the physical barriers removed, no long-term land use impacts are anticipated by the project. Therefore, from a land use perspective, none of the above construction impacts are considered to be significant.

The installation of electric and/or magnetic infrastructure is only expected to occur along existing roadways/freeways and transportation corridors (e.g., Sepulveda Boulevard, Terminal Island Freeway, and Alameda Street). These roads and freeways are already

heavily traveled and in many cases already divide existing communities. For example, through portions of Carson and Los Angeles, the Alameda Corridor separates communities and there are a limited number of streets available to cross the Alameda Corridor in an east/west direction. The same is true with respect to Sepulveda Boulevard and the Terminal Island Freeways – both are heavy transportation corridors with limited opportunities to cross these roadways. Installation of electric and/or magnetic infrastructure will not change the existing condition (i.e., there will be limited opportunities to cross these major transportation corridors); however, the installation of the electric and/or magnetic infrastructure is not expected to create any new barriers or physically divide an established community.

Further, the electric and/or magnetic infrastructure would be expected to be construction within or adjacent to the existing rights-of-way of existing streets and freeways, so no conflict with existing land uses, general plans, specific plans, local coastal program, zoning ordinance, or other policies would be expected.

Any proposed modification to an existing rail or truck traffic route/corridor will require a separate CEQA evaluation. As discussed in Chapter 4.9 - Impacts Transportation and Traffic, Section 4.9.5, the traffic management plan should include identification of alternative routes of travel, which will identify a means of connecting established communities that have been temporarily divided by the construction activities associated with the project.

Project-specific Mitigation: No significant land use impacts were identified for the installation of catenary or overhead power lines associated with the 2012 AQMP so no mitigation measures are required.

Remaining Land Use Impacts: The land use impacts from proposed project are not expected to be significant; therefore, no mitigation measures are required.

4.6.5 Summary of Land Use Impacts

The following is the summary of the conclusions of the analysis of the land use impacts associated with implementation of the 2012 AQMP.

The 2012 AQMP control measures are not expected to conflict with applicable land use plans, policies, or regulations or physically divide an established community. Therefore, no significant adverse land use impacts are expected.

Summary of PM_{2.5} Control Measure Impacts: PM_{2.5} Control Measures were evaluated in the NOP/IS and it was determined that the PM_{2.5} Control Measures would not generate any potentially significant land use impacts.

Summary of Ozone Control Measure Impacts: Three Ozone Control Measures could result in the construction of overhead catenary lines; however, the potential land use impacts associated with the Ozone Control Measures were determined to be less than significant, as no land use conflicts were identified.

SUBCHAPTER 4.7

NOISE

Introduction

2012 AQMP Control Measures with Potential Noise Impacts

Significance Criteria

Potential Noise Impacts and Mitigation

Summary of Noise Impacts

4.7 NOISE

4.7.1 Introduction

This subchapter identifies 2012 AQMP control measures that could result in potential adverse noise impacts. Control measures that may have noise impacts are primarily those associated with construction activities.

4.7.2 2012 AQMP Control Measures with Potential Noise Impacts

All control measures in the 2012 AQMP were evaluated to determine whether or not they could generate noise impacts based on the anticipated methods of control. Control measures that may result in noise impacts are included in Table 4.7-1. Construction activities that could be required to implement the following control measures in the 2012 AQMP, BCM-03 - Emission Reductions from Under-Fired Charbroilers, CMB-01 - Further NO_x Reductions from RECLAIM – *Phase I and Phase II*, CMB-02 - NO_x Reductions from Biogas Flares, CMB-03 - Reductions from Commercial Space Heating, IND-01 - Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities, FUG-01 - ~~Further~~ VOC Reductions from Vacuum Trucks, FUG-02 - Emission Reduction from LPG Transfer and Dispensing – Phase II, FUG-03 - Further ~~VOC~~ Reductions from Fugitive VOC Emissions, MCS-01 - Application of All Feasible Measures Assessment, MCS-03 - Improved Start-up, Shutdown and Turnaround Procedures, INC-01 - Economic Incentive Programs to Adopt Zero and Near-Zero Technologies, OFFRD-04 - Further Emission Reductions from Ocean-Going Marine Vessels at Berth, ONRD-03 - Further Emission Reductions from Passenger Locomotives, ONRD-05 - Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards, ADV-01 - Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles, ADV-02 - Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives, ADV-03 - Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment, ADV-04 - Actions for the Deployment of Cleaner Commercial Harborcraft, ADV-05 - Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels, and ADV-06 - Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment. Some of the control measures could require construction activities which could generate noise impacts. Specifically, ONRD-03, ONRD-05, and ADV-01 propose to advance zero-emission and cleaner combustion emission technologies for on-road heavy-duty vehicles. Possible methods associated with this control measure could include cleaner engines using technologies such as electric, battery electric, and fuel cells, as well as alternative and renewable fuels. ONRD-03, ONRD-5 and ADV-01 could also result in the construction of "wayside" electric or magnetic power built into roadway infrastructure to boost the pulling capacity or range of the heavy-duty vehicles. This may include battery changing or fueling infrastructure as well as overhead electrical catenary lines. ADV-02 could require electrification of existing rail lines.

TABLE 4.7-1

Control Measures with Potential Secondary Noise Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	NOISE IMPACT
SHORT-TERM PM2.5 CONTROL MEASURES			
BCM-03 <i>(formerly BCM-05)</i>	Emission Reductions from Under-Fired Charbroilers	Add-On Control Equipment with Ventilation Hood Requirements (e.g., ESPs, HEPA filters, wet scrubbers, and thermal oxidizers).	Construction activities associated with air pollution control equipment could generate noise impacts.
IND-01 ^a	Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities	Environmental lease conditions, port rules, tariffs or incentives.	Control measure could result in construction activities associated with air pollution control equipment and other control strategies that could generate noise impacts.
MCS-01 ^a	Application of All Feasible Measures Assessment	SCAQMD District will adopt and implement new retrofit technology control standards as new BARCT standards become available.	Control measure could result in construction activities associated with air pollution control equipment and other control strategies that could generate noise impacts.
OZONE CONTROL MEASURES			
CMB-01	Further NOx Reductions from RECLAIM – <i>Phase I and Phase II</i>	Selective catalytic reduction, low NOx burners, NOx reducing catalysts, oxy-fuel furnaces, and selective non-catalytic reduction.	Implementation of BARCT technologies could result in construction activities that would generate noise impacts.
CMB-02	NOx Reductions from Biogas Flares (NOx)	Replacement of existing biogas flares with more efficient biogas flares	Replacement of flares could generate construction noise impacts.
CMB-03	Reductions from Commercial Space Heating (NOx)	This control measure seeks emission reductions from unregulated commercial fan-type central furnaces used for space heating.	Replacement of unregulated commercial fan-type central furnaces could generate noise impacts.
FUG-01	Further VOC Reductions from Vacuum Trucks	VOC control devices such as carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers, liquid scrubbers and positive displacement (PD) pumps.	Construction activities associated with air pollution control equipment could generate noise impacts.
FUG-02	Emission Reduction from LPG Transfer and Dispensing – <i>Phase II</i>	Expand applicability of rule to LPG transfer and dispensing at facilities other than those that offer LPG for sale to end users included currently exempted facilities.	Construction activities associated with air pollution control equipment could generate noise impacts.

TABLE 4.7-1 (CONTINUED)

Control Measures with Potential Secondary Noise Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	NOISE IMPACT
OZONE CONTROL MEASURES			
MCS-03	Improved Start-up, Shutdown and Turnaround Procedures (All Pollutants)	Diverting or eliminating process streams that are vented to flares, and installing redundant equipment to increase operational reliability	Construction activities could generate noise impacts.
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies (NOx)	Installation of cleaner, more efficient combustion equipment, such as boilers, water heaters and commercial space heating or installation of control technologies including fuel cells, diesel particulate filters (DPF), NOx reduction catalysts, alternative electricity generation, such as wind and solar, battery electric, hybrid electric, and usage of low NOx and alternative fuels such as natural gas.	Replacement of existing combustion equipment and installation of emissions controls could generate noise impacts.
ONRD-03	Accelerated Penetration of Partial Zero Emission and Zero Emission Light-Heavy- and Medium-Heavy-Duty Vehicles [NOx, PM]	Construct "wayside" electric or magnetic infrastructure, construction battery charging and fueling infrastructure.	Construction activities associated with battery charging or fueling infrastructures, as well as transportation infrastructure, could generate noise impacts.
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards (NOx, PM)	Incentives to replace older medium-duty vehicles with low-emitting vehicles.	Construction activities associated with wayside power, catenary lines or other similar technologies could generate noise impacts.
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels at Berth	Shore power of vessels at berth, use of air pollution control technologies on exhaust gases from auxiliary engines and boilers (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Construction activities associated with emission control technologies could generate noise impacts.
ADV-01	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles (NOx)	Construct "wayside" electric or magnetic infrastructure, construction battery charging and fueling infrastructure.	Construction activities associated with battery charging or fueling infrastructures, as well as transportation infrastructure, could generate noise impacts.

TABLE 4.7-1 (CONCLUDED)
Control Measures with Potential Secondary Noise Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	NOISE IMPACT
OZONE CONTROL MEASURES			
ADV-02	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives (NOx)	Construct "wayside" electric or magnetic infrastructure, construct battery charging or fueling infrastructure.	Construction activities associated with wayside power, catenary lines or other similar technologies could generate noise impacts.
ADV-03	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment (NOx)	Construct electric gantry cranes, construct battery charging or fueling infrastructure, use of alternative fuels and fuel additives.	Construction activities associated with emission control technologies could generate noise impacts.
ADV-04	Actions for the Deployment of Cleaner Commercial Harborcraft (NOx)	Construct battery charging or fueling infrastructure, use of air pollution control equipment (e.g., SCR, use of alternative fuels and fuel additives).	Construction activities associated with emission control technologies could generate noise impacts.
ADV-05	Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx]	Construction of control technologies such as SCR and wet/dry scrubbers, use of alternative fuels.	Construction activities associated with emission control technologies could generate noise impacts.
ADV-06	Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment [NOx]	Construct battery charging or fueling infrastructure, increased use of alternative fuels and fuel additives.	Construction activities associated with emission control technologies could generate noise impacts.

- a. The specific actions associated with the control measure are unknown and, therefore, the impacts are speculative. In order to provide a conservative analysis, it is assumed that the control measure could require air pollution control technologies that are similar to those that are currently required (e.g., SCR, electrification, use of alternative fuels, etc.) and would have the potential to require construction activities that would generate noise.

4.7.3 Significance Criteria

Implementation of the 2012 AQMP would be considered to have significant adverse impact on noise or vibration if any of the following conditions occur:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.

- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.
- Construction and operation would have a significant vibration impact if ground vibration levels for residential structures would exceed 72 VdB for frequent events (70+ vibration events), 75 VdB for occasional events (30-70 events), and/or 80 VdB for infrequent events (e.g., 30 or fewer events) such as the acceptability limits prescribed by the Federal Transit Administration.

4.7.4 Potential Noise Impacts and Mitigation

Construction Activities: Potential noise impacts associated with the 2012 AQMP relate primarily to the construction activities associated with air pollution control equipment and construction of support systems (e.g., wayside power, catenary overhead electrical lines, battery charging or fueling infrastructures related to operation of zero- and near-zero transport systems). Control Measures ONRD-03, ONRD-05, and ADV-01 could require the installation of catenary overhead electrical lines within or adjacent to existing roadways, streets, freeways, and/or transportation corridors. ADV-02 could require the installation of electrical or magnetic infrastructure along rail lines. For purposes of evaluating potential noise impacts, it has been assumed herein that no new rail or truck traffic routes would be constructed, but rather some of these existing routes/corridors will be modified to include catenary overhead electrical lines or magnetic lines. A number of control measures could result in the construction of air pollution control equipment including BCM-03, IND-01, MCS-01, CMB-01, FUG-01, FUG-02, INC-01, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, and ADV-06.

The existing rail and truck routes/corridors likely to be modified are located primarily in commercial and industrial zones within the Southern California area. Examples of these areas include, but are not limited to, the Port of Los Angeles, Port of Long Beach, and industrial areas in and around container transfer facilities (rail and truck) near the Terminal Island Freeway, along the Alameda Corridor, as well inland railyards near downtown Los Angeles. Construction activities may also occur at stationary sources where air pollution control equipment or new equipment may be installed.

Construction activities may require the use of heavy construction equipment. As specific construction projects are not currently proposed, the specific types of construction equipment necessary to implement the proposed control measures are not currently known. The noise levels from typical construction equipment are presented in Table 4.7-2.

The construction equipment noise sources identified in Table 4.7-2 represent typical construction equipment that range from 72 dBA to over 100 ~~decibels~~ (dBA) for activities such as pile driving. The construction equipment, hours of operations, number of pieces of equipment operating at the same time, and construction phases, would vary depending on the specific project; therefore, the construction noise levels are also expected to vary. Each construction phase would use a combination of equipment and personnel that would vary throughout that phase. In addition, construction phases could overlap at the site. This

would lead to a variety of possible construction activities and equipment that may occur at any given time throughout the construction process.

Construction activities would generate noise from heavy construction equipment and construction-related traffic. A typical construction site would be expected to generate noise levels of about 85 dBA at 50 feet from the center of construction activity. Most of the construction noise sources would be located at or near ground level, which would help attenuate noise levels. The estimated noise from a representative construction site at increasing distances from the site is provided in Table 4.7-3.

TABLE 4.7-2

Noise Level Ranges of Typical Construction Equipment

EQUIPMENT	TYPICAL RANGE IN DECIBELS (dBA) ^a
Truck	82-95
Front Loader	73-86
Backhoe	73-95
Vibrator	68-82
Saws	72-82
Pneumatic Impact Equipment	83-88
Jackhammers	81-98
Pumps	68-72
Generators	71-83
Compressors	75-87
Concrete Mixers	75-88
Concrete Pumps	81-85
Pile Driving (peaks)	95-107
Tractor	77-98
Scrapers, Graders	80-93
Pavers	85-88
Cranes	75-89

^a City of Los Angeles, 2006. Levels are in dBA at 50-foot reference distance.

TABLE 4.7-3

Noise Level Attenuation at a Representative Construction Site

DISTANCE FROM CONSTRUCTION NOISE SOURCE	ESTIMATED NOISE LEVEL (dBA)
50	85
100	79
200	73
400	67
800	61
1,600	55
3,200	49
6,400	43

Assuming construction activities of about 85 dBA at 50 feet from the center of construction activity and using an estimated six dBA reduction for every doubling of distance, the noise levels are expected to decrease about 61 dBA at about 800 feet from construction activities.

The potential noise impact of construction activities would vary depending on the existing noise levels in the environment and the location of sensitive receptors (e.g., residents, hotels, hospitals, etc.) from proposed construction activities. Because no specific projects are currently proposed, the noise impacts are speculative. Nonetheless, construction activities associated with control measures in the 2012 AQMP could occur throughout the Basin. The 2012 AQMP may require existing commercial or industrial owners/operators of affected facilities to install air pollution control equipment or modify their existing operations to reduce stationary source emissions. Potential modifications would occur at facilities typically located in appropriately zoned industrial or commercial areas. Installing air pollution control equipment could generate noise impacts, but virtually all of the control equipment would be installed within industrial and commercial facilities, so that construction noise impacts at stationary sources on sensitive receptors are expected to be less than significant.

The 2012 AQMP may also require construction of overhead catenary lines or other similar technologies along existing roadways and transportation corridors. Noise levels from the existing roadways and transportation corridors that could be impacted by these control measures (e.g., ONRD-03, ONRD-05, ADV-01 and ADV-02) are expected to be high as they are heavily traveled transportation corridors (e.g., Terminal Island Freeway and Alameda Street). The construction of catenary lines or similar technologies would result in additional noise sources (e.g., heavy construction equipment) near these transportation corridors. There are residential areas and other sensitive receptors near some of these transportation corridors that include: 1) the western portions of the City of Long Beach near and adjacent to the Terminal Island Freeway and near Sepulveda Boulevard; 2) residents in the City of Wilmington near Alameda Street; and, 3) residents in the City of Carson and other cities and jurisdictions along Alameda Street. Some of these residents are located within several hundred feet of the existing roadways so noise levels associated with construction activities could be in the range of 65-75 dBA, which could result in noise increases of three dBA or greater and generate significant impacts.

Vibration associated with ground-borne sources is generally not a common environmental problem. However, construction activities such as blasting, pile driving, and heavy earth-moving equipment are potential sources of vibration during construction activities. As described for construction noise impacts, some residents are located with several hundred feet of the existing roadways and construction activities could result in noticeable vibration impacts.

Project construction would involve equipment and activities that may have the potential to generate groundborne vibration. In general, demolition of structures during construction generates the highest levels of vibration. The FTA has published standard vibration levels and peak particle velocities for construction equipment operations (FTA, 2006). The approximate velocity level and peak particle velocities for large construction equipment are listed in Table 4.7-4. Ground-borne vibration is quantified in terms of decibels, since that

scale compresses the range of numbers required to describe the oscillations. The FTA uses vibration decibels (abbreviated as VdB) to measure and assess vibration amplitude. In the United States, vibration is referenced to one micro-inch/sec (25.4 micro-mm/sec) and presented in units of VdB.

The FTA recommends using an estimated six VdB reduction for every doubling of distance (FTA, 2006). Using the FTA methodology, the VdB would range from 40 to 82 VdB within 200 feet from construction activities, depending on the type of equipment used. The predicted vibration during construction activities can be compared to the significance threshold of 72 VdB. Vibration from construction activities could exceed the 72 VdB threshold for structures and sensitive receptors within 200 feet of construction activities, if certain types of construction equipment are used. Therefore, vibration impacts associated with construction activities are potentially significant.

TABLE 4.7-4
Representative Construction Equipment Vibration Impacts

EQUIPMENT	APPROXIMATE PEAK PARTICLE VELOCITY AT 25 FT. (INCHES/SECOND)^a	APPROXIMATE VELOCITY LEVEL AT 25 FT. (VdB)^a	APPROXIMATE VELOCITY LEVEL AT 200 FT. (VdB)^a
Pile Driver typical	0.644	100	82
Vibratory Roller	0.210	94	76
Large Bulldozers	0.089	87	69
Loaded Trucks	0.076	86	68
Jackhammer	0.035	79	61
Small Bulldozer	0.003	58	40

a. Source: FTA, 2006. Data reflects typical vibration level.

Construction activities are often limited to daytime hours to prevent noise impacts during the more sensitive nighttime hours. However, transportation-related construction activities often occur during the evening/nighttime hours to minimize traffic impacts during the more heavy traffic periods. For example, construction activities related to catenary overhead lines may occur during the evening/nighttime hours to minimize traffic conflicts, as construction would be expected along existing roads and transportation corridors. Therefore, there is the potential for significant noise and vibration impacts during construction activities.

Workers exposed to noise sources in excess of 90 dBA for an eight-hour period would be required to wear hearing protection devices that conform to Occupational Safety and Health Administration/National Institute for Occupational Safety and Health (NIOSH) standards.

Operational Activities: As discussed above, the 2012 AQMP may require existing commercial or industrial owners/operators of affected facilities to install air pollution control equipment or modify their existing operations to reduce stationary source emissions. Potential modifications would occur at facilities typically located in appropriately zoned industrial or commercial areas. Installing air pollution control equipment on stationary sources could generate noise and vibration impacts, but virtually all of the control equipment would be installed within industrial and commercial facilities. Further, noise

requirements and noise ordinances would continue to apply to stationary sources, so that noise impacts on sensitive receptors are expected to be less than significant.

Wayside electrification/magnetizing could be installed as a result of implementing Control Measures ONRD-03, ONRD-05, ADV-01 and ADV-02. Installation of catenary lines/rail electrification would likely occur along existing transportation corridors and railways and is not expected to require constructing new roadways or corridors. It is not expected that trucks and locomotives using wayside sources of electricity electric would be louder than non-electrified mobile sources. Indeed, electric motors connected to wayside power would likely be quieter than diesel mobile sources because electric motors have fewer moving parts. Further, wayside power would likely be installed on major transportation corridors where noise levels are already high and, often, are the major noise sources in many areas, especially industrial areas and near the ports. Therefore, operational noise and vibration impacts associated with the 2012 AQMP are expected to be less than significant.

Noise Impacts Mitigation: The impact of the proposed project on local noise levels during construction, although temporary in nature, could be significant. In order to mitigate potential noise impacts during construction activities, project-specific information would be necessary in order to first identify the specific impacts (e.g., project location, distance of roadway to be altered, etc.) to develop appropriate mitigation measures.

Ultimately, mitigation measures for construction would need be identified on a project-by-project basis and would be the responsibility of the lead agencies based on their underlying legal authority to mitigate project impacts. For example, in the Draft Program EIR prepared for SCAG's 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy, mitigation measure TR29 (MM-TR29) identifies noise mitigation measures during construction as follows:

NO-1: To reduce noise impacts due to construction, project sponsors may require construction contractors to implement a site-specific noise reduction program, subject to the Lead Agency (or other appropriate government agency) review and approval, which includes the following measures:

- Equipment and trucks used for project construction may utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).
- Except as may be exempted by the Lead Agency (or other appropriate government agency), impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction may be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust may be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves may be used, if such jackets are commercially available and this could achieve a reduction of five dBA. Quieter procedures may be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.

- Stationary noise sources may be located as far from adjacent sensitive receptors as possible and they may be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the Lead Agency (or other appropriate government agency) to provide equivalent noise reduction.

NO-2: Prior to the issuance of a building permit, along with the submission of construction documents, each project sponsor may submit to the Lead Agency (or other government agency as appropriate) a list of measures to respond to and track complaints pertaining to construction noise. These measures may include:

- A procedure and phone numbers for notifying the Lead Agency staff and local Police Department (during regular construction hours and off-hours);
- A sign posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign may also include a listing of both the Lead Agency and construction contractor's telephone numbers (during regular construction hours and off hours);
- The designation of an on-site construction complaint and enforcement manager for the project;
- Notification of neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity; and
- A preconstruction meeting may be held with the job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

NO-3: Project sponsor may implement use of portable barriers in the vicinity of sensitive receptors during construction including construction of subsurface barriers, debris basins, and storm water drainage facilities.

NO-4: For projects that require pile driving or other construction noise above 90 dBA in proximity to sensitive receptors, to further reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90dBA, a set of site-specific noise attenuation measures may be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures may be submitted for review and approval by the Lead Agency (or other appropriate government agency) to ensure that maximum feasible noise attenuation would be achieved. This plan may be based on the final design of the project. A third-party peer review, paid for by the project sponsor, may be required to assist the Lead Agency in evaluating the feasibility and effectiveness of the noise reduction plan submitted by the project sponsor. The criterion for approving the plan may be a determination that maximum feasible noise attenuation would be achieved. The noise reduction plan may include, but not be limited to, an evaluation of implementing the following measures. These attenuation measures may include as many of the following control strategies as applicable to the site and construction activity:

- Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings;
- Implement “quiet” pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;
- Utilize noise control blankets on the building structure as the structures are erected to reduce noise emission from the site;
- Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example and implement such measure if such measures are feasible and would noticeably reduce noise impacts; and
- Monitor the effectiveness of noise attenuation measures by taking noise measurements.

NO-5: Noise generated from any rock-crushing or screening operations performed within 3,000 feet of any occupied residence may be mitigated by the project sponsor by strategic placement of material stockpiles between the operation and the affected dwelling or by other means approved by the local jurisdiction.

NO-6: Where feasible, pile holes may be pre-drilled to reduce potential noise and vibration impacts.

NO-7: As necessary, each project sponsor may retain a structural engineer or other appropriate professional to determine threshold levels of vibration and cracking that could damage any adjacent historic or other structure subject to damage, and design means and construction methods to not exceed the thresholds.

NO-8: Project sponsors may comply with all local sound control and noise level rules, regulations, and ordinances.

NO-9: As part of the appropriate environmental review of each project, a project specific noise evaluation may be conducted and appropriate mitigation identified and implemented.

Remaining Noise Impacts: The noise impacts from the proposed project are expected to be significant prior to mitigation. While generally mitigation measures could help minimize some of the noise impacts, SCAQMD cannot predict how a future lead agency might choose to mitigate a particular significant noise impact. Thus, the potential exists for future noise impacts to be significant even after feasible mitigation measures are identified and imposed. Therefore, noise impacts that may occur as a result of implementing the 2012 AQMP are expected to remain significant.

4.7.5 Summary of Noise Impacts

The following is the summary of the noise and vibration impacts associated with implementation of the 2012 AQMP.

- Noise and vibration impacts would be temporary in nature and related solely to construction activities, but could be significant.
- No modification to existing rail or truck traffic routes/corridor is expected; therefore, noise and vibration impacts associated with operational activities are expected to be less than significant.

Summary of PM_{2.5} Control Measure Impacts: PM_{2.5} Control Measures were evaluated and it was determined that noise and vibration impacts would be limited to construction activities associated with air pollution control activities. Construction noise/vibration impacts associated with these activities are expected to be less than significant as they will occur within appropriately zoned industrial and commercial areas, impacts are temporary and limited to construction activities, and construction noise/vibration impacts to sensitive receptors would not be expected.

Summary of Ozone Control Measure Impacts: Three Ozone Control Measures could result in the construction of overhead catenary lines. The potential noise/vibration impacts of the Ozone Control Measures during the construction phases were determined to be significant, mitigation measures were imposed, however, construction noise/vibration impacts could remain significant in areas where sensitive receptors are located near transportation corridors.

SUBCHAPTER 4.8

SOLID AND HAZARDOUS WASTE

Introduction

2012 AQMP Control Measures with Potential Solid and Hazardous Waste Impacts

Significance Criteria

Potential Aesthetics Impacts and Mitigation Measures

Project Specific Mitigation

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4.8 SOLID AND HAZARDOUS WASTE

4.8.1 Introduction

This subchapter identifies potential solid and hazardous waste impacts that may be generated by implementing the 2012 AQMP. The potential impacts to the generation of solid and hazardous waste associated with the implementation of the 2012 AQMP are described below.

The analysis of solid and hazardous waste impacts assumes that safety and disposal procedures required by various agencies in the state of California will provide reasonable precautions against the improper disposal of hazardous wastes in a municipal waste landfill. Because of state and federal requirements, some facilities are attempting to reduce or minimize the generation of solid and hazardous waste by incorporating source reduction technologies to reduce the volume or toxicity of waste generated, including improving operating procedures, using less hazardous or non-hazardous substitute materials, and upgrading or replacing inefficient processes.

4.8.2 2012 AQMP Control Measures with Solid and Hazardous Waste Impacts

Implementing some of the 2012 AQMP control measures could increase the generation and disposal of solid and hazardous waste in the region. Specifically, some control measures will encourage the use of electric vehicles which could result in an increase in waste associated with spent batteries. Other control measures could increase the generation of solid or hazardous waste due to installation of air pollution control equipment, such as activated carbon, filters, and catalysts. Finally, other control measures would encourage the early retirement of older equipment and replacement with newer and lower emission technology equipment which would generate additional waste. Table 4.8-1 lists the 2012 AQMP control measures with potential adverse solid and hazardous waste impacts through the addition of materials requiring disposal.

Evaluation of control methods for each control measure indicated that there are 23 control measures that could have potential solid and hazardous waste impacts. As shown in Table 4.8-1, three PM_{2.5} control measures and 20 ozone control measures could have significant impacts on solid and hazardous wastes.

TABLE 4.8-1**Control Measures with Potential Solid and Hazardous Waste Impacts**

CONTROL MEASURES	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	POTENTIAL SOLID AND HAZARDOUS WASTE IMPACT
Short-Term PM2.5 Control Measures			
CMB-01	Further NO _x Reductions from RECLAIM [NO _x] –Phase I & II	Installation of SCR systems and burner replacement.	Potential increase in solid waste due to burner replacement & SCR catalyst disposal.
BCM-03 <i>(formerly BCM-05)</i>	Emission Reductions from Under-Fired Charbroilers [PM2.5]	Control options include ESPs, HEPA filters, wet scrubbers, and thermal oxidizers.	Potential increase in solid waste associated with air pollution control equipment (e.g., filters).
IND-01 ^a	Backstop Measure for Indirect Sources of emissions from Ports and Port-Related Facilities	Potential control measures include electrification of sources, early retirement of equipment, air pollution control equipment on sources, use of alternative fuels.	Potential increase in solid waste due to early retirement of equipment, solid was associated with air pollution control equipment, EV battery disposal.
MCS-01 ^a	Application of All Feasible Measures Assessment	Implement new retrofit technology control standards as new BARCT standards become available.	Potential increase in solid waste associated with air pollution control equipment (e.g., filters, early retirement of equipment).
Ozone Control Measures			
CMB-02	NO _x Reductions from Biogas Flares	Construction of replacement flares.	Potential increase in solid waste from replacing old flares with new flares.
CMB-03	Reductions from Commercial Space Heating	Burner replacement.	Potential increase in solid waste due to burner replacement.
INC-01	Economic Incentive Programs to Adopt Cleaner, More Efficient Combustion Equipment [All Pollutants]	Control technologies for funding include fuel cells, diesel particulate filters (DPF), NO _x reduction catalysts, alternative electricity generation, such as wind and solar, battery electric, hybrid electric, and usage of low NO _x and alternative fuels such as natural gas.	Potential increase in solid waste due to combustion equipment replacement, generation of solid waste from air pollution control equipment (e.g. used filters), and EV battery disposal.
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles [VOC, NO _x , PM]	Implement rebate incentive program to purchase low-emitting vehicles.	Potential increases in solid waste from EV battery disposal and early retirement of vehicles.
ONRD-02	Accelerated Retirement of Older Light- and Medium-Duty Vehicles [VOC, NO _x , PM]	Continue Enhanced Fleet Modernization Program (EFMP) through 2023.	Potential increase in solid waste generation from early retirement of vehicles and EV battery disposal.
ONRD-03	Accelerated Penetration of Partial Zero Emission and Zero Emission Light-Heavy- and Medium-Heavy-Duty Vehicles [NO _x , PM]	Would continue the state hybrid truck and bus voucher incentive project (HVIP) through 2023. Use of electric and alternative fuel vehicles.	Potential increase in solid waste generation from early retirement of vehicles and EV battery disposal.

TABLE 4.8-1 (CONTINUED)

Control Measures with Potential Solid and Hazardous Waste Impacts

CONTROL MEASURES	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	POTENTIAL SOLID AND HAZARDOUS WASTE IMPACT
Ozone Control Measures			
ONRD-04	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NO _x , PM]	Incentives to purchase low-emitting vehicles.	Potential increase in solid waste generation from early retirement of vehicles and EV battery disposal.
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NO _x , PM]	Accelerated use of hybrid electric or fuel cell trucks.	Potential increase in solid waste generation from early retirement of vehicles and EV battery disposal.
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment [NO _x]	Extend SOON program from 2014 to 2023. Use of electric and alternative fuel construction/industrial equipment.	Potential increase in solid waste generation from early retirement of equipment and EV battery disposal.
OFFRD-02	Further Emission Reductions from Freight Locomotives [NO _x , PM]	Replace existing engines with Tier 4 engines with control equipment (e.g., SCRs).	Potential increase in solid waste generation from early retirement of locomotive engines, solid waste generated from air pollution control equipment, and EV battery disposal.
OFFRD-03	Further Emission Reductions from Passenger Locomotives [NO _x , PM]	Repower existing engines with Tier 4 engines with control equipment (e.g., SCRs).	Potential increase in solid waste generation from early retirement of locomotive engines, solid waste generated from air pollution control equipment (e.g., DPM filters and catalyst), and EV battery disposal.
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels While at Berth [NO _x , PM]	Calls for increased percentage of ships at berth to cold iron.	Potential increase in solid waste generation from air pollution control equipment (e.g., catalysts) from ships at berth.
ADV-01	Actions for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles [NO _x]	Use of electric and alternative fuel vehicles.	Potential increase in solid waste generation from early retirement of vehicles and EV battery disposal.
ADV-02	Actions for the Deployment of Zero- and Near-Zero Emission Locomotives [NO _x]	Use of electric and alternative fuel locomotives.	Potential increase in solid waste due to locomotive replacement and from EV battery disposal.
ADV-03	Actions for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment [NO _x]	Use of electric and alternative fuel cargo handling equipment.	Potential increase in solid waste due to CHE replacement and from EV battery disposal.
ADV-04	Actions for the Deployment of Cleaner Commercial Harbor Craft [NO _x]	Use of electric and alternative fuel harbor craft and use of control equipment such as SCRs.	Potential increase in solid waste due to harbor craft replacement, EV battery disposal, and disposal of SCR catalyst.

TABLE 4.8-1 (CONCLUDED)

Control Measures with Potential Solid and Hazardous Waste Impacts

CONTROL MEASURES	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	POTENTIAL SOLID AND HAZARDOUS WASTE IMPACT
Ozone Control Measures			
ADV-05	Actions for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx]	Use of electric and alternative fuel marine vessels. Use of control technologies such as SCR, wet/dry scrubbers, etc.	Potential increase in solid waste due to vessel replacement, EV battery disposal, and scrubber/catalyst disposal.
ADV-06	Actions for the Deployment of Cleaner Off-Road Equipment [NOx]	Use of electric and alternative fuel off-road equipment.	Potential increase in solid waste due to off-road equipment replacement and from EV battery disposal.
ADV-07	Actions for the Deployment of Cleaner Aircraft Engines [NOx]	Potential low emission aircraft technologies include alternative fuels, lean combustion burners, high rate turbo bypass, advanced turbo-compressor design, and engine weight reduction.	Potential increase in solid waste due to replacement of aircraft engines and burners.

- a The specific actions associated with the control measure is unknown and, therefore, the impacts are speculative. In order to provide a conservative analysis, it is assumed that the control measure could require air pollution control technologies that are similar to those that are currently required (e.g., SCR, electrification, use of alternative fuels, etc.), and would have the potential to require construction activities that would generate noise.

4.8.3 Significance Criteria

Impacts to solid and hazardous waste facilities will be considered significant if any of the following occur:

- Published national, state, or local standards relating to solid waste are exceeded.
- The generation and disposal of solid or hazardous waste, when combined with existing waste generation, exceeds the capacity of designated landfills.

4.8.4 Potential Impacts and Mitigation

The goal of the 2012 AQMP is to improve air quality, however, some types of air pollution control equipment have the potential to create cross-media impacts. For example, removing pollutants from equipment exhaust streams may produce liquid or solid wastes that may require further treatment or disposal to publicly owned treatment works (POTWs) or landfills, respectively. Specifically, hazardous and non-hazardous waste maybe generated by some types of air pollution control equipment such as electrostatic precipitators, carbon adsorption [units](#), oxidation devices, wet scrubbers, baghouses, and filtration equipment. Several control measures have been proposed in the 2012 AQMP which may require the use of these

types of pollution control equipment (see Table 4.8-1). Solid waste impacts from these control measures are described in the following subsections.

4.8.4.1 Spent Batteries from Electric Vehicles

PROJECT-SPECIFIC IMPACTS: The following control measures encourage early retirement of older vehicles and replacement with electric or hybrid vehicles and could result in an increase in waste generated from batteries: IND-01, INC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, and ADV-06. The most common battery currently used in gasoline and diesel powered vehicles within the district is the lead-acid battery found in conventional automobiles and trucks. These batteries are disposed of through the well established lead recycling industry by companies such as Quemetco and Exide in southern California. Zero and Near-Zero Emission Vehicles operate with different battery types than the lead-acid battery. The common battery types available for hybrid and electric powered vehicles are nickel metal hydride (NiMH) and lithium ion (Li-ion).

The 2012 AQMP projects substantial penetration of fuel cell, electric and electric hybrid vehicles by 2023 as part of mobile source pollution control measures. The suggested control measures that have additional requirements for Zero and Near-Zero Emission Vehicles are shown in Table 4.8.2. The batteries that could power these vehicles have useful lives similar to or less than the life of a vehicle. Since some batteries contain toxic materials, the increased use of batteries may result in an incremental increase in solid and hazardous waste impacts. In addition, environmental impacts could occur if batteries were disposed of in an unsafe manner, such as illegal dumping or by disposal in an unlined landfill.

TABLE 4.8-2

Control Measures and Vehicle Retirement Quantities

CONTROL MEASURE	NUMBER OF VEHICLES
ONRD-01 – Incentivize light- and medium-duty trucks	9,000 vehicles
ONRD-02 – Accelerated retirement and replacement of pre-1992 light- and medium-duty vehicles	18,000 vehicles
ONRD-03 – Encourage the introduction of hybrid and zero-emission vehicles	5,000 vehicles
ONRD-04 – Accelerated retirement and replacement of pre-2010 heavy duty vehicles	5,000 vehicles
ONRD-05 – Replace 1,000 trucks with zero-emission vehicles	1,000 vehicles

Source: CEC, 2012a

The primary battery used in hybrid cars is the NiMH type. NiMH batteries are considered to be less toxic than lead-acid batteries. Another type is Li-ion batteries

which are being developed for the next generation of hybrid cars, and may ultimately be the battery to power all electric vehicles. The reason for this is that the Li-ion battery has a higher energy density, allowing them to hold the most energy by weight or by volume. Additionally, the Li-ion battery is less toxic than both the lead-acid and NiMH batteries.

Planning is already underway to deal with tens of thousands of exhausted NiMH batteries from conventional hybrids and Li-ion batteries from electric cars. While there are more than two million conventional and plug-in hybrids and electric cars on the road in the U.S. alone, none have been around long enough to start contributing a meaningful flow of batteries to the recycling industry. Most hybrid batteries seem to be able to outlive the ten-year/100,000-mile warranties that they carried from the automakers, and many battery and automotive industry insiders say there appears to be no reason that Li-ion batteries will not last for 150,000 miles or more (Edmunds, 2012).

Recycling is an important aspect of battery life. The Li-ion batteries used in most EVs and plug-in hybrids, and the NiMH batteries used in most conventional hybrids, are not considered toxic. Both types, unlike conventional 12-volt lead-acid car batteries, are considered safe for landfills. But, since landfill space is at a premium, it is more beneficial for the environment and the economy if spent advanced-technology batteries are reduced to their components, which can be reused instead of being sent to landfills. Automakers, and the auto dismantling industry and its designated recyclers, are posed to handle the recycling of NiMH and Li-ion batteries (Edmunds, 2012).

Recycling is expected to help keep battery costs down because it will permit the reuse of the metals and rare-earth compounds that make these batteries work, which is cheaper than mining and processing all-new material. With Li-ion batteries accounting for as much as half the cost of a new EV, reducing battery costs through recycling will go a long way toward making electric-drive vehicles competitive with conventional cars. Having a market for used batteries will also help increase the resale value of electric-drive vehicles to the benefit of consumers. Additionally, advanced battery recycling helps reduce CO₂ emissions and energy use from processing new material (Edmunds, 2012).

The NiMH batteries found in hybrid vehicles are basically "zero-landfill" products. Whatever cannot be recycled is consumed in the recycling process, leaving no trash behind. The primary metals recovered are nickel, copper and iron. The principal rare earths are neodymium and lanthanum (Edmunds, 2012).

Li-ion batteries now are somewhere between 70 and 100 percent recyclable, depending on the particular chemistry of the batteries. There are approximately six different types in use, and more are being developed. The types are differentiated by the chemical formulation of the electrodes. These types include, but are not limited to, cobalt dioxide, nickel-cobalt-manganese (NCM), nickel-cobalt- aluminum (NCA), manganese oxide spinel (MnO), and iron phosphate (FePo). The

components of Li-ion batteries that cannot be recycled are mostly consumed as fuel in the furnaces that are used to melt down the metals, which include cobalt, copper, iron, nickel, manganese and, in the future, lithium (Edmunds, 2012).

Li-ion batteries have a potential after-automotive use that can postpone destructive recycling for years. Even when an EV or hybrid battery can no longer hold and discharge sufficient electricity to power the car's motor, the pack can still carry a tremendous amount of energy. Battery manufacturers project the packs will still be able to operate at approximately 80 percent of capacity when they must be retired from automotive use. Auto companies are partnering with battery, recycling and electronics firms to figure out and develop post-automotive markets for lithium-ion battery packs (Edmunds, 2012).

For instance, several major power utilities are working with companies, including General Motors, Ford, Toyota and Nissan, to explore the use of the batteries for stationary storage of the power produced in off-peak periods by wind turbines and solar generation stations. Li-ion packs also are being tested as backup power storage systems for retail centers, restaurants and hospitals, as well as for residential solar power systems (Edmunds, 2012).

Two recycling firms have the technology to recycle NiMH and Li-ion batteries. One of these companies is the Belgium-based metals recycling company Umicore, who is preparing for the time when advanced-technology automotive battery recycling companies will be handling battery packs from hundreds of thousands of hybrids and EVs each year. Umicore is the European leader and is expanding in the U.S. The other company, Kinsbursky Brothers, handles most North American advanced automotive battery recycling through a joint venture with longtime battery recycling company Toxco. The Kinsbursky Brothers' Toxco operation appears to be the recycler most widely used by companies that sell hybrids and EVs in North America. The company also receives batteries from carmakers in Europe. (Edmunds, 2012).

Each operation uses a proprietary system and both now are concerned mainly with recycling NiMH batteries. Both companies also are handling small volumes of Li-ion packs as they work with automakers to develop the best recycling processes. Because of the sales pace for EVs and hybrid cars and trucks, it is expected that a commercially viable recycling market would take at least a decade to develop (Edmunds, 2012).

Both companies process batteries from automakers and dismantlers. Battery packs typically have a recycling-information sticker on them so wrecking yards, garages, and car dealers can get instructions for directing "end-of-life" batteries to the proper recycling operation. Toyota offers a \$200-per-pack bounty to encourage dealers and others to turn in spent packs rather than discarding them. Once the packs are at the proper distribution point, the recyclers break down their constituent parts to salvage any wiring, electrical components and plastics that can be separately recycled (Edmunds, 2012).

Currently, Umicore does the initial component separation in Germany and soon will be conducting the process at a North American facility being built in Maxton, North Carolina. The battery cells will continue to be shipped to Umicore's industrial-scale pilot recycling plant in Hoboken, Belgium. The Hoboken facility put the cells through a process that separates their content into metal alloys and a slag that, when NiMH batteries are being recycled, concentrates the rare earth elements they contain. The recycler sells the metals to battery makers for reuse. The rare-earth concentrate from NiMH batteries is sold for reprocessing. Umicore sells the slag from Li-ion batteries to cement makers, who use it as an aggregate that helps strengthen concrete (Edmunds, 2012).

At Toxco, the process also starts by gathering batteries at a variety of collection points from automakers and wrecking yards. The company sends the batteries to facilities in Trail, British Columbia, and Lancaster, Ohio, where they are flash-frozen to ensure that the lithium does not cause a fire when the cells are broken into. Then metal shredders tear them apart. Toxco is increasing capacity at its Ohio facility under a federal grant it received in 2009. The additional space and new equipment will help the company improve the cost-effectiveness of lithium battery recycling (Edmunds, 2012).

Most battery and fuel cell technologies currently employ materials that have high economic value and, therefore, are recyclable. Additionally, both regulatory requirements and market forces require and encourage recycling. The following is a brief listing of some of the more important Federal and California regulations that have created requirements and incentives for the proper disposal and recycling of EV battery packs:

- The federal Battery Act promulgated in 1996 requires that each regulated battery be labeled with a recycling symbol. NiCad batteries must be labeled with the words “NiCad” and the phrase “Battery must be recycled or disposed of properly.” Lead-acid batteries must be labeled with the words “Lead,” “Return,” and “Recycle.”
- Current California and federal regulations require ZEV manufacturers to take into account the complete life-cycle of car batteries and to plan for safe disposal and/or recycling of battery materials.
- The California Health and Safety Code does not allow the disposal of lead-acid batteries at a solid waste facility or on or in any land, surface waters, water courses, or marine waters. Legal disposal methods for used lead-acid batteries are to recycle/reuse the battery or to dispose of it at a hazardous waste disposal facility. A lead-acid battery dealer is required to accept spent batteries when a new one is purchased.
- California Public Resources Code requires state agencies to purchase car batteries made from recycled material.

- The Universal Waste Rule requires that spent batteries exhibiting hazardous waste characteristics and that are not recycled need to be managed as hazardous waste. This includes lead-acid and NiCad batteries.
- Car manufacturers offer incentives to recycle batteries (e.g., Toyota offers \$200 for spent battery packs to help promote battery recycling).

Recycling of lead-acid and nickel-cadmium batteries is a well-established activity. Eighty percent of lead consumed in the United States is used to produce lead-acid batteries and the lead recovery rate from batteries is approximately 80 to 90 percent. The remainder is plastic and fluids (e.g., sulfuric acid). According to the Lead-Acid Battery Consortium, 95 to 98 percent of all battery lead is recycled.

Because most EV batteries are recycled, it is unlikely that the increase in battery use would create a significant adverse affect on landfill capacity in California. As mentioned earlier, electric batteries generally hold significant residual value, and 95 to 98 percent of all lead-acid batteries are recycled. In addition, the electric batteries that would power EVs are packaged in battery packs and cannot be as easily disposed of as a single 12-volt conventional vehicle battery. It should be noted that the increased operation of EVs associated with the implementation of the 2012 AQMP may actually result in a reduction of the amount of solid and hazardous waste generated in the SCAQMD's jurisdiction, as NiMH and Li-ion batteries have a much longer life span than conventional lead-acid batteries. Further, their size (over 100 pounds) makes them more difficult to handle and transport for unauthorized disposal. Additionally, the advanced-technology automotive battery recycling industry is setting up operations in states and countries where processing will have no impact on landfills either locally or within the state. Further, EVs do not require the various oil and gasoline filters that are required by vehicles using internal combustion engines. Furthermore, EVs do not require the same type or amount of engine fluids (oil, antifreeze, etc.) that are required by vehicles using internal combustion engines. Used oil and antifreeze are considered hazardous wastes under California regulations.

Even though batteries are comprised of materials with economic value, the increased use of electric batteries may require efforts at preventing disposal of spent batteries in municipal landfills or via illegal dumping. Illegal or improper disposal of electric batteries could result in significant solid waste impacts by allowing hazardous wastes to be disposed in municipal landfills. However, the recycling of batteries is required under law. Further some manufacturers pay \$200 for used EV/hybrid batteries. The value, size, and length of life of NiMH and Li-ion batteries are such that recycling is expected to be more predominate than with lead acid batteries. Therefore, the use of EVs and hybrids are not expected to result in an increase in the illegal or improper disposal of electric batteries. Further, batteries associated with electric and hybrid cars are required to be recycled. Therefore, no significant increase in the disposal of hazardous or solid waste is expected due to increased use of electric or hybrid vehicles.

PROJECT-SPECIFIC MITIGATION: Based on the above information, neither solid nor hazardous waste impacts from increased use of electric or hybrid cars associated with the 2012 AQMP are expected to exceed the applicable solid and hazardous waste significance thresholds. Therefore, no mitigation measures are required.

REMAINING SOLID AND HAZARDOUS WASTE IMPACTS: There are no remaining solid and hazardous waste impacts since no significant impacts are expected due to increased use of electric or hybrid cars, and therefore, no mitigation measures are required.

4.8.4.2 Solid Waste Impacts Due to Air Pollution Control Technologies

Table 4.8-1 identifies those proposed control measures that may have potential project specific impacts on solid waste due to the addition of pollution control equipment that use filters, catalysts, etc., to collect and control pollutants, which may eventually need to be disposed and/or replaced. The following proposed control measures could potentially require or incentivize the use of pollution control equipment that use filters, catalysts, etc.: Control Measures BCM-03, MCS-01, CMB-01, INC-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-04, and ADV-05. It is difficult to quantify the number of facilities that would employ these types of equipment, the rate of disposal necessary to maintain the equipment, type of waste generated by the equipment (e.g., hazardous or non-hazardous) and the timing by which these technologies would come into use. However, known control technology historically used is examined qualitatively in the following paragraphs.

4.8.4.2.1 *Filters/Precipitators*

PROJECT-SPECIFIC IMPACTS: While it is speculative to identify the number of facilities and the quantity of equipment that would utilize filters/precipitators as a result of the proposed control measures, the quantity of particulate matter collected on filters and from electrostatic precipitators is expected to be small. Diesel particulate filters are estimated to collect about 10 to 150 grams of material per vehicle per year (CARB, 2002) which is expected to be considered as hazardous waste. The amount of material collected from these types of control equipment is expected to be minor as described in the following paragraphs and could be handled within the capacity of existing disposal facilities.

The diesel PM filter system consists of a filter positioned in the exhaust stream designed to collect a significant fraction of the PM emissions while allowing the exhaust gases to pass through the system. Since the volume of PM generated by a diesel engine is sufficient to fill up and plug a reasonably sized filter over time, some means of disposing of this trapped PM must be provided. The most promising means of disposal is to burn or oxidize the PM in the filter, thus regenerating, or cleansing, the filter.

A complete filter system consists of the filter and the means to facilitate the regeneration (if not a disposable type filter).. The exhaust temperature of diesel engines is not always sufficient to initiate regeneration in the filter. However, a number of techniques are available to bring about regeneration of filters. It is not uncommon for some of these various techniques to be used in combination. Some of these methods include:

- Using a catalyst coated on the filter element. The application of a base or precious metal coating applied to the surface of the filter reduces the ignition temperature necessary for oxidation of the particulate;
- Using a NO_x conversion catalyst upstream of the filter to facilitate oxidation of NO to NO₂ which adsorbs on the collected PM, substantially reducing the temperature required to regenerate the filter;
- Using fuel-borne catalysts to reduce the temperature required for ignition of the accumulated material;
- Throttling the air intake to one or more of the cylinders, thereby increasing the exhaust temperature;
- Using fuel burners, electrical heaters, or combustion of atomized fuel by catalyst to heat the incoming exhaust gas to a temperature sufficient to ignite the PM;
- Using periodically compressed air flowing in the opposite direction of the PM from the filter into a collection bag which is periodically discarded or burned; and
- Throttling the exhaust gas downstream of the filter. This method consists of a butterfly valve with a small orifice in it. The valve restricts the exhaust gas flow, adding back pressure to the engine, thereby causing the temperature of the exhaust gas to rise and initiating combustion.

While it is speculative to identify the number of facilities and the quantity of equipment that would utilize filters as a result of the proposed control measures, the quantity of additional filters being disposed of is expected to be small and could be handled within the capacity of existing disposal facilities. Additionally, the volume of particulate material collected on filters is very small (150 grams per vehicle per year). Based on the above considerations, no significant adverse solid and hazardous waste impacts are anticipated to occur from the use of particulate filters or traps.

State law requires hazardous waste generators to attempt to recycle their wastes before disposing them. The Office of Environmental Health Hazards Assessment (OEHHA) has implemented a hazardous waste exchange program to promote the use, reuse, and exchange of hazardous wastes. The program is designed to assist

generators of hazardous wastes to recycle their wastes and encourage the reuse of the wastes. The DTSC also publishes a directory catalog of industrial waste recyclers annually so that industries will know where to buy, sell, or exchange their wastes.

PROJECT SPECIFIC MITIGATION: Based on the above information, neither solid nor hazardous waste impacts from using particulate filters are expected to exceed the applicable significance thresholds because most of the additional waste generated is expected to be relatively small. Therefore, no mitigation measures are required.

REMAINING SOLID AND HAZARDOUS WASTE IMPACTS: Since no significant adverse solid and hazardous waste impacts are expected due to the use of particulate filters, mitigation measures are not required, and solid and hazardous waste impacts remain less than significant.

4.8.4.2.2 *Carbon Adsorption*

PROJECT-SPECIFIC IMPACT: While none of the proposed solid and hazardous waste control measures specifically designate the use of carbon adsorption as air pollution control equipment, some do encourage a variety of options which could include carbon adsorption. Carbon adsorption is used to control VOC emissions primarily from stationary sources. The amount of solid waste, which may be generated by the carbon adsorption process would depend on the number of carbon adsorbers installed, the operating characteristics, and the frequency of carbon replacement. Most of the control measures have alternative methods of compliance (e.g., reformulation of material).

If carbon adsorption systems are used, the amount of hazardous waste generated on an annual basis is expected to be minimal. Most activated carbon used in carbon adsorption control devices is reclaimed and reactivated, resulting in negligible impacts on solid waste disposal facilities. Activated carbon can have a useful lifetime of five to 10 years; however, the operating characteristics of the control device may result in a shorter lifetime.

Spent carbon is usually recycled and reused rather than disposed in landfills. Most facilities contract out with vendors that take the spent carbon and deliver regenerated carbon. Another alternative to the land disposal of regenerated carbon is to burn the spent carbon in a thermal incinerator. With thermal incineration, the organic materials contained in the carbon are oxidized to carbon dioxide, water, and in most cases, harmless combustion by-products. Incineration destroys the toxic constituents and significantly reduces the volume of carbon to be disposed of, thus reducing solid waste impacts. The disadvantage of incineration is that without additional add-on control devices, there may be an increase in criteria pollutant emissions.

Further, it is not expected that carbon adsorption will be used in a majority of the cases where it is as a control option. It is expected that facilities will continue to choose other more cost-effective options to comply with control measures. Based on

these considerations, the solid waste impacts resulting from the use of carbon adsorption are expected to be less than significant.

PROJECT SPECIFIC MITIGATION: Based on the above information, neither solid nor hazardous waste impacts from using carbon adsorption control equipment are expected to exceed the applicable significance thresholds because most of the additional waste generated is expected to be relatively small. Therefore, no mitigation measures are required.

REMAINING SOLID AND HAZARDOUS WASTE IMPACTS: Since no significant adverse solid and hazardous waste impacts are expected due to the use of carbon adsorption control equipment, mitigation measures are not required, and solid and hazardous waste impacts remain less than significant.

4.8.4.2.3 Particulate Traps/Prefilters/Filters/HEPA Filters

PROJECT-SPECIFIC IMPACTS: A number of control measures in the 2012 AQMP could require the collection and disposal of additional particulate matter including BCM-03, MCS-01, INC-01, and OFFRD-03. These measures could result in increased collection of particulate matter that would then need to be disposed.

Baghouses, pre-filters, filters, and HEPA filters collect particulate emissions from stationary and mobile sources of particulate emissions. These types of filtration control equipment can effectively remove particulate matter, including heavy metals, asbestos, as well as other toxic and nontoxic compounds. Polytetrafluoroethylene (PTFE) membranes or HEPA filters can increase a system's removal efficiency up to 99.9 percent. In general, as particulate size decreases, the surface area to volume ratio increases, thus, increasing the capacity of these filters to adsorb smaller particles (including hazardous materials). An increase in the use of membranes and filters may result in an incremental increase of solid waste requiring disposal in landfills over what would be produced if the [2012 AQMP](#) were not adopted. In some cases, waste generated will be hazardous (e.g., the collection of toxic emissions). The increase in the amount of waste generated from the use of filters and the collection of additional particulate matter is expected to be minimal, because filtration control equipment is already used in practice or required by existing rules, especially for stationary sources. Control measures that may include filtration control equipment will generally require increased control efficiencies and/or better housekeeping and maintenance requirements for the filtration devices. As a result the incremental amount of material collected by filters is expected to be small. Further, the larger filters used in baghouses are cleaned and reused, so minimal additional waste would be expected from collecting more PM due to greater efficiency. Therefore, the potential impacts from the use of additional filtration equipment on solid and hazardous waste generation are less than significant.

PROJECT SPECIFIC MITIGATION: Based on the above information, neither solid nor hazardous waste impacts from using baghouses, pre-filters, filters, and HEPA filters are expected to exceed the applicable significance thresholds because

the most of the additional waste generated is expected to be relatively small. Therefore, no mitigation measures are required.

REMAINING SOLID AND HAZARDOUS WASTE IMPACTS: Since no significant adverse solid and hazardous waste impacts are expected due to the use of baghouses, pre-filters, filters, and HEPA filters, mitigation measures are not required, and solid and hazardous waste impacts remain less than significant.

4.8.4.2.4 *Catalytic Oxidation*

PROJECT-SPECIFIC IMPACTS: The 2012 AQMP could result in the increased use of catalytic oxidation to control emissions. The following control measures could rely on catalytic oxidation technologies for emission control: Control Measures CMB-01, OFFRD-03, OFFRD-04, ADV-04, and ADV-05. Catalytic oxidation beds generally use a precious metal to aid in the combustion of air pollutants at relatively low temperatures. Catalytic oxidizers require periodic replacement of the catalyst bed. The expected life of the catalyst is approximately three to five years, depending on the concentration of materials and type of exhaust flows controlled. Metals used in the catalyst are generally recovered because they are made from precious and valuable metals (e.g., platinum and palladium). Metals can be recovered from approximately 60 percent of the spent catalyst generated from the operation of catalytic oxidizers (SCAQMD, 2003a). These metals could then be recycled. The remaining material would most likely need to be disposed of at a hazardous waste landfill.

If the catalyst is not hazardous, jurisdiction for its disposal then shifts to local agencies such as regional water quality control boards (RWQCBs) or county environmental agencies. The RWQCB has indicated that if a spent catalyst is not considered a hazardous waste, it would probably be considered a Designated Waste. A Designated Waste is characterized as a non-hazardous waste consisting of, or containing pollutants that, under ambient environmental conditions, could be released at concentrations in excess of applicable water objectives, or which could cause degradation of the waters of the state. The type of landfill that the material is disposed at will depend upon its final waste designation. Due to the recycling of catalysts used in catalytic oxidation and the fact that this technology is not expected to be widely used because of cost, no significant impacts on waste disposal are expected.

PROJECT SPECIFIC MITIGATION: Based on the above information, neither solid nor hazardous waste impacts from using catalytic oxidation control technologies are expected to exceed the applicable significance thresholds because the most of the additional waste generated is expected to be relatively small. Therefore, no mitigation measures are required.

REMAINING SOLID AND HAZARDOUS WASTE IMPACTS: Since no significant adverse solid and hazardous waste impacts are expected due to the use of

catalytic oxidation control technologies, mitigation measures are not required, and solid and hazardous waste impacts remain less than significant.

4.8.4.3 Solid Waste Impacts Due to the Retirement of Equipment

Control Measures IND-01, MCS-01, CMB-01, CMB-02, CMB-03, INC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, ADV-01, ADV-02, ADV-05, ADV-06, and ADV-07 could result in the early retirement of equipment (e.g., burners, on-road trucks and vehicles, off-road vehicles, gasoline fueled engines, diesel fueled engines, and locomotive and aircraft engines). Solid waste impacts could occur since the older equipment or vehicle parts would be taken out of service in the district and scrapped and disposed of in district landfills. It is expected that some older trucks, vehicles, and locomotive engines could be relocated to other areas, such as Mexico.

Approximately 80 percent of a vehicle can be recycled and reused in another capacity. Batteries, catalytic converters, tires, and other recoverable materials (e.g., metal components) are removed and the metal components of the vehicle are shredded. The shredded material is then sent for recovery of metal content. Therefore, the amount of solid waste landfilled as a result of the proposed control measures would be relatively small since most of the parts being replaced have commercial value as scrap metal. Currently, there are a limited number of vehicles and parts that can be scrapped per year because of the limited number of scrapping and recycling facilities in the district. It is expected that gasoline and diesel engines could also be recycled for metal content, or rebuilt and sold to other areas. It is expected that parts and equipment would be scrapped in the near future, regardless of the [2012 AQMP](#) control measures as they are older vehicles or have older components. The primary solid waste impact is expected to be accelerated replacement and disposal of equipment and parts before the end of their useful life. Further, these control measures are not expected to mandate that older vehicles, engines, or other equipment be scrapped. The control measures are expected to allow a number of different control methods to comply with the required emission reductions. The most cost effective control measures would be expected to be implemented. Control measures that would require new equipment will generally require that retirement occurs as the life of the old equipment is exhausted and new equipment is put into service. Based on the above, scrap metal from vehicle and engine replacements are expected to be recycled and not disposed of in landfills. Any small increase that may occur from miscellaneous parts is expected to be within the total permitted capacity of over 100,000 tons per day for all facilities in the district, so that no significant impacts would be expected.

The California Integrated Waste Management Act of 1989 (AB 939) requires cities and counties in California to reduce the amount of solid waste disposed in landfills by 25 percent by 1995 and by 50 percent by 2000, through source reduction, recycling and composting activities. Later legislation mandates a 50 percent diversion requirement be achieved every year. SB 1016 (Wiggins) – Diversion: Alternative Compliance System (effective January 1, 2009) moves CalRecycle from

the previously existing solid waste diversion accounting system to a per capita disposal based system. SB 1016 does not change the 50 percent requirement in AB 939, rather measures it differently. Compliance is the same under the new system as it was under the old system. To evaluate compliance, CalRecycle will look at a jurisdiction's per capita disposal rate as an indicator of how well its programs are doing to keep disposal at or below a jurisdiction's unique 50 percent equivalent per capita disposal target. The 50 percent equivalent per capita disposal target is the amount of disposal a jurisdiction would have had during the base period had it been at exactly a 50 percent diversion rate. The target is calculated using the average of 2003-2006 per capita generation for each jurisdiction. The generation average is then divided in half to determine the 50 percent equivalent per capita disposal target. This number does not determine compliance. Compliance is based on CalRecycle evaluating that a jurisdiction is continuing to implement the programs it chooses and is making progress in meeting its target (CalRecycle, 2012a).

In 2010, California's statewide disposal was 30.4 million tons and population was 37.2 million residents. This resulted in a per resident disposal rate of 4.5 pounds/resident/day. The rate was the same in 2009 (CalRecycle, 2012c).

Almost all (99 percent) of California's 30.4 million tons of disposed ~~waste~~ waste was ~~were~~ landfilled in California, while approximately one percent was exported to landfills out of state. An additional 0.8 million tons were transformed at three permitted waste-to energy plants in California, but not included in the disposal rate estimate because of provisions in the law that allow limited diversion credit for transformation (CalRecycle, 2012c).

California's disposal of 30.4 million tons in 2010 is a slight decline of 0.7 million tons from 2009. However, it is 13.6 million tons less than the high of 44 million tons in 1989, and 12.1 million tons less than the second highest amount of 42.5 million tons recently recorded in 2005. In 2010, the per employee disposal rate reached a historic low of 11.7 pounds per employee per day, per resident "diversion rate equivalent" was 65 percent, and per employee "diversion rate equivalent" was 63 percent (CalRecycle, 2012c).

In the future, it is anticipated that the California economy will rebound and solid waste generation will increase as people find work, build more, produce more, and buy more. Statewide disposal is expected to increase in the likely event of an economic rebound. If these increased flows of materials are not planned for, they may end up in landfills rather than being recycled back into the economy.

Many cities and counties had not met the 20 and 50 percent waste reduction goals of AB 939 prior to the adoption of the 50 percent equivalent per capita disposal target associated with SB 1016. Table 4.8-3 shows that within the counties within the district as well as statewide, targets are still short of meeting diversion standards. The generation of additional waste associated with control measures in the 2012 AQMP could impact the abilities of cities and counties to further reduce wastes. However, as discussed above the increase in solid waste that is expected to be

diverted to a landfill is small and many of the waste streams are recyclable. Therefore, the 2012 AQMP is not expected to have adverse impacts on landfills.

TABLE 4.8-3

Summary of Per Capita Target Compliance (2010)

LOCATION	NUMBER OF JURISDICTIONS WITHIN LOCATION	NUMBER OF JURISDICTIONS MEETING POPULATION TARGET	PERCENT OF JURISDICTIONS MEETING POPULATION TARGET	NUMBER OF JURISDICTIONS MEETING EMPLOYEE TARGET	PERCENT OF JURISDICTIONS MEETING EMPLOYEE TARGET
State of California	415	18	4%	51	12%
Los Angeles County	74	2	3%	4	5%
Orange County	35	1	3%	2	6%
Riverside County	25	0	0%	4	16%
San Bernardino County	26	0	0%	2	8%

Source (CalRecycle, 2012b)

PROJECT SPECIFIC MITIGATION: Due to the monetary value of scrapped engines, vehicles and equipment, significant solid or hazardous impacts associated with the early retirement of such equipment were not identified, are not significant and, therefore, no mitigation measures are required.

REMAINING SOLID AND HAZARDOUS WASTE IMPACTS: Since no significant adverse solid and hazardous waste impacts are expected due to scrapped engines, vehicles and equipmen, mitigation measures are not required, and solid and hazardous waste impacts remain less than significant.

4.8.5 Summary of Solid and Hazardous Waste Impacts

The following is a summary of the conclusions of the analysis of solid and hazardous wastes impacts associated with implementation of the 2012 AQMP.

- **Spent Batteries:** The analysis indicates that no significant solid and hazardous waste impacts associated with spent batteries are likely to occur because due to battery recycling. Lead acid batteries are currently required to be recycled. NiMH and Li-ion batteries more common with EVs and hybrids have a long battery life, are valuable, and usually have a monetary incentive associated with return of the battery to the

manufacturer. Two firms in the United States are currently recycling NiMH and Li-ion batteries. For these reasons, the increased use of EVs and hybrids are not expected to result in a significant increase in the illegal disposal of batteries.

- **Solid and Hazardous Waste Impacts due to Air Pollution Control Technologies:** No significant solid and hazardous waste impacts were identified due to air pollution control technologies as part of the 2012 AQMP. The solid and hazardous waste impacts associated with the use of carbon adsorption are considered less than significant, since spent carbon is usually recycled and reused rather than disposed in landfills. The increase in the amount of waste generated from the use of filters and the collection of additional particulate matter from the control technologies are expected to be minimal as the amount of material collected is small. Finally the impacts associated with catalytic oxidation are not expected to be significant because the catalysts used are largely recycled; therefore, no significant impacts on solid or hazardous waste disposal are expected.
- **Early Retirement of Equipment:** Control measures that would require new equipment can require that retirement occurs as the life of the old equipment is exhausted and new equipment is put into service. For equipment that may be retired before the end of its useful life, that equipment may be reused in areas outside the district. Equipment with no remaining useful life is expected to be recycled for metal content. Therefore, no significant solid and hazardous waste impacts were identified due to implementation of the control measures.

Summary of PM_{2.5} Control Measure Impacts: The impacts associated with PM_{2.5} Control Measures were evaluated and determined to be less than significant for solid and hazardous waste generation (CMB-01, BCM-02, BCM-03, BCM-04, IND-01, EDU-01 and MCS-01).

Summary of Ozone Control Measure Impacts: The Ozone Control Measures were evaluated and determined to be less than significant for solid and hazardous waste generation (CMB-01, CMB-02, CMB-03, INC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07).

SUBCHAPTER 4.9

TRANSPORTATION AND TRAFFIC

Introduction

2012 AQMP Control Measures with Potential Traffic Impacts

Significance Criteria

Potential Impacts and Mitigation

Summary of Traffic Impacts

4.9 TRANSPORTATION AND TRAFFIC

4.9.1 Introduction

This subchapter examines impacts on the potential transportation and traffic impacts associated with implementation of the proposed control measures in the 2012 AQMP.

4.9.2 2012 AQMP Control Measures with Potential Traffic Impacts

All of the proposed control measures in the 2012 AQMP were evaluated and only three control measures, ONRD-05, ADV-01, and ADV-02, were found to potentially impact traffic.

ONRD-05 identifies as compliance options zero-emission container movement technologies (e.g., no creation of tailpipe emissions) for vehicles or systems that transport containers between marine ports and near-dock railyards¹. Zero-emission container movement systems include, but are not limited to, on-road technologies such as battery-electric trucks, fuel cell trucks, hybrid-electric trucks with all-electric range and zero-emission hybrid or battery-electric trucks with “wayside” power (such as electricity from overhead wires). The measure could also be implemented by constructing zero-emission fixed guideway systems in the roadway such as electric, maglev or linear synchronous motor propulsion. If implemented, ONRD-05 would require an additional demand for electricity to be powered by grid electricity stored in a battery, by electricity produced onboard the vehicle through a fuel cell, or by “wayside” electricity from outside sources by constructing new overhead catenary lines or wires on roadways between the marine ports and the near-dock railyards.

ADV-01 identifies as compliance options advance on-road freight transport equipment that is powered by clean energy technologies, such as advanced engine controls for more efficient combustion, electric hybrid systems and zero-emission technologies such as electric, battery-electric, and fuel cells, and a greater use of alternative and renewable fuels. Under ADV-01, an additional demand for electricity is also likely and could be supplied by the construction of overhead catenary electrical lines adjacent to and within existing streets and roadways. Lastly, implementation of ADV-01 could also result in the construction of “wayside” electric or magnetic power built into the existing roadway infrastructure to boost the pulling capacity or range of the heavy-duty vehicles as well as battery changing or fueling infrastructure.

ADV-02 focuses on deploying zero- and near-zero emission locomotives. The following technologies could be applied toward achieving zero emissions from freight and passenger locomotives: overhead catenary electrical lines, “wayside” electric or magnetic power built into the existing railway infrastructure, linear synchronous motor technology, battery-hybrid systems, fuel cells, and alternative fuels such as LNG.

Table 4.9-1 contains a summary of these control measures and their corresponding potential traffic impacts.

¹ Near-dock railyards are railyards located less than five miles from marine terminals.

TABLE 4.9-1

Control Measures with Potential Traffic Impacts

CONTROL MEASURE	CONTROL MEASURE DESCRIPTION (POLLUTANT)	CONTROL METHODOLOGY	TRAFFIC IMPACT
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Servicing Near-Dock Railyards (NO _x , PM)	Incentives to replace up to 1,000 heavy-duty vehicles with low-emitting vehicles or zero-emission container movement systems.	Potential traffic impacts due to the construction of overhead catenary lines and fixed guideway systems. Potential traffic impacts associated with operation activities associated with transportation infrastructure improvements (e.g., dedicating an existing truck lane exclusive to vehicles using the overhead catenary electrical lines or fixed guideway systems).
ADV-01	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles (NO _x)	Construct "wayside" electric or magnetic infrastructure; construct battery charging and fueling infrastructure. Alternatively, if battery, fuel cell or other zero/near zero emission technologies progress sufficiently, the need for wayside power for rail or trucks may be diminished or eliminated.	Potential traffic impacts associated with construction activities to develop electrical-support systems (e.g., overhead catenary electrical lines and battery charging stations) and fueling infrastructure adjacent to and within existing streets and roadways. Potential traffic impacts associated with operation activities associated with transportation infrastructure improvements (e.g., dedicating an existing truck lane exclusive to vehicles using the overhead catenary electrical lines).
ADV-02	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives (NO _x)	Construct "wayside" electric, magnetic, battery-hybrid system, or fuel cell infrastructure, construct battery charging or fueling infrastructure.	Potential traffic impacts from construction of overhead catenary electrical lines, "wayside" electric or magnetic infrastructure.

4.9.3 Significance Criteria

Implementation of the 2012 AQMP will be considered to have significant adverse transportation and traffic impacts if any of the following conditions occur:

- Peak period levels on major arterials are disrupted to a point where level of service (LOS) is reduced to D, E or F for more than one month.
- An intersection's volume to capacity ratio increase by 0.02 (two percent) or more when the LOS is already D, E or F.
- A major roadway is closed to all through traffic, and no alternate route is available.
- The project conflicts with applicable policies, plans or programs establishing measures of effectiveness, thereby decreasing the performance or safety of any mode of transportation.
- There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- The demand for parking facilities is substantially increased.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.
- The need for more than 350 employees.
- An increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round trips per day.
- Increase customer traffic by more than 700 visits per day.

4.9.4 Potential Impacts and Mitigation

Potential traffic impacts associated with the 2012 AQMP during construction relate primarily to the construction of the following support systems: 1) catenary overhead electrical lines; 2) battery charging stations; 3) fueling infrastructure; 4) "wayside" electric; and, 5) magnetic infrastructure. Potential traffic operational impacts associated with the 2012 AQMP relate primarily to dedicating an existing truck lane exclusive to vehicles using the overhead catenary electrical lines. For purposes of evaluating potential traffic impacts, it has been assumed herein that no new rail or roadways will be constructed, but rather some of the existing routes/corridors may be modified.

PROJECT-SPECIFIC IMPACTS: The existing rail and truck routes/corridors likely to be modified are located primarily in commercial and industrial zones within the Southern California area. Examples of these areas include, but are not limited to, the Port of Los Angeles, Port of Long Beach, and industrial areas in and around container transfer facilities (rail and truck) near the Terminal Island Freeway, along the Alameda Corridor, as well as inland facilities. Since only existing transportation routes would be modified, no new roadways or railways are anticipated as part of the proposed project.

Construction Activities: Implementation of Control Measures ONRD-05 and ADV-01 could require the installation of catenary overhead electrical lines and fixed guideway systems, battery charging stations, and fueling infrastructure within or adjacent to existing roadways, streets, freeways, and/or transportation corridors. Implementation of Control Measure ADV-02 could require the installation of catenary overhead electrical lines or electrical or magnetic infrastructure along rail lines. Construction activities would generate traffic associated with construction worker vehicles and trucks delivering equipment, materials and supplies to the project site during the duration of the construction activities. Heavy construction equipment such as backhoes, cranes, cherry pickers, front end loaders and other types of equipment would be used to carry-out the aforementioned construction activities. Construction activities would be expected to occur within or adjacent to existing roadways which could require lane closures to protect construction workers and avoid traffic conflicts. These construction activities are expected to occur along heavily travelled roadways (e.g., roads near the ports, such as Sepulveda Boulevard, Terminal Island Freeway, on Navy Way at the Port of Los Angeles, and Alameda Street). Construction traffic could potentially result in increased traffic volumes on heavily traveled streets and require temporary lane closures. Construction activities may result in the following impacts:

- Temporary reduction in the level of service on major arterials.
- Temporary closure of a roadway or major arterial.
- Temporary closure of a railroad line.
- Temporary impact on businesses or residents within the construction area.
- Removal of on-street parking.
- Conflicts with public transportation system (e.g., temporary removal of bus stops).

Construction activities necessary to modify existing rail and truck routes/corridors would vary depending on the location, and the specific traffic impacts are unknown. As such, to identify any impacts at this time without knowing the specific design features would be speculative. When the details become available, project-specific impacts would require a separate CEQA evaluation. However, the above listed construction traffic impacts, although temporary in nature, could be significant and result in a reduction of LOS at local intersections and potentially impact roadways within the applicable county's congestion management plan.

Operational Activities: Because Control Measures ONRD-05, ADV-01, and ADV-02 would apply to existing transportation corridors, no new streets, roads, freeways, or rail lines are expected to be needed as part of implementing the 2012 AQMP. However, implementation of Control Measures ONRD-05 and ADV-01 may contribute to significant adverse operational traffic impacts on roadways because transportation infrastructure improvements pertaining to overhead catenary electrical lines could require the dedication of an existing lane exclusive to vehicles using the overhead catenary electrical lines or fixed guideway systems. The dedication of an existing lane would mean that other vehicles would have reduced access to available driving lanes. Thus, a reduction in the number of

available lanes on a roadway to accommodate vehicles using the overhead catenary electrical lines could adversely affect traffic and congestion for all other vehicles on the road.

The number of plug-in hybrid vehicles, battery electric vehicles, and fuel cell vehicles that will be driving on district roadways are projected to substantially increase between year 2013 and year 2025, because Control Measure ONRD-03 would accelerate the penetration of zero emission vehicle trucks (1,000 zero emission vehicle trucks by 2023). This means from 2013 to 2023 there would be approximately 91 more zero emission vehicle trucks per year (e.g., 1,000 trucks per year divided by 11 years equals 91 trucks per year). In addition, Control Measure ONRD-05 calls for 1,000 more zero emission vehicle trucks by 2020. This means approximately 167 additional zero emission vehicle trucks per year from 2015 to 2020. (As a reminder, ONRD-05 only affects trucks going from the ports to near-dock transfer nodes. By definition near-dock means within five miles of the ports.) Table 4.9-2 contains a summary of the projected increases over the baseline of near-zero and zero emission vehicles that may result from implementing Control Measures ONRD-03 and ONRD-05.

TABLE 4.9-2
 Projected Increases Near-Zero and Zero Emission Vehicles
 from ONRD-03 and ONRD-05

YEAR	BASELINE NEAR-ZERO & ZERO EMISSION VEHICLES	ADDITIONAL NEAR-ZERO & ZERO EMISSION VEHICLES FROM ONRD-03	ADDITIONAL NEAR-ZERO & ZERO EMISSION VEHICLES FROM ONRD-03	TOTAL ADDITIONAL VEHICLES FROM ONRD03 + ONRD-05
2013	23,055	91	--	23,146
2014	31,160	91	--	31,251
2015	45,146	91	167	45,404
2016	59,976	91	167	60,234
2017	74,839	91	167	75,097
2018	105,211	91	167	105,469
2019	147,767	91	167	148,025
2020	201,256	91	167	201,514
2021	262,241	91	--	262,332
2022	332,639	91	--	332,730
2023	412,355	91	--	412,446
2024	500,607	--	--	500,607
2025	595,397	--	--	595,397

Source: Communication with ARB Staff, Mobile Source Division, August 14, 2012.

Similarly, implementation of ADV-02 may alter railway traffic due to infrastructure improvements pertaining to overhead catenary electrical lines. However, specific design features are unknown at this time. As such, to identify any impacts at this time without knowing the specific design features would be speculative. Nonetheless, when details of the

project become available, any proposed modifications to an existing rail or truck traffic route/corridor will require a separate CEQA evaluation to analyze specific traffic impacts and identify appropriate mitigation measures. Never-the-less, a reduction in the number of available lanes on a roadway to accommodate vehicles using the overhead catenary electrical lines could adversely affect traffic and congestion for all other vehicles on the road.

PROJECT-SPECIFIC MITIGATION: The impact of the proposed project on traffic and circulation during construction, although temporary in nature, could be significant. In addition, the impact of the proposed project on traffic and circulation during operation, could be significant if an existing roadway is dedicated exclusively as a truck lane for vehicles using the overhead catenary electrical lines or fixed guideway systems because traffic patterns and congestion may be altered. In order to mitigate potential construction and operation traffic impacts, project-specific information would be necessary in order to first identify the specific impacts (e.g., project location, distance of roadway to be altered, etc.) to develop appropriate mitigation measures.

Ultimately, mitigation measures, both for construction and operation, would need be identified on a project-by-project basis and would be the responsibility of the lead agencies based on their underlying legal authority to mitigate project impacts. For example, in the Draft Program EIR prepared for SCAG's 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy, mitigation measure TR29 (MM-TR29) identifies mitigation measures for traffic congestion management during construction as follows:

TT-1: Project sponsors and construction contractors can and should meet with the appropriate Lead Agency (or other government agency) to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this project and other nearby projects that could be simultaneously under construction. The project sponsor should develop a construction management plan for review and approval by the Lead Agency (or other government agency as appropriate). The plan should include at least the following items and requirements:

- A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes.
- Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur.
- Location of construction staging areas for materials, equipment, and vehicles at an approved location.

- A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an onsite complaint manager. The manager should determine the cause of the complaints and should take prompt action to correct the problem. The Lead Agency should be informed who the Manager is prior to the issuance of the first permit.
- Provision for accommodation of pedestrian flow.
- As necessary, provision for parking management and spaces for all construction workers to ensure that construction workers do not park in on street spaces.
- Any damage to the street caused by heavy equipment, or as a result of this construction, should be repaired, at the project sponsor's expense, within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair should occur prior to issuance of a final inspection of the building permit. All damage that is a threat to public health or safety should be repaired immediately. The street should be restored to its condition prior to the new construction as established by the Lead Agency (or other appropriate government agency) and/or photo documentation, at the sponsor's expense, before the issuance of a Certificate of Occupancy.
- Any heavy equipment brought to the construction site should be transported by truck, where feasible.
- No materials or equipment should be stored on the traveled roadway at any time.
- Prior to construction, a portable toilet facility and a debris box should be installed on the site, and properly maintained through project completion.
- All equipment should be equipped with mufflers.
- Prior to the end of each work-day during construction, the contractor or contractors should pick up and properly dispose of all litter resulting from or related to the project, whether located on the property, within the public rights-of-way, or properties of adjacent or nearby neighbors.

As a single purpose public agency responsible for adopting and enforcing air quality rules and regulations, the SCAQMD's authority to implement mitigation measures for traffic impacts is limited. CEQA is intended to be implemented in conjunction with discretionary powers granted to public agencies by other laws (CEQA Guidelines §14040(a)). Further, the CEQA Guidelines (§15040(b)) specifically state, "CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws." Thus, it is not

feasible for the SCAQMD to identify appropriate project-specific mitigation measures for traffic and transportation impacts in this [Final](#) Program EIR.

Identification and adoption of mitigation of traffic and transportation impacts would primarily be the responsibility of the local general purpose public agency (e.g., city or county) or other agency that would typically serve as the lead agency on any given future project. Thus, appropriate project-specific mitigation measures would have to be identified by the applicable lead agency, such as SCAG's MM-TR29, in the CEQA document prepared for each future project that is proposed. Since MM-TR29 is currently an adopted mitigation measure from SCAG's 2012 – 2035 RTP/SCS, the SCAQMD recommends that it be implemented for all projects that have the potential to affect roadways, including 2012 AQMP Control Measures ONRD-05, ADV-01, and ADV-02.

In conclusion, the SCAQMD cannot predict how a future lead agency might choose to mitigate a particular significant traffic and transportation impact. Because the catenary lines are expected to be utilized in areas where truck traffic is concentrated and could occur in heavy traffic areas (e.g., Alameda Corridor and downtown Los Angeles) the potential exists for future traffic and transportation impacts to be significant and unavoidable (e.g., significant even after feasible mitigation measures are identified and imposed).

REMAINING IMPACTS – USE OF CATALYSTS: The impacts of the proposed project on traffic and transportation are expected to be significant prior to mitigation. While generally mitigation measures could help minimize some of the impacts, SCAQMD cannot predict how a future lead agency might choose to mitigate a particular significant traffic and transportation. Thus, the potential exists for future traffic and transportation impacts to be significant even after feasible mitigation measures are identified and imposed. Therefore, traffic and transportation impacts that may occur as a result of implementing the 2012 AQMP are expected to remain significant.

4.9.5 Summary of Traffic Impacts

The following is the summary of the conclusions of the analysis of the traffic impacts associated with implementation of the 2012 AQMP.

- Construction impacts, though temporary in nature, could be significant.
- Operational impacts could be significant.
- Any proposed modification to an existing rail or truck traffic route/corridor will require a separate CEQA evaluation to identify specific traffic impacts and mitigation measures for that project.

Summary of PM_{2.5} Control Measure Impacts: PM_{2.5} Control Measures were evaluated in the NOP/IS and it was determined that the PM_{2.5} Control Measures would not generate any potentially significant traffic impacts. Since no significant traffic impacts were identified for any of the PM_{2.5} Control Measures, no mitigation measures are required.

Summary of Ozone Control Measure Impacts: Three Ozone Control Measures (e.g., ONRD-05, ADV-01, and ADV-02) could result in traffic impacts due to construction and operation. The potential traffic impacts of these Ozone Control Measures were determined to be significant and mitigation measures would be required. However, it is not feasible to identify appropriate project-specific mitigation measures for traffic and transportation impacts in this [Final](#) Program EIR. Instead, appropriate project-specific mitigation measures will have to be identified in the CEQA document prepared for each future project that is proposed. The analysis concluded that the potential exists for future traffic and transportation impacts to be significant and unavoidable (e.g., significant even after feasible mitigation measures are identified and imposed).

SUBCHAPTER 4.10

OTHER CEQA TOPICS

Growth-Inducing Impacts

Significant Environmental Effects Which Cannot Be Avoided

Relationship Between Short-Term Uses and Long-Term Productivity

Environmental Effects Not Found to Be Significant

4.10 OTHER CEQA TOPICS

4.10.1 Growth-Inducing Impacts

CEQA defines growth-inducing impacts as those impacts of a proposed project that “could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects, which would remove obstacles to population growth” (CEQA Guidelines §15126.2 (d)).

To address this issue, potential growth-inducing effects are examined through the following considerations:

- Facilitation of economic effects that could result in other activities that could significantly affect the environment;
- Expansion requirements for one or more public services to maintain desired levels of service as a result of the proposed project;
- Removal of obstacles to growth through the construction or extension of major infrastructure facilities that do not presently exist in the project area or through changes in existing regulations pertaining to land development;
- Adding development or encroachment into open space; and/or
- Setting a precedent that could encourage and facilitate other activities that could significantly affect the environment.

4.10.1.1 Economic and Population Growth, and Related Public Services

The proposed project would not directly foster economic or population growth or the construction of new housing in the southern California area. The control measures contained in the 2012 AQMP accommodate the projected growth for the region while still resulting in compliance with the federal 24-hour PM_{2.5} ambient air quality standards and making expeditious progress towards attaining the federal one-hour and eight-hour ozone standards. However, the 2012 AQMP would not be the cause of residential, commercial, industrial, and infrastructure development.

A project would directly induce growth if it would directly foster economic or population growth or the construction of new housing in the surrounding environment (e.g., if it would remove an obstacle to growth by expanding existing infrastructure such as new roads or wastewater treatment plants). The 2012 AQMP would not remove barriers to population growth, as it involves no changes to a General Plan, zoning ordinance, or a related land use policy. Alternatively, the 2012 AQMP would not create barriers to projected population growth because it would result in avoiding sanctions or implementation of a Federal Implementation Plan, which could increase the New Source Review emission offset ratio or result in highway funding sanctions.

The 2012 AQMP does not include policies that would encourage the development of new housing or population-generating uses or infrastructure that would directly encourage such uses. The 2012 AQMP may indirectly increase the efficiency of the region's urban form through encouraging more air quality efficient development patterns. The 2012 AQMP does not change jurisdictional authority or responsibility concerning land use or property issues. Land use authority falls solely under the purview of the local governments. The SCAQMD is specifically excluded from infringing on existing city or county land use authority (California Health & Safety Code §40414). Therefore, the 2012 AQMP would not directly trigger new residential development in the area.

The 2012 AQMP may result in construction activities associated with implementation of certain control measures (e.g., control equipment at existing stationary sources or electrification along existing roadways). However, the [2012 AQMP](#) would not directly or indirectly stimulate substantial population growth, remove obstacles to population growth, or necessitate the construction of new community facilities that would lead to additional growth in the Basin. It is expected that construction workers will be largely drawn from the existing workforce pool in southern California.

Considering the existing workforce in the region and current unemployment rates, it is expected that a sufficient number of workers are available locally and that few or no workers would relocate for construction jobs potentially created by the 2012 AQMP as construction activities would be spread over a period of about 10 years. Further, the 2012 AQMP would not be expected to result in an increase in local population, housing, or associated public services (e.g., fire, police, schools, recreation, and library facilities) since no increase in population or the permanent number of workers is expected. Likewise, the proposed project would not create new demand for secondary services, including regional or specialty retail, restaurant or food delivery, recreation, or entertainment uses. As such, the 2012 AQMP would not foster economic or population growth in the surrounding area in a manner that would be growth-inducing.

4.10.1.2 Removal of Obstacles to Growth

The 2012 AQMP is located within an existing urbanized area where adequate infrastructure is already in place to serve the existing surrounding population. The proposed project would not employ activities or uses that would result in growth inducement, such as the development of new infrastructure (e.g., new roadway access or utilities) that would directly or indirectly cause the growth of new populations, communities, or currently undeveloped areas. The 2012 AQMP would require additional energy (electricity and potentially natural gas) but the increased energy requirements are expected to be within those projected for existing population growth of the region. The 2012 AQMP also encourages energy efficiency to minimize energy use. The 2012 AQMP may also result in the construction of overhead catenary lines to electrify existing roadways and transportation corridors. These transportation measures are expected to use existing roadways and are not expected to require the development of new roads or freeways. Likewise, the proposed project would not result in an expansion of existing public service facilities (e.g., police, fire, libraries, and schools) or the development of public service facilities that do not already exist.

4.10.1.3 Development or Encroachments into Open Space

Development can be considered growth-inducing when it is not contiguous to existing urban development and introduces development into open space areas. The proposed project is situated within the existing South Coast Air Basin, which is urbanized. The areas of the Basin where construction activities may occur would be at existing stationary sources and along transportation corridors. Stationary sources are generally located within commercial and industrial (urbanized) areas. Any related construction activities would be expected to be within the confines of the existing facilities and would not encroach into open space. The 2012 AQMP may also result in the construction of overhead catenary lines to electrify roadways and transportation corridors. These transportation measures are expected to use existing roadways and are not expected to require the development of new roads or freeways. Therefore, the 2012 AQMP would not result in development within or encroachment into an open space area.

4.10.1.4 Precedent Setting Action

The 2012 AQMP demonstrates attainment of the federal 24-hour PM_{2.5} standard by 2014 in the Basin through the adoption of all feasible control measures, and also provides updates to the 8-hour ozone control plan. The federal Clean Air Act requires a 24-hour PM_{2.5} non-attainment area to prepare a State Implementation Plan which must be submitted to the U.S. EPA. Therefore, the 2012 AQMP is being prepared to comply with state and federal air quality planning regulations and requirements. These required approvals are routine compliance actions and would not result in precedent-setting actions that might cause other significant environmental impacts (other than those evaluated in other sections of this [Final Program EIR](#)).

4.10.1.5 Conclusion

The 2012 AQMP was developed to comply with state and federal air quality planning requirements. The 2012 AQMP is not expected to foster economic or population growth or result in the construction of additional housing or other infrastructure, either directly or indirectly, that would further encourage growth. The 2012 AQMP could result in construction projects at existing stationary sources and along existing transportation corridors. However, the proposed project would not be considered growth-inducing, because it would not result in an increase in production of resources or cause a progression of growth that could significantly affect the environment either individually or cumulatively.

4.10.2 Significant Environmental Effects Which Cannot Be Avoided

Section 15126.2 (b) of the CEQA Guidelines requires that an EIR describe significant environmental impacts that cannot be avoided, including those effects that can be mitigated but not reduced to a less than significant level. Irreversible changes include a large commitment of nonrenewable resources, committing future generations to specific uses of the environment (e.g., converting undeveloped land to urban uses), or enduring environmental damage due to an accident. The following is a summary of impacts associated with the 2012 AQMP that this [Draft-Final Program EIR](#) concluded are significant

and unavoidable. These impacts are also described in detail in the preceding portions of Chapter 4.0 of this [Final Program EIR](#).

- Air quality impacts associated with construction activities due to the implementation of the control measures in the 2012 AQMP were considered to be potentially significant for CO and PM10 emissions.
- The increased demand for electricity and natural gas associated with the 2012 [AQMP](#) control measures is considered to be significant.
- Water demand associated with the manufacture and use of waterborne coatings, solvents and other consumer products, and add-on air pollution control technologies are potentially significant. While mitigation measures are available, they can vary from jurisdiction to jurisdiction, and may remain significant.
- The potential hazards associated with LNG transport are considered significant.
- Noise and vibration impacts will be temporary in nature and related solely to construction activities, but could be significant.
- Traffic impacts associated with the construction and operation of catenary overhead electrical lines and fixed guideway systems are potentially significant.

Feasible mitigation measures have been developed for the identified adverse significant impacts; however, those mitigation measures may not reduce the impacts to less than significant. The 2012 AQMP would place only an incremental demand on nonrenewable and limited resources, such as energy and water supplies relative to the rate of use of these resources due to population growth and increased consumer demand. The largely irretrievable conversion of undeveloped/agricultural land to urban uses is a function of the growing population and local land use authority, not the 2012 AQMP. The 2012 AQMP is expected to result in long-term benefits associated with achieving ambient air quality standards and a reduction in the use of petroleum-based fuels (e.g., increased use of alternative fuels).

Conversely, positive environmental changes are expected to result from implementation of the 2012 AQMP. The project will result in significantly reduced emissions of air pollutants, thereby improving air quality and related public health. Emission reductions will also directly improve the vitality of crops and other plants. The health of livestock, domestic animals and other wildlife will be indirectly enhanced by the positive effects on plant life, as well as by any direct benefits attributable to less air pollution. The damage to buildings and other structures attributable to air pollution also will be diminished, as well as an improvement in aesthetics and visibility.

4.10.3 Relationship Between Short-Term Uses and Long-Term Productivity

An important consideration when analyzing the effects of a proposed project is whether it will result in short-term environmental benefits to the detriment of achieving long-term

goals or maximizing productivity of these resources. Implementing the 2012 AQMP is not expected to achieve short-term goals at the expense of long-term environmental productivity or goal achievement. The purpose of the 2012 AQMP is to set forth a comprehensive control program that will lead the Basin into compliance with the federal 24-hour PM_{2.5} air quality standards and achieving additional reductions in ozone precursors. By attaining federal and state air quality standards, the 2012 AQMP is expected to enhance short and long-term environmental productivity in the region.

Implementing the 2012 AQMP does not narrow the range of beneficial uses of the environment. Of the potential environmental impacts discussed in Chapter 4, only those related to air quality impacts associated with construction activities, water demand, noise impacts associated with construction activities and traffic impacts associated with construction activities, are considered potentially significant. Implementation of the recommended mitigation measures will ensure such impacts are mitigated to the greatest degree feasible.

Because no short-term environmental benefits are expected at the expense of long-term environmental goals being achieved, there is no justification for delaying the proposed action. This project must be implemented now as the SCAQMD is required by the Federal and state Clean Air Acts to formally review the [2012 AQMP](#) and adopt relevant plan revisions which will achieve the state and federal ambient air quality standards by the established deadline. The SCAQMD is proceeding with the 2012 AQMP pursuant to this mandate.

4.10.4 Environmental Effects Not Found to Be Significant

The environmental effects of the 2012 AQMP are identified and discussed in detail in the preceding portions of Chapter 4 of this [Final Program](#) EIR and in the Initial Study (see Appendix A) per the requirements of the CEQA Guidelines §15128. The following topics of analysis in this [Final Program](#) EIR were found to have no potentially significant adverse effects, after mitigation:

- Aesthetic impacts associated with implementation of the control measures in the 2012 AQMP.
- Air quality impacts associated with implementation (operation) of the control measures in the 2012 AQMP.
- Energy impacts associated with implementation of the control measures in the 2012 AQMP.
- Hazards and hazardous materials impacts associated with implementation of the control measures in the 2012 AQMP.
- Hydrology and water quality impacts associated with implementation of the control measures in the 2012 AQMP (other than water demand).

- Land use impacts associated with implementation of the control measures in the 2012 AQMP.
- Noise impacts associated with implementation of the control measures in the 2012 AQMP (other than construction activities).
- Traffic impacts associated with implementation of the control measures in the 2012 AQMP (other than construction activities).
- Solid and hazardous waste impacts associated with implementation of the control measures in the 2012 AQMP.

While all the environmental topics required to be analyzed under CEQA were reviewed to determine if the proposed amendments would create significant impacts, the screening analysis (see Appendix A for the NOP/IS) concluded that the following environmental areas would not be significantly adversely affected by 2012 AQMP: agriculture and forest resources, biological resources, cultural resources, geology and soils, mineral resources, population and housing, public services, and recreation. These topics were not analyzed in further detail in this environmental assessment, however, a brief discussion of each is provided below.

4.10.4.1 Agricultural and Forest Resources Impacts

In general, the 2012 AQMP control measures typically affect existing commercial or industrial facilities, establish specifications for fuels or mobile source exhaust emissions, or accelerate the replacement of high-emitting mobile sources with low emitting mobile sources so they are not expected to generate any new construction of buildings or other structures that would require conversion of farmland to non-agricultural use or conflict with zoning for agricultural uses or a Williamson Act contract. Further, the 2012 AQMP control measures typically affect existing facilities that are located in appropriately zoned areas. Any new facilities that may be affected by the 2012 AQMP control measures would be constructed and operated for reasons other than complying with the 2012 AQMP control measures. For these same reasons, it is not expected that implementing 2012 AQMP control measures will conflict with any forest land zoning codes or convert forest land to non-forest uses. No control measures were identified in the proposed 2012 AQMP that would affect or conflict with existing land use plans, policies, or regulations or require conversion of farmland to non-agricultural uses or forest land to non-forest uses.

Land use, including agricultural- and forest-related uses, and other planning considerations are determined by local governments and no agricultural land use or planning requirements will be altered by the proposed project, except as noted above. The 2012 AQMP control measures, including control measures related to mobile sources, would have no direct or indirect effects on agricultural or forest land resources because these types of control measures typically involve reduction in combustion and fugitive VOC emissions, as well as establishing emission

Based upon the above considerations, significant adverse impacts to agricultural and forestland resources are not expected due to implementation of the 2012 AQMP.

4.10.4.2 Biological Resources Impacts

The effects of implementing [the 2012 AQMP](#) control measures typically include reducing mobile source exhaust emissions; modifying fuel specifications; or modifications at existing commercial or industrial facilities to control or further control emissions, which may require some type of construction equipment and activities. Any affected existing commercial or industrial facilities are generally located in appropriately zoned commercial or industrial areas, which typically do not support candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. Typically, existing industrial or commercial facilities are already devoid of plant life or plant life supporting wildlife species for fire safety reasons. Any new industrial or commercial facilities that may be affected by [the 2012 AQMP](#) control measures and that have the potential to adversely affect biological resources would be constructed and operated for reasons unrelated to complying with [the 2012 AQMP](#) control measures.

Similarly, modifications at existing facilities would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with native or resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites because implementing [the 2012 AQMP](#) control measures typically occurs within the boundaries of the affected facilities and, therefore, would not require disturbing wildlife habitat. For these same reasons, since the proposed 2012 AQMP primarily regulates stationary emission sources at existing commercial or industrial facilities, it does not directly or indirectly affect land use policy that may adversely affect riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations, or identified by the California Department of Fish and Game or U.S. Fish and Wildlife Service. It is expected that industrial or commercial facilities that may be affected by 2012 AQMP control measures are already located in appropriately zoned areas or would be located in appropriately zoned areas. [The 2012 AQMP](#) control measures do not include any provisions that would allow affected facility operators to violate existing zoning ordinances or regional plans, policies, or regulations. Improving air quality is expected to provide health benefits to plant and animal species in the district. Similarly, the 2012 AQMP contains control measures that establish emission standards for mobile sources or accelerated penetration of low emission vehicles, which could result in additional control of emissions from mobile sources or revision to existing fuel specifications. As a result, the proposed project would not affect land use policies or designations. There are no control measures contained in the 2012 AQMP that would alter this determination.

Implementing some [of the 2012 AQMP](#) control measures (e.g., coatings and solvent control measures) could change or increase a facility's potential to generate waste water. Past SCAQMD staff experience with analyzing modifications at industrial or commercial facilities is that they are considered "point sources" and must release wastewater into publicly owned treatment works (POTWs) (e.g., local sewer systems), and, therefore, are subject to National Pollutant Discharge Elimination System (NPDES) permit program

administered by the Regional Water Quality Control Board (RWQCB). Direct discharge into federally protected wetlands as defined by §404 of the Clean Water Act would be prohibited under federal law (Clean Water Act) and state law (Porter-Cologne Act) and, therefore, is not expected to occur. Some of the 2012 AQMP control measures have the potential to require air pollution controls at port facilities, which are located on the coast. Port facilities are considered to be heavy industrial facilities (point sources) and the installation of additional controls would be consistent with this land use. Further, any facilities that release wastewater into California's ocean waters are subject to water quality standards established in the California Ocean Plan and are also subject to NPDES requirements, enforced by the local RWQCBs. For all of the above reasons the proposed project will not adversely affect protected wetlands as defined by §404 of the Clean Water Act, including, but not limited to marshes, vernal pools, coastal wetlands, etc., through direct removal, filling, hydrological interruption or other means.

Implementing the proposed 2012 AQMP is not expected to affect land use plans, local policies or ordinances, or regulations protecting biological resources such as a tree preservation policy or ordinance for the reasons given in discussions above, i.e. control measures promulgated as rules or regulations primarily affect existing commercial and industrial facilities through installation of air pollution control equipment, which are typically located in appropriately zoned areas or activities that would accelerate the penetration of low emission vehicles into the regional vehicle fleet. Land use and other planning considerations are determined by local governments and no land use or planning requirements will be altered by the proposed project. Neither SCAQMD nor CARB has legal authority over land use decisions except to impose certain air pollution control requirements, which do not drive the land use approval process, and, therefore, cannot alter or interfere with land use zoning ordinance or designations and cannot approve new land use projects or modifications to existing land use projects. Similarly, the proposed 2012 AQMP is not expected to affect in any way habitat conservation or natural community conservation plans, agricultural resources or operations, and would not create divisions in any existing communities for the reasons discussed above.

Based upon the above considerations, significant adverse impacts to biological resources are not expected due to implementation of the 2012 AQMP.

4.10.4.3 Cultural Resource Impacts

Implementing the proposed 2012 AQMP control measures is primarily expected to result in controlling stationary source emissions at existing commercial or industrial facilities or accelerate the penetration of low emission vehicles into the regional vehicle fleet. Affected facilities where physical modifications may occur are typically located in appropriately zoned commercial or industrial areas that have previously been disturbed and are not typically considered to be historically significant. It is unlikely that construction activities, including heavy construction activities, such as cut-and-fill activities or excavation, at potentially affected existing facilities would uncover cultural resources as these existing facilities are located in previously disturbed areas. Some affected facilities (e.g., refineries) may have equipment older than 50 years that may need to be modified to comply with 2012 AQMP control measures. However, such equipment does not typically meet the criteria

identified in CEQA Guidelines §15064.5 [\(a\)\(3\)](#). Based on these considerations, it is unlikely that implementing control measures in the proposed 2012 AQMP would: adversely affect historical or archaeological resources as defined in CEQA Guidelines §15064.5, destroy unique paleontological resources or unique geologic features, or disturb human remains interred outside formal cemeteries.

In spite of the fact that most facilities that would be affected by 2012 AQMP control measures are located on previously disturbed sites where there is little likelihood of any remaining identifiable artifacts, it is possible, that implementing control measures could result in construction activities to install pollution control equipment at affected existing facilities that uncover cultural or archaeological resources. Even if this circumstance were to occur, significant adverse cultural resources impacts are not anticipated because there are existing laws in place that are designed to protect and mitigate potential adverse impacts to cultural resources. As with any construction activity, should archaeological resources be found during construction that results from implementing the proposed [2012 AQMP](#) control measures, the activity would cease until a thorough archaeological assessment is conducted as required by state or federal law.

The proposed 2012 AQMP is, therefore, not anticipated to result in any construction activity or promote any programs that could have a significant adverse impact on cultural resources in the district.

4.10.4.4 Geology and Soils Impacts

The proposed 2012 AQMP control measures would not directly or indirectly expose people or structures to earthquake faults, seismic shaking, seismic-related ground failure including liquefaction, landslides, mudslides or substantial soil erosion for the following reasons. In general, [the 2012 AQMP](#) control measures affecting mobile sources, such as those that would accelerate the penetration of zero or low emission vehicles into district fleets, would not affect geology or soils because for on-road vehicles, they would continue to operate on existing roadways (ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; etc.). Although some [of the 2012 AQMP](#) control measures would accelerate the penetration of zero or low emission off-road equipment, replacing one type of off-road engine with a lower emitting off-road engine would not be expected to affect construction activities. Further, construction activities occur for reasons other than complying with [the 2012 AQMP](#) control measures.

When implemented as rules or regulations, [the 2012 AQMP](#) control measures regulating stationary sources do not directly or indirectly promote new land use projects that could be located on earthquake faults, seismic zones, etc. Any seismic-related activities in areas where facilities that may be subject to [the 2012 AQMP](#) control [measures](#) are located would be part of the existing setting. Some minor structural modifications, however, at existing affected facilities may occur as a result of installing control equipment or making process modifications. Such modifications would not likely require large heavy-duty construction equipment or substantial site modifications. In any event, existing affected facilities or modifications to existing facilities would be required to comply with relevant California

Building Code (formerly referred to as the Uniform Building Code) requirements in effect at the time of initial construction or modification of a structure.

Southern California is an area of known seismic activity. Structures must be designed to comply with the California Building Code requirements if they are located in a seismically active area. The local city or county is responsible for ensuring that a proposed project complies with current California Building Code requirements as part of the issuance of the building permits and can conduct inspections to ensure compliance. The California Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage but with some non-structural damage; and 3) resist major earthquakes without collapse but with some structural and non-structural damage.

The California Building Code bases seismic design on minimum lateral seismic forces (“ground shaking”). The California Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the California Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site. Accordingly, buildings and equipment at existing affected facilities are likely to conform to the California Building Code and all other applicable state codes in effect at the time they were constructed.

Any potentially affected facilities that are located in areas where there has been historic occurrence of liquefaction (e.g., coastal zones) or existing conditions indicate a potential for liquefaction, including expansive or unconsolidated granular soils and a high water table, may have the potential for liquefaction-induced impacts at the project sites. The California Building Code requirements consider liquefaction potential and establish more stringent requirements for building foundations in areas potentially subject to liquefaction. Compliance with the California Building Code requirements is expected to minimize the potential impacts associated with liquefaction. The issuance of building permits from the local cities or counties will assure compliance with the California Building Code requirements. Finally, [none of the 2012 AQMP control measures](#) require the location of new, or relocation of existing facilities in areas prone to liquefaction. Land use decisions are under the authority of the local jurisdictions, typically cities or counties. Neither the SCAQMD nor CARB has authority over land use decisions except to impose specific air pollution control requirements, which do not drive the land use approval process, and CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws (CEQA Guidelines §15040 (b)).

Because facilities affected by any [of the 2012 AQMP control measures](#) are typically located in appropriately zoned areas such as industrial or commercial areas, which are not typically located near known geological hazards (e.g., landslide, mudflow, seiche, tsunami or volcanic hazards), no significant adverse geological impacts are expected. Even if potentially affected facilities are located near such geological hazards, the hazards are part of the existing setting and are not made worse by installing control equipment or other activities to comply with emission control rules and regulations. For example, tsunamis at

the Port of Los Angeles and Port of Long Beach, are not expected because the ports are surrounded by breakwaters that protect the area from wave action. In any event, [the 2012 AQMP](#) control measures would not increase potential exposures to tsunamis.

Although the proposed 2012 AQMP control measures may require minor modifications at existing industrial or commercial facilities, such modifications are not expected to require substantial grading or construction activities. Typically, existing facilities have already been graded and soil stabilization is already in place (e.g., through the placement of buildings, paving, or other soil stabilization measures currently required pursuant to SCAQMD Rule 403 – Fugitive Dust). In other cases, potentially affected areas may have already been graded or displaced in some way for other reasons (e.g., leveling the site, stabilization of slopes, etc.). Accelerating the penetration of low emission vehicles into the regional vehicle fleet, (ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles, etc.), does not require modifications requiring construction activities at existing facilities. Therefore, significant adverse soil erosion impacts are not anticipated from implementing the 2012 AQMP.

Septic tanks or other similar alternative waste water disposal systems are typically associated with small residential projects in remote areas. The proposed 2012 AQMP does not contain any control measures that generate construction of residential or other types of land use projects in remote areas. Neither the SCAQMD nor CARB has land use approval authority. Consequently, construction of small residential land uses with septic systems would occur for reasons other than complying with [the 2012 AQMP](#) control measures. Further, [the 2012 AQMP](#) control measures typically affect existing industrial or commercial facilities that are already hooked up to appropriate sewerage facilities and are subject to wastewater control requirements, typically through NPDES permits.

Based on these considerations, implementation of the 2012 AQMP is not expected to generate significant adverse geology and soils impacts.

4.10.4.5 Mineral Resources Impacts

There are no provisions of the proposed 2012 AQMP that would directly result in the loss of availability of a known mineral resource of value to the region and the residents of the state, such as aggregate, coal, clay, shale, etc., or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Moreover, the 2012 AQMP is not expected to deplete non-renewable mineral resources in a wasteful manner.

Based upon the above considerations, significant adverse impacts to mineral resources are not expected due to implementation of the 2012 AQMP.

4.10.4.6 Population and Housing Impacts

According to SCAG, current population in the SCAG region (which includes all of the district, the non-district portions of Los Angeles and San Bernardino counties, and all of Ventura and Imperial counties) is approximately 18 million people and is expected to

increase by another four million people by 2035. The proposed 2012 AQMP generally affects existing commercial or industrial facilities located in predominantly industrial or commercial urbanized areas throughout the district and, as such, is not anticipated to generate any significant effects, either directly or indirectly, on the district's population or population distribution.

Consistent with past experience, it is expected that the existing labor pool within the southern California area would accommodate the labor requirements for any modifications requiring construction at affected facilities. This is especially true in the current recession. For example, California has a seasonally adjusted unemployment rate of 10.9 percent. Unemployment rates (not seasonally adjusted) in each of the four district counties are as follows: Los Angeles County, 11.5 percent; Orange County, 8.1 percent; Riverside County, 12.8 percent, and San Bernardino County, 12.1 percent.

It is expected that few or no new employees would need to be hired at affected facilities to operate and maintain new control equipment on site because air pollution control equipment is typically not labor intensive equipment. In the event that new employees are hired, it is expected that the existing local labor pool in the district can accommodate any increase in demand for workers that might occur as a result of adopting the proposed 2012 AQMP. Based on the above, it is not expected that the 2012 AQMP would induce population growth resulting in the need for new housing, roads or other infrastructure. As such, adopting the proposed 2012 AQMP is not expected to result in changes in population densities or induce significant growth in population.

In general, [the 2012 AQMP](#) control measures affecting mobile sources, such as those that would accelerate the penetration of zero or low emission vehicles into district fleets (e.g., ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles, etc.), would not induce population growth because there is a finite number of drivers in the region at any one time, so drivers who purchase low or zero emission vehicles would not be driving the old high emitting vehicles at the same time they are driving the new low emitting vehicles. Although projected increases in population in the region may result in the continued use of the replaced high emitting vehicles, as already noted, future population growth in the region would occur for reasons other than complying with [the 2012 AQMP](#) control measures.

There are no provisions in any [of the 2012 AQMP](#) control measures that would cause displacement of substantial numbers of people or housing necessitating construction of replacement housing elsewhere. As noted in the discussions under "Land Use and Planning, the proposed 2012 AQMP contains control measures that may result in installing control equipment on stationary sources at existing commercial or institutional facilities and establishing emission exhaust specifications for mobile sources. Construction of new structures affecting land use planning would occur for reasons other than complying with [the 2012 AQMP](#) control measures. As a result, the proposed 2012 AQMP would not be expected to affect the location of people or housing in any areas of the district.

Based upon the above considerations, significant adverse population and housing impacts are not expected to occur due to implementation of the 2012 AQMP.

4.10.4.7 Public Services Impacts

There is little potential for significant adverse public service impacts as a result of adopting the proposed 2012 AQMP. The 2003 AQMP EIR analyzed potential adverse impacts to public services as a result of implementing [the 2003 AQMP](#) control measures and concluded that existing resources at services such as fire departments, police departments and local governments would not be significantly adversely affected as a result of implementing [the 2003 AQMP](#) control measures even if there are slight increases in potential flammability impacts from implementing [the 2003 AQMP](#) control measures. Similarly, the 2007 NOP/IS concluded that implementing [the 2007 AQMP](#) control measures would not significantly adversely affect fire departments, police departments and local governments for the same reasons as identified in the 2003 Program EIR, which include the following considerations. Although implementing [the 2012 AQMP](#) control measures may increase the use of alternative clean fuels, for example, there would be a commensurate reduction in currently used petroleum fuels. As first responders to emergency situations, police and fire departments may assist local hazmat teams with containing hazardous materials, putting out fires, and crowd control to reduce public exposures to hazardous materials releases. In many situations, implementing [the 2012 AQMP](#) control measures may reduce hazardous materials use (e.g., formulating coatings with less hazardous aqueous formulations). Some [of the 2012 AQMP](#) control measures may increase the use of air pollution control equipment that uses hazardous materials. In spite of this, there are no components of any control measures that would result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times or other performance objectives. Further, most large industrial facilities have on-site security that controls public access to facilities so no increase in the need for police services are expected. Many large industrial facilities also have on-site fire protection personnel and/or have agreements for fire protection services with local fire departments. Even in the absence of onsite police or fire protection services, implementing [the 2012 AQMP](#) control measures in no way hinders service ratios or response times and is not expected to require physical modifications to existing government facilities to a greater extent than is currently the case. Finally, pursuant to the Health and Safety Code, emergency or rescue vehicles operated by local, state, and federal law enforcement agencies, police and sheriff departments, fire department, hospital, medical or paramedic facility, and used for responding to situations where potential threats to life or property exist, including, but not limited to fire, ambulance calls, or life-saving calls are specifically exempt from regulations requiring alternative clean fueled vehicles. For these reasons, implementing the 2012 AQMP is not expected to require additional fire protection services to an extent that it would cause a need for construction of new facilities.

As indicated in the discussions under Population and Housing, the 2012 AQMP is not anticipated to affect population growth in the district, which would not be expected to adversely affect existing public services or facilities or physically alter, require new public service facilities, or alter the demand for schools. Anticipated development to accommodate future population growth would occur for reasons other than complying with [the 2012 AQMP](#) control measures. To address future growth it is the responsibility of local land

public agencies with general land use authority, typically cities or counties, over fire departments, police departments and other public services to address potential impacts to public services that may require new or physically altered facilities or affect service ratios, response times, or other performance objectives. Consequently, no significant adverse impacts to schools or parks are foreseen as a result of adopting the proposed 2012 AQMP.

Based upon the above considerations, significant adverse project-specific public services impacts are not expected to occur due to implementation of the 2012 AQMP.

4.10.4.8 Recreation Impacts

As discussed under “Land Use and Planning” and “Population and Housing” above, there are no provisions in the proposed 2012 AQMP that would affect land use plans, policies, ordinances, or regulations. Land use and other planning considerations are determined by local governments. No land use or planning requirements, including those related to recreational facilities, will be altered by the proposal. The proposed project does not have the potential to directly or indirectly induce population growth or redistribution that could adversely affect recreational resources. As a result, the proposed project would not increase the use of, or demand for existing neighborhood and/or regional parks or other recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Based upon the above considerations, no significant adverse project-specific impacts to population and housing are expected to occur due to implementation of the 2012 AQMP.

CHAPTER 5

CUMULATIVE IMPACTS

Introduction

Aesthetics

Agricultural Resources

Air Quality

Biological Resources

Cultural Resources

Energy

Geology and Soils

Hazards and Hazardous Materials

Hydrology and Water Quality

Land Use and Planning

Mineral Resources

Noise

Population and Housing

Public Services

Recreation

Solid and Hazardous Waste

Transportation and Traffic

5.0 CUMULATIVE IMPACTS

CEQA Guidelines §15130 (a) requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in [CEQA Guidelines](#) §15065 (a)(3). The 2012 AQMP is a regional plan that includes broad policy criteria and as such, the 2012 AQMP [Final](#) Program EIR evaluates the environmental impacts associated with implementing the 2012 AQMP stationary and mobile source control measures to determine whether or not the impacts of the project are cumulatively considerable when combined with potential impacts associated with other similar regional projects involving regulatory activities or other projects with similar impacts.

5.1 INTRODUCTION

The cumulative impacts analysis for the 2012 AQMP [Final](#) Program EIR includes the analyses of the SCAQMD's stationary and mobile source control measures and the regulatory activities associated with other measures that could also generate impacts within the Basin. The traffic control measures (TCMs) in the 2012 AQMP (see Appendix IV-C of the [Revised Draft](#) 2012 AQMP and Appendix E of this [Final](#) Program EIR) were developed and adopted by SCAG as part of the 2012-2035 RTP/SCS¹ and the 2011 Federal Transportation Improvement Program (FTIP) (SCAG 2012).

SCAG's Regional Council approved the TCMs and strategies included in the 2012-2035 RTP/SCS Program EIR and the investment commitments contained in the 2008 RTIP and its subsequent amendments. These measures and recommendations have accordingly been moved forward for inclusion in the region's air quality plans and are included as part of the 2012 AQMP. The impacts of implementation of these TCMs were evaluated in the 2012-2035 RTP/SCS Program EIR (SCAG, 2012). The cumulative analysis in this section of the Final Program EIR for the 2012 AQMP relies primarily on the environmental analyses in the SCAG 2012-2035 RTP/SCS Program EIR for the evaluation of the environmental impacts of implementing the TCMs.

Because the TCMs, their associated mitigation measures², and their emissions reductions are included along with the 2012 AQMP in the PM_{2.5} SIP submittal for the Basin and because the TCMs and other projects in the 2012-2035 RTP/SCS have the potential to generate similar impacts, the 2012-2035 RTP/SCS is considered to be a cumulatively related project. In general, the long-term transportation planning requirements for emission reductions from on-road mobile sources within the district are met by SCAG's RTP/SCS, whereas the short-term implementation requirements of the Transportation Conformity Rule are met by SCAG's biennial Regional Transportation Improvement Program (RTIP) (SCAG 2010).

¹ Under SB 375, SCAG addresses GHG reduction in a Sustainable Communities Strategy (SCS) as part of the Regional Transportation Plan. SB 375 was established to implement the state's GHG emissions reduction goals, as set forth by AB 32, in the sector of cars and light trucks. SCS is intended to provide a vision for future growth in Southern California that would decrease per capita GHG emissions from passenger vehicles.

² [In addition to summarizing impacts from the 2012-2035 RTP/SCS, this document includes a list of all measures identified in the 2012-2035 RTP/SCS Program EIR to mitigate environmental impacts from that project for informational purposes only. The PEIR for the 2012-2035 RTP/SCS, which includes all of the mitigation measures in Appendix F, was previously certified in April 2012.](#)

In general, TCMs are those control measures that provide emission reductions from on-road mobile sources, based on changes in the patterns and modes by which the regional transportation system is used. Strategies that have a particular bearing on the environment can be grouped into the following components:

- **Active Transportation:** This strategy integrates land use and transportation by working with sub-regions and local communities to increase development densities and improve the jobs/housing balance. Implementing this strategy encourages walking, biking, and transit use, thereby reducing vehicular demand and environmental impacts.
- **Transportation Demand Management (TDM):** This strategy reduces vehicular demand and thereby congestion, particularly during peak periods. TDM measures are designed to influence travel behavior and include use of transit, bicycling, and walking, carpools and telecommuting, strategies that allow travelers to easily connect to and from transit service at their origin and destination, vanpool services for larger employers, and rideshare matching services.
- **Transportation Systems Management (TSM):** This strategy increases the productivity of the existing multi-modal transportation system and relies in part on intelligent transportation system (ITS) technologies such as automated vehicle location (AVL) and advanced monitoring systems, which assist in achieving system efficiencies in ports and intermodal operations, reduce delays and wait times at gates and destinations, and allow for more flexible dispatching, thereby reducing emissions.
- **Congestion Management Process (CMP):** This strategy manages congestion by requiring that highway capacity projects that significantly increase the capacity for single occupancy vehicles be developed in a comprehensive context that considers all possible alternatives, including transit, TDM and TSM strategies.
- **High Occupancy Vehicle (HOV) Gap Closures and Connectors:** This strategy builds upon the previous HOV strategy by including additional investments to extend the HOV network, strategically close gaps in the HOV network, convert certain limited access HOV lanes to allow for continuous access, and construct additional direct freeway-to-freeway HOV connectors to maximize the overall system performance by minimizing weaving conflicts and maintaining travel speeds.

The following sections summarize the project-specific and cumulative impacts analyses from the Final Program EIR for the 2012-2035 RTP/SCS. The discussions also summarize project-specific impacts from the 2012 AQMP. The discussions also include an evaluation regarding whether or not impacts from the 2012 AQMP contribute to cumulative impacts from the 2012-2035 RTP/SCS, which have already been evaluated in a Program EIR certified by SCAG.

5.2 AESTHETICS

5.2.1 Cumulative Aesthetic Impacts

Implementation of the 2012 AQMP is not expected to result in potentially significant adverse aesthetic impacts because [the 2012 AQMP](#) control measures relate primarily to emission reductions through the incorporation of electrically powered trucks and locomotives. Although, to power this equipment, catenary lines (overhead power lines) could be needed, areas where catenary lines may be constructed would be limited to commercial, industrial areas, along existing transportation corridors, and at existing railyards. The 2012 AQMP [Final Program EIR](#) determined that construction and operation of such lines would not substantially degrade the existing visual character of a site or its surroundings, impact existing scenic vistas, or impact any scenic resources, including scenic highways.

According to the 2012-2035 RTP/SCS Program EIR, implementation of the 2012-2035 RTP/SCS would adversely affect aesthetics and views. Expected significant impacts would include the obstruction of scenic views and vista points due to the construction of highways, flyovers, interchanges, goods movement roadway facilities, and sound walls for anticipated RTP/SCS transportation projects, which would potentially block or impede views of mountains, oceans, or rivers. In addition, implementation of the 2012-2035 RTP/SCS would alter areas along state designated scenic highways and vista points, in particular along SR-91 through Riverside and Orange Counties and along SR-14 as part of the High Desert Corridor, connecting Palmdale and the Antelope Valley to Santa Clarita.

Implementing the 2012-2035 RTP/SCS is expected to create significant contrasts with the overall visual character of the existing landscape setting and possibly add urban visual elements to an existing natural, rural, and open space area. In particular, the Gold and Crenshaw Light Rail Lines would travel through urban neighborhoods with distinct character and may be located adjacent to historic resources depending on the final alignments. The wires, structures and other elements associated with light rail would change the character of these areas. Increased urbanization through taller buildings or more compact development could have a similar effect by changing the low-scale nature of a particular neighborhood. Transit centers and park-n-ride lots, constructed primarily within the heavily urbanized portions of the SCAG region, could also affect a large number of viewers.

Implementing the 2012-2035 RTP/SCS would create shade and shadow or light and glare impacts when tall newly constructed elevated transportation infrastructure projects cast a shadow on nearby shadow sensitive areas, such as eating or playing areas. Population growth in the region would also potentially create contrasts with the overall visual character of the existing landscape because some urban land would have increased intensity of use and because currently vacant and undeveloped land would be developed into urban uses.

Because implementation of the 2012-2035 RTP/SCS would include the extension of transportation and related infrastructure to areas outside the region and, as such, would indirectly result in changes to the visual character or to scenic areas outside of the SCAG

region, the 2012-2035 RTP/SCS would contribute to a cumulatively considerable loss of scenic resources.

The analysis of potential aesthetics impacts from implementing the 2012 AQMP in Subchapter 4.1 of this Program EIR concluded that the 2012 AQMP would not in itself generate significant adverse aesthetic impacts. Further, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with transportation projects projected in the 2012-2035 RTP/SCS, would not contribute to cumulatively considerable impacts to aesthetic resources identified in the 2012-2035 RTP/SCS because potential aesthetic resources impacts identified in the 2012-2035 RTP/SCS Program EIR are different than the potential aesthetics impacts that could be generated by the 2012 AQMP and, geographically, there is no overlap between the 2012 AQMP projects that may affect aesthetics resources and aesthetic resources impacts created by the 2012-2035 RTP/SCS.

5.2.2 Mitigation Measures

Mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse aesthetic impacts. However, because implementation of the 2012-2035 RTP/SCS is expected to generate significant adverse impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.2.3 Level of Impact After Mitigation Measures

Potential aesthetics resources impacts from the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation as the population growth projected by 2035 in combination with projects identified in the 2012-2035 RTP/SCS would consume currently vacant land that would create significant contrasts with the overall visual character of the existing landscape setting. Moreover, the 2012 AQMP would not contribute to that impact as noted in Subsection 5.2.1, so adverse cumulative operational aesthetics resources impacts are concluded to be less than significant.

5.3 AGRICULTURAL RESOURCES

5.3.1 Cumulative Agricultural Resources Impacts

Impacts to agricultural resources were considered and fully evaluated in the August 2, 2012 Notice of Preparation/Initial Study (8/2/12 NOP/IS) prepared for the 2012 AQMP. As concluded in the 8/2/12 NOP/IS, implementation of the 2012 AQMP is not expected to result in significant adverse impacts to the agriculture resource because [the 2012](#) AQMP control measures typically affect existing commercial or industrial facilities or establish specifications for fuels or mobile source exhaust emissions and as such are not expected to generate new construction of buildings or other structures that would require conversion of farmland to non-agricultural use or conflict with zoning for agricultural uses. No comment

letters were received by the SCAQMD during the 8/2/12 NOP/IS comment period disputing this conclusion.

Agricultural resources were considered under the combined category of Land Use and Agricultural Resources section in the 2012-2035 RTP/SCS Program EIR³. According to the 2012-2035 RTP/SCS Program EIR, implementing the proposed 2012-2035 RTP/SCS transportation projects would result in substantial disturbance and/or loss of prime farmlands or grazing lands throughout southern California. Furthermore, development of highway, arterial, and transit projects proposed under the 2012-2035 RTP/SCS would result in the disturbance and/or loss of a substantial portion of these designated agricultural areas. The 2012-2035 RTP/SCS specifically calls out highway expansion and potential connector projects such as the High Desert Corridor project, the mixed flow Express/High Occupancy Toll (HOT) lane project along SR-395, as well as roadway improvements, toll road improvements and connections, grade separated facilities for bus ways, goods movement roadway facilities, and HOV/HOT connectors as projects which could result in significant impacts to agricultural lands.

In total, the 2012 RTP/SCS would result in approximately 74,300 total new lane miles by 2035, some of which would potentially disturb or consume agricultural lands in the region. The loss and disturbance of agricultural land was concluded to be a significant impact of the 2012-2035 RTP/SCS Program EIR.

Impacts to agricultural resources were determined to be below the level of significance in the 8/2/12 NOP/IS. Furthermore, when combined with past, present, and reasonably foreseeable activities, and in particular with projects identified as part of the 2012-2035 RTP/SCS, the 2012-2035 RTP/SCS would not contribute to a cumulatively considerable impact to agricultural resources requiring mitigation.

5.3.2 Mitigation Measures

Mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse agricultural impacts and does not contribute to the impacts identified in the 2012-2035 RTP/SCS Final Program EIR. However, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.3.3 Level of Impact After Mitigation Measures

Potential agricultural resources impacts associated with the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS would contribute to significant loss and disturbance of agricultural lands. Moreover, the 2012 AQMP would not

³ The topic of forestry resources was not evaluated in the Final Program EIR for the 2012-2035 RTP/SCS.

contribute to these impacts as noted in Subsection 5.3.1, so adverse cumulative operational agricultural resources impacts are concluded to be less than significant.

5.4 AIR QUALITY

5.4.1 Cumulative Air Quality Impacts

Construction Impacts: Implementation of the 2012 AQMP is expected to result in potentially significant adverse air quality impacts associated with: 1) additional infrastructure to support electric and alternative fuel vehicles; 2) additional infrastructure for stationary source controls; and, 3) additional infrastructure to support electrification of new sources.

According to the 2012-2035 RTP/SCS Program EIR, implementation of the 2012-2035 RTP/SCS transportation projects would result in substantial construction activities. The construction activities would create short-term temporary emissions from the following activities: 1) demolition; 2) site preparation operations (e.g., grading/excavation); 3) fuel combustion from the operation of construction equipment; 4) delivery and hauling of construction materials and supplies to and from sites; 5) the use of asphalt or other oil based substances during the final construction phases of projects; and, 6) travel by construction workers to and from sites.

Construction activities associated with the 2012 AQMP would result in significant impacts to the air quality resource and any concurrent emissions-generating activities from reasonably foreseeable construction activities would add an additional air emission burden to these significant levels. Therefore, construction air quality impacts from the 2012 AQMP are considered to be cumulatively considerable prior to mitigation and would contribute to significant adverse cumulative impacts from the 2012-2035 RTP/SCS.

Operational Impacts - Criteria Pollutants: The 2012 AQMP is expected to result in an emission reduction in NO_x, VOC, SO_x, and PM emissions, providing an air quality benefit. As shown in Figure 4.2-3, the 2012 AQMP is expected to attain the 24-hour federal PM_{2.5} standard by 2014. The 2012 AQMP also is expected to: 1) implement specific measures to implement Clean Air Action Section 182 (e)(5) to assist in attaining the eight-hour ozone standard by 2023; 2) maintain compliance with state and federal NO₂ standards (even considering the increase in population growth); 3) maintain compliance with state and federal SO₂ standards (even considering the increase in population growth); and, 4) maintain compliance with the federal 24-hour average PM₁₀ standard.

Control measures from the 2012 AQMP are expected to increase the demand for electrical energy associated with operation of add-on control equipment, electrical support facilities for on-road vehicles and off-road vehicles, and shore-side electricity associated with “cold ironing” of marine vessels. While these control measures may cause an increase in emissions from power plants used in electricity production, overall emissions in the Basin would be reduced because combustion emissions from natural gas, used to produce electricity, are lower than combustion emissions from gasoline or diesel engines. The 2012 AQMP [Final](#) Program EIR concluded that overall the net emissions effects from

implementing 2012 AQMP control measures would be a reduction and that no significant adverse impacts to air quality are expected from 2012 AQMP control measures requiring increased demand for electricity or natural gas.

The 2012 AQMP control measures associated with control of stationary sources are expected to result in a small increase in CO and NO_x emissions. However, the 2012 AQMP would achieve enough NO_x reductions overall to maintain ambient air quality standards. Also, although a potential exists for secondary particulate formation from ammonia slip, in selective catalytic reduction (SCR) applications used to control NO_x emissions from stationary sources, the 2012 AQMP [Final](#) Program EIR concluded that no new or substantially more severe significant air quality impacts related to ammonia emissions and secondary particulate formation from the increased use of SCR systems is expected.

Several 2012 AQMP control measures would reduce VOC emissions by reformulating or specifying utilization of certain VOC-containing products. The 2012 AQMP [Final](#) Program EIR concluded that air quality impacts from implementing future coatings rules would result in an overall reduction of VOC emissions and would be beneficial to air quality.

Control measures in the 2012 AQMP would also reduce emissions from mobile sources by accelerating the penetration of partial zero-emission and zero emission vehicles and off-road equipment, accelerating the replacement of old locomotive engines, increasing the amount of shore-side marine power, accelerating the replacement of aircraft engines with cleaner burning engines, increasing the use of alternative fuels, and increasing the use of add-on control devices. The 2012 AQMP [Final](#) Program EIR concluded that estimated VOC, CO, NO_x, SO_x, PM₁₀, and PM_{2.5} emissions associated with on-road mobile sources in the district are expected to be reduced and that the overall impact of mobile source control measures is expected to be a beneficial impact on air quality. Finally, several 2012 AQMP control measures would regulate a variety of different types of emissions sources including both area and point sources. These control measures are expected to reduce VOC, criteria pollutant, and precursor emissions.

Under the 2012-2035 RTP/SCS, mobile source criteria pollutant emissions would stay approximately the same or decrease, providing an air quality benefit. However, the increase of re-entrained roadway dust would increase proportionately to vehicle miles traveled (VMT) and as such was considered a significant impact in the 2012-2035 RTP/SCS Program EIR.

Implementation of the 2012 AQMP would not in itself result in significant air quality impacts associated with operational activities. For this reason, the 2012 AQMP would not be expected to contribute to significant adverse cumulative impacts from transportation projects projected in the 2012-2035 RTP/SCS.

Operational Impacts - Non-Criteria Pollutants: Several 2012 AQMP control measures may result in the increased use of ammonia in SCRs. However, because ammonia slip from SCR units is restricted to 5.0 ppm or less, which has been shown through source-specific permit modeling to have no significant impact on surrounding communities, the impact from the use of ammonia as proposed in the 2012 AQMP is expected to be less than significant.

The 2012 AQMP is expected to result in a reduction of toxic air contaminant (TAC) emissions. The basis for this conclusion is that many TACs are also classified as criteria pollutants (e.g., PM and VOCs). To the extent that [the 2012 AQMP](#) control measures reduce PM and VOC emissions, associated TAC emission reductions could occur as well. The overall impacts associated with implementation of the 2012 AQMP are an overall reduction in non-criteria pollutants (e.g., toxic air contaminants). Therefore, no significant impacts on non-criteria pollutants have been identified.

Under the 2012-2035 RTP/SCS, as a result of on-going emission controls, cancer and other health risks within any given distance of mobile sources in the region would decline, although the health risks adjacent to transportation facilities would remain higher than regional averages and above desirable levels. As a result of 2012-2035 RTP/SCS policies anticipated growth patterns would concentrate population adjacent to transit and other transportation facilities in High Quality Transit Areas (HQTAs) that could result in more people being exposed to elevated cancer risk as compared to areas of the region more distant from such facilities. Therefore under the 2012-2035 RTP/SCS more sensitive receptors would be located adjacent to transportation facilities and would therefore be exposed to transportation-related air toxics. In addition, although non-carcinogenic health impacts due to VMT-related re-entrained dust would increase, these health impacts would be at least partially offset by the decrease in health impacts related to the decrease of air toxics and criteria pollutants from vehicle exhaust.

Implementation of the 2012 AQMP would not in itself result in significant air quality impacts associated with non-criteria pollutants. Moreover, the 2012 AQMP would not contribute to impacts associated with transportation projects projected in the 2012-2035 RTP/SCS and, therefore, would not be expected to contribute to a cumulatively considerable impact requiring mitigation.

Greenhouse Gas Impacts: The 2012 AQMP is expected to result in a reduction of GHGs. This conclusion is based on the fact that mobile source control measures would reduce GHG emissions through accelerated penetration of partial zero-emission and zero emission vehicles, the use of alternative fuels such as natural gas, the combustion of which generates less GHG emissions than diesel fuel.

The proposed 2012 AQMP control measures and the recommended state and federal control measures that promote fuel and energy efficiency and pollution prevention would also reduce GHG emissions. Measures that stimulate the development and use of new technologies would also be beneficial. In general, strategies that conserve energy, promote clean technologies, and result in a reduction in vehicle miles traveled would reduce GHG emissions. Therefore, the cumulative impacts are expected to result in an overall reduction in GHGs.

According to the 2012-2035 RTP/SCS Program EIR, implementation of the 2012-2035 RTP/SCS projects would result in a significant increase of greenhouse gas emissions from residential and commercial building construction, operational energy demand, and total mobile source emissions. The 2012-2035 RTP/SCS Program EIR concludes that implementation of 2012-2035 RTP/SCS projects would meet the applicable AB 32 reduction

targets (identified in SB 375) with respect to light duty vehicles. However, without technical details as to how each sector of the economy would comply with AB 32, growth anticipated to occur under the 2012-2035 RTP/SCS could result in a significant impact related to AB 32 and the Scoping Plan.

The 2012-2035 RTP/SCS Program EIR concluded that because per capita carbon dioxide emissions from light duty trucks and autos would meet ARB targets by 2020 and would achieve even greater emission reductions in 2035, the 2012-2035 RTP/SCS would result in a less-than-significant impact related to per capita emissions and SB 375.

5.4.2 Mitigation Measures

The 2012 AQMP is expected to result in significant adverse air quality impacts associated with construction activities. Mitigation measures AQ-1 through AQ-8 would serve to reduce those impacts, but significant impacts would remain for CO and PM10.

The 2012 AQMP [Final](#) Program EIR concluded that implementation of 2012 AQMP control measures would not generate significant adverse secondary operational air quality impacts from increased electricity and natural gas demand or from control of stationary sources. The 2012 AQMP [Final](#) Program EIR also concluded that the implementation of 2012 AQMP control measures would result in beneficial air quality impacts associated with coating or consumer product regulations, with mobile sources, and with miscellaneous source control measures, by providing emission reductions. Therefore, no significant adverse air quality impacts associated with operational control measures are expected and no mitigation measures are required.

It was also concluded that the 2012 AQMP would not generate significant adverse secondary air quality impacts from non-criteria pollutants. The 2012 AQMP also concluded that implementation of 2012 AQMP control measures would not result in significant air quality impacts from GHG emissions. Therefore, no mitigation is required.

Because implementation of the 2012-2035 RTP/SCS would result in significant air quality impacts associated with construction, health impacts associated with re-entrained roadway dust due to VMT increase, health impacts associated with the location of a potentially greater number of people adjacent to transportation facilities, and an increase in GHG emissions, mitigation measures were imposed in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures would also reduce impacts associated with the 2012 AQMP and are included in Appendix F of the 2012 AQMP [Final](#) Program EIR.

5.4.3 Level of Significance After Mitigation Measures

The air quality impacts associated with 2012 AQMP control measures were determined to be significant for construction activities and less than significant for secondary emissions from increased electricity demand, control of stationary sources, change in use of lower VOC materials, mobile sources, increase use of fuels due to reduction in fuel economy, miscellaneous sources, non-criteria pollutants, and global warming and ozone. Although

mitigation measures identified in the 2012 AQMP [Final](#) Program EIR would reduce construction air quality impacts associated with construction activities, impacts would remain significant and as such would continue to contribute to considerable impacts following mitigation.

Similarly, although mitigation measures identified in the 2012-2035 RTP/SCS Program EIR would reduce air quality and associated health impacts, impacts for construction, operation, TACs, and GHG impacts would continue to contribute to cumulatively considerable impacts following mitigation. Moreover, the 2012 AQMP would not contribute to these impacts as noted in Subsection 5.4.1, so adverse cumulative operational air quality impacts are concluded to be less than significant.

5.5 BIOLOGICAL RESOURCES

5.5.1 Cumulative Biological Resources and Open Space Impacts

Impacts to biological resources were considered and fully evaluated in the 8/2/12 NOP/IS prepared for the 2012 AQMP. As determined in the 8/2/12 NOP/IS, implementation of the 2012 AQMP would not adversely affect plant and/or animal species in the Basin because [the 2012 AQMP](#) control measures typically affect existing commercial or industrial facilities or establish specifications for fuels or mobile source exhaust emissions. Such existing commercial or industrial facilities are generally located in appropriately zoned commercial or industrial areas, which typically do not support candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. No comment letters were received during the 8/2/12 NOP/IS that disputed this conclusion.

According to the 2012-2035 RTP/SCS Program EIR, implementation of the 2012-2035 RTP/SCS would adversely affect biological resources and open space. Expected significant adverse impacts would include disturbance and removal of natural vegetation that may be utilized by sensitive species, habitat fragmentation and the associated decrease in habitat quality, litter, smoke, light pollution and road noise in previously undisturbed natural areas, trampling of natural vegetation, displacement of riparian and wetland habitat, as well as long-term impacts such as stream siltation of streams and other water bodies during construction and operation.

The amount of new urbanized acreage (consuming previously vacant land) would be on the order of hundreds of thousands of acres. Despite the inability to predict the acreage of each habitat type that may be affected, it is reasonable to expect that this future urban development would contribute to the same types of impacts detailed previously above. These indirect impacts on biological resources are associated with population, employment, and household growth forecasted by SCAG. Transportation projects included in the 2012-2035 RTP/SCS on previously undisturbed land would potentially displace natural vegetation and, thus, habitat, some of which is utilized by sensitive species in the region. In particular, the 2012-2035 RTP/SCS Program EIR states that the Mixed Flow Improvement along Highway 395 and the High Quality Transit Area (HQTA) along the I-15 in Riverside County would be located in sensitive and listed animal species habitat could result in a direct

loss of habitat. In addition, because implementation of 2012-2035 RTP/SCS projects would cause loss of habitat as well as habitat fragmentation in habitat corridors that cross the SCAG region's boundaries, thereby limiting the movement of wildlife species beyond the SCAG region, the 2012-2035 RTP/SCS Program EIR determined that implementation of the 2012-2035 RTP/SCS would contribute to a cumulative biological resources impact.

Implementation of the 2012 AQMP would not in itself result in significant biological impacts. Moreover, the 2012 AQMP would not contribute to impacts associated with transportation projects projected in the 2012-2035 RTP/SCS and, therefore, would not be expected to contribute to a cumulatively considerable impact requiring mitigation.

5.5.2 Mitigation Measures

Mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse biological impacts. However, because implementation of the 2012-2035 RTP/SCS would result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.5.3 Level of Impact After Mitigation Measures

2012-2035 RTP/SCS impacts associated with biological and open space resources would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation due to significant disturbance and removal of natural vegetation that may be utilized by sensitive species, habitat fragmentation and the associated decrease in habitat quality, litter, trampling, light pollution and road noise in previously undisturbed natural areas, displacement of riparian and wetland habitat, siltation of streams and other water bodies during construction, and the loss of prime farmlands, grazing lands, open space and recreation lands. The increased urban development anticipated by the 2012-2035 RTP/SCS would also result in similar impacts. However, since the 2012 AQMP was not identified as creating any adverse biological resources impacts, it would not create cumulatively considerable impacts, so adverse cumulative biological resources impacts from the 2012 AQMP are concluded to be less than significant.

5.6 CULTURAL RESOURCES

5.6.1 Cumulative Cultural Resources Impacts

Impacts to cultural resources were considered and fully evaluated in the 8/2/12 NOP/IS prepared for the 2012 AQMP. As determined in the 8/2/12 NOP/IS, implementation of the 2012 AQMP would not adversely affect cultural resources because [the 2012](#) AQMP control measures typically affect existing commercial or industrial facilities or establish specifications for fuels or mobile source exhaust emissions. Potentially affected facilities would not require extensive cut-and-fill activities or excavation at undeveloped sites, and implementation of the 2012 AQMP would therefore not adversely affect historical or archaeological resources as defined in CEQA Guidelines §15064.5, destroy unique

paleontological resources or unique geologic features, or disturb human remains interred outside formal cemeteries. No comment letters were received by the SCAQMD during the 8/2/12 NOP/IS comment period disputing this conclusion.

In a small number of cases, implementation of the 2012 AQMP may require minor site preparation and grading at an affected facility. Under this circumstance, it is possible that archaeological or paleontological resources could be uncovered. Even if this circumstance were to occur, significant adverse cultural resources impacts are not anticipated because construction activities would occur at previously disturbed industrial or commercial locations and there are existing laws in place that are designed to protect and mitigate potential adverse impacts to cultural resources. As with any construction activity, should archaeological resources be found during construction that result from implementation of the 2012 AQMP, the activity would cease until a thorough archaeological assessment is conducted and the Native American Heritage Commission (NAHC) is contacted, if necessary.

According to the 2012-2035 RTP/SCS Program EIR, as of August 2011, over 68,000 archaeological and over 1,200 historic locations have been identified in the SCAG region. Each of these sites is documented at the Office of Historic Preservation, which holds location information on archaeological sites for each region in California. Paleontological sites are also numerous in southern California. The development of new transportation facilities as part of the 2012-2035 RTP/SCS may affect historical resources because many HQTAs would be located in older urban centers where structures of architectural or historical significance are likely to be located. In addition, 2012-2035 RTP/SCS transportation projects would significantly affect archaeological and paleontological resources because the projects could be located in previously undisturbed areas.

Furthermore, since it is not always possible to predict where human remains may occur outside of formal burials, it is possible that excavation and construction activities associated with 2012-2035 RTP/SCS projects may disturb previously undiscovered human remains not interred in marked, formal burials, resulting in significant impacts.

Finally, the 2012-2035 RTP/SCS's influence on growth would contribute to regional impacts on existing and previously undisturbed and undiscovered cultural resources; impacts would combine with impacts in other areas of Southern California to contribute to a cumulative loss of cultural resources in California.

Implementation of the 2012 AQMP would not in itself result in significant impacts to cultural resources. However, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with increased urbanization, projected in the 2012-2035 RTP/SCS, would not be expected to contribute to cumulatively considerable impacts to existing historic resources and previously undisturbed and undiscovered archeological and paleontological resources requiring mitigation.

5.6.2 Mitigation Measures

Mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse impacts to cultural resources. However, because implementation of the 2012-2035 RTP/SCS would result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.6.3 Level of Impact After Mitigation Measures

Potential impacts from the 2012-2035 RTP/SCS associated with cultural resources would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts to cultural resources would remain significant following mitigation because the 2012-2035 RTP/SCS is expected to affect a potentially large number of historic properties, archaeological resources, and paleontological resources. Moreover, the 2012 AQMP would not contribute to impacts associated with transportation projects projected in the 2012-2035 RTP/SCS and, therefore, would not be expected to contribute to a cumulatively considerable impact requiring mitigation. As a result, adverse cumulative cultural resources impacts from the 2012 AQMP are concluded to be less than significant.

5.7 ENERGY

5.7.1 Cumulative Energy Impacts

Implementation of the 2012 AQMP is expected to result in an overall increase in electricity demand. While this increase is expected to be within the electric generating capacity of the region, an increase in electricity of greater than one percent represents a substantial increase in electricity use. Similarly, the increased demand for natural gas for both stationary source and mobile source control measures were concluded to be significant, even though since sufficient natural gas resources are available. Thus, the energy impacts associated with electricity and natural gas demand from the implementation of the 2012 AQMP are considered to be significant.

Implementation of the 2012 AQMP is expected to result in less than significant energy impacts for use of petroleum fuels, use of alternative fuels (e.g., hydrogen), and on renewable energy sources. Furthermore, implementation of the 2012 AQMP control measures would result in a demand reduction of petroleum fuels. Finally, although implementation of the 2012 AQMP control measures would increase hydrogen demand as a transportation fuel, this increase is not expected to be significant since hydrogen is not widely available, its use is currently limited, and future demand is expected to be met through increased production. The energy impacts associated with the future use of hydrogen is expected to be less than the current strategy that uses predominately petroleum based fuels such that no significant hydrogen demand impacts are expected. Further, control measures may have a renewable energy benefit from the use of solar energy.

Energy resources are considered as part of the 2012-2035 RTP/SCS Program EIR Public Services and Utilities section. According to the 2012-2035 RTP/SCS Program EIR, implementation of the 2012-2035 RTP/SCS may uncover and potentially sever underground utility lines during construction activities, prior to mitigation.

The 2012-2035 RTP/SCS Program EIR concluded that implementation of the 2012-2035 RTP/SCS would increase energy demand associated with construction of regional transportation system and anticipated development. The RTP/SCS Program EIR also concluded that the 2012-2035 RTP/SCS would result in less transportation fuel consumption due to RTP/SCS' emphasis on compact land use and growth patterns that facilitate transit and non-motorized transportation. The 2012-2035 RTP/SCS Program EIR also identified that overall population growth, accommodated by the transportation investments, would require an increase in energy resources and as such would result in significant impacts to non-renewable energy resources. Finally, the 2012-2035 RTP/SCS Program EIR concluded that the anticipated demand for energy would contribute to depleting energy reserves and as such would contribute to a cumulatively significant impact.

Implementation of the 2012 AQMP was concluded to generate significant impacts to electricity and natural gas energy supplies. The 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with construction activities and accommodated population growth demands predicted by the 2012-2035 RTP/SCS Program EIR, may contribute to cumulatively considerable impacts electricity and natural gas energy impacts. Moreover, the 2012 AQMP would not contribute to impacts associated with demand for petroleum fuels, alternative fuels or non-renewable energy supplies requiring mitigation.

5.7.2 Mitigation Measures

The 2012 AQMP is expected to result in significant electricity demand impacts associated with electrification of stationary and mobile sources. Mitigation measures E-1 through E-7 would serve to reduce impacts from increased electricity demand and mitigation measures E-8 through E-12 would reduce impacts from increased demand for natural gas. In spite of implementing these mitigation measures, significant adverse energy impacts would remain.

The 2012 AQMP [Final](#) Program EIR also concluded that impacts would be less than significant for use of petroleum fuels, use of alternative fuels (e.g., hydrogen), and use of renewable energy sources.

Implementation of the 2012-2035 RTP/SCS would result in significant impacts from construction projects associated with urban development and growth accommodated by the 2012-2035 RTP/SCS transportation projects, therefore, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. Energy resources were addressed as part of the Public Services and Utilities section of the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.7.3 Level of Impact after Mitigation Measures

Electricity and natural gas demand impacts associated with the 2012 AQMP control measures were concluded to be significant, while energy impacts associated with use of petroleum fuels, use of alternative fuels and renewable energy sources were considered to be less than significant. Although mitigation measures identified in the 2012 AQMP [Final Program EIR](#) would reduce energy impacts associated with electricity demand, impacts would remain significant and as such would continue to contribute to considerable impacts following mitigation.

2012-2035 RTP/SCS impacts associated with energy resources would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because energy consumed during construction and expansion of the transportation system, as well as growth that would be accommodated by the 2012-2035 RTP/SCS, would contribute to considerable impacts following mitigation. Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would contribute to a cumulatively considerable electricity and natural gas demand impacts following mitigation.

5.8 GEOLOGY AND SOILS

5.8.1 Cumulative Geology and Soils Impacts

Impacts to geologic resources were considered and fully evaluated in the 8/2/12 NOP/IS prepared for the 2012 AQMP. As determined in the 8/2/12 NOP/IS, implementation of the 2012 AQMP would not directly or indirectly expose people or structures to earthquake faults, seismic shaking, seismic-related ground failure including liquefaction, landslides, mudslides or substantial soil erosion; no new structures would be constructed as the result of implementing the 2012 AQMP. Although some structural modifications at existing affected facilities may occur as a result of installing control equipment or making process modifications, existing affected facilities or modifications to existing facilities would be required to comply with relevant California Building Code requirements in effect at the time of initial construction or modification of a structure which are expected to mitigate geology and soils impacts to less than significant. No comment letters were received disputing these conclusions.

Geology and soils were considered in the 2012-2035 RTP/SCS Program EIR as part of the Geology, Soils and Mineral Resources section. All of southern California is susceptible to impacts from seismic activity and numerous active faults are known to exist in the region that could potentially generate seismic events capable of significantly affecting transportation facilities proposed in the 2012-2035 RTP/SCS. According to the 2012-2035 RTP/SCS Program EIR, seismic events could damage transportation infrastructure through surface rupture, ground shaking, liquefaction, and landsliding. Specifically, implementation of the new light rail transit (LRT) routes/extension in Los Angeles and San Bernardino Counties, new highways, arterials, bus rapid transit routes, goods movement (freight), heavy and light rail routes, high-speed trains, and other capacity enhancements proposed under the

2012-2035 RTP/SCS would be susceptible to impacts from seismic activity. Although seismic activity could cause damage to existing substandard construction, new designs taking account of current engineering knowledge can significantly reduce potential damage and harm. Earthquake-resistant designs employed on new structures minimize the impact to public safety from seismic events. The 2012-2035 RTP/SCS Program EIR also determined that seismically induced tsunami and seiche waves could damage transportation infrastructure proximate to coastal areas, but that the potential for these impacts would be remote and was not considered significant.

The 2012-2035 RTP/SCS Program EIR concluded that earthwork associated with implementation of the 2012-2035 RTP/SCS could result in soil erosion and/or loss of topsoil and in some cases could result in slope failure. The 2012-2035 RTP/SCS Program EIR further determined that location of 2012-2035 RTP/SCS projects on expansive soils and unstable geologic units could have potentially significant impacts to property and public safety due to on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse. Finally, the 2012-2035 RTP/SCS Program EIR concluded that implementation of the 2012-2035 RTP/SCS would occur within the SCAG region, would be site-specific in nature and as such would not contribute to a cumulatively considerable increase in risk associated with geologic hazards.

Impacts under geologic and soil resources were determined to be below the level of significance in the 8/2/12 NOP/IS, therefore, when combined with past, present, and reasonably foreseeable activities, and in particular with projects identified as part of the 2012-2035 RTP/SCS, would not be expected to contribute to a cumulatively considerable geologic and soil resources impacts prior to mitigations.

5.8.2 Mitigation Measures

Mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse impacts under geologic and soil resources. However, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.8.3 Level of Impact After Mitigation Measures

Potential geologic and soil resources impacts associated with the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS is expected to result in potential damage to transportation infrastructure through surface rupture, ground shaking, liquefaction, and landsliding, as well as long term soil erosion and/or loss of top soil, subsidence, and slope failure. Moreover, the 2012 AQMP would not contribute to geologic and soil resources impacts associated with transportation projects projected in the 2012-2035 RTP/SCS and, therefore, would not be expected to contribute to a cumulatively considerable impact requiring mitigation.

5.9 HAZARDS AND HAZARDOUS MATERIALS

5.9.1 Cumulative Hazards and Hazardous Materials Impacts

Implementation of the 2012 AQMP is not expected to result in potentially significant adverse impacts from hazards and hazardous materials associated with the use of alternative fuels or the use of fuel additives. Fire hazards associated with reformulated coatings, adhesives, solvents, lubricants, mold release products, and other consumer products are potentially significant. The hazard impacts associated with alternative fuels, except for the transport of LNG are considered less than significant. Hazard impacts associated with the transport of LNG are considered potentially significant. In addition, the hazards associated with a spill of ammonia (used as a catalyst in SCR systems) were determined to be potentially significant. Finally, the hazard impacts associated with facility shutdown and start up operations and associated with the use of catalysts were considered less than significant.

According to the 2012-2035 RTP/SCS Program EIR, proposed freight rail enhancements and other goods movement capacity enhancements could result in increased or new transport of hazardous materials or wastes. In addition, construction and maintenance of such projects would result in use of equipment that contains or uses routine hazardous materials (e.g., diesel-fuel, paint and cleaning solutions), and the transportation of excavated soil and/or groundwater containing contaminants from previously contaminated areas. The 2012-2035 RTP/SCS Program EIR concludes that although individual projects would be required to comply with all existing regulations, due to the volume of projects (transportation and development) contained within the RTP/SCS it is possible that significant impacts could occur.

Because implementing the 2012-2035 RTP/SCS would facilitate the movement of goods, including hazardous materials, through the region, transportation of goods, in general, and hazardous materials in particular, is expected to increase substantially with implementation of the 2012-2035 RTP/SCS. The 2012-2035 RTP/SCS Program EIR estimated that daily regional heavy duty truck VMT within the SCAG region would increase from 41 million in 2011 to 65 million in 2035, a 58 percent increase. The 2012-2035 RTP/SCS Program EIR concluded that there would be a potential to create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment during transportation. The 2012-2035 RTP/SCS Program EIR also concluded that approximately 541 existing kindergarten through 12th grade schools would be located within a one-quarter mile buffer of the 2012-2035 RTP/SCS projects and as such could be impacted by an accidental release of hazardous materials.

Furthermore, according to the 2012-2035 RTP/SCS Program EIR, implementation of the 2012-2035 RTP/SCS would potentially disturb contaminated property during the construction of new transportation or expansion of existing transportation facilities and disturb contaminated sites as a result of population, housing and employment growth in the region. Finally, the 2012-2035 RTP/SCS Program EIR concluded that the forecasted urban development and growth that would occur under the 2012-2035 RTP/SCS and the increased mobility provided by the 2012-2035 RTP/SCS would result in increased hazardous materials

transport outside of the SCAG region and as such would contribute to cumulatively considerable impacts.

Implementation of the 2012 AQMP would result in significant impacts from fire hazards associated with reformulated products, the possibility of ammonia tank failures, and from transport of LNG. The 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with transportation projects projected in the 2012-2035 RTP/SCS, would contribute to cumulatively considerable impacts prior to mitigation.

5.9.2 Mitigation Measures

In the 2012 AQMP, mitigation measures HZ1 and HZ2 were developed to minimize fire impacts associated with reformulated products. HZ3 through HZ6 were developed to minimize impacts associated with LNG transport, and HZ7 through HZ10 were developed to minimize impacts associated with ammonia storage. Implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.9.3 Level of Impact After Mitigation Measures

It was concluded in the 2012 Program EIR that potentially significant adverse fire hazard impacts associated with reformulated products and the on-site ammonia storage hazards would be less than significant after mitigation. In spite of implementing mitigation measures, it was concluded that hazards associated with LNG transport would remain significant.

It was concluded in the 2012-2035 RTP/SCS that impacts associated with hazards and hazardous materials would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, impacts from the implementation of the 2012-2035 RTP/SCS, associated with upset and accident conditions, hazardous emissions in vicinity of schools, and disturbance of contaminated property during construction activities would remain significant following mitigation. When combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, the 2012 AQMP has the potential to contribute to a cumulatively considerable hazards and hazardous materials impacts following mitigation for the risks associated with the transport of LNG.

5.10 HYDROLOGY AND WATER QUALITY

5.10.1 Cumulative Hydrology and Water Quality Impacts

Implementation of 2012 AQMP control measures may result in impacts to water quality and increased wastewater discharge associated with the use of alternative fuels, increased use of batteries, increased water demand, use and application of sodium bisulfate for livestock operations, and use of ammonia in SCR applications.

The 2012 AQMP [Final](#) Program EIR concluded that wastewater treatment facilities would have sufficient capacity to handle the estimated increase in wastewater that could be generated from reformulation of products and use of air pollution control equipment. The 2012 AQMP [Final](#) Program EIR also concluded that the use of alternative fuels would not result in greater adverse water quality impacts than the use of conventional fuels. In addition, the 2012 AQMP [Final](#) Program EIR concluded that the recycling of EV and hybrid batteries would be greater than lead-acid batteries in conventional vehicles, reducing the potential for illegal disposal and potential water quality impacts. Furthermore, the 2012 AQMP [Final](#) Program EIR concluded that the use and application of sodium bisulfate in livestock operations would be controlled and monitored to prevent water quality runoff and related water quality impacts. The 2012 AQMP [Final](#) Program EIR also concluded that potential spills associated with ammonia would be contained on-site via required secondary spill containment devices and berms. Finally, the 2012 AQMP [Final](#) Program EIR concluded that water demand associated with the manufacture and use of waterborne and add-on air pollution control technologies would be potentially significant.

According to the 2012-2035 RTP/SCS Program EIR, project-specific studies would be necessary to determine the actual potential for significant impacts on water resources resulting from implementation of the 2012-2035 RTP/SCS. However, general program-level impacts from new transportation projects proposed in the 2012-2035 RTP/SCS would degrade local surface water quality by increased roadway and urban runoff, potentially violating water quality standards associated with wastewater and stormwater permits. In addition, the 2012-2035 RTP/SCS could alter the existing drainage patterns in ways that would result in substantial erosion or siltation.

Implementation of the 2012-2035 RTP/SCS would also increase impervious surfaces due to additional miles of roadway, in addition to urban development associated with the population distribution by 2035, and as such would increase runoff and potentially affect groundwater recharge rates. Furthermore, the 2012-2035 RTP/SCS would potentially increase flooding hazards by placing structures such as transportation investments on alluvial fans and within 100-year flood hazard areas and increase the rate or amount of surface runoff in a manner that would result in flooding or produce or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.

The 2012-2035 RTP/SCS Program EIR concluded that although wastewater rates are expected to increase 21 percent by 2035, population growth would be dispersed throughout the SCAG region and, especially given aggressive water conservation strategies, the SCAG region would not outgrow its wastewater treatment capacity by the year 2035.

The 2012-2035 RTP/SCS Program EIR also concluded that increased mobility and inclusion of land-use-transportation measures would influence the pattern of urbanization in southern California and although most water agencies have plans in place to respond to future growth, the existing water supplies and infrastructure would not be sufficient to meet the expected demand in 2035. Finally, the 2012-2035 RTP/SCS Program EIR concluded that any increase in water demand in the SCAG regions would affect areas outside the region by consuming water that could be used in other areas and that due to uncertainties associated with water

supply management, this would contribute to a cumulatively considerable impact prior to mitigation.

Implementation of the 2012 AQMP would result in significant adverse water demand impacts associated with the manufacture and use of waterborne and add-on air pollution control technologies. Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and with 2012-2035 RTP/SCS would contribute to cumulatively considerable impacts prior to mitigation.

5.10.2 Mitigation Measures

The 2012 AQMP [Final](#) Program EIR identifies possible mitigation measures to reduce water demand associated with the manufacture and use of waterborne and add-on air pollution control technologies. The 2012 AQMP [Final](#) Program EIR concludes that while mitigation measures are available, they can vary from jurisdiction to jurisdiction, and impacts may remain significant. In addition, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.10.3 Level of Impact After Mitigation Measures

Although 2012 AQMP impacts associated with water demand would be reduced following the implementation measures, the effectiveness of mitigation measures can vary between jurisdictions, therefore, water demand impacts may remain significant.

2012-2035 RTP/SCS impacts associated with hydrology and water quality would be reduced following the implementation of the 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation for water quality, wastewater, riparian habitats and waters of the U.S. runoff/drainage, groundwater, flooding, and water supply. Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would contribute to cumulatively considerable impacts following mitigation to water demand impacts. The cumulative impacts of other hydrology and water quality impacts associated with the 2012 AQMP are less than significant.

5.11 LAND USE AND PLANNING

5.11.1 Cumulative Land Use and Planning Impacts

Implementation of the 2012 AQMP is not expected to result in potentially significant adverse land use impacts because the 2012 AQMP would for the most part impose control requirements on stationary sources at existing commercial or institutional facilities, establish emission exhaust specifications for mobile sources, and control emissions from mobile sources. Although some 2012 AQMP control measures may require the construction of battery charging or fueling infrastructure as well as construction of catenary lines, the 2012

AQMP [Final](#) Program EIR concluded that impacts associated with these activities would not generate significant adverse land use impacts because they would be developed within or adjacent to existing roadways and transportation corridors.

It should be noted that there are no provisions of the 2012 AQMP that would directly affect land use plans, policies, or regulations. The SCAQMD is specifically precluded from infringing on existing city or county land use authority (California Health & Safety Code §40414). Land use and other planning considerations are determined by local governments and no present or planned land uses in the region or planning requirements would be altered by the 2012 AQMP.

Land use and planning were considered under the combined category of Land Use and Agricultural Resources section in the 2012-2035 RTP/SCS Program EIR. According to the 2012-2035 RTP/SCS Program EIR, implementation of the 2012-2035 RTP/SCS would result in inconsistencies with general plans, disruption or division of established communities, changes to land uses by changing concentrations of development throughout SCAG, change patterns of growth and urbanization beyond the SCAG region, and cumulatively considerable changes to land use and the intensity of land use. Short-term construction related impacts and long-term or permanent displacement or offsite impacts from new facilities would potentially occur as a result of implementation of the 2012-2035 RTP/SCS.

Implementation of the 2012 AQMP control measures would not conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or physically divide an established community. Therefore, when combined with past, present, and reasonably foreseeable activities, and in particular with projects identified as part of the 2012-2035 RTP/SCS, it would not contribute to cumulatively considerable impacts requiring mitigation.

5.11.2 Mitigation Measures

Land use and planning mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse impacts to land use and planning. However, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. Land use and planning resources were combined with agricultural resources in the 2012-2035 RTP/SCS. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.11.3 Level of Impact After Mitigation Measures

Potential land use and planning impacts associated with the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS would contribute to inconsistencies with general plans, disruption or division of established communities,

changes to land uses by changing concentrations of development throughout SCAG, change patterns of growth and urbanization beyond the SCAG region, and cumulatively considerable changes to land use and the intensity of land use. Short-term construction related impacts and long-term or permanent displacement or offsite impacts from new facilities would also potentially occur as a result of implementation of the 2012-2035 RTP/SCS. Moreover, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable land use and planning impacts requiring mitigation.

5.12 MINERAL RESOURCES

5.12.1 Cumulative Mineral Resources Impacts

Impacts to mineral resources were considered and fully evaluated in the 8/2/12 NOP/IS, prepared for the 2012 AQMP. As determined in the 8/2/12 NOP/IS, implementation of the 2012 AQMP would not directly or indirectly impact mineral resources. No comment letters were received by the SCAQMD during the 8/2/12 NOP/IS disputed this conclusion.

Mineral resources were considered under the combined category of Geology, Soils and Mineral Resources in the 2012-2035 RTP/SCS Program EIR. According to the 2012-2035 RTP/SCS Program EIR, implementing the proposed 2012-2035 RTP/SCS transportation projects would result in the loss of availability of known aggregate and mineral resources that would be of value to the region.

Since potential impacts to mineral resources were determined to be below the level of significance in the 8/2/12 NOP/IS, when combined with past, present, and reasonably foreseeable activities, and in particular with projects identified as part of the 2012-2035 RTP/SCS, the 2012 AQMP is not expected to contribute to cumulatively considerable impacts to mineral resources prior to mitigation.

5.12.2 Mitigation Measures

Mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse impacts to mineral resources. However, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. Mineral resources were combined in the 2012-2035 RTP/SCS with geology and soil resources. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.12.3 Level of Impact After Mitigation Measures

Potential impacts from the 2012-2035 RTP/SCS associated with mineral resources would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of 2012-2035 RTP/SCS would result in increased

demand driven by growth and the large number of projects anticipated in the 2012-2035 RTP/SCS. Moreover, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable mineral resources impacts requiring mitigation.

5.13 NOISE

5.13.1 Cumulative Noise Impacts

Construction Impacts: Implementation of the 2012 AQMP control measures associated with air pollution control technologies and exhaust standards would not result in noise and vibration impacts because construction activities would occur within appropriately zoned industrial and commercial areas, impacts would be temporary and limited to construction activities, and construction noise/vibration impacts to sensitive receptors would not be expected. However, implementation of the 2012 AQMP control measures associated with construction of overhead catenary lines could result in significant noise and vibration impacts due to the geographic proximity of sensitive receptors.

According to the 2012-2035 RTP/SCS Program EIR, grading and construction activities associated with the proposed freeway, arterial, transit, and rail projects, as well as anticipated development would intermittently and temporarily generate noise and vibration levels above ambient background levels. Noise and vibration levels in the immediate vicinity of the construction sites would increase substantially sometimes for extended duration, resulting in temporary noise increases at nearby sensitive receptors, creating potentially significant adverse noise impacts.

Operational Impacts: Implementation of the 2012 AQMP control measures is not expected to result in significant adverse operational noise impacts because [the 2012 AQMP](#) control measures typically affect existing commercial or industrial facilities typically located in appropriately zoned industrial or commercial areas. It is not expected that modifications to install air pollution control equipment would substantially increase ambient noise levels in the area, either permanently or intermittently, or expose people to excessive noise levels that would be noticeable above and beyond existing ambient levels. Although overhead catenary lines could be installed to comply with certain control measures, these lines would be installed along existing roadways and transportation corridors and as such would not result in the construction of new roadways or corridors.

According to the 2012-2035 RTP/SCS Program EIR, noise-sensitive land uses could be exposed to operational noise in excess of normally acceptable noise levels and could experience substantial increases in noise as a result of:

- The operation of expanded or new transportation facilities (e.g., increased traffic resulting from new highways, addition of highway lanes, roadways, ramps, and use of new transit facilities as well as increased use of existing transit facilities, etc.).
- Increased vehicle activity (e.g., autos, trucks, buses, planes, trains, etc.) associated with development and resulting in increased ambient noise next to transportation facilities.

Implementation of 2012 AQMP control measures could result in significance noise and vibration impacts during construction activities. Therefore, when combined with past, present, and reasonably foreseeable activities, and in particular with the increased development projected in the 2012-2035 RTP/SCS, the 2012 AQMP would contribute to cumulatively considerable noise impacts prior to mitigation.

5.13.2 Mitigation Measures

Mitigation measures NO-1 through NO-9 [in the 2012 AQMP Final Program EIR](#) would reduce noise impacts associated with construction of overhead catenary lines. Furthermore, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final Program EIR](#).

5.13.3 Level of Impact After Mitigation Measures

Although impacts would be reduced following implementation of noise mitigation measures identified in the 2012 AQMP [Final Program EIR](#), noise and vibration impacts associated with the construction of catenary lines would remain significant in areas where sensitive receptors are located near transportation corridors.

2012-2035 RTP/SCS impacts associated with noise would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation for noise and vibration during construction activities and operational activities. Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would contribute to cumulatively considerable noise and vibration impacts following mitigation.

5.14 POPULATION AND HOUSING

5.14.1 Cumulative Population, Housing and Employment Impacts

Impacts to population and housing were considered and fully evaluated in the 8/2/12 NOP/IS prepared for the 2012 AQMP. As determined in the 8/2/12 NOP/IS, implementation of the 2012 AQMP is not expected to result in significant adverse population and housing impacts because [the 2012 AQMP](#) control measures typically affect existing commercial or industrial facilities located in predominantly industrial or commercial urbanized areas. It is expected that the existing labor pool within the areas surrounding any affected facilities would accommodate the labor requirements for any facility or equipment modifications. In addition, it is not expected that affected facilities would be required to hire additional personnel to operate and maintain new control equipment on site because air pollution control equipment is typically not labor intensive equipment. In the event that new employees are hired, it is expected that the existing local labor pool in the district can accommodate any increase in demand for workers that might occur as a result of adopting the proposed 2012 AQMP. Therefore, implementing 2012

AQMP control measures is not expected to result in changes in population densities or induce significant growth in population. No comment letters were received by the SCAQMD during the 8/2/12 NOP/IS comment period disputing this conclusion.

According to the 2012-2035 RTP/SCS Program EIR, implementing the 2012-2035 RTP/SCS would induce population growth in some areas of the SCAG region, displace existing homes and businesses, and influence the pattern of growth in the regions through transportation investments and land use strategies.

Since population, housing and employment impacts were concluded to be below the level of significance in the 8/2/12 NOP/IS, when combined with past, present, and reasonably foreseeable activities, and in particular with the anticipated impacts in the 2012-2035 RTP/SCS, the 2012 AQMP would not be expected to contribute to cumulatively considerable impacts to population and housing prior to mitigation.

5.14.2 Mitigation Measures

Mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse impacts to population, housing, and employment. However, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F of the 2012 AQMP [Final](#) Program EIR.

5.14.3 Level of Impact After Mitigation Measures

Potential population, housing, and employment impacts associated with the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, although the policies included in the 2012-2035 RTP/SCS seek to direct growth in a way that is efficient for both mobility and land consumption, 2012-2035 RTP/SCS population, housing, and employment impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS would continue to induce growth to certain areas of the region. In addition, although 2012-2035 RTP/SCS Program EIR mitigation measures would serve to reduce potential impacts related to displacement of residences and businesses, a substantial number of businesses and residences would likely be displaced due to development associated with 2012-2035 RTP/SCS projects. The accessibility afforded by the 2012-2035 RTP/SCS and the expected shifts in population, households, and employment associated with the mobility benefits would change the growth patterns in the region, generating potentially significant adverse cumulative population and housing impacts in spite of implementing mitigation measures. Moreover, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and with 2012-2035 RTP/SCS projects in particular, would not be expected to produce cumulatively considerable impacts requiring mitigation.

5.15 PUBLIC SERVICES

5.15.1 Cumulative Public Services Impacts

Impacts to public services were considered and fully evaluated in the 8/2/12 NOP/IS prepared for the 2012 AQMP. As determined in the 8/2/12 NOP/IS, implementation of the 2012 AQMP would not result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times or other performance objectives. Most industrial facilities have on-site security that control public access to facilities and therefore, an increase in the need for police services is not expected. Furthermore, most industrial facilities have on-site fire protection personnel and/or have agreements for fire protection services with local fire departments. For these reasons, implementing the 2012 AQMP is not expected to require additional fire or police protection services. In addition, implementation of the 2012 AQMP is not expected to induce population growth and as such would not increase or otherwise alter the demand for schools and parks in the district. Therefore, no significant adverse impacts to schools or parks are foreseen as a result of adopting the proposed 2012 AQMP. No comment letters were received that disputed this conclusion.

According to the 2012-2035 RTP/SCS Program EIR, implementing the 2012-2035 RTP/SCS would adversely affect public services and utilities. Expected significant impacts would include demand for more police, fire, and emergency personnel and facilities, demand for more school facilities and teachers, and increase in the number of houses in areas subject to wildfires. The 2012-2035 RTP/SCS concluded that impacts to fire services would contribute to regionally cumulatively considerable impacts to staffing levels and response times of police, fire and emergency services.

Construction necessary to implement the 2012-2035 RTP/SCS could potentially uncover and sever underground utility lines (electric and natural gas), as could any groundbreaking in the SCAG region. For this reason, the project implementation agency is normally required to incorporate the locations of existing utility lines into the construction schedule prior to construction. Per the 2012-2035 RTP/SCS Program EIR, prior knowledge and avoidance during construction of existing utility lines would reduce this impact.

Because impacts to public services and utilities were determined to be below the level of significance in the 8/2/12 NOP/IS, when combined with past, present, and reasonably foreseeable activities, and in particular with the anticipated impacts in the 2012-2035 RTP/SCS, the 2012 AQMP is not expected to contribute to cumulatively considerable impacts to public services requiring mitigation.

5.15.2 Mitigation Measures

Mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse impacts to public services and utilities. However, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-

2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F of the 2012 AQMP [Final](#) Program EIR.

5.15.3 Level of Impact After Mitigation Measures

Potential adverse impacts to public services and utilities from the 2012-2035 RTP/SCS would be reduced following the implementation of the 2012-2035 RTP/SCS Program EIR mitigation measures. However, public service impacts from the 2012-2035 RTP/SCS associated with police, fire, and emergency response were concluded to be significant in spite of implementing mitigation measures. Impacts to wildfire threats would also remain significant because development would occur in areas that have a high threat of fire.

The region's demand to accommodate an additional 453,000 school children would remain a significant impact on public services following implementation of 2012-2035 RTP/SCS mitigation measures. The 2012-2035 RTP/SCS Program EIR also concluded that impacts to underground utility lines would be reduced to below the level of significance following mitigation.

Based on the above information, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and with 2012-2035 RTP/SCS projects in particular, is not expected to produce cumulatively considerable impacts to public services and utilities requiring mitigation.

5.16 RECREATION

5.16.1 Cumulative Recreational Resources Impacts

Impacts to recreational resources were considered and fully evaluated in the 8/2/12 NOP/IS prepared for the 2012 AQMP. As discussed in the 8/2/12 NOP/IS, and similar to the conclusions regarding potential land use and planning impacts, there are no provisions in the proposed 2012 AQMP that would affect land use plans, policies, ordinances, or regulations related to recreation facilities or services. Recreation-related land use and other planning considerations are determined by local governments and no land use or planning requirements, including those related to recreational facilities, would be altered by the proposal. The proposed project would not have the potential to directly or indirectly induce population growth or redistribution that could adversely affect recreational resources. As a result, the proposed project would not increase the use of, or demand for existing neighborhood and/or regional parks or other recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. No comment letters were received by the SCAQMD during the 8/2/12 NOP/IS comment period disputing this conclusion.

Impacts to recreational resources were considered under the combined category of Public Services and Utilities section in the 2012-2035 RTP/SCS Program EIR. According to the 2012-2035 RTP/SCS Program EIR, implementing the proposed 2012-2035 RTP/SCS projects would result in a substantial loss or disturbance of existing open space and recreational lands, as well as a potential to increase the use of existing neighborhood and

regional parks or other recreational facilities, such that substantial deterioration of the facilities would occur. The 2012-2035 RTP/SCS Program EIR concluded that implementation of 2012-2035 RTP/SCS projects would result in significant impacts prior to mitigation.

Because potential impacts to recreational resources were determined to be below the level of significance in the 8/2/12 NOP/IS, when combined with past, present, and reasonably foreseeable activities, and in particular with projects identified as part of the 2012-2035 RTP/SCS, the 2012 AQMP would not be expected to contribute to a cumulatively considerable impact to recreational resources requiring mitigation.

5.16.2 Mitigation Measures

Recreation mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse impacts to recreational resources. However, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. Recreational resources were considered as part of the Public Services and Utilities section of the 2012-2035 RTP/SCS. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.16.3 Level of Impact After Mitigation Measures

Potential impacts associated with recreational resources from the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS would contribute to loss and disturbance of open space and recreational lands. Based on the information above, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable recreation impacts following mitigation.

5.17 SOLID AND HAZARDOUS WASTE

5.17.1 Cumulative Solid and Hazardous Waste Impacts

Implementation 2012 AQMP control measures would not significantly increase disposal of spent batteries, activated carbon, filters, and catalysts, and the early retirement of older equipment and replacement with newer and lower emission technology equipment, would not generate significant additional waste.

The 2012 AQMP [Final](#) Program EIR concluded that because spent batteries are required to be and are largely recycled, the increased use of EVs and hybrid vehicles would not result in a significant increase in the illegal disposal of batteries. In addition, solid waste impacts due to 2012 AQMP air pollution control technologies would not be significant because spent

carbon and catalysts are usually recycled and reused rather than disposed in landfills and filter waste would be small because the amount of material collected is small. The 2012 AQMP [Final](#) Program EIR concludes that control measures that would require new equipment can require that retirement occurs as the life of the old equipment is exhausted and new equipment is put into service. For equipment that may be retired before the end of its useful life, that equipment may be reused in areas outside the district. Equipment with no remaining useful life is expected to be recycled for metal content. Therefore, no significant solid/hazardous waste impacts were identified due to implementation of the control measures.

Impacts from solid waste were considered under the combined category of Public Services and Utilities section in the 2012-2035 RTP/SCS Program EIR, whereas impacts from hazardous waste were considered under the Hazardous Materials section in the 2012-2035 RTP/SCS Program EIR. According to the 2012-2035 RTP/SCS Program EIR, implementing the proposed 2012-2035 RTP/SCS projects would result in a significant amount of solid waste generated during construction of new transit lines, truck lanes, HOV connectors, and HOT projects through grading and excavation activities, as well as debris resulting from removal of structures. Construction of urban development would be expected to generate similar debris. Construction debris would be recycled or used as fill at other projects or transported to the nearest landfill site and disposed of appropriately. The 2012-2035 RTP/SCS Program EIR concluded that implementation of 2012-2035 RTP/SCS projects would result in significant impacts prior to mitigation. Impacts associated with hazardous waste, as identified by the 2012-2035 RTP/SCS Program EIR, are consistent with and are presented in Section 5.9, Hazards and Hazardous Materials of that document.

The 2012-2035 RTP/SCS Program EIR also concluded that because 2012-2035 RTP/SCS projects may require transport of waste to less urban areas of the region or outside of the region, to landfills that are less impacted than local landfills, implementation of 2012-2035 RTP/SCS projects would result in a cumulatively considerable demand on solid waste facilities that exceeds regional capacity.

5.17.2 Mitigation Measures

Mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse impacts due to solid and hazardous wastes. However, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.17.3 Level of Impact After Mitigation Measures

Potential impacts associated with solid and hazardous waste from the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because the demand for solid waste services in the SCAG region and the resulting need to move solid waste large distances, potentially out of the region, would

remain. Based on the above information, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable solid or hazardous waste impacts requiring mitigation.

5.18 TRANSPORTATION AND TRAFFIC

5.18.1 Cumulative Transportation and Traffic Impacts

Implementation of the 2012 AQMP is not expected to result in potentially significant adverse transportation and traffic impacts because [the 2012 AQMP](#) control measures typically affect existing commercial or industrial facilities or establish specifications for fuels or mobile source exhaust emissions and as such are not expected to generate new construction or substantially increase vehicle trips or vehicle miles traveled in the district. However, some 2012 AQMP control measures could necessitate the construction of overhead catenary lines, within or adjacent to existing roadways, streets, freeways, and/or transportation corridors. Such construction activities would generate traffic associated with construction worker vehicles and trucks delivering equipment, materials and supplies to the project site during the duration of the construction activities. Construction activities, including potential lane closures, were considered to be significant.

Similarly, transportation infrastructure improvements pertaining to overhead catenary electrical lines could require the dedication of an existing lane exclusive to vehicles using the overhead catenary electrical lines or fixed guideway systems. The dedication of an existing lane would mean that other vehicles would have reduced access to available driving lanes. Thus, a reduction in the number of available lanes on a roadway to accommodate vehicles using the overhead catenary electrical lines could adversely affect traffic and congestion for all other vehicles on the road, significant adverse operational traffic impacts are anticipated to be generated by the 2012 AQMP because no new streets, roads, freeways, or rail lines would be required and the 2012 AQMP control measures would apply to existing transportation corridors.

The 2012 AQMP relies on transportation and related control measures developed by SCAG in the 2012-2035 RTP/SCS. These transportation control measures include strategies to enhance mobility by reducing congestion through transportation infrastructure improvements, mass transit improvements, increasing telecommunications products and services, enhanced bicycle and pedestrian facilities, etc. Specific strategies that serve to reduce vehicle trips and vehicle miles traveled, such as strategies resulting in greater reliance on mass transit, ridesharing, telecommunications, etc., are expected to result in reducing traffic congestion. Although population in the district would continue to increase, implementing the transportation control measures (in conjunction with the RTP) would ultimately result in greater percentages of the population using transportation modes other than single occupant vehicles. As a result, relative to population growth, existing traffic loads and the level of service designation for intersections district-wide would not be expected to decline at current rates due to implementing the [2012 AQMP](#). Implementing the 2012 AQMP would not hinder population growth in the district, however, could hinder

transportation/traffic improvements and congestion reduction benefits of the 2012-2035 RTP/SCS.

According to the 2012-2035 RTP/SCS Program EIR, implementation of the 2012-2035 RTP/SCS would result in several significant and several less than significant impacts as follows:

- **Vehicle Miles Traveled (VMT)** - Substantial growth and development is anticipated to occur within the region between 2011 and 2035. Based on SCAG's modeling results, average daily VMT are expected to grow from 448 million miles in 2011 to 517 million miles per day in 2035; constituting a 13 percent increase over this period and includes light-, medium- and heavy-duty vehicle VMT in all six counties. While the 2012-2035 RTP/SCS's multimodal strategies aim to reduce per capita VMT over the next 25 years, total demand to move people and goods would continue to grow due to the region's population increase. The 2012-2035 RTP/SCS, therefore, targets transportation systems that have room to grow, including transit, high-speed rail, active transportation, express lanes, and goods movement. Although per capita VMT would decrease, the environment would experience an overall increase in VMT and would be significant prior to mitigation.
- **Vehicle Hours of Delay (VHD)** - Average vehicle hours of delay would be reduced from 3,277,000 vehicle-hours in 2011 to 3,115,000 vehicle-hours in 2035, and as such would constitute a less than significant impact.
- **Vehicle Hours of Delay for Heavy-Duty Trucks** - The transportation system is heavily influenced by goods movement, particularly by heavy-duty trucks. Despite regional planning efforts to improve the efficiency of goods movement, increased demand for goods would lead to an increase from 117,000 to 158,000 average daily heavy-duty truck vehicle hours of delay by 2035 and as such would constitute a significant impact.
- **Peak Period Work Trips** - In 2035, with the implementation of the 2012-2035 RTP/SCS, 82 percent of the evening peak period work trips would take 45 minutes or less by single occupancy vehicle, 77 percent of the evening peak period work trips would take 45 minutes or less by high occupancy vehicle, and 21 percent would occur within 45 minutes by transit. There would be an increase in the percent of work opportunities within 45 minutes travel time by personal vehicle as compared to the current condition. The transit percentage would remain approximately the same. This result is considered to be a regional benefit; the 2012-2035 RTP/SCS would result in a less-than-significant impact related to work commute.
- **System-Wide Fatality and Injury** - Implementation of the 2012-2035 RTP/SCS would contribute to a lower system-wide fatality accident rate and injury rate for all travel modes in 2035 compared to the existing condition. The system-wide daily fatality rate would be 0.17 fatalities per million persons for all travel modes, a decrease of 0.03 daily fatalities per million persons when compared to the existing rate of 0.20. The system-wide daily injury rate would be 12.92 injuries per million persons for all travel modes, a decrease of 5.34 daily injuries per million persons when compared to the existing rate of 18.27. The reductions in fatality and injury rates would be beneficial and would constitute less than significant impacts.

- 2012-2035 RTP/SCS Program EIR Cumulative Impact - Implementation of the 2012-2035 RTP/SCS would contribute to a cumulatively considerable amount of transportation impacts, such as VMT and all-vehicle vehicle hours in delay, to counties outside of the SCAG region. As the population increases through 2035, the number of trips originating and ending in Santa Barbara, San Diego and Kern counties to and from the SCAG region would increase. The transportation demand from growth, in combination with the projects in the 2012-2035 RTP/SCS would contribute to a cumulatively considerable transportation impact in these other counties.

Implementation of the 2012 AQMP would significantly adversely affect traffic and circulation during construction of overhead catenary lines and during operation if the roadways are dedicated to low or zero emission trucks. The 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with projects identified as part of the 2012-2035 RTP/SCS, would contribute to cumulatively considerable impacts prior to mitigation.

5.18.2 Mitigation Measures

Mitigation measure TT-1 in the 2012 AQMP would reduce traffic and circulation impacts associated with construction of catenary lines. No mitigation measures were identified that could reduce potentially significant adverse impacts from operating roadways with catenary lines. Since implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP [Final](#) Program EIR.

5.18.3 Level of Impact After Mitigation Measures

Potential construction traffic and circulation impacts from the 2012 AQMP would be reduced following the implementation of TT-1, however because it may not be possible to reduce construction traffic impacts to less than significant under all conditions, the 2012 AQMP [Final](#) Program EIR concluded that construction impacts on traffic would remain significant.

Impacts to transportation and traffic would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, the 2035 VMT and 2035 heavy-duty truck VHD would be substantially greater than the existing conditions and as such would result in a significant impact in spite of implementing mitigation measures. In addition, as population increases through 2035, the number of trips originating and ending in Santa Barbara, San Diego and Kern counties to and from the SCAG region would increase. The transportation demand from growth, in combination with the accommodating projects in the 2012-2035 RTP/SCS would contribute to a cumulatively considerable transportation impact in these counties. Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and with 2012-2035 RTP/SCS projects in particular, would contribute to cumulatively considerable construction impacts following mitigation and, since no mitigation measures were identified that reduce potential operation-related traffic impacts, these remain significant.

CHAPTER 6

ALTERNATIVES

Introduction

Methodology for Developing Project Alternatives

Alternatives Rejected as Infeasible

Alternatives to the 2012 AQMP

Alternatives Analysis

Comparison of the Project Alternatives to the 2012 AQMP

Environmentally Superior and Lowest Toxic Alternative

Conclusion

6.1 INTRODUCTION

This [Final](#) Program EIR provides a discussion of alternatives to the proposed project as required by CEQA. Pursuant to the CEQA Guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project but would avoid or substantially lessen any of the significant effects of the project, and provide means for evaluating the comparative merits of each alternative (CEQA Guidelines §15126.6 (a)). In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative (CEQA Guidelines §15126.6 (a)). The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation. An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative (CEQA Guidelines §15126.6 (f)(3)).

6.2 METHODOLOGY FOR DEVELOPING PROJECT ALTERNATIVES

The alternatives typically included in CEQA documents for proposed SCAQMD rules, regulations, or plans are developed by breaking down the project into distinct components (e.g., emission limits, compliance dates, applicability, exemptions, pollutant control strategies, etc.) and varying the specifics of one or more of the components. Different compliance approaches that generally achieve the objectives of the project may also be considered as project alternatives.

The overall control strategy for the 2012 AQMP is designed to meet applicable federal and state requirements, including attainment of ambient air quality standards. The focus of the 2012 AQMP is to demonstrate attainment of the 2006 24-hour PM_{2.5} national ambient air quality standard by the 2014 attainment date, as well as provide an update regarding ozone to ensure further implementation of measures [Clean Air Act §182 (e)(5)] to meet the federal and state 8-hour ozone standards. Therefore, 2012 AQMP serves as the official SIP submittal for the federal 2006 24-hour PM_{2.5} standard, for which U.S. EPA has established a due date of December 14, 2012. The 2012 AQMP includes a number of short-term stationary source control measures and §182 (e)(5) stationary and mobile sources, both on-road and off-road, control measures. The attainment demonstration for the new 8-hour ozone standard (75 ppb) will be addressed in a 2015 ozone plan.

The possible alternatives to the proposed 2012 AQMP are limited by the nature of the project. For example, the SCAQMD is required to prepare a PM_{2.5} AQMP that demonstrates attainment of the federal PM_{2.5} federal ambient air quality standard by 2014. To achieve the 2006 24-hour PM_{2.5} ambient air quality standard by 2014, the 2012 AQMP relies on a comprehensive and integrated control approach. Further, 2012 AQMP control measures are developed to achieve the maximum emission reduction potential that is technically feasible and cost-effective. Because, the 2012 AQMP includes all feasible control measures identified as part of the AQMP development process and control measures reflect the maximum emission reduction potential, it is difficult to develop alternatives that would still achieve the project objectives, including attaining the federal 24-hour PM_{2.5} standard, but are substantially different than the 2012 AQMP.

In spite of the limitations identified above with regard to developing project alternatives, similar to previous AQMP Program EIRs, alternatives to the 2012 AQMP focus on emphasizing different pollutant control strategies. For example, alternatives could rely more heavily on emission reductions from short-term stationary source control measures versus greater reliance on future §182 (e)(5) mobile source control measures. Ultimately, all project alternatives must demonstrated attainment of the federal 24-hour PM2.5 standard.

The shortest routes for attaining the federal 24-hour PM2.5 typically rely on controlling directly emitted PM2.5 or controlling PM2.5 precursor pollutants, especially NOx because it also contributes to the SCAQMD's efforts to attain the federal ozone standards. Some combination of strategies to control both PM2.5 and NOx is necessary because neither a PM2.5-heavy control approach nor a NOx-heavy control approach can attain the standards alone.

Development of the PM2.5 attainment control strategy relies on baseline emissions specified by the emissions inventory of all emissions sources in the district. As indicated in Subchapter 3-1 of this [Final](#) Program EIR, the federal CAA §172 (c)(3) requires all plan (AQMP) submittals to include a comprehensive, accurate, and current inventory of actual emissions from all sources of the relevant pollutant(s). To fulfill the intent of this requirement, the year 2008 was selected as the baseline year for analyzing the effectiveness of 2012 AQMP control measures in attaining the PM2.5 standard. Consistent with CAA §172 (c)(3) requirements, the baseline year for alternatives to the 2012 AQMP will also be [year](#) 2008.

Typically, the existing setting is established at the time the NOP/IS is circulated for public review, which was June 2012. This baseline is used for all environmental topics analyzed in this [Final](#) Program EIR except air quality. However, CEQA Guidelines §15125 (a) recognizes that a baseline may be established at times other than when the NOP/IS is circulated to the public by stating (emphasis added), “This environmental setting *will normally* constitute the baseline physical conditions by which a lead agency determines whether an impact is significant.” Therefore, consistent with CAA §172 (c)(3) requirements, the air quality baseline for the 2012 AQMP is the year 2008.

6.3 ALTERNATIVES REJECTED AS INFEASIBLE

In accordance with CEQA Guidelines §15126.6 (c), a CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Section 15126.6 (c) also states that among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: 1) failure to meet most of the basic project objectives; 2) infeasibility; or, 3) inability to avoid significant environmental impacts.

As noted in Section 6.2, the range of feasible alternatives to the 2012 AQMP is limited by the nature of the proposed project and associated legal requirements. Similarly, the range of alternatives considered, but rejected as infeasible is also relatively limited. The following

subsections identify two potential alternatives to the 2012 AQMP, but were rejected for the reasons explained in each subsection.

6.3.1 No Project Alternative – No Further Action

CEQA documents typically assume that the adoption of a no project alternative would result in no further action on the part of the project proponent or lead agency. For example, in the case of a proposed land use project such as a housing development, adopting the No Project Alternative terminates further consideration of that housing development or any housing development alternative identified in the associated CEQA document. In that case, the existing setting would typically remain unchanged.

The concept of taking no further action (and thereby leaving the existing setting intact) by adopting a No Project Alternative does not readily apply to an update of an already adopted and legally mandated plan such as the AQMP. Adopting a no project alternative for an update to the AQMP does not imply that no further action will be taken (e.g., halting implementation of the existing AQMP). The federal and state Clean Air Acts require the SCAQMD to revise and implement the AQMP in order to attain all state and national ambient air quality standards. A no further action no project alternative in the case of the AQMP is not a legally viable alternative. Consequently, the No Project Alternative presented in this [Final Program](#) EIR is the continued implementation of the 2007 AQMP. Although it is unclear whether or not continued implementation of the 2007 AQMP is a feasible alternative because the SCAQMD is required to submit to U.S. EPA a PM_{2.5} AQMP that demonstrates attainment of the 2006 24-hour PM_{2.5} national ambient air quality standard by December 14, 2012, as explained above. However, continued implementation of the 2007 AQMP as the No Project Alternative is consistent with CEQA Guidelines §15126.6 (e)(2) (*italics added*):

“The ‘no project’ analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, *as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services...*”

It should be noted that, except for air quality, there would be no further incremental impacts on the existing environment if no further action is taken. Although there are existing rules that may have future compliance dates, potential adverse impacts from these rules have already been evaluated in the Final Program EIR for the 2007 AQMP and subsequent rule-specific CEQA documents. Air quality would continue to improve to a certain extent, but it is unlikely that all state or federal ozone standards would be achieved as required by the federal and California CAAs. It is possible that the federal 24-hour PM_{2.5} standard may be achieved; however, it is unlikely that further progress would be made towards achieving the state PM_{2.5} standard as required by the California CAA.

6.3.2 More NO_x Reductions Through Accelerated Penetration of Alternative Fuel Mobile Sources

This NO_x heavy emission reduction alternative would have relied on accelerated penetration of alternative fuel on-road and off-road mobile sources. Specifically, this alternative would have required 50 percent of all heavy-duty on-road mobile sources subject to CARB's adopted Truck and Bus Regulation to meet the requirement of replacing heavy-duty on-road trucks and buses with trucks and buses that comply with the 2010 model year or newer final requirements by the year 2014. Similarly, this alternative would have required 50 percent of all off-road mobile sources subject to CARB's adopted off-road mobile sources regulations to meet the requirement of replacing heavy-duty off-road mobile sources that comply with Tier 4 or equivalent requirements by the year 2014.

Converting heavy-duty on-road mobile sources to year 2010 model year engines or off-road mobile sources to Tier 4 or equivalent standards has typically required incentive funding to offset the typically higher costs of the cleaner vehicles. Incentive funding sources include Carl Moyer or Proposition 1B funds. This NO_x heavy emission reduction alternative is considered to be economically infeasible because insufficient funding would be available to meet the 50 percent penetration rate in the 2012 to 2014 timeframe.

6.3.3 Alternative Location

CEQA requires consideration of an alternative location alternative if significant effects of the project would be avoided or substantially lessened by putting the project in another location. Pursuant to CEQA Guidelines §15126.6 (f)(2)(B), if the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR. For example, in some cases there may be no feasible alternative locations for a geothermal plant or mining project which must be in close proximity to natural resources at a given location. The 2012 AQMP applies to the entire area of the SCAQMD's jurisdiction. The SCAQMD has no authority to adopt and enforce 2012 AQMP control measures in areas outside its jurisdiction. CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws (CEQA Guidelines §15040 (b)). Therefore, an alternative locations alternative is not considered to be a feasible alternative

6.4 ALTERNATIVES TO THE 2012 AQMP

Because of the substantial emission reductions necessary to bring the region into attainment with the federal 24-hour PM_{2.5} standard, as well as the eight-hour ozone, the SCAQMD is relatively limited with regard to the number of potential alternatives to the 2012 AQMP. As a result, with the exception of the No Project Alternative, all project alternatives include the same short-term control measures to attain the federal 24-hour standard because of the requirement to attain the standard by 2014 and these measures would regulate or further regulate PM emission sources where emission reductions are feasible.

Although most of the project alternatives also include long-term measures, the primary difference between the various alternatives is the pollutant control strategies being

employed. The alternatives rely to a greater or lesser extent on PM control to attain the federal 24-hour PM_{2.5} standard or NO_x control to, not only attain the federal 24-hour PM_{2.5} standard, but to demonstrate progress in attaining the federal ozone standards as well. Similarly, the pollutant control strategy of the alternative may determine the extent to which the SCAQMD and CARB will rely on specific emission source categories to obtain future emission reductions. This means that the SCAQMD and CARB may rely to a greater or lesser extent on emission reductions from some source categories (e.g., on- and off-road mobile sources), compared to other source categories. The following subsections provide a brief description of the alternatives.

6.4.1 Alternative 1 – No Project Alternative (Continued Implementation of the 2007 AQMP)

CEQA requires the specific alternative of no project to be evaluated. A No Project Alternative consists of what would occur if the proposed project was not approved; in this case, not adopting the 2012 AQMP. The net effect of not adopting the 2012 AQMP would be a continuation of the 2007 AQMP. This approach is consistent with CEQA Guidelines §15126.6 (e)(3)(A), which states: "When no project is the revision on an existing land use or regulatory plan, policy or ongoing operation, the 'no project' alternative will be the continuation of the existing plan, policy, or operation into the future. Typically this is a situation where other projects initiated under the existing plan will continue while the new plan is developed. Thus, the projected impacts of the proposed plan or alternative plans would be compared to the impacts that would occur under the existing plan."

Between 2008 and 2011, twelve short-term control measures from the 2007 AQMP have been promulgated as rules or rule amendments by the SCAQMD. Promulgation of these 12 control measures has allowed the SCAQMD to achieve its stationary source emission reduction targets (see Table 1-2 in Chapter 1 of the 2012 AQMP). Similarly, since the 2007 AQMP was adopted, 2007 AQMP control measure commitments were adopted (either entirely or partially) by CARB (see Table 1-2 in Chapter 1 of the 2012 AQMP).

Based on the above information, it is assumed for this alternative that both the SCAQMD and CARB have achieved their 2007 AQMP short-term emission reduction targets. Therefore, the 2007 AQMP does not contain any remaining short-term stationary source or mobile source control measures (Table 6-1). Although there were a couple of short-term control measures remaining (e.g., BCM-05 - Emission Reductions from Under-fired Charbroilers, MCS-06 - Improved Start-up and Shutdown, and Turnaround Procedures, etc.), there are no emission reductions associated with them or they are, or will be under evaluation to determine the feasibility of potential emission reductions in the future. As a result, all remaining necessary emission reductions from continuing to implement the 2007 AQMP would be obtained through implementing CAA §182 (e)(5) ("black box") measures. Table 6-1 summarizes the components of Alternative 1 and associated assumptions.

TABLE 6-1
2012 AQMP and Alternatives

PLAN TYPE	ATTAINMENT YEAR	STATIONARY SOURCE CMS	ON-ROAD MOBILE SOURCE CMS	OFF-ROAD MOBILE SOURCE CMS	COMMENT
Proposed Project – 2012 AQMP					
<p>1. PM2.5 Attainment Plan (Includes Ozone Attainment Control Measures)</p> <p>2. Federal 1-hour Ozone Attainment Demonstration (Includes 7 2007 AQMP Mobile Source CMs)</p> <p>3. VMT Offset Requirement Demonstration</p>	<p>1. PM2.5 – 2014</p> <p>2. 1-hour Ozone Demonstration – 2022</p> <p>3. 8-hour Ozone – 2023</p>	<p>8 categories:</p> <p>1) PM Sources (4 CMs);</p> <p>2) Combustion (4 CMs);</p> <p>3) Coatings & Solvents (4 CMs);</p> <p>4) Petroleum Operations & Fugitive VOC (3 CMs);</p> <p>5) Multiple Component (3 CMs);</p> <p>6) Indirect (1 CM);</p> <p>7) Incentive (2 CMs); &</p> <p>8) Educational (1CM)</p>	<p>5 CMs:</p> <p>1) Accelerated Penetration – light, medium, & medium HD vehicles (2 CMS);</p> <p>2) Accelerated retirement of – light, medium, & HD vehicles (2 CMS); &</p> <p>3) Emission reductions from near-dock railyard drayage trucks (1 CM)</p>	<p>5 CMS:</p> <p>1) Emission reductions from construction equipment (1CM)</p> <p>2) Emission reductions from freight & passenger locomotives (2 CMs)</p> <p>3) Emission reductions from marine vessels (2 CMs)</p> <p>7 ADV CMs for future studies to further reduce emission from off-road sources</p>	<p>Includes episodic CMs:</p> <p>BCM-01 Further Emissions Reductions from Wood Burning Devices (Rule 445) &</p> <p>BCM-02 Further Reductions from Open Burning (Rule 444. ADV CMs are CAA §182 (e)(5) black box measures.</p>

TABLE 6-1 (Continued)
2012 AQMP and Alternatives

PLAN TYPE	ATTAINMENT YEAR	STATIONARY SOURCE CMS	ON-ROAD MOBILE SOURCE CMS	OFF-ROAD MOBILE SOURCE CMS	COMMENT
Alternative 1 – No Project Alternative					
Continue Implementing 2007 AQMP: PM2.5 & 8-hour Ozone Attainment Plans	PM2.5 – 2019 Ozone – 2023	Assumes no remaining short-term CMS	Assumes no remaining short-term CMS	Assumes no remaining short-term CMS	SCAQMD & CARB have met their emission reduction obligations, so no other short-term CMS adopted. It is assumed all remaining necessary emission reductions obtained through adopting CAA §182 (e)(5) “black box” CMS, see Table 6-2.
Alternative 2 – PM2.5 Attainment Plan Localized PM Control in Mira Loma Area					
PM2.5 Attainment Plan (Includes Ozone Attainment Control Measures)	PM2.5 – 2017 Ozone – 2023	Same as 2012 AQMP except includes: 1) Multiple Component – 3 new localized episodic CMS for Mira Loma: CMALT-2A Reductions From Mobile Sources Serving Warehouse And Distribution Centers; CMALT-2B Residential Wood Burning Devices; & CMALT-2C Ammonia Reductions from Livestock Waste 2) Excludes BCM-02 Open burning	Same as 2012 AQMP	Same as 2012 AQMP	Excludes BCM-02 Further Reductions from Open Burning, (Rule 444). MCS CMS are episodic & would apply only to the Mira Loma area. This alternative was originally the 2012 AQMP project in the June 28, 2012 NOP/IS. Includes CAA §182 (e)(5) “black box” CMS

TABLE 6-1 (Continued)
2012 AQMP and Alternatives

PLAN TYPE	ATTAINMENT YEAR	STATIONARY SOURCE CMS	ON-ROAD MOBILE SOURCE CMS	OFF-ROAD MOBILE SOURCE CMS	COMMENT
Alternative 3 – Greater Reliance on NOx Emissions Reductions					
PM2.5 Attainment Plan (Includes Ozone Attainment Control Measures)	PM2.5 – 2017 Ozone – 2023	Same as 2012 AQMP except excludes: BCM-01 Further Emissions Reductions from Wood Burning Devices, (Rule 445)	Same as 2012 AQMP except includes: ONRD-03 Accelerated implementation of CARB’s On-road Truck & Bus Regulation ^a from adoption date of 2008. Double CARB’s assumed 2017 penetration rate of fleet to new 2010 model-year engines (assumes 25% of the total fleet go to CNG & the rest go to compliant diesel engines)	Same as 2012 AQMP except includes: OFFRD-01 Accelerated implementation of CARB’s Off-road Vehicle Regulation ^b from adoption date of 2007. Double CARB’s assumed 2017 turnover rate of the fleet to cleaner engines or comparable.	Note: BCM-02 Further Reductions from Open Burning, is included in this alternative. Includes CAA §182 (e)(5) “black box” CMs.

^a Can be found at: <http://www.arb.ca.gov/msprog/onroadhd/onroadhd.htm>

^b Can be found at: <http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm>

TABLE 6-1 (Concluded)
2012 AQMP and Alternatives

PLAN TYPE	ATTAINMENT YEAR	STATIONARY SOURCE CMS	ON-ROAD MOBILE SOURCE CMS	OFF-ROAD MOBILE SOURCE CMS	COMMENT
Alternative 4 – PM2.5 Emissions Reduction Strategies Only					
PM2.5 Control Measures Only, No Ozone Control Measures	PM2.5 – 2014	Same as 2012 AQMP 5 categories: 1) PM Sources (4 CMs); 2) Combustion (1 CM); 3) Multiple Component (1 CM); 4) Indirect (1 CM); 5) Educational (1 CM)	None	None	<p>1. Does not include CAA §182 (e)(5) “black box” measures.</p> <p>2. Includes implementing all remaining 2007 AQMP ozone control measures.</p>

Table 6-2 shows the black box measure strategies from the 2007 AQMP. Because all control measures in Table 6-2 regulate mobile sources or the VOC content in consumer products, they are all considered to be ozone reduction control measures. The only exceptions to this assumption are the renewable energy and AB32 implementation control measures, which primarily address GHG emissions. Otherwise, there are no control measures in Alternative 1 that specifically address reducing PM_{2.5} emissions.

Although Table 6-2 shows the 2007 AQMP black box measures and also shows the §182 (e)(5) control measures from the 2012 AQMP that affect the same emissions sources, this does not imply that the 2007 AQMP measures analyzed in this [Final](#) Program EIR will be updated to conform to the 2012 AQMP control measures. The descriptions of the black box control measures from the 2007 AQMP analyzed here are exactly the same as their descriptions in the 2007 AQMP.

TABLE 6-2

Long-Term (Black Box) Control Measures from the 2007 AQMP

SOURCE CATEGORY	METHOD OF EMISSIONS CONTROL	2012 AQMP CONTROL MEASURES AFFECTING SAME SOURCE
Light Duty Vehicles (SCLTM-01A)	Extensive retirement of high-emitting vehicles and accelerated penetration of ATPZEVs and ZEVs	ONRD-01 & ADV-01
On-Road Heavy Duty Vehicles (SCLTM-01B)	<ul style="list-style-type: none"> Expanded modernization and retrofit of heavy-duty trucks and buses Expanded inspection and maintenance program Advanced near-zero and zero-emitting cargo transportation technologies 	ONRD-03, ONRD-05 & ADV-06
Off-Road Vehicles (SCLTM-02)	Expanded modernization and retrofit of off-road equipment	OFFRD-01 & ADV-06
Consumer Products (SCLTM-03)	Ultra Low-VOC formulations; Reactivity-based controls	CTS-04
Fuels	More stringent gasoline and diesel specifications; Extensive use of diesel alternatives	No update ^a
Marine Vessels	More stringent emission standards and programs for new and existing ocean-going vessels and harbor craft	IND-01, OFFRD-05 & ADV-05
Locomotives	Advanced near-zero and zero emitting cargo transportation technologies	OFFRD-02 & ADV-02

TABLE 6-2 (CONCLUDED)

Long-Term (Black Box) Control Measures from the 2007 AQMP

SOURCE CATEGORY	METHOD OF EMISSIONS CONTROL	2012 AQMP CONTROL MEASURES AFFECTING SAME SOURCE
Pleasure Craft	Accelerated replacement and retrofit of high-emitting engines	No update ^a
Aircraft	More stringent emission standards for jet aircraft (engine standards, clean fuels, retrofit controls); Airport bubble	ADV-07
Renewable Energy	Accelerated use of renewable energy and development of hydrogen technology and infrastructure	No update ^a
AB32 Implementation	Concurrent criteria pollutant reduction technologies	No update ^a

^a No update means that the control measures have not been updated as part of the 2012 AQMP, which primarily addresses attaining the federal 24-hour PM_{2.5} standard, [but also includes a federal one-hour ozone attainment demonstration](#).

The No Project Alternative analyzed here will take into account the most current air quality setting (2008) and will include updated and refined control measures, but no new control measures (Table 6-2).

6.4.2 Alternative 2 – PM_{2.5} Attainment Plan Localized PM Control in Mira Loma Area

Alternative 2 is the 2012 AQMP project that was included in the 8/24/12 NOP/IS. This alternative is similar to the currently proposed 2012 AQMP with the following exceptions. Alternative 2 does not include Control Measure BCM-02 – Further Emission reductions from open burning because this measure was not included as part of the 2012 AQMP project description in the 8/24/12 NOP/IS. Alternative 2 includes the same episodic control measures that would apply only to the Mira Loma area and described in the June 28, 2012 NOP/IS. The episodic control measures for the Mira Loma area, shown in Figure 6-1, are described in the following paragraphs.

Control Measure MCS-04 contains three sub-control measures, two PM_{2.5} control measures and one ozone control measure, targeting specific sources around Mira Loma (approximately within a 10-mile radial), including mobile sources serving warehouse and distribution centers, residential wood burning devices (e.g., fireplaces and wood stoves), and livestock waste. Air quality data through 2011 show that the Mira Loma monitoring station in western Riverside County is the only monitoring station violating the federal 24-hour PM_{2.5} standard. Emissions sources in the Mira Loma area that contribute to violations of the federal 24-hour PM_{2.5} standard include: 1) local PM emissions from the large concentration of warehouses that attract heavy-duty diesel haul trucks; and 2) transport of

ammonia, a PM precursor, from dairies located downwind of the Mira Loma area (Figure 6-1). Therefore, the purpose of the sub-control measures under MCS-04 is to achieve a 1.0 $\mu\text{g}/\text{m}^3$ PM_{2.5} air quality improvement (based on the 24-hour design value) at the Mira Loma station through targeted reductions of direct PM and NO_x emissions from various sources in the areas around the monitoring station.

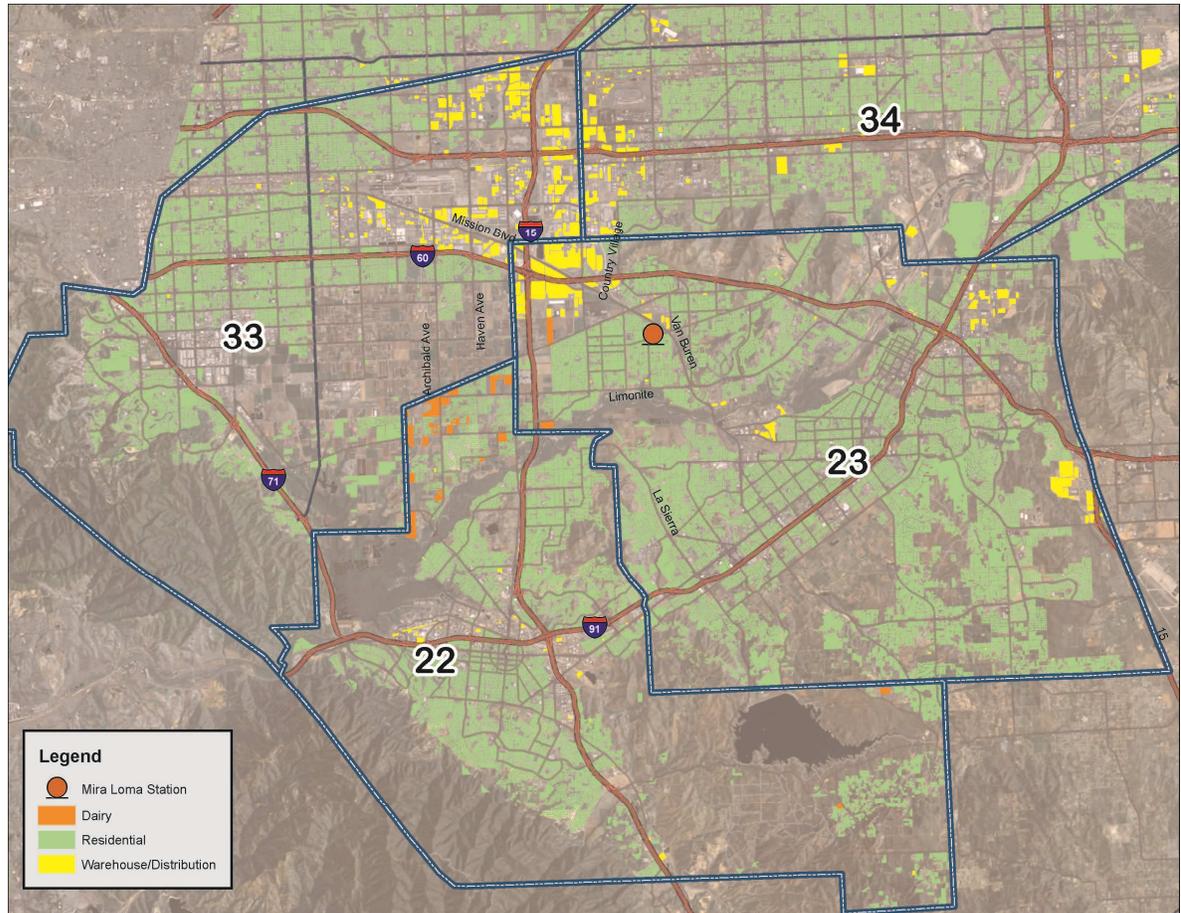


FIGURE 6-1

PM_{2.5} Emission Sources in the Mira Loma Area
(Numbers Represent Source Receptor Areas)

These control measures would be implemented sequentially and as needed to meet the 24-hour PM_{2.5} standard at the Mira Loma monitoring station. The mobile source control measure would be implemented initially, followed by the wood burning devices control measure. In the event ambient data indicate the 24-hour PM_{2.5} standard continues to be exceeded in Mira Loma in 2014 (single year, 98th percentile), the livestock measure would then be implemented in 2015 specifically applicable to dairies. If the 24-hour PM_{2.5} standard is not exceeded, each subsequent year would then be similarly assessed. U.S. EPA has suggested that such localized, and in some cases episodic or seasonal controls can be a very cost effective strategy for achieving the NAAQSs.

The specific sub-control measures identified in the 6/28/12 NOP/IS under MCS-04 were labeled as Control Measures MCS-04A, MCS-04B, and MCS-04C. They are relabeled to avoid confusion with the 2012 AQMP and are summarized in the following paragraphs.

CMALT-2A (formerly MCS-04A and merged into ONRD-04 of the 2012 AQMP) Further Emission Reductions From Mobile Sources Serving Warehouse And Distribution Centers Located Around The Mira Loma Region [NO_x, PM]: Over the past decade, warehouse and distribution centers have been steadily increasing in size and number throughout the region. The greatest growth in warehouses/distribution centers has been in the Riverside area, especially the Mira Loma area (Figure 6-1), and San Bernardino areas. According to SCAG, by 2035 over one billion square feet of warehousing will be needed in the southern California area to support goods movement activities (SCAG, 2010).

Distribution centers and/or warehouses are facilities that serve as a distribution point for the transfer of goods. Such facilities include cold storage warehouses, goods transfer facilities, and transloading facilities, where imported goods are sorted, tagged, repackaged and prepared for retail distributions. These operations involve trucks, trailers, shipping containers, and other equipment with diesel engines. A warehouse/distribution center can be comprised of multiple centers or warehouse/distribution centers within an area. The size can range from 100,000 square feet to well over one million square feet. Depending on the size and type, a warehouse/distribution center may have hundreds of diesel trucks per day that deliver, load, and/or unload goods, generally operating seven days per week. To the extent that these trucks are transporting perishable goods, they are equipped with diesel-powered transport refrigeration units (TRUs) or TRU generator sets. The activities associated with delivering, storing, and loading freight produces NO_x and PM emissions, including diesel particulate matter (DPM).

This sub-control would be a voluntary incentive program with the intent of reducing emission from older, pre-2010 heavy-duty vehicles beyond the emission reductions targeted in CARB's Truck and Bus Regulation. In addition, the proposed action would direct a portion of available public funding to assist in replacing older diesel trucks serving warehouse and distribution centers to a truck with an engine meeting on-road heavy-duty exhaust emission standards by 2015. The incentive program would place the highest priority on on-road vehicles that provide at least 75 percent of their service to warehouse and distribution centers in the Mira Loma region and have gross vehicle weight ratings of 26,001 lbs or greater.

Sub-Control Measure MCS-04 would only implemented if the federal 24-hour PM_{2.5} standard is exceeded. If needed to demonstrate attainment of the 24-hour PM_{2.5} standard at the Mira Loma monitoring station, Sub-Control Measure MCS-04 would be implemented first of the three sub-control measures. If the 24-hour PM_{2.5} standard is not exceeded in the Mira Loma area in 2014 (single year, 98th percentile), PM_{2.5} concentrations in each subsequent year would then be similarly assessed for any exceedances of the federal 24-hour PM_{2.5} standard.

CMALT-2B (formerly 2007 AQMP Control Measure BCM-03; MCS-04B in the 6/28/12 NOP/IS; and is BCM-01 in the 2012 AQMP) Further Reductions from Residential Wood Burning Devices in Mira Loma Region [PM2.5] SCAQMD Rule 445 – Wood Burning Devices, was adopted in 2008 and prohibits the burning of any product not intended for use as a fuel (e.g., trash) in a wood burning device and requires commercial firewood facilities to only sell seasoned firewood (20 percent or less moisture content) from July through February. Rule 445 also establishes a mandatory wood burning curtailment program that extends from November 1 through the end of February each winter season. During a wood burning curtailment period, the public is required to refrain from both indoor and outdoor solid fuel burning in specific areas where PM2.5 air quality is forecast to exceed $35 \mu\text{g}/\text{m}^3$ (federal 24-hour standard).

Under Sub-Control Measure CMALT-2B the current mandatory wood burning curtailment threshold would be lowered from $35 \mu\text{g}/\text{m}^3$ to a more conservative $30 \mu\text{g}/\text{m}^3$. This means that a mandatory wood burning curtailment would be implemented in the Mira Loma area when a PM2.5 level of greater than $30 \mu\text{g}/\text{m}^3$ is forecast at monitoring stations in the Mira Loma area at any monitoring station at which the design value has exceeded the current PM2.5 24-hour standard of $35 \mu\text{g}/\text{m}^3$ for either of the two previous years. The design value is the three-year average of the annual 98th percentile of monitored ambient PM2.5 data.

It is expected that, initially, the wood burning curtailment program would continue to target winter season emissions. In addition, the feasibility of an enhanced program to incentivize the purchase of gaseous fueled devices would be explored relative to areas in Mira Loma that are affected by high PM2.5 concentrations. For example, an enhanced incentive program for the Mira Loma community could result in the installation of as many as 2,000 units in existing residential homes.

It is expected that this sub-control measure would be implemented only if the federal PM2.5 standard continues to be exceeded in the Mira Loma area. In this situation, Sub-Control Measure CMALT-2A would be implemented first to address exceedances of the federal PM2.5 standard. If, after implementing Sub-Control Measure CMALT-2A, exceedances continue and data indicate the 24-hour PM2.5 standard is exceeded in Mira Loma in 2014 (single year, 98th percentile), only then would Sub-Control Measure CMALT-2B be implemented. If the 24-hour PM2.5 standard is not exceeded in the Mira Loma area in 2014 (single year, 98th percentile), PM2.5 concentrations in each subsequent year would then be similarly assessed for any exceedances of the federal 24-hour PM2.5 standard.

CMALT-2C (formerly 2007 AQMP Control Measure MCS-05; MCS-04C in the 6/28/12 NOP/IS and BCM-04 in the 2012 AQMP) Further Ammonia Reductions from Livestock Waste in Mira Loma Region [Ammonia] Ammonia contributes to formation of PM2.5 and mixes with transport emissions, particularly to form aerosol ammonium nitrate and ammonium sulfate. Livestock waste produces appreciable amounts of ammonia emissions. With the approval of Proposition 2 (known as cage-free proposition that passed in 2008), economic, and product demand climate, the livestock industry in the South Coast jurisdiction is not considered a growth industry

into the future. Currently, however, there continues to be large concentrations of dairies downwind of the Mira Loma area (Figure 6-1), which contributes to exceedances of the federal PM_{2.5} standard.

Like 2012 AQMP Control Measure BCM-04, the purpose of the sub-control measure is to reduce ammonia emissions from livestock operations with emphasis on dairies in the Mira Loma area. This control measure would reduce the pH level in manure through the application of acidulant additives (acidifier) as mitigation for ammonia. The acidifier sodium bisulfate (SBS) is being considered for use in animal housing areas where high concentrations of fresh manure are. Research indicates best results with the use of SBS on localized “hot spots.” SBS can also be applied to manure stock piles, high manure concentrations at fence lines, and when scraping manure to reduce ammonia spiking from the leftover remnants of manure and urine. Implementing this measure would become effective in the event ambient data indicates the 24-hour PM_{2.5} standard is exceeded in Mira Loma in 2014 (single year, 98th percentile). Before implementing Sub-Control Measure CMALT-2C, Sub-Control Measures CMALT-2A and MCS-04 B would be implemented. The livestock measure would then be implemented in 2015, specifically applicable to dairies. If not exceeded, each subsequent year would then be similarly assessed. In the interim, a pilot program will be conducted to further evaluate the application of SBS at local dairies so as to evaluate the direct technical and economic feasibility of application.

6.4.3 Alternative 3 – Greater Reliance on NO_x Emissions Reductions

Alternative 3 would rely to a greater extent on NO_x emission reductions, primarily from on- and off-road mobile sources as described in the following paragraphs, to achieve the federal 24-hour PM_{2.5} standard. Greater reliance on NO_x emission reductions is considered a viable alternative because NO_x is not only a PM_{2.5} precursor, it is also an ozone precursor, so this alternative would also be consistent with the SCAQMD’s efforts to continue making expeditious progress in attaining the federal one-hour and eight-hour ozone standards.

Because this alternative relies more heavily on NO_x emission reductions to attain the federal 24-hour PM_{2.5} standard, it does not include Control Measure BCM-01 - Further Emissions Reductions from Wood Burning Devices. Although direct PM_{2.5} emission reductions are more effective than NO_x in reducing PM_{2.5} concentrations, early and greater reliance on Basin-wide NO_x emission reductions from on- and off-road mobile sources would not only assist with attaining the PM_{2.5} standard, they would also contribute to making greater progress in attaining the one-hour and eight-hour ozone standards than might otherwise be the case. Otherwise Alternative 3 includes all of the same PM_{2.5} control measures as the 2012 AQMP.

Generally, Alternative 3 includes all of the same ozone control measures as the 2012 AQMP, which includes stationary source control measures and CAA §182 (e)(5) stationary source, on-road mobile source, off-road mobile source, and advanced . Two ozone Control Measures, ONRD-03 and OFFRD-01, would be modified under Alternative 3 as explained in the following paragraphs.

Control Measure ONRD-03 would be modified to accelerate implementation of CARB's on-road truck and bus regulation, which was originally adopted December 12, 2008. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Heavier trucks must be retrofitted with PM filters beginning January 1, 2012, and older trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The CARB regulation applies to nearly all privately- and federally-owned diesel fueled trucks and buses and privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. Small fleets with three or fewer diesel trucks can delay compliance and there are a number of extensions for low-mileage construction trucks, early PM filter retrofits, adding cleaner vehicles, and other situations. Privately and publicly owned school buses have different requirements.

Under Alternative 3 and ozone Control Measure ONRD-03, the rate of compliance with the statewide on-road truck and bus regulation would double by the year 2017 compared to the estimated compliance provided by CARB in the existing regulation for year 2017. Compliance with the increased penetration rate would be with engines that meet 2010 exhaust emission standards. Because there is more than one engine type that complies with the year 2010 engine exhaust requirements, it is unknown what the exact breakdown of compliant engine types will be in operation. Therefore, under this alternative it is assumed that 25 percent of the additional vehicles complying with the year 2010 engine exhaust standards would comply using CNG engines and the remainder would comply using diesel engines.

SCAQMD staff estimates that Alternative 3 could result in approximately 5,000 additional medium-heavy-duty trucks (14,000 to 26,000 pounds gross vehicle weight) complying with the year 2010 engine exhaust requirements for the years 2013 through 2017. This means that over the five years 2013 through 2017, 1,000 additional medium-heavy-duty trucks would comply with the year 2012 engine exhaust requirements. Consistent with the above assumption, approximately 250 of these medium-heavy-duty trucks would comply using CNG engines, while the remaining 750 would be compliant diesel or diesel hybrid trucks.

Finally, Alternative 3 ozone Control Measure OFFRD-01 would require accelerated implementation of CARB's off-road diesel vehicle regulation, which was originally adopted July 26, 2007. The overall purpose of the off-road regulation is to reduce NOx and PM emission from off-road diesel vehicles operating within California through increased turnover of older higher emitting vehicles to newer cleaner ones. The regulation applies to self-propelled diesel-fueled vehicles in California (except for agricultural or personal use, or for use at ports or intermodal railyards) with engines with a maximum rating of 25 horsepower or greater. The requirements and compliance dates of the Off-Road regulation vary by fleet size. To determine the size of their fleets, fleet operators must add up all of the off-road horsepower (hp) under common ownership or control in the fleet. For example, a small fleet would be comprised of a fleet with a total horsepower rating of less than or equal to 2,500 hp; a medium fleet would be comprised of a fleet with a total horsepower rating of 2,501 to 5,000 hp; and a large fleet would be comprised of a fleet with a total horsepower rating of over 5,000 hp (all state and federal fleets would be classified as large fleets

regardless of hp rating). Large, medium and small fleets must begin complying with regulation requirements by the beginning of 2014, 2017, and 2019 respectively.

Alternative 3 ozone Control Measure OFFRD-01 would require CARB to amend the off-road vehicle regulation to require doubling the implementation rate of the regulation such that the emission reductions expected by 2021 (the 8th year of compliance) would be realized by the year 2017. SCAQMD staff estimates that doubling the implementation rate of CARB's off-road vehicle regulation would result in approximately 19,344 additional off-road engine repowers or vehicle replacements over the years 2014 to 2017 (Table 6-3). The reason that the accelerated regulation affects more than three times the number of vehicles, instead of simply doubling the number is that the regulation was designed to regulate more vehicles in the later years (the vehicle turnover percentage rises from 8 percent to 10 percent in 2018 and the small fleets need to comply beginning in 2019).

TABLE 6-3

Number of Additional Off-Road Vehicles Affected by Alternative 3

YEAR	CURRENT RULE	ACCELERATED RULE	# OF ADDITIONAL VEHICLES
2014	2,447	5,500	3,053
2015	3,186	5,164	1,978
2016	1,982	10,087	8,105
2017	3,536	9,742	6,206
Total	11,150	30,494	19,344

6.4.4 Alternative 4 – PM2.5 Emissions Reduction Strategies Only

As requested by the public during the public comment period for the June 28, 2012 NOP/IS, the SCAQMD has incorporated a PM2.5 reduction strategies only alternative. Alternative 4 is considered to be a legally viable alternative because the SCAQMD is only required to submit PM2.5 plan demonstrating attainment of the 2006 24-hour PM2.5 National Ambient Air Quality Standard no later than three years from the effective date of designation of nonattainment of the federal 24-hour PM2.5 standard, December 14, 2012. However, there is no federal requirement to submit an ozone plan by the same date as the PM2.5 plan, December 14, 2012.

Alternative 4 would only include the control measures in Table 6-4. None of the remaining CAA §182 (e)(5) control measures, which include all remaining stationary source control measures (see Table 4-3, 2012 AQMP) and all on-road, off-road, and ADV control measures (see Table 4-6, 2012 AQMP) would be included in Alternative 4.

Creating a PM2.5 reduction strategies only alternative means that the Ozone SIP portion of the 2007 AQMP would remain in effect. This means that the CAA §182 (e)(5) black box measures shown in Table 6-2 would continue to be considered for promulgation into rules or

regulations in the future. Consequently the environmental analysis for this alternative would include potentially significant adverse environmental impacts from the measures listed in Tables 6-2 and 6-4.

TABLE 6-4

List of SCAQMD's Adoption/Implementation Dates and Estimated Emission Reductions from Short-Term PM_{2.5} Control Measures

NUMBER	TITLE	ADOPTION	IMPLEMENTATION PERIOD	REDUCTION (TPD)
CMB-01	Further NO _x Reductions from RECLAIM [NO _x] –Phase I	2013	2014	2-3
BCM-01	Further Reductions from Residential Wood Burning Devices [PM _{2.5}]	2013	2013-2014	7.1 ^a
BCM-02	Further Reductions from Open Burning [PM _{2.5}]	2013	2013-2014	4.6 ^b
BCM-03 (formerly BCM-05)	Emission Reductions from Under-Fired Charbroilers [PM _{2.5}]	Phase I – 2013 (Tech Assessment) Phase II - TBD	TBD	1 ^c
BCM-04	Further Ammonia Reductions from Livestock Waste [NH ₃]	Phase I – 2013-2014 (Tech Assessment) Phase II - TBD	TBD	TBD ^d
IND -01 (formerly MOB-03)	Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources [NO _x , SO _x , PM _{2.5}]	2013	12 months after trigger	N/A ^e
EDU-01 (formerly MCS-02, MCS-03)	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]	Ongoing	Ongoing	N/A ^e
MCS-01 (formerly MCS-07)	Application of All Feasible Measures Assessment [All Pollutants]	Ongoing	Ongoing	TBD ^d

Source: Table 4-2, 2012 Air Quality Management Plan

- Winter average day reductions based on episodic conditions and 75 percent compliance rate.
- Reductions based on episodic day conditions.
- Will submit into SIP once technically feasible and cost effective options are confirmed.
- TBD means reductions to be determined once the technical assessment is complete, and inventory and control approach are identified.
- N/A means reductions that cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs) or if the measure is designed to ensure reductions that have been assumed to occur will in fact occur.

6.5 ALTERNATIVES ANALYSIS

The following subsections include the same environmental topic areas evaluated for the proposed 2012 AQMP. Under each environmental topic area, impacts and significance conclusions are summarized for the proposed 2012 AQMP. In addition, potential impacts generated by each alternative to that environmental topic are described, a significance determination is made for the alternative, and environmental impacts from each alternative are compared to the environmental impacts identified for the proposed project.

6.5.1 Aesthetics

The potential direct and indirect aesthetics impacts from implementing the proposed project and the project alternatives were evaluated. The following subsections provide brief discussions of direct and indirect aesthetics impacts from each alternative relative to the 2012 AQMP.

6.5.1.1 Proposed Project

Potential direct and indirect aesthetics impacts from the 2012 AQMP are summarized in the following subsections. For the complete analysis of potential aesthetics impacts from implementing the 2012 AQMP, refer to Subchapter 4.1 – Aesthetics.

6.5.1.1.1 *PM2.5 Control Measures*

The analysis in Subchapter 4.1 indicated that no 2012 AQMP PM2.5 control measures were identified that have the potential to significantly adversely affect aesthetics resources. Therefore, potential impacts to aesthetics resources are concluded to be less than significant.

6.5.1.1.2 *Ozone Control Measures*

The analysis in Subchapter 4.1 identified the following 2012 AQMP ozone control measures as having the potential to create significant adverse aesthetics impacts, including visual impacts and impacts to scenic highways, ozone Control Measures ONRD-05, ADV-01, and ADV-2. These control measures identify “wayside” power (such as electricity from overhead wires) as one of the zero emission technologies that could be used to reduce emissions from heavy-duty trucks and locomotives. Wayside power technologies include overhead catenary lines, where power is delivered from the electrical grid through the overhead wire to a pantograph on the vehicle itself. Catenary systems are well-established and efficient in light-rail applications, trolley cars and buses, and even mining trucks.

Control Measure ADV-01 indicates that the I-710 corridor was selected as high priority for introduction of zero-emission technology¹. The 2012-2035 RTP/SCS also designates a route

¹ Los Angeles County Metropolitan Transportation Authority, *Alternative Goods Movement Technology Analysis-Initial Feasibility Study Report, Final Report: I-710 Corridor Project EIR/EIS*. Prepared by URS. January 6, 2009.

along the State Route 60 freeway as an east-west freight corridor². Both of these corridors are currently heavily used freight corridors. In addition, there is currently a pilot project under consideration to install catenary lines at one of two sites, a site along the Terminal Island Freeway and on Navy Way at the Port of Los Angeles. Further, the most likely areas affected by these control measures are likely to be within five miles of the San Pedro Bay Ports complex because the heavy-duty truck measures affect near-dock truck transport. Finally, the I-710 freeway, State Route 60, and the roadways that may be chosen for the pilot project are not identified as scenic highways or eligible to be classified as scenic roadways nor are there any scenic highways or highways eligible for state scenic highway status.

6.5.1.1.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, it was concluded in Subchapter 4.1 that the construction and operation of the catenary or overhead power lines that could be used to power Zero and Near Zero vehicles and locomotives are not expected to be visible to any Scenic Highway or any roadway eligible as a Scenic Highway. Therefore, project-specific aesthetics impacts associated with the 2012 AQMP are less than significant.

Since, anticipated project-specific aesthetics impacts from the 2012 AQMP are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). In Chapter 5 potential project-specific aesthetics impacts from the 2012 AQMP were evaluated in connection with aesthetic impacts from SCAG's 2012-2035 RTP/SCS. Further, it was concluded that aesthetics impacts from the 2012 AQMP would not contribute to significant adverse cumulative aesthetics impacts from the 2012-2035 RTP/SCS. Since aesthetics impacts from the 2012 AQMP are not cumulatively considerable and don't contribute to cumulative impacts generated by the 2012-2035 RTP/SCS, cumulative aesthetics impacts from the 2012 AQMP are not significant.

6.5.1.2 *Alternative 1 – No Project Alternative*

The Program EIR for the 2007 AQMP included environmental analyses for all control measures, including the black box control measures. As discussed in Chapter 2 of this [Final](#) Program EIR for the 2012 AQMP, all of the SCAQMD's and CARB's short- and mid-term control measures have been adopted. The only remaining control measures are the black box measures. Since the 2007 AQMP now includes only black box measures, the aesthetics impacts analysis for Alternative 1 will focus only on potential aesthetics impacts identified for the black box measures. Potential aesthetics impacts from implementing Alternative 1 are described in the Subsections 6.5.1.2.2 and 6.5.1.2.3.

² Los Angeles County Metropolitan Transportation Authority, *Alternative Goods Movement Technology Analysis-Initial Feasibility Study Report, Final Report: I-710 Corridor Project EIR/EIS*. Prepared by URS. January 6, 2009.

6.5.1.2.1 *Alternative 1 Analysis Assumptions*

If 2007 AQMP black box control measures contributed to impacts in any environmental topic areas that were concluded to be less than significant, it is assumed that they would continue to contribute impacts to those environmental topic areas, but impacts would be less than significant. Conversely, if 2007 AQMP black box control measures contributed to impacts to any environmental topic areas that were concluded to be significant, it is assumed for this analysis that they would continue to contribute to significant adverse impacts to those environmental topic areas. If 2007 AQMP black box control measures were not identified as contributing to impacts to an environmental topic area, for this analysis it was also assumed that they would not contribute to impacts to those environmental topic areas. For example, if it was concluded in the 2007 AQMP that the overall significance determination for an environmental topic area would be significant, but no black box control measures contributed to that significant adverse impact, it is assumed here that black box control measures that are part of Alternative 1 would also not contribute to significant adverse impacts to that environmental topic area. These same assumptions will be used for all subsequent environmental topics analyzed under Alternative 1.

6.5.1.2.2 *PM2.5 Control Measures*

As discussed in Subsection 6.4.1, Alternative 1 has no control measures that are considered to be PM2.5 control measures. For this reason and the fact that aesthetics was not an environmental topic identified in the NOP/IS for the 2007 AQMP that could be adversely affected by that AQMP, Alternative 1 is not expected to create any impacts to aesthetics resources from PM2.5 control measures.

6.5.1.2.3 *Ozone Control Measures*

All remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. As shown in Table 6-2, 2012 AQMP Control Measure ONRD-05 would regulate the same emissions sources as 2007 AQMP Control Measure Off-Road Vehicles (SCLTM-02) (e.g., heavy-duty trucks using control technologies such as: expanded modernization and retrofit of heavy-duty trucks and buses; expanded inspection and maintenance program; and advanced near-zero and zero-emitting cargo transportation technologies). However, catenary systems were not identified as a possible method of reducing heavy-duty truck emissions. In fact, it was concluded in the NOP/IS for the 2007 AQMP that some control measures may have beneficial effects on scenic resources by improving visibility as well as improving air quality, preventing smoke, limiting opening burning and wood burning; and minimizing fugitive dust emissions. Therefore, it is concluded that Alternative 1 does not have the potential to generate significant adverse aesthetics impacts.

6.5.1.2.4 *Project-specific and Cumulative Impacts Conclusion*

The NOP/IS for the 2007 AQMP concluded that the 2007 AQMP ozone control measures would not generate any aesthetics impacts. Therefore, consistent with the assumptions in

Subsection 6.5.1.2.1, it is presumed that, overall, Alternative 1 would not generate significant adverse project-specific aesthetics impacts.

Since, anticipated project-specific aesthetics impacts from Alternative 1 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project specific aesthetics impacts would be approximately equivalent to those generated by the 2012 AQMP, Alternative 1 would also not contribute to significant adverse cumulative impacts generated by the 2012-2035 RTP/SCS. Since aesthetics impacts from Alternative 1 are not cumulatively considerable, cumulative aesthetics impacts from Alternative 1 are not significant.

6.5.1.3 Alternative 2 – PM2.5 Attainment Plan Localized PM Control in Mira Loma Area

As explained in Subsection 6.4.2, with the exception of the two episodic PM2.5 control measures for Mira Loma³, CMALT-2B (formerly MCS-04B in the 6/28/12 NOP/IS) and CMALT-2C (formerly MCS-04C in the 6/28/12 NOP/IS), and one episodic ozone Control Measure CMALT-2A (formerly MCS-04A in the 6/28/12 NOP/IS), Alternative 2 includes all of the same PM2.5 and ozone control measures as the 2012 AQMP, except for PM2.5 Control Measure BCM-02 – Open Burning. As explained in the following subsections, potential aesthetics impacts from implementing Alternative 2 would be the same as potential aesthetics impacts from implementing the 2012 AQMP. For the complete analysis of aesthetics impacts from the 2012 AQMP, refer to Subchapter 4.1 – Aesthetics. Potential aesthetics impacts from implementing Alternative 2 are described in the following subsections.

6.5.1.3.1 PM2.5 Control Measures

Similar to the analysis of aesthetics impacts for the 2012 AQMP in Subchapter 4.1, no PM2.5 control measures were identified from implementing Alternative 2 that have the potential to significantly adversely affect aesthetics resources. The two episodic control measures in this alternative that would apply only to the Mira Loma area do not contain any provisions for reducing heavy-duty truck emissions using wayside electricity such as catenary electric lines. None of the two PM2.5 control measures in the 2012 AQMP that regulates the same sources as the episodic control measures in Alternative 2 was identified as contributing to aesthetics impacts. Therefore, potential impacts to aesthetics resources from implementing the 2012 AQMP were concluded to be less than significant. This same conclusion applies to Alternative 2.

6.5.1.3.2 Ozone Control Measures

Because Alternative 2 contains the same ozone control measures as the 2012 AQMP, except that ozone control measures CMALT-2A (similar to 2012 [AQMP](#) Control Measure ONRD-04) applies only to the Mira Loma area, aesthetics impacts from implementing Alternative 2

³ As indicated in Subsection 6.4.2, Alternative 2 control measures CMALT-2C, which would reduce ammonia emissions from livestock waste in the Mira Loma area, is identical to 2012 control measure BCM-04.

ozone control measures would be the same as the aesthetics impacts from implementing the 2012 AQMP ozone control measures. As shown in the analysis of aesthetics impacts for the 2012 AQMP in Subchapter 4.1, implementing ozone control measures from Alternative 2 (e.g., ozone Control Measures ONRD-05, ADV-01, and ADV-2) has the potential to generate adverse impacts to aesthetics resources, scenic highways in particular. No other 2012 AQMP ozone control measures were identified that could affect aesthetic resources. Such impacts associated with implementing the 2012 AQMP ozone control measures would be less than significant, as no scenic highways or highways eligible for scenic highway status would be adversely affected as a result of installing catenary lines in the future. This same conclusion applies to Alternative 2 because it contains the same three ozone control measures that have the potential to affect aesthetics resources.

6.5.1.3.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, potential project-specific adverse aesthetics impacts from Alternative 2 would be the same as potential project-specific aesthetics impacts from the 2012 AQMP and less than significant, because construction and operation of the catenary or overhead power lines that could be used to power Zero and Near Zero vehicles and locomotives are not expected to be visible to any Scenic Highway or any roadway eligible as a Scenic Highway.

Since, anticipated project-specific aesthetics impacts from Alternative 2 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project specific aesthetics impacts would be equivalent to those generated by the 2012 AQMP, Alternative 2 would also not contribute to significant adverse cumulative impacts generated by the 2012-2035 RTP/SCS. Since aesthetics impacts from Alternative 2 are not cumulatively considerable, cumulative aesthetics impacts from Alternative 2 are not significant and equivalent to the 2012 AQMP.

6.5.1.4 *Alternative 3 – Greater Reliance on NOx Emissions Reductions*

As explained in Subsection 6.4.3, Alternative 3 includes all of the same PM_{2.5} control measures as the 2012 AQMP except it does not include 2012 AQMP Control Measure BCM-01. With regard to ozone control measures, with the exceptions of 2012 AQMP Control Measures ONRD-03 and OFFRD-01, all other ozone control measures are the same as those in the 2012 AQMP. As explained in the following subsections, potential aesthetics impacts from implementing Alternative 3 would be the same as potential aesthetics impacts from implementing the 2012 AQMP. For the complete analysis of aesthetics impacts from the 2012 AQMP, refer to Subchapter 4.1 – Aesthetics.

6.5.1.4.1 *PM_{2.5} Control Measures*

Similar to the analysis of aesthetics impacts for the 2012 AQMP in Subchapter 4.1, no PM_{2.5} control measures were identified from implementing Alternative 3 that have the potential to significantly adversely affect aesthetics resources. Potential impacts to aesthetics resources from implementing the 2012 AQMP were concluded to be less than significant (see Subchapter 4.1 of this [Final](#) Program EIR). This same conclusion applies to Alternative 3.

6.5.1.4.2 *Ozone Control Measures*

Similar to the analysis of aesthetics impacts for the 2012 AQMP in Subchapter 4.1, implementing ozone control measures from Alternative 3 (e.g., ozone Control Measures ONRD-05, ADV-01, and ADV-02) has the potential to generate adverse impacts to aesthetics resources, scenic highways in particular. No other 2012 AQMP ozone control measures were identified that could affect aesthetic resources. Such impacts associated with implementing 2012 AQMP ozone control measures would be less than significant, as no scenic highways or highways eligible for scenic highway status would be adversely affected as a result of installing catenary lines in the future. This same conclusion applies to Alternative 3 because it contains the same three ozone control measures that have the potential to affect aesthetics resources.

6.5.1.4.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, potential project-specific adverse aesthetics impacts from Alternative 3 would be the same as potential project-specific aesthetics impacts from the 2012 AQMP and less than significant, because construction and operation of the catenary or overhead power lines that could be used to power Zero and Near Zero vehicles and locomotives are not expected to be visible to any Scenic Highway or any roadway eligible as a Scenic Highway.

Since, anticipated project-specific aesthetics impacts from Alternative 3 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project specific aesthetics impacts would be approximately equivalent to those generated by the 2012 AQMP, Alternative 3 would also not contribute to significant adverse cumulative impacts generated by the 2012-2035 RTP/SCS. Since aesthetics impacts from Alternative 3 are not cumulatively considerable, cumulative aesthetics impacts from Alternative 3 are not significant and equivalent to the 2012 AQMP.

6.5.1.5 *Alternative 4 – PM2.5 Reduction Strategies Only*

As explained in Subsection 6.4.4, Alternative 4 would only include the PM2.5 control measures in Table 6-4 of this chapter. For the complete analysis of aesthetics impacts from 2012 AQMP PM2.5 control measures, refer to Subchapter 4.1 – Aesthetics. Because Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2. As a result, impacts from implementing 2007 AQMP black box control measures would be the same as for Alternative 1. Potential aesthetics impacts from implementing Alternative 4 are described in the following subsections.

6.5.1.5.1 *PM2.5 Control Measures*

Similar to the analysis of aesthetics impacts for the 2012 AQMP in Subchapter 4.1, no PM2.5 control measures were identified from implementing Alternative 4 that have the potential to significantly adversely affect aesthetics resources. Potential impacts to aesthetics resources from implementing the 2012 AQMP were concluded to be less than

significant (see Subchapter 4.1 of this [Final Program EIR](#)). This same conclusion applies to Alternative 4.

6.5.1.5.2 Ozone Control Measures

Adopting Alternative 4 means that the ozone SIP portion of the 2007 AQMP would remain in effect. As shown in Table 6-2 and discussed in subsection 6.5.1.2.3, 2012 AQMP Control Measure ONRD-05 would regulate the same emissions sources as 2007 AQMP Control Measure On-road Heavy-duty Vehicles (SCLTM-01B) (e.g., heavy-duty trucks using control technologies such as: expanded modernization and retrofit of heavy-duty trucks and buses; expanded inspection and maintenance program; and advanced near-zero and zero-emitting cargo transportation technologies). However, catenary systems were not identified as a possible method of reducing heavy-duty truck emissions. In fact, it was concluded in the NOP/IS for the 2007 AQMP that some control measures may have beneficial effects on scenic resources by improving visibility as well as improving air quality, preventing smoke, limiting opening burning and wood burning; and minimizing fugitive dust emissions. Therefore, it is concluded that Alternative 4 does not have the potential to generate significant adverse aesthetics impacts and impacts would be less than aesthetics impacts from the 2012 AQMP.

6.5.1.5.3 Project-specific and Cumulative Impacts Conclusion

Based upon the above conclusions, when considering overall aesthetics impacts from implementing Alternative 4, no significant adverse aesthetics impacts were identified from implementing PM_{2.5} or ozone control measures. Therefore, it is presumed that Alternative 4 would not generate significant adverse aesthetics impacts. Finally, it is concluded that potential adverse aesthetics impacts from implementing Alternative 4 would be less than for the 2012 AQMP because unlike the 2012 AQMP, Alternative 4 does not contain any control measures that adversely affect aesthetics resources.

Since, anticipated project-specific aesthetics impacts from Alternative 4 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project specific aesthetics impacts would be less than those generated by the 2012 AQMP, Alternative 4 would also not contribute to significant adverse cumulative impacts generated by the 2012-2035 RTP/SCS. Since aesthetics impacts from Alternative 4 are not cumulatively considerable, cumulative aesthetics impacts from Alternative 4 are not significant and less than the 2012 AQMP.

6.5.2 Air Quality

The potential direct air quality effects of implementing the proposed project and the project alternatives were modeled to determine their effectiveness in attaining the federal 24-hour PM_{2.5} standard. Modeling was also conducted to evaluate the effectiveness of the proposed project and project alternatives with regard to continued progress in achieving the one-hour and eight-hour ozone standards by 2023. Potential adverse secondary air quality impacts for the proposed project and project alternatives were also evaluated. The following subsections

provide brief discussions of direct and indirect air quality impacts from each alternative relative to the 2012 AQMP.

6.5.2.1 Methodology

The same models and methodology used to evaluate the effects of 2012 AQMP control measures were used to evaluate direct air quality impacts from the project alternatives. The methodology and assumptions used to analyze direct air quality impacts are summarized in the following paragraphs. For more complete discussions of the models and assumptions, the reader is referred to Chapter 5 of the 2012 AQMP and 2012 AQMP Appendix [V5](#) – Modeling and Attainment Demonstrations.

PM_{2.5} is either directly emitted into the atmosphere (primary particles) or is formed through atmospheric chemical reactions from precursor gases (secondary particles). While the primary particles include road dust, diesel soot, combustion products, and other sources of fine particles, the secondary particles, such as sulfates, nitrates, and complex carbon compounds are formed from reactions with precursor pollutants, such as SO_x, NO_x, VOCs, and ammonia. These secondary particles make up most of the fine particle pollution in the Basin. Accordingly, reductions of the precursor pollutants contribute to lower ambient PM_{2.5} concentration levels so various combinations of reductions of these pollutants could all provide different paths to attaining the 24-hour PM_{2.5} standard.

The full extent of PM_{2.5} chemistry is extremely complex and can be calculated only with a very comprehensive numerical model that incorporates various mechanisms of chemical reactions, mixing, dispersion, removal process, and so on.

The Final 2007 AQMP established a set of factors relating regional per ton precursor emissions reductions to microgram per cubic meter improvements of ambient PM_{2.5} for the annual average concentration. The current CMAQ model simulations provide a similar set of factors, but this time related to 24-hour average PM_{2.5}. For 24-hour average PM_{2.5}, the simulations determined that VOC emissions reductions have the lowest benefit in terms of micrograms per cubic meter ambient PM_{2.5} reduced per ton of emissions reduction, half of NO_x's effectiveness. The analysis further indicated that SO_x emissions were about six times more effective than NO_x, and that directly emitted PM_{2.5} is approximately 14 times more effective than NO_x. It is important to note that the contribution of ammonia emissions is embedded as a component of the SO_x and NO_x factors, since ammonium nitrate and ammonium sulfate are the resultant particulate compounds formed in the ambient chemical process.

The 2012 AQMP PM_{2.5} attainment demonstration has been developed using the U.S. EPA supported Community Multiscale Air Quality (CMAQ) modeling platform, and the Weather Research and Forecasting Model (WRF) meteorological fields. The WRF meteorological simulations were initialized from National Centers for Environmental Prediction (NCEP) analyses and run for four-day increments with the option for four dimensional data assimilation (FDDA).

The emission inventory was prepared with a series of processes to retrieve stationary, mobile, area and biogenic emissions sources. Day-specific point source emissions were extracted from the SCAQMD's stationary source and RECLAIM inventories. Mobile source emissions include weekday, Saturday, and Sunday emission profiles based on CARB's on-road mobile source 2011 Emission Factors model (EMFAC 2011); Caltrans weigh-in-motion profiles; vehicle population and miles traveled; and transportation analysis zone (TAZ) data provided by SCAG. The mobile source data and selected area source data were subjected to daily temperature corrections to account for enhanced evaporative emissions on warmer days. Gridded daily biogenic VOC emissions were provided by CARB using the Model of Emissions of Gases and Aerosols from Nature (MEGAN). Once the emissions inventories for the modeling base year (year 2008 in the 2012 AQMP) were established, future years' inventories for each of the project alternatives were developed based on control measures already adopted through previous AQMPs, inventory projections to future milestone years, and the proposed emission control strategies for each project alternative. This same methodology was applied to the project alternatives, except that the control strategies were modified to account for the different pollutant control strategies embodied in each alternative.

In addition to the numerical modeling, the 2012 AQMP approach to demonstrate attainment of the air quality standards relies heavily on the use of design values and relative response factors (RRF) to translate regional modeling simulation output to the form of the air quality standard. The design value is derived from three consecutive years of monitored data, averaged according to the form of the standard. The 24-hour PM_{2.5} design value is determined from the three-year average of the 98th percentile of all 24-hour concentrations sampled at a monitoring site. The annual PM_{2.5} design value is based on quarterly average PM_{2.5} concentrations, averaged by year, for a three-year period. The Relative Response Factor (RRF) is simply a ratio of future year predicted air quality with the control strategy fully implemented to the simulated air quality in the base year. From these two, the future year design value is estimated by multiplying the non-dimensional RRF by the base year design value and then compared with the standard to determine future year compliance.

Subsequent to the release of the Draft Program EIR, control measures with associated emission reduction values were re-evaluated for the 2012 AQMP and all alternatives resulting in minor modifications to the pollutant emissions inventories, NO_x equivalent values, and PM_{2.5} concentrations derived from the NO_x equivalent values. These minor revisions do not change any of the conclusions for air quality for the 2012 AQMP or any of the project alternatives.

6.5.2.2 Proposed Project

Potential direct and indirect air quality impacts from the 2012 AQMP are summarized in the following subsections. For the complete analysis, refer to Subchapter 4.2 – Air Quality.

6.5.2.2.1 *Direct Air Quality Impacts – PM_{2.5} Control Measures*

The 2012 AQMP demonstrated that the federal 24-hour and annual PM_{2.5} standards are predicted to be met in 2014 with implementation of the 2012 AQMP PM_{2.5} control strategy.

The highest 24-hour and annual PM_{2.5} in the Basin were predicted to be 34.2 µg/m³ and 13.8 µg/m³, respectively, which are lower than the federal standards. The 2012 AQMP control strategy targets directly emitted PM_{2.5}, as is evident in the 58 tons per day (tpd) of PM_{2.5} emissions in the 2012 AQMP.

TABLE 6-5
2012 AQMP – PM_{2.5} Remaining Inventory ^a (Tons/Day)

SOURCE CATEGORY	POLLUTANT				
	VOC	NO _x	CO	SO _x	PM _{2.5}
Baseline Year 2008 Average Annual Day (tpd)					
Total Stationary Sources	257	92	137	14	48
Total Mobile Sources	336	666	2,744	40	32
Total	593	758	2,881	54	80
Year 2014 – 2012 AQMP Average Annual Day (tpd) ^b					
Total Stationary Sources	234	77 ⁴	164	12	38
Total Mobile Sources	217	414 ²⁹	1,931	6	20
Total	451	491⁵⁰⁰	2,095	18	58
Year 2017 – 2012 AQMP Average Annual Day ^c (tpd)					
Total Stationary Sources	237	74 ⁶⁸	165	11	39
Total Mobile Sources	188	377	1,702	7	19
Total	425	451⁴⁵	1,867	18	58
Year 2019 – 2012 AQMP Average Annual Day ^c (tpd)					
Total Stationary Sources	239	6 ⁷²	165	11	40
Total Mobile Sources	170	331 ⁰	1,151	7	18
Total	409	403³⁹⁷	1,716	18	58

^a This table shows remaining emissions, not emission reductions. Remaining emission take into account emission reductions achieved or projected to be achieved from AQMP control measures and subtracted from the 2008 baseline.

^b Demonstrate attainment of the federal 24-hour PM_{2.5} standard.

^c Continues to demonstrate attainment of the federal 24-hour PM_{2.5} standard.

6.5.2.2.2 Direct Air Quality Impacts – Ozone Control Measures

~~Because~~ The 2012 AQMP is primarily a PM_{2.5} AQMP as required by the CAA, ~~all~~ primarily emission reductions are based on PM_{2.5} control measures. The 2012 AQMP also includes control measures for making expeditious progress in attaining the federal one-hour (revoked) and eight-hour ozone standards by the years 2022 – 2023, respectively. Table 6-6 shows that implementing the 2012 AQMP would continue to make progress towards attaining the federal one-hour and eight-hour ozone standards, but it would not attain either of the federal ~~one-hour or eight-hour ozone standards~~, as shown in Table 6-6. ~~However, is not technically an ozone attainment AQMP.~~ An ~~ozone attainment~~ AQMP specifically

[addressing the eight-hour ozone standard](#) will be prepared and submitted to U.S. EPA in 2015 as required by federal law.

[As indicated in Chapter 2, the U.S. EPA’s September 19, 2012 proposed “SIP call” and proposed withdrawing its approval/disapproval of the TCM demonstrations, also referred to as VMT emissions offset demonstrations, in the 2003 one-hour ozone plan and the 2007 eight-hour ozone plan. In response to U.S. EPA’s disapproval of the VMT emissions offset demonstrations, has resulted in the preparation of the *One-hour Ozone Attainment Demonstration* \(see 2012 AQMP Appendix VII\) and *VMT Offset Requirement Demonstration* \(2012 AQMP Appendix VIII\). These documents were reviewed by SCAQMD staff to determine any CEQA implications.](#)

[Because the federal one-hour ozone SIP includes all of the same ozone control measures already in the 2012 AQMP and the VMT offset demonstration showed that no new TCMs are required for the one-hour ozone SIP, this Final Program EIR for the 2012 AQMP also serves as the CEQA document for the one-hour ozone SIP. Further, *One-hour Ozone Attainment Demonstration* includes seven mobile source control measures from the 2007 AQMP. Because a CEQA document was prepared and certified for the 2007 AQMP and because the 2007 AQMP control measures do not require any changes, no further environmental analysis of the 2007 AQMP control measures is required.](#)

TABLE 6-6

2012 AQMP – Remaining Emission Inventory ^a for Ozone Attainment Evaluation (Tons/Day)

SOURCE CATEGORY	POLLUTANT	
	VOC	NO _x
Baseline Year 2008 Summer Planning Inventory (tpd)		
Total Stationary Sources	264	87
Total Mobile Sources	375	634
Total	639	721
Year 2023 – 2012 AQMP Summer Planning Inventory (tpd)		
Total Stationary Sources	254	66 ₉
Total Mobile Sources	177	227
Total	431	293 ₈₇
Year 2023 – Ozone Attainment Inventory (tpd)		
Total Carrying Capacity: 8-Hr standard ^b	420	114

^a This table shows remaining emissions, not emission reductions. Remaining emission take into account emission reductions achieved or projected to be achieved from AQMP control measures and subtracted from the 2008 baseline.

^b Inventory necessary to achieve 80 ppb to attain the federal eight-hour ozone standard by 2023.

6.5.2.2.3 *Secondary Air Quality Impacts – PM2.5 Control Measures*

Construction: Construction air quality impacts associated with a number of 2012 AQMP PM2.5 control measures were identified and evaluated. It was assumed that the following types of construction activities to implement 2012 AQMP PM2.5 control measures contribute to construction activities emission inventories: 1) additional infrastructure to support electric and alternative fuel vehicles; 2) additional infrastructure for stationary source controls; and, 3) additional infrastructure to support electrification of new sources. It was concluded that these PM2.5 control measures have the potential to contribute to significant adverse secondary air quality impacts as the increase in the construction emission inventories for CO and PM10 from the baseline to the year 2023 would increase in an amount that would exceed the applicable construction air quality significance thresholds of 550 and 150 pounds per day, respectively (refer to Table 4.2-4). Because future construction air quality impacts were concluded to be significant, seven mitigation measures were identified to reduce potentially significant CO and PM10 construction air quality impacts. In spite of implementing these eight construction air quality mitigation measures, CO and PM10 construction air quality impacts would remain significant.

Operation: Secondary air quality impacts associated with approximately seven 2012 AQMP PM2.5 control measures were also identified and evaluated. For example, several PM2.5 control measures have the potential to generate secondary criteria pollutant, toxic air contaminant, and GHG emissions from and electricity generation. Additional emission controls could result in increased electricity use and an associated increase in criteria pollutant and GHG combustion emissions. Further, increased use of alternative fuels could generate criteria pollutant and GHG emissions associated with the increased production. Installation of emission control technologies on some sources has the potential reduce engine efficiency resulting in combustion of more fuel and an increase in criteria pollutant and GHG emissions. Potential air toxic impacts could occur as a result of formulating coatings and solvents with more toxic materials than are currently used. The analysis concluded, however, that secondary operational emissions from increased electricity demand, control of stationary sources, coatings and solvents formulated with low VOC materials, use of alternative fuels in mobile sources, increase use of fuels due to reduction in fuel economy, miscellaneous sources, non-criteria pollutants, and global warming and ozone depletion would be less than significant.

6.5.2.2.4 *Secondary Air Quality Impacts – Ozone Control Measures*

Construction: Construction air quality impacts associated with approximately 14 2012 AQMP ozone control measures were identified and evaluated. It was assumed that the following types of construction activities to implement 2012 AQMP ozone control measures contribute to construction activities emission inventories: 1) additional infrastructure to support electric and alternative fuel vehicles; 2) additional infrastructure for stationary source controls; and, 3) additional infrastructure to support electrification of new sources. It was concluded that these ozone control measures have the potential to contribute to significant adverse secondary air quality impacts as the increase in the construction emission inventories for CO and PM10 from the baseline to the year 2023 would increase in an amount that would exceed the applicable construction air quality significance thresholds of

550 and 150 pounds per day, respectively (refer to Table 4.2-4). Because future construction air quality impacts were concluded to be significant, eight mitigation measures were identified to reduce potentially significant CO and PM10 construction air quality impacts. In spite of implementing these eight construction air quality mitigation measures, CO and PM10 construction air quality impacts would remain significant.

Operation: Secondary air quality impacts associated with a number of 2012 AQMP ozone control measures were also identified and evaluated. The following bullet points show potential impacts from implementing ozone control measures and the significance determination.

- **Secondary Emissions from Increased Electricity Demand:** While there may be an increase in electricity, the existing air quality rules and regulations are expected to minimize emissions associated with increased generation of electricity. The impacts associated with secondary emissions from increased electricity demand are expected to be less than significant.
- **Secondary Emissions from the Control of Stationary Sources:** No significant secondary air quality impacts from control of stationary sources were identified associated with implementation of the 2012 AQMP.
- **Secondary Emissions from Change in Use of Lower VOC Materials:** The secondary air quality impacts associated with reformulated products are expected to be less than significant.
- **Secondary Emissions from Mobile Sources:** The overall impact of mobile sources due implementation of the control measures has been considered less than significant for all pollutants.
- **Secondary Emissions from Increased Use of Fuels due to Reduction in Fuel Economy:** The reduction in fuel economy is expected to be about one percent for the affected sources so a potential increase in fuel use could occur. However, the overall focus of the 2012 AQMP is to reduce PM2.5 and ozone emissions, which is primarily driven by increasing use of cleaner fuels. Therefore, the impact of fuel economy is expected to be less than significant.
- **Secondary Emissions from Miscellaneous Sources:** The impacts of the control measures on secondary emissions from miscellaneous sources were determined to be less than significant.
- **Non-Criteria Pollutants:** Electrification may cause greater emissions of benzene, aldehydes, metals, and polynuclear aromatic hydrocarbons from fuel-based power generating facilities. However, if the process being electrified was previously powered by direct combustion of fossil fuels, then electrification may result in an overall decrease in toxic emissions. No significant secondary air quality impacts were identified from non-criteria pollutants, so no mitigation measures are required.
- **Global Warming and Ozone Depletion:** The 2012 AQMP is expected to have a net effect of reducing emissions of compounds that contribute to global warming and ozone depletion so that no significant adverse impacts are expected.

The air quality impacts associated with approximately 23 ozone control measures (see Table 4.2-1 in this [Final](#) Program EIR) were evaluated and determined to be less than significant for secondary emissions from increased electricity demand, control of stationary sources, change in use of lower VOC materials, mobile sources, increase in use of fuels due to reduction in fuel economy, miscellaneous sources, non-criteria pollutants, and global warming and ozone depletion.

6.5.2.2.5 *Project-specific and Cumulative Impacts Conclusion*

Based upon the above conclusions, the 2012 AQMP PM_{2.5} and ozone control measures have the potential to generate significant adverse project-specific construction CO and PM₁₀ air quality impacts. In spite of identifying eight construction air quality mitigation measures, project-specific construction CO and PM₁₀ air quality impacts would remain significant.

With regard to project-specific secondary operational air quality impacts, a number of different types of operational air quality impacts from both 2012 AQMP PM_{2.5} and ozone control measures were identified and analyzed. Based on the analysis of operational air quality impacts in Subchapter 4.2, operational air quality impacts were concluded to be less than significant. Since, anticipated project-specific construction CO and PM₁₀ impacts from the 2012 AQMP are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). In Chapter 5 potential project-specific air quality impacts from the 2012 AQMP were evaluated in connection with air quality impacts from SCAG's 2012-2035 RTP/SCS. Further, it was concluded that construction CO and PM₁₀ impacts from the 2012 AQMP would not contribute to significant adverse cumulative air quality impacts from the 2012-2035 RTP/SCS. Since construction CO and PM₁₀ impacts from the 2012 AQMP are cumulatively considerable and contribute to cumulative air quality impacts generated by the 2012-2035 RTP/SCS, cumulative construction air quality impacts from the 2012 AQMP are concluded to be significant.

Alternatively, since anticipated project-specific operational air quality impacts from the 2012 AQMP are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project specific operational air quality impacts would be less than those generated by the 2012 AQMP, the 2012 AQMP would also not contribute to significant adverse cumulative operational air quality impacts generated by the 2012-2035 RTP/SCS. Since project-specific operational air quality impacts from the 2012 AQMP are not cumulatively considerable, cumulative operational air quality impacts from the 2012 AQMP are not significant.

6.5.2.3 *Alternative 1 – No Project Alternative*

The Program EIR for the 2007 AQMP included environmental analyses for all control measures, including the black box control measures. As discussed in Chapter 2 of this [Final](#) Program EIR, all of the SCAQMD's and CARB's short- and mid-term control measures have been adopted. The only remaining control measures are the black box measures. Since

the 2007 AQMP now includes only black box measures, environmental impacts for Alternative 1 will focus only on potential impacts identified for the black box measures. The following subsections analyze potential direct air quality impacts from Alternative 1 and compare them to direct air quality impacts from the 2012 AQMP. After the direct air quality analysis, subsections include an analysis of potential secondary air quality impacts from implementing Alternative 1 are described and impacts are compared to the 2012 AQMP. For the complete analysis of direct and secondary air quality impacts from the 2012 AQMP, refer to Subchapter 4.2 – Air Quality.

6.5.2.3.1 Direct Air Quality Impacts – PM2.5 Control Measures

It is expected that air quality will continue to improve under Alternative 1 because of the adoption and implementation by the SCAQMD and CARB of short- and mid-term control measures with future compliance dates. As shown in Table 6-7, which shows the average annual day inventories for demonstrating attainment of the federal 24-hour PM2.5 standard, Alternative 1 would not achieve the federal 24-hour PM2.5 standard until 2019, whereas it is expected that the 2012 AQMP would achieve the federal 24-hour PM2.5 standard by the year 2014, as required by federal law.

The 2012 AQMP control strategy targets directly emitted PM2.5, as is evident in the remaining 58 tons per day PM2.5 emissions inventory in the attainment year 2014 compared to the 70 tons per day PM2.5 emissions inventory in the attainment year 2019 for Alternative 1. Although the remaining PM2.5 emissions inventory for the 2012 AQMP appear to be substantially less than the remaining PM2.5 emissions inventory for Alternative 1, both inventories attain the federal 24-hour PM2.5 standard. To understand how such different results could both demonstrate attainment it is necessary to view pollutant emissions in NOx equivalents.

TABLE 6-7
Alternative 1 – PM2.5 Remaining Inventory ^a (Tons/Day)

SOURCE CATEGORY	POLLUTANT				
	VOC	NOx	CO	SOx	PM2.5
Baseline Year 2008 Average Annual Day (tpd)					
Total Stationary Sources	257	92	137	14	48
Total Mobile Sources	336	666	2,744	40	32
Total	593	758	2,881	54	80
Year 2014 – Alternative 1 Average Annual Day (tpd) ^b					
Total Stationary Sources	234	77 3	164	12	50
Total Mobile Sources	217	429	1,931	6 7	20
Total	451	506 2	2,095	18 9	70
Year 2014 – 2012 AQMP Average Annual Day (tpd) ^c					
Total Stationary Sources	234	77 4	164	12	38
Total Mobile Sources	217	414 29	1,931	6 7	20
Total	451	491 500	2,095	18 9	58

TABLE 6-7 Concluded)Alternative 1 – PM_{2.5} Remaining Inventory ^a (Tons/Day)

SOURCE CATEGORY	POLLUTANT				
	VOC	NO _x	CO	SO _x	PM _{2.5}
Year 2019 – Alternative 1 Average Annual Day (tpd) ^c					
Total Stationary Sources	245	74	165	11	52
Total Mobile Sources	170	331	1,551	7	18
Total	415	405	1,716	18	70
Year 2019 – 2012 AQMP Average Annual Day (tpd)					
Total Stationary Sources	239	6 72	165	11	40
Total Mobile Sources	170	331 0	1,151	7	18
Total	409	403397	1,716	18	58

^a This table shows remaining emissions, not emission reductions. Remaining emission take into account emission reductions achieved or projected to be achieved from AQMP control measures and subtracted from the 2008 baseline.

^b Does **not** demonstrate attainment of the federal 24-hour PM_{2.5} standard.

^c Demonstrates attainment of the federal 24-hour PM_{2.5} standard.

PM_{2.5} has five major precursors that contribute to the development of the ambient aerosol including ammonia, NO_x, SO_x, VOC, and directly emitted PM_{2.5}. For this reason it is useful to weigh the value of the precursor emissions reductions (on a per ton basis) to microgram per cubic meter improvements in ambient PM_{2.5} levels. The 2012 AQMP CMAQ simulations determined that VOC emissions reductions have the lowest return in terms of micrograms reduced per ton reduction, one-half of the benefit of NO_x reductions. SO_x emissions were shown to be about six times more effective than NO_x reductions, while directly emitted PM_{2.5} reductions were shown to be approximately 14 times more effective than NO_x reductions. Applying these weighting factors to the VOC, NO_x, SO_x, and directly emitted PM_{2.5} inventory emissions provides NO_x equivalents, which can then be converted to concentrations in micrograms per cubic meter (µg/m³).

Table 6-8 shows NO_x equivalent emissions for each pollutant and total NO_x equivalent emissions from Alternative 1 compared to the 2012 AQMP for the 24-hour PM_{2.5} attainment years, 2019 and 2014, respectively. Table 6-8 also shows the corresponding PM_{2.5} concentrations. As can be seen in the table, the PM_{2.5} concentration in the 2019 attainment year for Alternative 1 is close to the PM_{2.5} concentration in 2014 attainment year for the 2012 AQMP and both demonstrate attainment of the federal 24-hour PM_{2.5} standard.

The 2012 AQMP control strategy targets directly emitted PM_{2.5}, as is evident in the 58 tons per day of remaining PM_{2.5} emissions from the 2012 AQMP in the year 2014 compared with 70 tons per day of remaining PM_{2.5} emissions in the year 2019 for Alternative 1. Attainment of the federal 24-hour PM_{2.5} standard by the year 2019 is primarily due to reductions in precursor pollutant emissions that form secondary particles rather than directly emitted PM. It is important to note that a greater portion of fine particles is produced

through a series of chemical reaction that involves precursor such as NO_x, VOCs, SO_x and ammonia.

TABLE 6-8
NO_x Equivalent Emissions ^a Comparison Between
Alternative 1 and the 2012 AQMP (Tons/Day)

	POLLUTANT					PM2.5 CONCENTRATION
	VOC	NO _x	CO ^b	SO _x	PM2.5	
Year 2019 – Alternative 1 Attainment (tpd) ^c						
Total Remaining Inventory	415	405 0	1,716	18	70	
NO _x Equivalents	195	405 0	--	100	998	1,698 3 35.4 µg/m ³
Year 2014 – 2012 AQMP Attainment (tpd) ^c						
Total Remaining Inventory	451	491 500	2,095	18 9	58	
NO _x Equivalents	212	491 500	--	108 6	827	1,638 45 34.2 µg/m ³

^a This table shows remaining emissions, not emission reductions.

^b CO does not contribute to PM2.5 formation, so it does not have a NO_x equivalent value.

^c Only emissions representing NO_x equivalents are added together because these are all ratios relative to NO_x emissions.

6.5.2.3.2 Direct Air Quality Impacts – Ozone Control Measures

Because the 2012 AQMP is a PM2.5 AQMP as required by the CAA, all emission reductions are based on PM2.5 control measures. The 2012 AQMP also includes ozone control measures to continue making expeditious progress towards achieving the federal one-hour and eight-hour ozone standards, but any emission reductions from these measures were not included in the analysis of direct air quality impacts.

Because most of the remaining “black box” control measures in the 2007 AQMP would regulate mobile sources, both on-road and off-road, in the future it is assumed that, similar to the CAA §182 (e)(5) mobile source measures in the 2012 AQMP, their primary objective is to make expeditious progress in attaining the federal one-hour and eight-hour ozone standards. However, the black box control measures in the 2007 consisted of general concepts and no emissions reductions were associated with them. The analysis of direct air quality impacts from Alternative 1 in Subsection 6.5.2.3.2 does not include any emission reductions from ozone control measures. As shown in Table 6-9, Alternative 1 would continue to make progress towards attaining the federal one-hour and eight-hour ozone standards, however, progress would not be as great as it would be under the 2012 AQMP.

6.5.2.3.3 Secondary Air Quality Impacts – PM2.5 Control Measures

As discussed in Subsection 6.4.1, Alternative 1 has no control measures that are considered to be PM2.5 control measures. For this reason, Alternative 1 is not expected to create any secondary construction or operational air quality impacts from PM2.5 control measures.

TABLE 6-9

Alternative 1 – Remaining Emission Inventory ^a for Ozone Attainment Evaluation (Tons/Day)

SOURCE CATEGORY	POLLUTANT	
	VOC	NOx
Baseline Year 2008 Summer Planning Inventory (tpd)		
Total Stationary Sources	264	87
Total Mobile Sources	375	634
Total	639	721
Year 2023 – Alternative 1 Summer Planning Inventory (tpd)		
Total Stationary Sources	261	70 63
Total Mobile Sources	177	249 50
Total	438	319 3
Year 2023 – 2012 AQMP Summer Planning Inventory (tpd)		
Total Stationary Sources	254	66 0
Total Mobile Sources	177	227
Total	431	293 87
Year 2023 – Ozone Attainment Inventory (tpd)		
Total Carrying Capacity: 8-Hr standard ^b	420	114

^a This table shows remaining emissions, not emission reductions. Remaining emission take into account emission reductions achieved or projected to be achieved from AQMP control measures and subtracted from the 2008 baseline.

^b Inventory necessary to achieve 80 ppb to attain the federal eight-hour ozone standard by 2023.

6.5.2.3.4 Secondary Air Quality Impacts – Ozone Control Measures

Potential impacts from adopting the 2007 AQMP were evaluated in the 2007 Program EIR. The 2007 Program EIR included an analysis of secondary air quality impacts from all control measures, including black box control measures. As noted in Subsection 6.4.1, both SCAQMD and CARB have achieved their 2007 AQMP short-term emission reduction targets, so the 2007 AQMP does not contain any remaining short-term stationary source or mobile source control measures the previously were identified as contributing to secondary air quality impacts. As a result, consistent with the assumption that significance determinations from the 2007 Program EIR continue to apply, it is concluded that Alternative 1 has the potential to generate potential secondary air quality impacts as shown in Table 6-10 and described in the following paragraphs.

TABLE 6-10^a

Environmental Impacts Identified for 2007 AQMP Black Box Measures

CONTROL MEASURE SOURCE CATEGORY	AIR QUALITY	ENERGY	HAZARDS AND HAZARDOUS MATERIALS	HYDROLOGY AND WATER QUALITY	SOLID AND HAZARDOUS MATERIALS WASTE
Light Duty Vehicles (SCLTM-01A)	None identified.	1. Potential increase in electricity demand. (NS)	None identified.	None identified.	None identified.
On-Road Heavy Duty Vehicles (SCLTM-01B)	None identified.	1. Potential increase in electricity demand. (NS)	None identified.	None identified.	1. Potential increase in solid waste due to accelerated vehicle replacement. (NS)
Off-Road Vehicles (SCLTM-02)	1. Decreased engine efficiency could reduce fuel economy and increase emissions. (NS) 2. Potential for passive filters to emit higher levels of NO ₂ . (NS)	1. Potential increase in electricity demand. (NS)	1. SCR to control NO _x could result in ammonia hazard impacts. (NS)	1. Potential impact on water demand and water quality. (NS) 2. Alternative formulations and additives can readily dissolve in water and impact ground and surface water. (NS)	1. Potential increase in solid waste due to accelerated vehicle replacement. (NS)
Consumer Products (SCLTM-03)	1. Increased air toxics emissions from products formulated with hazardous materials. (NS)	None identified.	1. Potential exposure to toxic air contaminant; flammability of reformulated material. (NS)	1. Potential increased use of water based formulations. (NS)	None identified.

^a The topics of aesthetics, land use and planning, noise, and transportation and traffic were concluded to be less than significant in the NOP/IS for the 2007 AQMP and, therefore, were not further analyzed in the 2007 Program EIR.

TABLE 6-10^a (Concluded)

Environmental Impacts Identified for 2007 AQMP Black Box Measures

SOURCE CATEGORY	AIR QUALITY	ENERGY	HAZARDS AND HAZARDOUS MATERIALS	HYDROLOGY AND WATER QUALITY	SOLID AND HAZARDOUS MATERIALS <u>WASTE</u>
Fuels	1. Construction impacts at refineries. (S) 2. Increase emissions at refineries to produce alt fuels. (NS)	None identified.	1. The use of alternative fuels and fuel additives can result in hazard impacts. (NS) 2. Production of alternative fuels could increase hazards at refineries. (S)	None identified.	None identified.
Marine Vessels	None identified.	None identified.	None identified.	None identified.	None identified.
Locomotives	None identified.	None identified.	1. SCR to control NOx could result in ammonia hazard impacts. (NS)	None identified	None identified.
Pleasure Craft	None identified.	None identified.	None identified.	None identified.	None identified.
Aircraft	None identified.	None identified.	None identified.	None identified	None identified.
Renewable Energy	None identified.	None identified.	None identified.	None identified.	None identified.
AB32 Implementation	None identified.	None identified.	None identified.	None identified.	None identified.

^a The topics of aesthetics, land use and planning, noise, and transportation and traffic were concluded to be less than significant in the NOP/IS for the 2007 AQMP and, therefore, were not further analyzed in the 2007 Program EIR.

Construction: Of the remaining black box measures, the Fuels control measure was identified as having the potential to generate significant adverse construction emissions from modifications at local refineries to produce reformulated gasoline. Phase 3 reformulated gasoline requirements were adopted by CARB in 2008, so potential construction air quality impacts from the Fuels control measure from the 2007 AQMP have already occurred. No other black box control measures were identified as having the potential to generate construction air quality impacts. Therefore, this impact is concluded to be less than significant.

Operation: Potential operational impacts (reduced engine efficiency resulting in higher emissions and passive filters increasing NOx emissions) from Alternative 1 black box measure SCLTM-02 were identified, but concluded to be less than significant. Similarly, black box Control Measure SCLTM-03 impacts (potential toxic emissions from reformulating consumer products) were identified and also concluded to be less than significant. Finally, the Fuels control measure impacts, potential emissions from refineries produce phase 3 reformulated gasoline were identified and concluded to be less than significant.

6.5.4.3.5 *Project-specific and Cumulative Impacts Conclusion*

Based on the above information, implementing Alternative 1 has no PM2.5 control measures that could generate project-specific construction or operational air quality impacts. The black box ozone control measures have the potential to generate project-specific operational air quality impacts, but these were concluded to be less than significant. Overall, Alternative 1 would not generate any significant adverse project-specific air quality impacts. Potential project-specific impacts from Alternative 1 are less than project-specific air quality impacts from the 2012 AQMP, but it would achieve the 24-hour federal PM2.5 standard in 2019 instead of 2014.

Since, anticipated project-specific air impacts from Alternative 1 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific air quality impacts would be less than those generated by the 2012 AQMP, Alternative 1 would not contribute to significant adverse cumulative air quality impacts generated by the 2012-2035 RTP/SCS. Since air quality impacts from Alternative 1 are not cumulatively considerable, air quality impacts from Alternative 1 are not significant.

6.5.2.4 *Alternative 2 – PM2.5 Attainment Plan Localized PM Control in Mira Loma Area*

As explained in Subsection 6.4.2, with the exception of the two episodic PM2.5 control measures for Mira Loma, CMALT-2B (formerly MCS-04B in the 6/28/12 NOP/IS) and CMALT-2C (formerly MCS-04C in the 6/28/12 NOP/IS), and one episodic ozone Control Measure, CMALT-2A (formerly MCS-04A in the 6/28/12 NOP/IS), Alternative 2 includes all of the same PM2.5 and ozone control measures as the 2012 AQMP, except for PM2.5 Control Measure BCM-02 – Open Burning. The following subsections analyze potential direct air quality impacts from Alternative 2 and compare them to direct air quality impacts from the 2012 AQMP. After the direct air quality analysis, subsections describing potential

secondary air quality impacts from implementing Alternative 2 are described and compared to the 2012 AQMP. For the complete analysis of direct and secondary air quality impacts from the 2012 AQMP, refer to Subchapter 4.2 – Air Quality.

6.5.2.4.1 Direct Air Quality Impacts – PM_{2.5} Control Measures

The 2012 AQMP control strategy targets directly emitted PM_{2.5}, as is evident in the 58 tons per day of remaining PM_{2.5} emissions from the 2012 AQMP in the attainment year 2014 compared with 64 tons per day of remaining PM_{2.5} emissions for Alternative 2 in the attainment year 2017 (Table 6-10). Attainment of the federal 24-hour PM_{2.5} standard by the year 2017 is primarily due to reductions in precursor pollutant emissions that form secondary particles rather than directly emitted PM. It is important to note that a greater portion of fine particles is produced through a series of chemical reaction that involves precursor such as NO_x, VOCs, SO_x and ammonia.

Table 6-12 shows NO_x equivalent emissions for each pollutant and total NO_x equivalent emissions from Alternative 2 compared to the 2012 AQMP for the 24-hour PM_{2.5} attainment years, 2017 and 2014, respectively. Table 6-12 also shows the corresponding PM_{2.5} concentrations. As can be seen in the table, the PM_{2.5} concentration in the 2017 attainment year for Alternative 2 is close to the PM_{2.5} concentration in 2014 attainment year for the 2012 AQMP and both demonstrate attainment of the federal 24-hour PM_{2.5} standard.

TABLE 6-11

Alternative 2 – PM_{2.5} Remaining Inventory (Tons/Day) ^a

SOURCE CATEGORY	POLLUTANT				
	VOC	NO _x	CO	SO _x	PM _{2.5}
Baseline Year 2008 Average Annual Day (tpd)					
Total Stationary Sources	257	92	137	14	48
Total Mobile Sources	336	666	2,744	40	32
Total	593	758	2,881	54	80
Year 2014 – Alternative 2 Average Annual Day (tpd) ^b					
Total Stationary Sources	234	734	164	12	43
Total Mobile Sources	217	429	1,931	7	20
Total	451	500	2,095	19	63
Year 2014 – 2012 AQMP Average Annual Day (tpd) ^c					
Total Stationary Sources	234	774	164	12	43.8
Total Mobile Sources	217	429	1,931	6.7	20
Total	451	506.0	2,095	18.9	63.58
Year 2017 – Alternative 2 Average Annual Day (tpd) ^c					
Total Stationary Sources	237	74.68	165	11	44
Total Mobile Sources	188	377	1,702	7	19
Total	425	451.45	1,867	18	63

TABLE 6-11 (Concluded)Alternative 2 – PM_{2.5} Remaining Inventory (Tons/Day) ^a

SOURCE CATEGORY	POLLUTANT				
	VOC	NO _x	CO	SO _x	PM _{2.5}
Year 2017 – 2012 AQMP Average Annual Day (tpd) ^d					
Total Stationary Sources	237	74 68	165	11	39
Total Mobile Sources	188	377	1702	7	19
Total	425	451 45	1,867	18	58

^a This table shows remaining emissions, not emission reductions. Remaining emission take into account emission reductions achieved or projected to be achieved from AQMP control measures and subtracted from the 2008 baseline.

^b Does **not** demonstrate attainment of the federal 24-hour PM_{2.5} standard.

^c Demonstrates attainment of the federal 24-hour PM_{2.5} standard.

^d Continues to demonstrate attainment of the federal 24-hour PM_{2.5} standard.

TABLE 6-12NO_x Equivalent Emissions ^a Comparison Between Alternative 2 and the 2012 AQMP (Tons/Day)

	POLLUTANT						PM _{2.5} CONCENTRATION
	VOC	NO _x	CO ^b	SO _x	PM _{2.5}	Total ^c	
Year 2017 – Alternative 2 Attainment (tpd) ^c							
Total Remaining Inventory	425	451 45	1,867	18	63		
NO _x Equivalents	200	451 45	--	100	898	1,649 3	34.5 µg/m ³
Year 2014 – 2012 AQMP Attainment (tpd) ^c							
Total Remaining Inventory	451	491 500	2,095	18 9	58		
NO _x Equivalents	212	491 500	--	108 6	827	1,638 45	34.2 µg/m ³

^a This table shows remaining emissions, not emission reductions.

^b CO does not contribute to PM_{2.5} formation, so it does not have a NO_x equivalent value.

^c Only emissions representing NO_x equivalents are added together because these are all ratios relative to NO_x emissions.

6.5.2.4.2 Direct Air Quality Impacts – Ozone Control Measures

Because the 2012 AQMP also includes control measures for making expeditious progress in attaining the federal one-hour and eight-hour ozone standards by the year 2023, a comparison of the summer planning inventories for ozone was also performed. As shown in Table 6-13, Alternative 2 would continue to make progress towards attaining the federal one-hour and eight-hour ozone standards to the same extent as the 2012 AQMP because

Alternative 2 contains all of the same control measures pertaining to reducing ozone concentrations as the 2012 AQMP.

6.5.2.4.3 Secondary Air Quality Impacts – PM2.5 Control Measures

Construction: The Alternative 2 PM2.5 control measures were evaluated and it was concluded that they would not contribute to construction air quality impacts. However, because all remaining PM2.5 control measures in Alternative 2 are identical to those in the 2012 AQMP, the same construction activities and associated construction emissions would occur. It was concluded that the 2012 AQMP PM2.5 control measures have the potential to contribute to significant adverse secondary air quality impacts as the increase in the construction emission inventories for CO and PM10 from the baseline to the year 2023 would increase in an amount that would exceed the applicable construction air quality significance thresholds of 550 and 150 pounds per day, respectively (refer to Table 4.2-4).

The same PM2.5 control measure construction air quality conclusion from the 2012 AQMP applies to Alternative 2. Similarly, because future construction air quality impacts from Alternative 2 were concluded to be significant, eight mitigation measures were identified to reduce potentially significant CO and PM10 construction air quality impacts. In spite of implementing these eight construction air quality mitigation measures, CO and PM10 construction air quality impacts from Alternative 2 would remain significant and equivalent to the 2012 AQMP.

TABLE 6-13

Alternative 2 – Remaining Emission Inventory for Ozone Attainment Evaluation ^a

SOURCE CATEGORY	POLLUTANT	
	VOC	NO _x
Baseline Year 2008 Summer Planning Inventory (tpd)		
Total Stationary Sources	264	87
Total Mobile Sources	375	634
Total	639	721
Alternative 2 Year 2023 Summer Planning Inventory (tpd)		
Total Stationary Sources	254	60
Total Mobile Sources	177	227
Total	431	293.87
2012 AQMP Year 2023 Summer Planning Inventory (tpd)		
Total Stationary Sources	254	60
Total Mobile Sources	177	227
Total	431	293.87
Year 2023 – Ozone Attainment Inventory (tpd)		
Total Carrying Capacity: 8-Hr standard ^b	420	114

^a This table shows remaining emissions, not emission reductions. Remaining emission take into account emission reductions achieved or projected to be achieved from AQMP control measures and subtracted from the 2008 baseline.

^b Inventory necessary to achieve 80 ppb to attain the federal eight-hour ozone standard by 2023.

Operation: Alternative 2 PM2.5 measures CMALT-2B (similar to 2012 AQMP PM2.5 Control Measure BCM-01) and CMALT-2C (the same as 2012 AQMP PM2.5 Control Measure BCM-04) were evaluated and it was concluded that they have the potential to generate criteria pollutant and GHG emissions from combustion sources. Because all remaining PM2.5 control measures in Alternative 2 are identical to those in the 2012 AQMP, the same operation activities and associated operation emissions would occur. The analysis concluded, however, that secondary operational emissions from increased electricity demand, control of stationary sources, coatings and solvents formulated with low VOC materials, use of alternative fuels in mobile sources, increase use of fuels due to reduction in fuel economy, miscellaneous sources, non-criteria pollutants, and global warming and ozone depletion as a result of implementing the 2012 AQMP would be less than significant. Because Alternative 2 Control Measure CMALT-2B (similar to 2012 AQMP PM2.5 Control Measure BCM-01) would only apply to the Mira Loma area, the magnitude of the criteria pollutant and GHG emissions would be less than the operation impacts from 2012 AQMP Control Measure BCM-01. Consequently, operational air quality impacts from Alternative 2 would be less than significant and slightly less than operational air quality impacts from the 2012 AQMP.

6.5.2.4.4 Secondary Air Quality Impacts – Ozone Control Measures

Construction: Alternative 2 Control Measure CMALT-2A (similar to 2012 AQMP Control Measure ONRD-04) was evaluated and it was concluded that it would not contribute to construction air quality impacts. Because all remaining ozone control measures in Alternative 2 are identical to those in the 2012 AQMP, the same construction activities and associated construction emissions would occur. It was concluded that the 2012 AQMP ozone control measures have the potential to contribute to significant adverse secondary air quality impacts as the increase in the construction emission inventories for CO and PM10 from the baseline to the year 2023 would increase in an amount that would exceed the applicable construction air quality significance thresholds of 550 and 150 pounds per day, respectively (refer to Table 4.2-4). This same conclusion applies to Alternative 2. Similarly, because future construction air quality impacts from Alternative 2 were concluded to be significant, eight mitigation measures were identified to reduce potentially significant CO and PM10 construction air quality impacts. In spite of implementing these eight construction air quality mitigation measures, CO and PM10 construction air quality impacts from Alternative 2 would remain significant and equivalent to the 2012 AQMP.

Operation: Alternative 2 Control Measure CMALT-2A (similar to 2012 AQMP Control Measure ONRD-04) was evaluated and it could potentially generate criteria pollutant, toxic air pollutant and GHG emissions from and electricity generation. Further, it has the potential generate emissions from demolition of retired vehicles. Because all remaining ozone control measures in Alternative 2 are identical to those in the 2012 AQMP, the same operation activities and associated construction emissions would occur. The analysis concluded, however, that secondary operational emissions from increased electricity demand, control of stationary sources, coatings and solvents formulated with low VOC materials, use of alternative fuels in mobile sources, increase use of fuels due to reduction in fuel economy, miscellaneous sources, non-criteria pollutants, and global warming and ozone depletion as a result of implementing the 2012 AQMP would be less

than significant. Because Alternative 2 Control Measure CMALT-2B (similar to 2012 AQMP PM2.5 Control Measure BCM-01) would only apply to the Mira Loma area, the magnitude of the criteria pollutant and GHG emissions would be less than the operation impacts from 2012 AQMP Control Measure BCM-01.

6.5.2.4.3 *Project-specific and Cumulative Impacts Conclusion*

Although the three episodic control measures for the Mira Loma area do not contribute to construction air quality impacts, all other control measures in Alternative 2 are identical to the control measures in the [2012 AQMP](#). Consequently, like the 2012 AQMP, Alternative 2 PM2.5 and ozone control measures have the potential to generate significant adverse project-specific construction CO and PM10 air quality impacts. In spite of identifying eight construction air quality mitigation measures, project-specific construction CO and PM10 air quality impacts would remain significant.

With regard to project-specific secondary operational air quality impacts, it was concluded that the three episodic control measures for the Mira Loma area contribute to operational air quality impacts. As already noted, all remaining PM2.5 and ozone control measures in Alternative 2 are identical to the 2012 AQMP PM2.5 and ozone control measures. As a result, operational air quality impacts from Alternative 2 were concluded to be less than significant. Because Alternative 2 Control Measures CMALT-2A (similar to 2012 AQMP PM2.5 control measure ONRD-04) and CMALT-2B (similar to 2012 AQMP PM2.5 Control Measure BCM-01) would only apply to the Mira Loma area, the magnitude of the criteria pollutant and GHG emissions would be less than the operation impacts from 2012 AQMP Control Measures ONRD-04 and BCM-01, respectively.

Since anticipated project-specific construction CO and PM10 air quality impacts from Alternative 2 are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Since project-specific construction CO and PM10 air quality impacts from Alternative 2 are cumulatively considerable, cumulative project-specific construction CO and PM10 air quality impacts from Alternative 2 are concluded to be significant. Further, since project-specific construction air quality impacts would be significant and equivalent to those generated by the 2012 AQMP, Alternative 2 would also contribute to significant adverse cumulative air quality impacts generated by the 2012-2035 RTP/SCS. No other construction air quality mitigation measures were identified that reduce cumulative construction CO and PM10 air quality impacts to less than significant.

Alternatively, since anticipated project-specific operational air quality impacts from the 2012 AQMP are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Since project-specific operational air quality impacts would be approximately equivalent to those generated by the 2012 AQMP, Alternative 2 would also not contribute to significant adverse cumulative operational air quality impacts generated by the 2012-2035 RTP/SCS. Since project-specific construction CO and PM10 air quality impacts from the 2012 AQMP are not cumulatively considerable, cumulative operational air quality impacts from the 2012 AQMP are not significant.

6.5.2.5 Alternative 3 – Greater Reliance on NOx Emissions Reductions

As explained in Subsection 6.4.3, Alternative 3 includes all of the same PM2.5 control measures as the 2012 AQMP except for 2012 AQMP Control Measure BCM-01. With regard to ozone control measures, with the exceptions of 2012 AQMP Control Measures ONRD-03 and OFFRD-01, all other ozone control measures are the same as those in the 2012 AQMP. The following subsections analyze potential direct air quality impacts from Alternative 3 and compare them to direct air quality impacts from the 2012 AQMP. After the direct air quality analysis, subsections describing potential secondary air quality impacts from implementing Alternative 3 are described and compared to the 2012 AQMP. For the complete analysis of direct and secondary air quality impacts from the 2012 AQMP, refer to Subchapter 4.2 – Air Quality.

6.5.2.5.1 Direct Air Quality Impacts – PM2.5 Control Measures

The 2012 AQMP control strategy targets directly emitted PM2.5, as is evident in the 58 tons per day of remaining PM2.5 emissions from the 2012 AQMP in the attainment year 2014 compared with 65 tons per day of remaining PM2.5 emissions for Alternative 3 in the attainment year 2017 (Table 6-14). Attainment of the federal 24-hour PM2.5 standard by the year 2017 is primarily due to reductions in precursor pollutant emissions that form secondary particles rather than directly emitted PM. It is important to note that a greater portion of fine particles is produced through a series of chemical reaction that involves precursor such as NOx, VOCs, SOx and ammonia.

TABLE 6-14

Alternative 3 – PM2.5 Remaining Inventory (Tons/Day) ^a

SOURCE CATEGORY	POLLUTANT				
	VOC	NOx	CO	SOx	PM2.5
Baseline Year 2008 Average Annual Day (tpd)					
Total Stationary Sources	257	92	137	14	48
Total Mobile Sources	336	666	2,744	40	32
Total	593	758	2,881	54	80
Year 2014 – Alternative 3 Average Annual Day (tpd) ^b					
Total Stationary Sources	234	77 +	164	12	45
Total Mobile Sources	217	429	1,931	6 7	20
Total	451	5060	2,095	189	65
Year 2014 – 2012 AQMP Average Annual Day (tpd) ^c					
Total Stationary Sources	234	77 +	164	12	38
Total Mobile Sources	217	414 29	1,931	6 7	20
Total	451	491500	2,095	189	58

TABLE 6-14 (Concluded)Alternative 3 – PM_{2.5} Remaining Inventory (Tons/Day) ^a

SOURCE CATEGORY	POLLUTANT				
	VOC	NO _x	CO	SO _x	PM _{2.5}
Year 2017 – Alternative 3 Average Annual Day (tpd) ^c					
Total Stationary Sources	234	72 66	114	11	42
Total Mobile Sources	186	344	1,702	7	19
Total	420	416 0	1,816	18	61
Year 2017 – 2012 AQMP Average Annual Day (tpd) ^d					
Total Stationary Sources	239 7	72 68	165	11	39
Total Mobile Sources	170 88	331 77	1,551 702	7	19
Total	409 25	403 45	1,716 867	18	58

^a This table shows remaining emissions, not emission reductions. Remaining emission take into account emission reductions achieved or projected to be achieved from AQMP control measures and subtracted from the 2008 baseline.

^b Does **not** demonstrate attainment of the federal 24-hour PM_{2.5} standard.

^c Demonstrates attainment of the federal 24-hour PM_{2.5} standard.

^d Continues to demonstrate attainment of the federal 24-hour PM_{2.5} standard.

Table 6-15 shows NO_x equivalent emissions for each pollutant and total NO_x equivalent emissions from Alternative 3 compared to the 2012 AQMP for the 24-hour PM_{2.5} attainment years, 2017 and 2014, respectively. Table 6-15 also shows the corresponding PM_{2.5} concentrations. As can be seen in the table, the PM_{2.5} concentration in the 2017 attainment year for Alternative 3 is close to the PM_{2.5} concentration in 2014 attainment year for the 2012 AQMP and both demonstrate attainment of the federal 24-hour PM_{2.5} standard.

6.5.2.5.2 Direct Air Quality Impacts – Ozone Control Measures

Because the 2012 AQMP also includes control measures for making expeditious progress in attaining the federal one-hour and eight-hour ozone standards by the year 2023, a comparison of the summer planning inventories for ozone was also performed. As shown in Table 6-16, Alternative 3 would continue to make progress towards attaining the federal one-hour and eight-hour ozone standards to the same extent as the 2012 AQMP because Alternative 3 contains all of the same control measures pertaining to reducing ozone concentrations as the 2012 AQMP. Even though Alternative 3 would generate NO_x emission reductions sooner, by 2023 NO_x emission reductions from Alternative are expected to be equivalent to NO_x emission reductions from the 2012 AQMP.

TABLE 6-15

NOx Equivalent Emissions ^a Comparison Between
Alternative 3 and the 2012 AQMP (Tons/Day)

	POLLUTANT					PM2.5 CONCENTRATION	
	VOC	NOx	CO ^b	SOx	PM2.5		Total ^c
Year 2017 – Alternative 3 Attainment (tpd) ^c							
Total Remaining Inventory	420	416 0	1,816	18	61		
NOx Equivalents	197	416 0	--	100	870	1,583 77	35.0 µg/m ³
Year 2014 – 2012 AQMP Attainment (tpd) ^c							
Total Remaining Inventory	451	491 500	2,095	18 9	58		
NOx Equivalents	212	491 500	--	108 6	827	1,638 45	34.2 µg/m ³

^a This table shows remaining emissions, not emission reductions.

^b CO does not contribute to PM2.5 formation, so it does not have a NOx equivalent value.

^c Only emissions representing NOx equivalents are added together because these are all ratios relative to NOx emissions.

TABLE 6-16

Alternative 3 – Remaining Emission Inventory for Ozone Attainment Evaluation ^a

SOURCE CATEGORY	POLLUTANT	
	VOC	NOx
Baseline Year 2008 Summer Planning Inventory (tpd)		
Total Stationary Sources	264	87
Total Mobile Sources	375	634
Total	639	721
Year 2023 – Alternative 3 Summer Planning Inventory (tpd)		
Total Stationary Sources	254	60
Total Mobile Sources	177	227
Total	431	29787
Year 2023 – 2012 AQMP Summer Planning Inventory (tpd)		
Total Stationary Sources	254	66 0
Total Mobile Sources	177	227
Total	431	29387
Year 2023 – Ozone Attainment Inventory (tpd)		
Total Carrying Capacity: 8-Hr standard ^b	420	114

^a This table shows remaining emissions, not emission reductions. Remaining emission take into account emission reductions achieved or projected to be achieved from AQMP control measures and subtracted from the 2008 baseline.

^b Inventory necessary to achieve 80 ppb to attain the federal eight-hour ozone standard by 2023.

6.5.2.5.3 *Secondary Air Quality Impacts – PM2.5 Control Measures*

Construction: All PM2.5 control measures in Alternative 3 are identical to those in the 2012 AQMP, except that Alternative 3 does not include BCM-01. PM2.5 Control Measure BCM-01 was not identified as a control measure that contributed to construction air quality impacts. Consequently, the same construction activities and associated construction emissions would occur under Alternative 3 as would occur under the 2012 AQMP. It was concluded that the 2012 AQMP PM2.5 control measures have the potential to contribute to significant adverse secondary air quality impacts as the increase in the construction emission inventories for CO and PM10 from the baseline to the year 2023 would increase in an amount that would exceed the applicable construction air quality significance thresholds of 550 and 150 pounds per day, respectively (refer to Table 4.2-4). This same conclusion applies to Alternative 3. Similarly, because future construction air quality impacts from Alternative 3 were concluded to be significant, eight mitigation measures were identified to reduce potentially significant CO and PM10 construction air quality impacts. In spite of implementing these eight construction air quality mitigation measures, CO and PM10 construction air quality impacts from Alternative 2 would remain significant and equivalent to the 2012 AQMP.

Operation: With the exception of Control Measure BCM-01, Alternative 3 includes all of the same control measures as the 2012 AQMP, so the same operation activities and associated operation emissions would occur. The analysis concluded, however, that secondary operational emissions from increased electricity demand, control of stationary sources, coatings and solvents formulated with low VOC materials, use of alternative fuels in mobile sources, increase use of fuels due to reduction in fuel economy, miscellaneous sources, non-criteria pollutants, and global warming and ozone depletion as a result of implementing the 2012 AQMP would be less than significant. Because PM2.5 Control Measure BCM-01 has the potential to generate GHG emissions, but it is not included in as part of the operation impacts from Alternative 3, operational air quality impacts from Alternative 3 would be less than significant and slightly less than operation impacts from the 2012 AQMP.

6.5.2.5.4 *Secondary Air Quality Impacts – Ozone Control Measures*

Construction: All ozone control measures in Alternative 3 are identical to those in the 2012 AQMP, except that Alternative 3 ozone Control Measure ONRD-03 could result in approximately 5,000 additional medium-heavy-duty trucks complying with the year 2010 engine exhaust requirements for the years 2013 through 2017 (750 trucks per year that would be diesel or diesel-hybrids that comply with the year 2010 exhaust emission standards and 250 trucks per year that would use CNG engines for a total of 1,000 trucks per year). Similarly, Alternative 3 OFFRD-01 could result in a total of 19,344 additional repowered or replaced vehicles from the year 2014 through 2017. However, neither of these control measures was identified as contributing to construction air quality impacts. In spite of this conclusion, since all remaining ozone control measures in Alternative 3 are also included in the 2012 AQMP, Alternative 3 has the potential to contribute to significant adverse secondary air quality impacts from increased construction emission inventories for CO and PM10 from the baseline to the year 2023 in amounts that would exceed the applicable

construction air quality significance thresholds of 550 and 150 pounds per day, respectively (refer to Table 4.2-4). This same conclusion applies to Alternative 3. Similarly, because future construction air quality impacts from Alternative 3 were concluded to be significant, eight mitigation measures were identified to reduce potentially significant CO and PM10 construction air quality impacts. In spite of implementing these eight construction air quality mitigation measures, CO and PM10 construction air quality impacts from Alternative 3 would remain significant and equivalent to the 2012 AQMP.

Operation: All ozone control measures in Alternative 3 are identical to those in the 2012 AQMP, except that Alternative 3 ozone Control Measure ONRD-03 could result in approximately 5,000 additional medium-heavy-duty trucks complying with the year 2010 engine exhaust requirements for the years 2013 through 2017 (1,000 trucks per year, 250 trucks per would comply with the 2010 on-road vehicle exhaust requirements using CNG engines and the rest would be diesel or diesel hybrid). The analysis of Alternative 3 ozone Control Measure ONRD-03 indicated that it has the potential to generate additional criteria pollutant, toxic air pollutant and GHG emissions from and electricity generation beyond those that would occur under the 2012 AQMP.

The increase in electricity demand from ozone Control Measure ONRD-03 would be twice that of the 2012 AQMP (see Table 4.2-5 of this [Final](#) Program EIR). However, this increase would not result in exceedances of any of the applicable regional significance thresholds.

Power generating facilities are subject to AB-32 and would be required to reduce GHG emissions by 2020. Therefore, the additional energy demand from Alternative 3 Control Measure ONRD-03 would be expected to increase, but is not expected to generate significant emission impacts.

Although Alternative 3 Control Measure ONRD-01 could increase demand for electricity, thus, potentially increasing GHG emissions from electric utilities, increased GHG emissions would be offset by reductions in GHG emissions from less polluting trucks. Because alternative 3 ozone Control Measure ONRD-03 would result in twice as many cleaner, less polluting heavy-duty trucks as the 2012 AQMP, GHG reduction benefits would be greater.

Similarly, Alternative 3 OFFRD-01 could result in a total of 19,344 additional repowered or replaced vehicles from the year 2014 through 2017. Alternative 3 ozone Control Measure ONRD-03 has the potential double the increase in the demand for alternative fuels compared to the 2012 AQMP. The reduction in fuel economy associated with use of alternative fuels expected to be greater than the 2012 AQMP, which is one percent for the affected sources so a potential increase in fuel use could occur. However, the overall focus of the 2012 AQMP is to reduce PM2.5 and ozone emissions, which is primarily driven by increasing use of cleaner fuels. Therefore, the impact of fuel economy is expected to be less than significant, but greater than the 2012 AQMP.

6.5.2.5.5 *Project-specific and Cumulative Impacts Conclusion*

Based upon the above conclusions, Alternative 3 PM2.5 and ozone control measures have the potential to generate significant adverse project-specific construction CO and PM10 air

quality impacts equivalent to those from the 2012 AQMP. In spite of identifying eight construction air quality mitigation measures, project-specific construction CO and PM10 air quality impacts would remain significant.

Since anticipated project-specific construction CO and PM10 air quality impacts from the 2012 AQMP are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific construction air quality impacts would be approximately equivalent to those generated by the 2012 AQMP, Alternative 3 would also contribute to significant adverse cumulative construction air quality impacts generated by the 2012-2035 RTP/SCS. Since project-specific construction CO and PM10 air quality impacts from the 2012 AQMP are cumulatively considerable, cumulative project-specific construction CO and PM10 air quality impacts from the 2012 AQMP are concluded to be significant. No other construction air quality mitigation measures were identified that reduce cumulative construction CO and PM10 air quality impacts to less than significant.

With regard to project-specific secondary operational air quality impacts, a number of different types of operational air quality impacts from Alternative 3 PM2.5 and ozone control measures were identified and analyzed. Since project-specific operational air quality impacts would be significant and greater than those generated by the 2012 AQMP, Alternative 3 would contribute to significant adverse cumulative operational air quality impacts generated by the 2012-2035 RTP/SCS. Based on the analysis of operational air quality impacts, overall operational air quality impacts were concluded to be significant and greater than the 2012 AQMP.

Since anticipated project-specific operational air quality impacts from the 2012 AQMP are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Since project-specific construction operational air quality impacts from the 2012 AQMP are cumulatively considerable, cumulative operational air quality impacts from the Alternative 3 are concluded to be significant and greater than the 2012 AQMP.

6.5.2.6 Alternative 4 – PM2.5 Reduction Strategies Only

As explained in Subsection 6.4.4, Alternative 4 would only include the PM2.5 control measures in Table 6-4 of this chapter. Because Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2. The following subsections analyze potential direct air quality impacts from Alternative 4 and compare them to direct air quality impacts from the 2012 AQMP. After the direct air quality analysis, subsections include an analysis of potential secondary air quality impacts from implementing Alternative 4 are described and impacts are compared to the 2012 AQMP. For the complete analysis of direct and secondary air quality impacts from the 2012 AQMP, refer to Subchapter 4.2 – Air Quality.

6.5.2.6.1 Direct Air Quality Impacts – PM2.5 Control Measures

The 2012 AQMP control strategy targets directly emitted PM2.5, as is evident in the 58 tons per day of remaining PM2.5 emissions from the 2012 AQMP in the attainment year 2014 which is the same as the remaining PM2.5 emissions for Alternative 4 in the attainment year 2014 (Table 6-17). The reason for this result is that Alternative 4 contains the same PM2.5 reduction control measures as the 2012 AQMP, so the same strategy, reducing directly emitted PM2.5, is expected to produce the same results in the year 2014 for both Alternative 4 and the 2012 AQMP.

TABLE 6-17

Alternative 4 – PM2.5 Remaining Inventory (Tons/Day) ^a

SOURCE CATEGORY	POLLUTANT				
	VOC	NO _x	CO	SO _x	PM2.5
Baseline Year 2008 Average Annual Day (tpd)					
Total Stationary Sources	257	92	137	14	48
Total Mobile Sources	336	666	2,744	40	32
Total	593	758	2,881	54	80
Year 2014 – Alternative 4 Average Annual Day (tpd) ^b					
Total Stationary Sources	234	77 4	164	12	38
Total Mobile Sources	217	429	1,931	6 7	20
Total	451	5060	2,095	189	58
Year 2014 – 2012 AQMP Average Annual Day (tpd) ^b					
Total Stationary Sources	234	77 4	164	12	38
Total Mobile Sources	217	414 29	1931	6 7	20
Total	451	491500	2,095	189	58
Year 2017 – Alternative 4 Average Annual Day (tpd) ^c					
Total Stationary Sources	240	74 0	165	11	39
Total Mobile Sources	187	378 7	1,702	7	19
Total	427	45247	1,867	18	58
Year 2017 – 2012 AQMP Average Annual Day (tpd) ^c					
Total Stationary Sources	237	74 68	165	11	39
Total Mobile Sources	188	377	1702	7	19
Total	425	45145	1,867	18	58

^a This table shows remaining emissions, not emission reductions. Remaining emission take into account emission reductions achieved or projected to be achieved from AQMP control measures and subtracted from the 2008 baseline.

^b Demonstrates attainment of the federal 24-hour PM2.5 standard.

^c Continues to demonstrate attainment of the federal 24-hour PM2.5 standard.

TABLE 6-18

NOx Equivalent Emissions ^a Comparison Between
Alternative 4 and the 2012 AQMP (Tons/Day)

	POLLUTANT					PM2.5 CONCENTRATION	
	VOC	NOx	CO ^b	SOx	PM2.5		Total ^c
Year 2014 – Alternative 4 Attainment (tpd) ^c							
Total Remaining Inventory	451	506.9	2,095	18.9	58		
NOx Equivalents	212	506.9	--	108.6	827	1,653.45	34.2 µg/m ³
Year 2014 – 2012 AQMP Attainment (tpd) ^c							
Total Remaining Inventory	451	500 491	2,095	18.9	58		
NOx Equivalents	212	500 491	--	108.6	827	1,638.45	34.2 µg/m ³

^a This table shows remaining emissions, not emission reductions.

^b CO does not contribute to PM2.5 formation, so it does not have a NOx equivalent value.

^c Only emissions representing NOx equivalents are added together because these are all ratios relative to NOx emissions.

6.5.2.6.2 Direct Air Quality Impacts – Ozone Control Measures

Because the 2012 AQMP also includes control measures for making expeditious progress in attaining the federal one-hour and eight-hour ozone standards by the year 2023, a comparison of the summer planning inventories for ozone was also performed. As shown in Table 6-19, Alternative 4 would continue to make progress towards attaining the federal one-hour and eight-hour ozone standards, but not to the same extent as the 2012 AQMP, because Alternative 4 contains all of the same control measures pertaining to reducing ozone concentrations as the 2012 AQMP. Even though Alternative 4 would generate NOx emission reductions sooner, by 2023 NOx emission reductions from Alternative are expected to be equivalent to NOx emission reductions from the 2012 AQMP.

6.5.2.6.3 Secondary Air Quality Impacts – PM2.5 Control Measures

Construction: Because Alternative 4 includes all of the same PM2.5 control measures as the 2012 AQMP, construction impacts from Alternative 4 PM2.5 control measures would be the same as for the 2012 AQMP, as explained here. Construction air quality impacts associated with approximately seven 2012 AQMP PM2.5 control measures were identified and evaluated. It was assumed that the following types of construction activities to implement 2012 AQMP PM2.5 control measures contribute to construction activities emission inventories: 1) additional infrastructure to support electric and alternative fuel vehicles; 2) additional infrastructure for stationary source controls; and, 3) additional infrastructure to support electrification of new sources. It was concluded that these PM2.5 control measures have the potential to contribute to significant adverse secondary air quality impacts as the increase in the construction emission inventories for CO and PM10 from the

baseline to the year 2023 would increase in an amount that would exceed the applicable construction air quality significance thresholds of 550 and 150 pounds per day, respectively (refer to Table 4.2-4). Because future construction air quality impacts were concluded to be significant, eight mitigation measures were identified to reduce potentially significant CO and PM10 construction air quality impacts. In spite of implementing these eight construction air quality mitigation measures, CO and PM10 construction air quality impacts would remain significant. This conclusion applies to Alternative 4.

TABLE 6-19

Alternative 4 – Remaining Emission Inventory for Ozone Attainment Evaluation ^a

SOURCE CATEGORY	POLLUTANT	
	VOC	NO _x
Baseline Year 2008 Summer Planning Inventory (tpd)		
Total Stationary Sources	264	87
Total Mobile Sources	375	634
Total	639	721
Year 2023 – Alternative 4 Summer Planning Inventory (tpd)		
Total Stationary Sources	261	63
Total Mobile Sources	177	250
Total	438	313
Year 2023 – 2012 AQMP Summer Planning Inventory (tpd)		
Total Stationary Sources	254	60
Total Mobile Sources	177	227
Total	431	287
Year 2023 – Ozone Attainment Inventory (tpd)		
Total Carrying Capacity: 8-Hr standard ^b	420	114

^a This table shows remaining emissions, not emission reductions. Remaining emission take into account emission reductions achieved or projected to be achieved from AQMP control measures and subtracted from the 2008 baseline.

^b Inventory necessary to achieve 80 ppb to attain the federal eight-hour ozone standard by 2023.

Operation: Because Alternative 4 PM_{2.5} measures are identical to those in the 2007 AQMP, the same operation activities and associated operation emissions would occur. The analysis concluded, however, that secondary operational emissions from increased electricity demand, control of stationary sources, coatings and solvents formulated with low VOC materials, use of alternative fuels in mobile sources, increase use of fuels due to reduction in fuel economy, miscellaneous sources, non-criteria pollutants, and global warming and ozone depletion as a result of implementing the 2012 AQMP would be less than significant. Consequently, operational air quality impacts from Alternative 4 would be significant and equivalent to the operational air quality impacts from the 2012 AQMP.

6.5.2.2.4 Secondary Air Quality Impacts – Ozone Control Measures

Construction: Because Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2 of this [Final](#) Program EIR. As a result, construction air impacts from implementing 2007 AQMP black box control measures would be the same as for Alternative 1, less than significant and, therefore, less than the 2012 AQMP.

Operation: As noted above, Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2 of this [Final](#) Program EIR. As a result, operation air impacts from implementing 2007 AQMP black box control measures would be the same as for Alternative 1, less than significant.

6.5.2.6.3 Project-specific and Cumulative Impacts Conclusion

Based upon the above conclusions, implementing PM_{2.5} control measures have the potential to generate significant project-specific construction air quality impacts, while operational impacts would be less than significant. Overall air quality impacts from implementing Alternative 4 PM_{2.5} control measures would be identical to the 2012 AQMP. No project-specific construction or operational air quality impacts were identified from implementing Alternative 4 ozone control measures. Therefore, it is presumed that Alternative 4 has the potential to generate significant adverse project-specific construction air quality impacts, which would be equivalent to the 2012 AQMP and less than significant project-specific operational air quality impacts, which would be less than project-specific impacts from the 2012 AQMP.

Since, anticipated project-specific construction air quality impacts from Alternative 4 are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific construction impacts would be significant and approximately equivalent to those generated by the 2012 AQMP, Alternative 4 would contribute to significant adverse cumulative air quality impacts generated by the 2012-2035 RTP/SCS. Since construction air quality impacts from Alternative 4 are cumulatively considerable, cumulative construction air quality impacts from Alternative 4 are significant and equivalent to the 2012 AQMP.

Alternatively, since anticipated project-specific operational air quality impacts from Alternative 4 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific operational air quality impacts would be less significant and less than those generated by the 2012 AQMP, Alternative 4 would also not contribute to significant adverse cumulative operational air quality impacts generated by the 2012-2035 RTP/SCS. Since operation air quality impacts from Alternative 4 are not cumulatively considerable, cumulative operational air quality impacts from Alternative 4 are significant, but less than the 2012 AQMP.

6.5.3 Energy

The potential direct and indirect energy impacts from implementing the proposed project and the project alternatives were evaluated. The following subsections provide a brief summary of potential direct and indirect energy impacts from the 2012 and evaluate potential direct and indirect energy impacts from each alternative relative to the 2012 AQMP.

6.5.3.1 Proposed Project

Potential direct and indirect energy impacts from the 2012 AQMP are summarized in the following subsections. For the complete analysis of potential energy impacts from implementing the 2012 AQMP, refer to Subchapter 4.3 - Energy.

6.5.3.1.1 *PM2.5 Control Measures*

As shown in Table 4.3-1, there are a number of 2012 AQMP PM2.5 control measures that have the potential to generate adverse energy impacts associated with implementing the 2012 AQMP PM2.5 control measures. Potential energy impacts from increased demand for electricity natural gas, petroleum fuels, and alternative fuels as a result of implementing 2012 PM2.5 control measures, are summarized in the following paragraph.

The potential increase in electricity and natural gas use due to implementation of 2012 AQMP PM2.5 control measures is partially associated with the potential installation of add-on control equipment. The energy impacts associated with 2012 AQMP PM2.5 control measures (see Table 4.3-1) were evaluated and determined to be less than significant for electricity, natural gas, petroleum fuels, and alternative fuels impacts.

6.5.3.1.2 *Ozone Control Measures*

As shown in Table 4.3-1 of this [Final](#) Program EIR, there are a number of 2012 AQMP ozone control measures that have the potential to generate adverse energy impacts associated with implementing the 2012 AQMP ozone control measures. Potential energy impacts from increased demand for electricity natural gas, petroleum fuels, and alternative fuels as a result of implementing 2012 PM2.5 control measures, are summarized in the following paragraphs.

A number of ozone control measures in the 2012 AQMP, in particular mobile source control measures, are expected to increase the demand for electricity and natural gas to fuel both on-road and off-road mobile sources as a means of complying with 2012 AQMP ozone control measures. Any increases in the use of electricity or natural gas as a combustion fuel would likely result in a concurrent decrease in tradition petroleum fuels such as gasoline and diesel. The increase in demand for electricity and natural gas associated with the ozone control measures and strategies in the 2012 AQMP is considered to be significant.

Subchapter 4.3 also included an analysis of 2012 AQMP ozone control measures that may have the potential to increase demand for alternative fuels such as hydrogen, methanol, ethanol, etc. Demand for alternative fuels could increase primarily as a result of

implementing ~~3023~~ 2012 AQMP ozone control measures, especially those affecting mobile sources. However, the analysis concluded that increased demand for alternative fuels as transportation fuels is not expected to be significant since they are not widely available and their use is currently limited. Therefore, energy impacts associated with the 2012 AQMP ozone control measures (see Table 4.3-1) were evaluated and determined to be less than significant for petroleum fuels and alternative fuels.

6.5.3.1.3 *Project-specific and Cumulative Impacts Conclusion*

It was concluded in Subchapter 4.1 that 2012 AQMP control measures, both PM_{2.5} and ozone control measures, could generate potential adverse impacts related to increased demand for electricity, natural gas, petroleum fuels, and alternative fuels. When considering overall electricity, natural gas, petroleum fuels, and alternative fuels impacts from the 2012 AQMP PM_{2.5} and ozone control measures, although potential adverse energy impacts were identified, none exceeded any of the energy significance thresholds identified in Subsection 4.3.3. Therefore, project-specific aesthetics impacts associated with the 2012 AQMP are less than significant.

Since, anticipated project-specific energy impacts from the 2012 AQMP are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). In Chapter 5 potential project-specific energy impacts from the 2012 AQMP were evaluated in connection with energy impacts from SCAG's 2012-2035 RTP/SCS. Since project-specific energy impacts would be significant, the 2012 AQMP would contribute to significant adverse cumulative energy impacts generated by the 2012-2035 RTP/SCS. Since energy impacts from the 2012 AQMP are cumulatively considerable, cumulative energy impacts from the 2012 AQMP are significant.

6.5.3.2 *Alternative 1 – No Project Alternative*

The Program EIR for the 2007 AQMP included environmental analyses for all control measures, including the black box control measures. As discussed in Chapter 2 of this [Final](#) Program EIR, all of the SCAQMD's and CARB's short- and mid-term control measures have been adopted. Since the 2007 AQMP now includes only black box measures, energy impacts analysis for Alternative 1 will focus only on potential impacts identified for the black box measures. Potential energy impacts from implementing Alternative 1 are described in the following subsections.

6.5.3.2.1 *PM_{2.5} Control Measures*

As discussed in Subsection 6.4.1, Alternative 1 has no control measures that are considered to be PM_{2.5} control measures. For this reason, Alternative 1 is not expected to create any energy impacts from PM_{2.5} control measures.

6.5.3.2.2 *Ozone Control Measures*

All remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. Potential impacts from adopting the 2007 AQMP were evaluated in the 2007 Program EIR. The 2007 Program EIR included an analysis of

energy impacts from all control measures, including black box control measures. As a result, consistent with the assumption in Subsection 6.5.1.2 that significance determinations from the 2007 Program EIR continue to apply, it is concluded that Alternative 1 does not have the potential to generate potentially significant adverse energy impacts as shown in Table 6-10 and described in the following paragraphs.

It was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-01 regulating on-road light-duty vehicles and heavy-duty vehicles could generate potentially significant adverse energy impacts because of potential increases in demand primarily for electricity, natural gas, and other alternative fuels, displacing and potentially reducing demand for gasoline and diesel fuels. Potential energy demand impacts in the future from on-road light-duty vehicles and heavy-duty vehicles were concluded to be less than significant because total demand for energy in the on-road light- and heavy-duty vehicle mobile source sectors was expected to be a small percentage of future energy demand in the district.

Similarly, it was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-02 regulating off-road heavy duty vehicles could also generate potentially significant adverse energy impacts because of potential increases in demand primarily for electricity, natural gas, and other alternative fuels, displacing and potentially reducing demand for diesel fuels. Potential energy demand impacts were concluded to be less than significant because total demand for energy in the off-road heavy duty vehicle sector was expected to be a small percentage of future energy demand in the district.

6.5.3.2.3 Project-specific and Cumulative Impacts Conclusion

As indicated in Subsection 6.4.1, the SCAQMD and CARB have adopted all short-term control measures within their authority, so that only black box control measures remain. Since Alternative 1 does not include short-term control measures, potential energy impacts would be even less compared to the 2007 AQMP when it was originally adopted. It was concluded in the 2007 Program EIR that the 2007 AQMP ozone control measures would not generate significant adverse energy impacts. Consequently, overall energy impacts from Alternative 1 are concluded to be less than significant.

Since, anticipated project-specific energy impacts from Alternative 1 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific energy impacts would be less than significant and less than those generated by the 2012 AQMP, Alternative 1 would not contribute to significant adverse cumulative energy impacts generated by the 2012-2035 RTP/SCS. Since energy impacts from Alternative 1 are not cumulatively considerable, cumulative energy impacts from Alternative 1 are not significant.

6.5.3.3 Alternative 2 – Localized PM Emissions Control

As explained in Subsection 6.4.2, with the CMALT-2A (formerly MCS-04A in the 6/28/12 NOP/IS), CMALT-2B (formerly MCS-04B in the 6/28/12 NOP/IS), CMALT-2C (formerly MCS-04C in the 6/28/12 NOP/IS), Alternative 2 includes all of the same PM_{2.5} and ozone

control measures as the 2012 AQMP, except for PM2.5 Control Measure BCM-02 – Open Burning. As explained in the following subsections, potential energy impacts from implementing Alternative 2 would be the same as potential energy impacts from implementing the 2012 AQMP. For the complete analysis of energy impacts from the 2012 AQMP, refer to Subchapter 4.3 – Energy. Potential energy impacts from implementing Alternative 2 are described in the following subsections.

6.5.3.3.1 *PM2.5 Control Measures*

As shown in Table 4.3-1, there are a number of 2012 AQMP PM2.5 control measures that have the potential to generate adverse energy impacts associated with implementing the 2012 AQMP PM2.5 control measures. Of the two Alternative 2 PM2.5 episodic control measures affecting the Mira Loma area, only one, CMALT-2C (2012 AQMP PM2.5 Control Measure BCM-04), was identified as contributing to potential adverse energy impacts. However, 2012 AQMP PM2.5 Control Measure BCM-04 only regulates affected livestock facilities in the Mira Loma area, so it is the same as Alternative 2 PM2.5 Control Measure CMALT-2C. Consequently, energy impacts from implementing 2012 AQMP ~~or~~ Alternative 2 PM2.5 control measures would be the same and less than significant.

6.5.3.3.2 *Ozone Control Measures*

Because Alternative 2 contains the same ozone control measures as the 2012 AQMP, except that ozone Control Measure CMALT-2A (similar to 2012 [AQMP](#) Control Measure ONRD-04) applies only to the Mira Loma area, energy impacts from implementing Alternative 2 ozone control measures would be the same as the energy impacts from implementing the 2012 AQMP ozone control measures. As shown in Table 4.3-1 in Subchapter 4.3, the analysis of electricity, natural gas, petroleum fuels, and alternative fuels impacts from implementing the 2012 AQMP ozone control measures indicated that they have the potential to generate adverse energy impacts. The analysis concluded that electricity and natural gas impacts associated with implementing the 2012 AQMP ozone control measures would be significant, while impacts to petroleum fuels, alternative fuels, and renewable fuels were concluded to be less than significant. This same conclusion also applies to Alternative 2 because it contains the same ozone control measures that have the potential to affect energy resources as the 2012 AQMP. Measures to mitigate significant adverse electricity and natural gas impacts were identified and would apply to Alternative 2. The analysis concluded, however, that in spite of implementing the electricity and natural gas mitigation measures, impacts would remain significant.

6.5.3.3.3 *Project-specific and Cumulative Impacts Conclusion*

As explained above, overall, potential project-specific adverse energy impacts from Alternative 2 would be the same as potential project-specific energy impacts from the 2012 AQMP and both would be significant.

Since, anticipated project-specific energy impacts from Alternative 2 are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific energy impacts would be

significant and approximately equivalent to those generated by the 2012 AQMP, Alternative 2 would contribute to significant adverse cumulative energy impacts generated by the 2012-2035 RTP/SCS. Since energy impacts from Alternative 2 are cumulatively considerable, cumulative energy impacts from Alternative 2 are significant and equivalent to the 2012 AQMP.

6.5.3.4 Alternative 3 – Greater Reliance on NO_x Emissions Reductions

As explained in Subsection 6.4.3, Alternative 3 includes all of the same PM_{2.5} control measures as the 2012 AQMP except it does not include 2012 AQMP Control Measure BCM-01. With regard to ozone control measures, with the exceptions of 2012 AQMP Control Measures ONRD-03 and OFFRD-01, all other ozone control measures are the same as those in the 2012 AQMP. As explained in the following subsections, potential energy impacts from implementing Alternative 3 would be the same as potential energy impacts from implementing the 2012 AQMP. For the complete analysis of energy impacts from the 2012 AQMP, refer to Subchapter 4.3 – Energy.

6.5.3.4.1 *PM_{2.5} Control Measures*

As shown in Table 4.3-1, there are a number of 2012 AQMP PM_{2.5} control measures that have the potential to generate adverse energy impacts associated with implementing the 2012 AQMP PM_{2.5} control measures. Alternative 3 includes all of the same PM_{2.5} control measures as the 2012 AQMP, except for BCM-01. PM_{2.5} Control Measure [BCM-01](#) was evaluated for the potential to generate adverse energy impacts, but it was concluded that this control measure did not have the potential to generate any energy impacts. It was concluded in the analysis of potential adverse energy impacts from implementing 2012 AQMP PM_{2.5} control measures that natural gas, petroleum fuels, and alternative fuels impacts would be less than significant. As with the 2012 AQMP, electricity impacts would be significant for the same reasons. Since Alternative 3 contains the same PM_{2.5} control measures as the 2012 AQMP, potential electricity, natural gas, petroleum fuels, and alternative fuels impacts would be same as energy impacts from implementing 2012 AQMP. Since all remaining PM_{2.5} control measures in Alternative 3 are the same as those in the 2012 AQMP, energy impacts from implementing Alternative 3 PM_{2.5} control measures would be significant and equivalent to energy impacts from the 2012 AQMP.

6.5.3.4.2 *Ozone Control Measures*

All ozone control measures in Alternative 3 are identical to those in the 2012 AQMP, except that Alternative 3 ozone Control Measure ONRD-03 could result in approximately 5,000 additional medium-heavy-duty trucks complying with the year 2010 engine exhaust requirements for the years 2013 through 2017 (750 trucks per year that would be diesel or diesel-hybrids that comply with the year 2010 exhaust emission standards and 250 trucks per year that would use CNG engines for a total of 1,000 trucks per year). Similarly, Alternative 3 OFFRD-01 could result in a total of 19,344 additional repowered vehicles from the year 2014 through 2017. Energy impacts for the 2012 AQMP were analyzed by type of energy source and, since Alternative 3 Ozone Control Measures ONRD-03 and OFF-01 may

contribute adverse impacts to each type of energy source, the same approach will be used here.

Electricity: Mobile source control measures in the 2012 AQMP are expected to increase the electricity demand in the district. A number of control measures would result in an increase in electricity demand associated with the electrification of mobile sources, including Control Measure ONRD-03. (Control Measure OFFRD-03 is not expected to increase demand for electricity since electric motors are not generally available for repowering off-road vehicles.) Although it is not expected that this category of heavy-duty on-road trucks would use electricity, consistent with the analysis of the 2012 AQMP electricity impacts, a worst-case assumption was made that mobile sources could switch to battery electric or hybrid vehicles. Table 6-20 shows the anticipated energy demand from Alternative 3 compared to the 2012 AQMP for those control measures where sufficient information is available to quantify electricity impacts.

TABLE 6-20

Electricity Impacts for Los Angeles, Orange, Riverside, and San Bernardino Counties (gigawatt-hours)

Control Measure	2010	2012 AQMP 2023 ^a	ALT. 3 2023
Baseline	115,000	136,079	136,079
ONRD-01 – Incentivize light- and medium-duty trucks (9,000 vehicles) ^c	--	38.6	38.6
ONRD-02 – Accelerated retirement and replacement of pre-1992 light- and medium-duty vehicles (18,000 vehicles) ^b	--	77.1	77.1
ONRD-03 – Encourage the introduction of hybrid and zero-emission vehicles (5,000 vehicles) ^c	--	83	166
ONRD-05 – Replace 1000 trucks with zero-emission vehicles (1000 vehicles) ^c	--	49.5	49.5
ADV-01 – “Wayside” Electric Roadway Infrastructure of the I-710 and 60 Freeways		563	563
ADV-02 – “Wayside” Electric Rail Infrastructure		880	880
Total of Mobile Source Measures	--	1,774.2	1,857.2
Percent of Baseline	--	1.54%	1.61%

Source: CEC, 2012a

^a Projections based on CEC, 2012j

^b Based on 12,600 miles/year and 0.34 kWh/mile.

^c Based on 16,600 miles/year and 1 kWh/mile.

^d Based on 18,000 miles/year and 2.75 kWh/mile.

Because electricity information is not available for all ozone control measures, increased electricity demand could be greater than shown in Table 6-20. Therefore, electricity demand

impacts are concluded to be significant and greater than the 2012 AQMP. Because the primary effect of Alternative 3 would be to increase electricity demand for mobile sources, no mitigation measures were identified to reduce electricity demand impacts from this alternative. Because electricity demand impacts are concluded to be significant for Alternative 3, the same mitigation measures identified for the 2012 AQMP also apply to this alternative.

Natural Gas: A number of control measures in the 2012 AQMP may result in an increase in demand for natural gas associated with stationary sources due to the need for additional emission controls. Other control measures are expected to encourage the use of natural gas as a fuel to offset the use of petroleum fuels including ONRD-03. In addition, increased demand for electricity will require additional natural gas, as most of the power plants in California are operated using natural gas.

According to the CEC, there were about 24,819 light-duty natural gas and about 11,500 heavy-duty natural gas vehicles in California in 2009 (CEC, 2011). The CEC expects a steady increase in natural gas consumption used as an alternative fuel (see Table 4.3-4 of this [Final](#) Program EIR). As indicated in Subchapter 4.3 of this [Final](#) Program EIR, some of the control measures in the 2012 AQMP could result in an increase in the use of natural gas in medium- and heavy-duty on road vehicles. It is expected that Alternative 3 Control Measure ONRD-03 has the potential to expand the use of natural gas fuels in on-road medium-duty and heavy-duty trucks using more efficient, advanced natural gas engine technologies by approximately 750 vehicles. Although Alternative 3 Control Measure OFFRD-01 has the potential to accelerate the penetration of heavy-duty off-road vehicles by as much as 19,344 it is unknown and, therefore, speculative regarding how many of these vehicles would repower using natural gas engines. Otherwise, natural gas impacts from other Alternative 3 ozone control measures are expected to be significant and slightly greater than the 2012 AQMP. Because natural gas demand impacts are concluded to be significant, mitigation measures were identified required and would apply to Alternative 3. The analysis concluded, however, that in spite of implementing the electricity and natural gas mitigation measures, impacts would remain significant.

Petroleum Fuels: Similar to the effects of the 2012 AQMP, implementing Alternative 3 is expected to result in a decrease in the future increased demand for petroleum fuels (e.g., diesel, distillate, residual oil, and gasoline) due to mobile source control measures, as well as a potential increase in engine efficiency associated with the retrofit of new engines. Ozone control measures that are expected to result in a reduction in the demand for petroleum fuels include Control Measure ONRD-03. Table 6-21 shows the reduction in demand for petroleum fuels for Alternative 3 compared to the 2012 AQMP.

TABLE 6-21

Estimated Reduction in Petroleum Fuels Associated with 2012 AQMP Control Measures
(gallons per year)

Control Measure	2012 AQMP 2013	2012 AQMP 2023	ALT.3 2013	ALT. 3 2023
ONRD-01 – Incentivize light- and medium-duty trucks (9,000 vehicles) ^a	663,157	5,968,421	663,157	5,968,421
ONRD-02 – Accelerated retirement and replacement of pre-1992 light- and medium-duty vehicles (18,000 vehicles) ^a	1,326,315	11,936,842	1,326,315	11,936,842
ONRD-03 – Encourage the introduction of hybrid and zero-emission vehicles (5,000 vehicles) ^b	3,018,122	15,091,090	3,018,122	15,091,090
ADV-02 – Electrification of 492 locomotive engines ^c	--	34,700,000	--	34,700,000
Total	5,007,594	67,696,353	5,007,594	67,696,353

^a Based on 12,600 miles/year and 19 miles/gallon.

^b Based on 16,600 miles/year and 11 miles/gallon.

^c Based on 18,000 miles/year and 6 miles/gallon.

^d Control measure ONRD-4 starts in 2015.

Construction activities that could be required to implement control measures in the 2012 AQMP would also increase the use of gasoline and diesel, including ozone Control Measure OFFRD-01. Construction activities could be required under a number of the control measures to develop transportation infrastructure (e.g., overhead catenary lines), install air pollution control equipment, and further develop electricity to support electrification of sources. OFFRD-01 has the potential to accelerate the turnover of up to 19,344 off-road mobile source vehicles. Currently, there are adequate fuel supplies in California. In fiscal year 2011, 14,728,734,063 gallons of gasoline and 2,564,017,901 gallons of diesel were sold in California⁴. Construction activities are temporary and all construction equipment will cease once construction activities are finished. As the use of petroleum fuels in other mobile sources decreases, there is likely to be an excess availability of gasoline and diesel. Even if all off-road mobile sources affected by Control Measure OFFRD-01 use diesel engines, it is unlikely that demand for diesel for these vehicles would offset the reduction in demand for diesel shown in Table 6-21. Petroleum fuel impacts from Alternative 3 for other control measures would be equivalent to the 2012 AQMP. Therefore, demand for petroleum fuels is expected to be less than significant for Alternative 3, but greater than similar impacts from the 2012 AQMP.

⁴ State Board of Equalization, Fuel Taxes Statistics & Reports, <http://www.boe.ca.gov/sptaxprog/spftrpts.htm>.

Alternative Fuels: Electricity, natural gas (including forms such as CNG, etc.), and diesel (which would include biodiesel) have already been evaluated in the above paragraphs. As noted in Subchapter 4.3, potential alternative fuel M85 is no longer sold in California. Although ethanol is used as a fuel additive, this primarily for gasoline powered on-road passenger cars and light-duty trucks and would not likely be used in vehicles affected by Alternative 3 ozone Control Measures ONRD-03 or OFFRD-01. While hydrogen fuel cell technology is promising, its use in the future is dependent on many things (cost-effectiveness of the technology, availability of hydrogen, etc.), so that the extent to which it may be used in the future to displace petroleum fuels is currently unknown and, therefore, speculative.

Potential energy impacts associated with the Alternative 3 ozone control measures (21 control measures, see Table 4.4-1) were evaluated and determined to be less than significant for reformulated coatings, adhesives, solvents, lubricants, mold release, and consumer products. Implementing ozone control measures that result in the use of ammonia in emission control systems could generate significant adverse energy impacts from exposure to ammonia in the event of an accidental release. Mitigation measures were identified that could reduce ammonia energy impacts to less than significant. Finally, ozone control measures that increase demand for alternative fuels (LNG) have the potential to generate significant adverse energy impacts. No mitigation measures were identified that could reduce energy impacts from alternative fuels to less than significant. Since Alternative 3 ozone Control Measures ONRD-03 and OFFRD-01 have the potential to increase demand for alternative fuels to a greater extent for on-road heavy-duty vehicles and a much greater extent for off-road vehicles compared to the 2012 AQMP, energy impacts from Alternative 3 are significant and greater than significant energy impacts from the 2012 AQMP.

In general, energy demand impacts from Alternative 3 would be greater than energy demand impacts from the 2012 AQMP. The energy impacts associated with the Alternative 3 ozone control measures were evaluated and determined to be less than significant for natural gas, petroleum fuels, and alternative fuels impacts. Impacts from increased demand for electricity were concluded to be significant for Alternative 3 and for the 2012 AQMP.

6.5.3.4.3 *Project-specific and Cumulative Impacts Conclusion*

Based on the above information, potential project-specific adverse energy impacts from Alternative 3 for natural gas, petroleum fuels, and alternative fuels would be greater than potential project-specific natural gas, petroleum fuels, and alternative fuels impacts from the 2012 AQMP, but for both projects natural gas, petroleum fuels, and alternative fuels impacts would be less than significant. Potential project-specific adverse energy impacts from Alternative 3 for electricity would be greater than potential project-specific electricity impacts from the 2012 AQMP and for both projects electricity impacts would be significant.

Since, anticipated project-specific petroleum fuels, alternative fuels, and renewable fuels impacts from Alternative 3 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Since, anticipated project-specific electricity and natural gas demand impacts from Alternative 3 are concluded to be significant, they are considered to be cumulatively considerable as

defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific energy impacts would be significant and greater than those generated by the 2012 AQMP, Alternative 3 would contribute to significant adverse cumulative energy impacts generated by the 2012-2035 RTP/SCS. Therefore, since energy impacts (electricity and natural gas demand impacts from Alternative 3 are cumulatively considerable, cumulative energy impacts from Alternative 3 are significant and greater than the 2012 AQMP.

6.5.3.5 Alternative 4 – PM2.5 Reduction Strategies Only

As explained in Subsection 6.4.3, Alternative 4 would only include the PM2.5 control measures in Table 6-4 of this chapter. For the complete analysis of energy impacts from 2012 AQMP PM2.5 control measures, refer to Subchapter 4.3 – Energy. Because Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2 of this [Final](#) Program EIR. As a result, impacts from implementing 2007 AQMP black box control measures would be the same as for Alternative 1. Potential energy impacts from implementing Alternative 4 are described in the following subsections.

6.5.3.5.1 *PM2.5 Control Measures*

As shown in Table 4.3-1 of this [Final](#) Program EIR, there are a number of 2012 AQMP PM2.5 control measures that have the potential to generate adverse energy impacts associated with implementing the 2012 AQMP PM2.5 control measures. It was concluded in the analysis of potential adverse energy impacts from implementing 2012 AQMP PM2.5 control measures that electricity, natural gas, petroleum fuels, and alternative fuels impacts would be less than significant. Since Alternative 4 contains the same PM2.5 control measures as the 2012 AQMP, potential electricity, natural gas, petroleum fuels, and alternative fuels impacts would be same as energy impacts from implementing 2012 AQMP. Consequently, energy impacts from implementing Alternative 4 PM2.5 control measures would also be less than significant.

6.5.3.5.2 *Ozone Control Measures*

Adopting Alternative 4 ozone control measures would result in the same potential adverse energy impacts as would occur under Alternative 1. It was concluded in the analysis of impacts from Alternative 1 that all remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. Potential impacts from adopting the 2007 AQMP were evaluated in the 2007 Program EIR. The 2007 Program EIR included an analysis of energy impacts from all control measures, including black box control measures. As a result, consistent with the assumption in Subsection 6.5.1.2 that significance determinations from the 2007 Program EIR continue to apply, it is concluded that Alternative 1 does not have the potential to generate potentially significant adverse energy impacts as shown in Table 6-10 and described in the following paragraphs.

It was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-01 regulating on-road light-duty vehicles and heavy-duty vehicles could

generate potentially significant adverse energy impacts because of potential increases in demand primarily for electricity, natural gas, and other alternative fuels, displacing and potentially reducing demand for gasoline and diesel fuels. Potential energy demand impacts in the future from on-road light-duty vehicles and heavy-duty vehicles were concluded to be less than significant because total demand for energy in the on-road light- and heavy-duty vehicle mobile source sectors was expected to be a small percentage of future energy demand in the district.

Similarly, it was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-02 regulating off-road heavy duty vehicles could also generate potentially significant adverse energy impacts because of potential increases in demand primarily for electricity, natural gas, and other alternative fuels, displacing and potentially reducing demand for diesel fuels. Potential energy demand impacts were concluded to be less than significant because total demand for energy in the off-road heavy duty vehicle sector was expected to be a small percentage of future energy demand in the district.

6.5.3.5.3 *Project-specific and Cumulative Impacts Conclusion*

Based upon the above conclusions, when considering overall energy impacts from implementing Alternative 4, adverse energy impacts were identified from implementing ozone control measures, but these impacts were concluded to be less than significant. Potentially significant adverse electricity and natural gas impacts were identified from implementing the PM_{2.5} control measures, but would be less than similar impacts from the 2012 AQMP. Therefore, it is concluded that potential adverse energy impacts from implementing Alternative 4 would be significant, but less than those for the 2012 AQMP because Alternative 4 contains fewer control measures that could adversely affect electricity, natural gas, petroleum fuels, and alternative fuels resources.

Since anticipated project-specific energy impacts from Alternative 4 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific energy impacts would be significant, although less than those generated by the 2012 AQMP, Alternative 4 would contribute to significant adverse cumulative energy impacts generated by the 2012-2035 RTP/SCS. Since energy impacts from Alternative 4 are cumulatively considerable, cumulative energy impacts from Alternative 4 are significant.

6.5.4 Hazards and Hazardous Materials

The potential direct and indirect hazards and hazardous materials impacts from implementing the proposed project and the project alternatives were evaluated. The following subsections provide brief discussions of direct and indirect hazards and hazardous materials impacts from each alternative relative to the 2012 AQMP.

6.5.4.1 Proposed Project

Potential direct and indirect hazards and hazardous materials impacts from the 2012 AQMP are summarized in the following subsections. For the complete analysis, refer to Subchapter 4.4 – Hazards and Hazardous Materials.

6.5.4.1.1 *PM2.5 Control Measures*

The analysis in Subchapter 4.4 identified three 2012 AQMP PM2.5 control measures, CMB-01, IND-01, and MCS-01 that have the potential to generate the following adverse hazards and hazardous materials impacts. Use of alternative fuels and fuel additives can result in hazard impacts for some fuels (e.g., LNG and CNG) in the event of an accidental release during transport. Potential exposure to a toxic air contaminant, ammonia, used as a NOx reducing agent for SCRs and SNCR in the event of an onsite accidental release during use or storage could also occur as a result of implementing 2012 AQMP PM2.5 control measures. Reformulating coatings with more toxic or flammable solvents could cause fire, accidental release, and offsite/onsite exposure and worker risk. Hazard impacts from transport of alternative fuels (LNG) were concluded to be significant. Hazard impacts from exposure to ammonia vapor were concluded to be significant, but could be reduced to less than significant.

6.5.4.1.2 *Ozone Control Measures*

The analysis in Subchapter 4.7 identified a number of 2012 AQMP ozone control measures as having the potential to create the following adverse hazards and hazardous materials impacts.

- Low VOC coatings could be formulated with more toxic or flammable solvents could cause fire, accidental release, and offsite/onsite exposure and worker risk. This potential impact is considered to be significant. Mitigation measures were identified to reduce this potential hazards and hazardous materials impact to less than significant.
- Receptors could be exposed to hazardous waste that may be generated from spent carbon, use of ammonia to operate condensers, hazardous waste from operating scrubbers, and hazardous waste of spent catalyst from operating thermal oxidizers. This impact was concluded to be less than significant.
- Use of alternative fuels and fuel additives can result in hazard impacts during transport. This impact was concluded to be significant and no mitigation measures were identified that could potentially reduce hazard impacts from and accidental release of alternative fuels during transport.
- Potential exposure to toxic air contaminant (ammonia) associated with SCRs during storage, transport, use and accidental release. Hazard impacts from exposure to accidental releases of ammonia were concluded to be less than significant, except for potential onsite releases, which were concluded to be significant, but could be reduced to less than significant.

The hazard impacts associated with the ozone control measures control measures, see Table 4.4-1, were evaluated and determined to be less than significant for reformulated coatings, adhesives, solvents, lubricants, mold release, and consumer products; and all alternative fuels except LNG.

6.5.4.1.3 *Project-specific and Cumulative Impacts Conclusion*

It was concluded in Subchapter 4.4 that potential hazards and hazardous materials impacts from implementing 2012 AQMP PM2.5 and ozone control measures would be less than significant for most control measures. In the case of exposure to accidental releases onsite at a commercial or industrial facility, impacts were concluded to be significant, but could be reduced to less than significant through implementing mitigation measures. Finally, hazard impacts from transporting LNG were concluded to be significant and no mitigation measures were identified that could reduce these potential hazard impacts to less than significant. Therefore, project-specific hazards and hazardous materials impacts associated with the 2012 AQMP are concluded to be significant.

Since, anticipated project-specific hazards and hazardous materials impacts from the 2012 AQMP are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). In Chapter 5 potential project-specific hazard and hazardous materials impacts from the 2012 AQMP were evaluated in connection with hazardous materials impacts from SCAG's 2012-2035 RTP/SCS. Since project-specific hazards and hazardous materials impacts generated by the 2012 AQMP would be significant, the 2012 AQMP would contribute to significant adverse cumulative hazard and hazardous materials impacts generated by the 2012-2035 RTP/SCS. Since hazards and hazardous materials impacts from the 2012 AQMP are cumulatively considerable, cumulative hazards and hazardous materials impacts from the 2012 AQMP are significant.

6.5.4.2 *Alternative 1 – No Project Alternative*

The Program EIR for the 2007 AQMP included environmental analyses for all control measures, including the black box control measures. As discussed in Chapter 2 of this [Final](#) Program EIR, all of the SCAQMD's and CARB's short- and mid-term control measures have been adopted. The only remaining control measures are the black box measures. Since the 2007 AQMP now includes only black box measures, environmental impacts for Alternative 1 will focus only on potential impacts identified for the black box measures.

6.5.4.2.1 *PM2.5 Control Measures*

As discussed in Subsection 6.4.1, Alternative 1 has no control measures that are considered to be PM2.5 control measures. For this reason, Alternative 1 is not expected to create any impacts to hazards and hazardous materials resources from PM2.5 control measures.

6.5.4.2.2 *Ozone Control Measures*

Potential impacts from adopting the 2007 AQMP were evaluated in the 2007 Program EIR. The 2007 Program EIR included an analysis of hazards and hazardous materials impacts from all control measures, including black box control measures. As a result, consistent with the assumptions in Subsection 6.5.1.2 regarding the applicability of the significance determinations from the 2007 Program EIR, it is concluded that Alternative 1 does not have the potential to generate potentially significant hazard and hazardous materials impacts as shown in Table 6-10 and described in the following paragraphs.

All remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. It was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-01 regulating on-road light-duty vehicles and heavy-duty vehicles could generate potentially significant adverse hazards and hazardous materials impacts. In particular, one of the NOx pollution control technologies that could be used for heavy-duty on-road vehicles could consist of SCR equipment. SCR uses ammonia as a reducing agent to convert NOx to nitrogen and water. Potential hazard and hazardous materials impacts from the use of SCR on heavy-duty vehicles were concluded to be less than significant because aqueous ammonia in concentrations less than 20 percent by volume would be used. No significant adverse hazards or hazardous materials impacts were identified using aqueous ammonia in concentrations less than 20 percent by volume.

Similarly, it was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-02 regulating off-road heavy duty vehicles could also generate potentially significant adverse hazards and hazardous materials impacts for the same reason identified for SCLTM-01 (e.g., installation of SCRs on off-road mobile sources that use ammonia as a reducing agent). Potential hazards and hazardous materials impacts were concluded to be less than significant for the same reason as above, aqueous ammonia in concentrations less than 20 percent by volume would be used.

Finally, it was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-03 regulating the VOC content of consumer products could generate potentially significant adverse hazards and hazardous materials impacts. The reason for this conclusion is that future rules regulating consumer products could result in formulations that are more flammable or toxic than current formulations. This impact, however, was concluded to be less than significant if water-based formulations are used. Further, solvents are currently available such as Texanol, propylene glycol, etc., that would not generate significant adverse flammability or hazard impacts.

6.5.4.2.3 *Project-specific and Cumulative Impacts Conclusion*

It was concluded in the 2007 Program EIR that all 2007 AQMP that, even with the implementation of mitigation measure HZ1, the 2007 AQMP had the potential to generate significant adverse hazards and hazardous materials impacts. Potential hazards and hazardous materials impacts could occur primarily from implementing Control Measure ARB-ONRD-03⁵/SCFUEL-01 – California Phase 3 Reformulated Gasoline Modifications. Other control measures that have the potential of affecting motor vehicle fuel formulations include: SC-ONRD-01, SCFUEL-02, ARB-ONRD-4/SCONRD-03, and ARB-OFFRD-1. As indicated in Subsection 6.4.1, the SCAQMD and CARB have adopted all short-term control measures within their authority, so that only black box control measures remain. Since Alternative 1 does not include short-term control measures, potential hazard and hazardous materials impacts would be even less compared to the 2007 AQMP when it was

⁵ Short-term control measures adopted by CARB were revised and renamed, so it is not possible to identify a CARB measure identified as ARB-ONRD-03, for example.

originally adopted. Consequently, overall hazards and hazardous materials impacts from Alternative 1 are concluded to be less than significant.

Since, anticipated project-specific hazards and hazardous materials impacts from Alternative 1 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific hazards and hazardous materials impacts would be less than those generated by the 2012 AQMP, Alternative 1 would not contribute to significant adverse cumulative hazards and hazardous materials impacts generated by the 2012-2035 RTP/SCS. Since hazards and hazardous materials impacts from Alternative 1 are not cumulatively considerable, cumulative hazards and hazardous materials impacts from Alternative 1 are not significant.

6.5.4.3 Alternative 2 – Localized PM Emissions Control

As explained in Subsection 6.4.2, with the exception of the two episodic PM_{2.5} control measures for Mira Loma, CMALT-2B (formerly MCS-04B in the 6/28/12 NOP/IS) and CMALT-2C (formerly MCS-04C in the 6/28/12 NOP/IS), and one episodic ozone control measure, CMALT-2A (formerly MCS-04A in the 6/28/12 NOP/IS), Alternative 2 includes all of the same PM_{2.5} and ozone control measures as the 2012 AQMP, except for PM_{2.5} Control Measure BCM-02 – Open Burning. As explained in the following subsections, potential hazards and hazardous materials impacts from implementing Alternative 2 would be the same as potential hazards and hazardous materials impacts from implementing the 2012 AQMP. For the complete analysis hazards and hazardous materials impacts from the 2012 AQMP, refer to Subchapter 4.4 – Hazards and Hazardous Materials. Potential noise impacts from implementing Alternative 2 are described in the following subsections.

6.5.4.3.1 *PM_{2.5} Control Measures*

Similar to the analysis of hazards and hazardous materials impacts for the 2012 AQMP in Subchapter 4.4, none of the two PM_{2.5} control measures in Alternative 2 that regulates the same sources as the episodic control measures in the 2012 AQMP was identified as contributing to construction hazards and hazardous materials impacts. However, because all other 2012 AQMP PM_{2.5} control measures, including those contributing to significant adverse hazards and hazardous materials impacts, are also included in Alternative 2, it has the potential to generate the same hazards and hazardous materials impacts as implementing the 2012 AQMP, which were concluded to be significant. This same conclusion applies to Alternative 2.

6.5.4.3.2 *Ozone Control Measures*

Because Alternative 2 contains the same ozone control measures as the 2012 AQMP, except that ozone Control Measure CMALT-2A (similar to 2012 control measure ONRD-04) applies only to the Mira Loma area, potential hazards and hazardous materials impacts from implementing Alternative 2 ozone control measures would be similar to the hazards and hazardous materials impacts from implementing the 2012 AQMP ozone control measures: VOC coatings could be formulated with more toxic or flammable solvents (not significant); exposure to hazardous waste from spent carbon, use of ammonia, and spent

catalyst from operating thermal oxidizers, etc., (not significant); and exposure to toxic air contaminant (ammonia) associated with SCRs during storage, transport, use and accidental release (mitigated to less than significant). Potential hazard and hazardous materials impacts from catastrophic releases of alternative fuels during transport (significant and unavoidable), would be slightly less because it is expected that fewer vehicles would be affected. Similar to the significance determination for potential hazards and hazardous materials impacts of the ozone control measures from the 2012 AQMP, hazards and hazardous materials impacts under Alternative 2 would also be significant, but would be slightly less compared to the 2012 AQMP. The mitigation measures (see Subchapter 4.4) identified to reduce potential hazards and hazardous materials impacts from the 2012 control measures would continue to apply to Alternative 2.

6.5.4.3.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, potential hazards and hazardous materials impacts from implementing Alternative 2 PM2.5 and ozone control measures could generate significant adverse hazards and hazardous materials impacts. Mitigation measures were identified that could reduce hazard impacts from exposure to onsite releases of ammonia to less than significant. No mitigation measures were identified that could reduce hazard impacts from catastrophic releases of alternative fuels during transport. Therefore, project-specific hazards and hazardous materials impacts associated with Alternative 2 are concluded to be significant and less than the 2012 AQMP.

Since, anticipated project-specific hazards and hazardous materials impacts from Alternative 2 are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific hazards and hazardous materials impacts would be significant, less than those generated by the 2012 AQMP, Alternative 2 would contribute to significant adverse cumulative hazards and hazardous materials impacts generated by the 2012-2035 RTP/SCS. Since hazards and hazardous materials impacts from the Alternative 2 are cumulatively considerable, cumulative hazards and hazardous materials impacts from the Alternative 2 are significant and less than the 2012 AQMP.

6.5.4.4 Alternative 3 – Greater Reliance on NOx Emissions Reductions

As explained in Subsection 6.4.3, Alternative 3 includes all of the same PM2.5 control measures as the 2012 AQMP except it does not include 2012 AQMP Control Measure BCM-01. With regard to ozone control measures, with the exceptions of 2012 AQMP Control Measures ONRD-03 and OFFRD-01, all other ozone control measures are the same as those in the 2012 AQMP. As explained in the following subsections, potential hazards and hazardous materials impacts from implementing Alternative 3 would be the same as potential hazards and hazardous materials impacts from implementing the 2012 AQMP. For the complete analysis of hazards and hazardous materials impacts from the 2012 AQMP, refer to Subchapter 4.4 – Hazards and Hazardous Materials.

6.5.4.4.1 *PM2.5 Control Measures*

Alternative 3 includes all of the same 2012 AQMP PM2.5 control measures, except BCM-01, so it has the potential to generate similar hazards and hazardous materials impacts as implementing the 2012 AQMP. PM2.5 control measures were identified as having the potential to generate significant adverse exposure impacts to a toxic air contaminant (ammonia) associated with SCRs and SNCR during storage, transport, use and accidental release. Mitigation measures were identified that could reduce this impact to less than significant. Use of alternative fuels and fuel additives could also result in hazard impacts, which were concluded to be significant. No mitigation measures were identified that could reduce hazard impacts from alternative fuels to less than significant. The hazard impacts associated with PM2.5 control measures (CMB-01, IND-01, and MCS-01) were evaluated and determined to be less than significant for reformulated coatings, adhesives, solvents, lubricants, mold release, and consumer products; alternative fuels; ammonia use in SCRs, and fuel additives. Since BCM-01 was not identified as a PM2.5 control measure that could generate hazards or hazardous materials impacts, hazards and hazardous materials impacts from Alternative 3 PM2.5 control measures would be equivalent to those from the 2012 AQMP.

6.5.4.4.2 *Ozone Control Measures*

All ozone control measures in Alternative 3 are identical to those in the 2012 AQMP, except that Alternative 3 ozone Control Measure ONRD-03 could result in approximately 5,000 additional medium-heavy-duty trucks complying with the year 2010 engine exhaust requirements for the years 2013 through 2017 (750 trucks per year that would be diesel or diesel-hybrids that comply with the year 2010 exhaust emission standards and 250 trucks per year that would use CNG engines for a total of 1,000 trucks per year). Similarly, Alternative 3 OFFRD-01 could result in a total of 19,344 additional repowered vehicles from the year 2014 through 2017.

Potential hazard impacts associated with the Alternative 3 ozone control measures (21 control measures, see Table 4.4-1) were evaluated and determined to be less than significant for reformulated coatings, adhesives, solvents, lubricants, mold release, and consumer products. Implementing ozone control measures that result in the use of ammonia in emission control systems could generate significant adverse hazard impacts from exposure to ammonia in the event of an accidental release. Mitigation measures were identified that could reduce ammonia hazard impacts to less than significant. Finally, ozone control measures that increase demand for alternative fuels (LNG) have the potential to generate significant adverse hazard impacts. No mitigation measures were identified that could reduce hazard impacts from alternative fuels to less than significant. Since Alternative 3 ozone Control Measures ONRD-03 and OFFRD-01 have the potential to increase demand for alternative fuels to a greater extent for on-road heavy-duty vehicles and a much greater extent for off-road vehicles compared to the 2012 AQMP, hazard and hazardous materials impacts from Alternative 3 are significant and greater than significant hazards and hazardous materials impacts from the 2012 AQMP.

6.5.4.4.3 *Project-specific and Cumulative Impacts Conclusion*

Since, anticipated project-specific hazards and hazardous materials impacts from Alternative 3 are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific hazards and hazardous materials impacts would be significant and greater than those generated by the 2012 AQMP, Alternative 3 would contribute to significant adverse cumulative hazards and hazardous materials impacts generated by the 2012-2035 RTP/SCS. Since hazards and hazardous materials impacts from Alternative 3 are cumulatively considerable, cumulative hazards and hazardous materials impacts from Alternative 3 are significant and greater than cumulative hazards and hazardous materials impacts from the 2012 AQMP.

6.5.4.5 *Alternative 4 – PM2.5 Reduction Strategies Only*

As explained in Subsection 6.4.4, Alternative 4 would only include the PM2.5 control measures in Table 6-4 of this chapter, which are the same as those in the 2012 AQMP. For the complete analysis of hazards and hazardous materials impacts from 2012 AQMP PM2.5 control measures, refer to Subchapter 4.4 – Hazards and Hazardous Materials. Because Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2. As a result, impacts from implementing 2007 AQMP black box control measures would be the same as for Alternative 1. Potential hazards and hazardous materials impacts from implementing Alternative 4 are described in the following subsections.

6.5.4.5.1 *PM2.5 Control Measures*

Similar to the analysis of hazards and hazardous materials impacts for the 2012 AQMP in Subchapter 4.4, because Alternative 4 includes all of the same 2012 AQMP PM2.5 control measures, including those contributing to significant adverse hazards and hazardous materials impacts, it has the potential to generate the same hazards and hazardous materials impacts as implementing the 2012 AQMP, which were concluded to be significant. This same conclusion applies to Alternative 4.

6.5.4.5.2 *Ozone Control Measures*

Adopting Alternative 4 ozone control measures would result in the same potential adverse hazards and hazardous materials impacts as would occur under Alternative 1. It was concluded in the analysis of impacts from Alternative 1 that all remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. Potential impacts from adopting the 2007 AQMP were evaluated in the 2007 Program EIR. The 2007 Program EIR included an analysis of hazards and hazardous materials impacts from all control measures, including black box control measures. The 2007 AQMP Program EIR included analyses of the following types of hazards and hazardous materials impacts.

- Low VOC coatings could be formulating with more toxic or flammable solvents could cause fire, accidental release, and offsite/onsite exposure and worker risk. This potential impact is considered to be less than significant.
- Use of alternative fuels and fuel additives can result in hazard impacts during transport, handling and storage. This impact was concluded to be less than significant.
- Potential exposure to toxic air contaminant (ammonia) associated with SCRs during storage, transport, use and accidental release. Hazard impacts from exposure to accidental releases of ammonia were concluded to be less than significant.

As a result, consistent with the assumption in Subsection 6.5.1.2 that significance determinations from the 2007 Program EIR continue to apply, it is concluded that Alternative 1 does not have the potential to generate potentially significant adverse hazards and hazardous materials impacts as shown in Table 6-10 and described in the following paragraphs.

6.5.4.5.3 Project-specific and Cumulative Impacts Conclusion

Because Alternative 4 includes all of the same 2012 AQMP PM2.5 control measures, including those contributing to significant adverse hazards and hazardous materials impacts, it has the potential to generate the same hazards and hazardous materials impacts as implementing the 2012 AQMP, which were concluded to be significant. Potential hazards and hazardous materials impacts from Alternative 4 ozone control measures would be the same as those identified for Alternative 1. Since Alternative 1 does not include short-term control measures, potential hazard and hazardous materials impacts would be even less compared to the 2007 AQMP when it was originally adopted. Consequently, overall hazards and hazardous materials impacts from Alternative 4 are concluded to be significant, less than significant.

Since, anticipated project-specific hazards and hazardous materials impacts from Alternative 4 are concluded to be significant, but less than those generated by the 2012 AQMP, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific hazards and hazardous materials impacts would be significant, but less than those generated by the 2012 AQMP, Alternative 4 would contribute to significant adverse cumulative hazards and hazardous materials impacts generated by the 2012-2035 RTP/SCS. Since hazards and hazardous materials impacts from Alternative 4 are cumulatively considerable, cumulative hazards and hazardous materials impacts from Alternative 4 are significant.

6.5.5 Hydrology and Water Quality

The potential direct and indirect hydrology and water quality impacts from implementing the proposed project and the project alternatives were evaluated. The following subsections provide brief discussions of direct and indirect hydrology and water quality impacts from each alternative relative to the 2012 AQMP.

6.5.5.1 Proposed Project

Potential direct and indirect hydrology and water quality impacts from the 2012 AQMP are summarized in the following subsections. For the complete analysis, refer to Subchapter 4.5 – Hydrology and Water Quality.

6.5.5.1.1 *PM2.5 Control Measures*

The hydrology and water quality impacts associated with PM2.5 control measures (e.g., BCM-03, IND-01, MCS-01, etc.) were analyzed and the following impacts were identified: water demand and wastewater discharge from operating wet ESPs or wet scrubbers, water quality impacts from the use of alternative fuels and fuel additives, water demand and water quality impacts from wastewater discharges from increased use of water-based formulations. Of the potential hydrology and water quality impacts analyzed, water demand impacts associated with the manufacture and use of waterborne and add-on air pollution control technologies were concluded to be significant. While mitigation measures were identified, water demand impacts are expected to remain significant. The hydrology and water quality impacts associated with wastewater generation and related wastewater quality are less than significant. Further, the use and application of SBS (BCM-04) on water quality is also expected to be less than significant.

6.5.5.1.2 *Ozone Control Measures*

Hydrology and water quality impacts associated with Ozone Control Measures are potentially significant for water demand (CTS-01, CTS-02, CTS-03, CTS-04, and FUG-01). The water quality impacts associated with wastewater generation and related wastewater quality from 2012 AQMP ozone control measures (CTS-01, CTS-02, CTS-03, CTS-04, and FUG-01) are less than significant. No significant adverse hydrology and water quality impacts are expected from the increased use of alternative fuels (IND-01, MSC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07). No significant adverse water quality impacts associated with increase battery use in EV and hybrid vehicles are expected (ONRD-01, ONRD-03, ONRD-04, ONRD-05, ADV-01, ADV-02, ADV-03, ADV-04, ADV-06, and ADV-07). Potential spills associated with ammonia are expected to be contained on-site due to the requirement for secondary spill containment devices and berms. Therefore, potential ammonia spills are expected to be less than significant.

6.5.5.1.3 *Project-specific and Cumulative Impacts Conclusion*

Water demand impacts from some types of air pollution control equipment (wet ESPs) and reformulating coatings with water-based coatings associated with 2012 AQMP PM2.5 and ozone control measures are potentially significant as indicated in the subsections above. No other hydrology or water quality impacts from 2012 AQMP PM2.5 or ozone control measures were identified. Further, it was concluded in Subchapter 4.5 that in spite of identifying water demand mitigation measures, implementing 2012 AQMP PM2.5 and ozone control measures has the potential to generate significant adverse water demand

impacts. Therefore, project-specific water demand impacts from implementing 2012 AQMP PM2.5 and ozone control measures are concluded to be significant and unavoidable.

Since, anticipated project-specific water demand impacts from the 2012 AQMP are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). In Chapter 5 potential project-specific hydrology or water quality impacts from the 2012 AQMP were evaluated in connection with hydrology or water quality impacts from SCAG's 2012-2035 RTP/SCS. Further, since project-specific hydrology or water quality impacts (water demand impacts) generated by the 2012 AQMP would be significant, the 2012 AQMP would contribute to significant adverse cumulative hydrology or water quality impacts generated by the 2012-2035 RTP/SCS. Other hydrology or water quality impacts from implementing 2012 AQMP PM2.5 and ozone control measures were identified, but concluded to be less than significant. Since water demand impacts from the 2012 AQMP are cumulatively considerable, cumulative water demand impacts from the 2012 AQMP are significant. No measures beyond those identified in Subchapter 4.5 were identified to mitigate significant adverse cumulative water demand impacts.

6.5.5.2 Alternative 1 – No Project Alternative

The Program EIR for the 2007 AQMP included environmental analyses for all control measures, including the black box control measures. As discussed in Chapter 2 of this [Final](#) Program EIR, all of the SCAQMD's and CARB's short- and mid-term control measures have been adopted. The only remaining control measures are the black box measures. Since the 2007 AQMP now includes only black box measures, environmental impacts for Alternative 1 will focus only on potential impacts identified for the black box measures.

6.5.5.2.1 *PM2.5 Control Measures*

As discussed in Subsection 6.4.1, Alternative 1 has no control measures that are considered to be PM2.5 control measures. For this reason, Alternative 1 is not expected to create any hydrology and water quality impacts from PM2.5 control measures.

6.5.5.2.2 *Ozone Control Measures*

Potential impacts from adopting the 2007 AQMP were evaluated in the 2007 Program EIR. The 2007 Program EIR included an analysis of hydrology and water quality impacts from all control measures, including black box control measures. As a result, consistent with the assumptions in Subsection 6.5.1.2 regarding the applicability of the significance determinations from the 2007 Program EIR, it is concluded that Alternative 1 does not have the potential to generate potentially significant hydrology and water quality impacts as shown in Table 6-10 and described in the following paragraphs.

All remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. It was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-01B regulating on-road heavy duty vehicles could generate potentially significant water quality impacts because potential emission reduction technologies such as alternative fuels or fuel additives, if accidentally

released could readily dissolve in water and create adverse groundwater and surface water impacts. As indicated in the 2007 AQMP Program EIR, potential water quality impacts were concluded to be less than significant because alternative fuels and fuel additives would not generate greater water quality impacts in the event of an accidental release than accidental releases of gasoline and diesel fuels.

It was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-03 regulating the VOC content of consumer products could generate potentially significant adverse water demand impacts. The reason for this conclusion is that future rules regulating consumer products could result in greater use of water-based formulation, thus, increasing water demand to supply these types of products. This impact, however, was concluded to be less than significant because the projected future increase in water demand from implementing 2007 AQMP control measures did not exceed the SCAQMD's water demand significance threshold in effect at that time.

6.5.5.2.3 *Project-specific and Cumulative Impacts Conclusion*

It was concluded in the 2007 Program EIR that water quality impacts from implementing all 2007 AQMP control measures would not be significant. However, the following three mitigation measures were identified to ensure that water quality impacts would remain less than significant.

HWQ-1: To ensure that users of reformulated solvents are aware of the proper disposal methods for reformulated solvents, the SCAQMD will provide an outreach and education program for affected parties. The SCAQMD will coordinate the outreach program with POTWs, the DTSC, and other appropriate agencies.

HWQ-2: The Sanitation Districts and other sewage agencies must increase their surveillance programs to quantify measurable effects resulting from this control measure and take appropriate action as necessary.

HWQ-3: CARB will monitor the use and limit or prohibit the use of toxic air contaminants, including perchloroethylene and methylene chloride, in reformulated consumer products.

Because Control Measure SCLTM-03 contributed to water quality impacts identified in the 2007 AQMP, the above mitigation measures would continue to be applicable under Alternative 1.

Potentially significant water quality impacts from illegal disposal of spent batteries resulting in battery acid leaking into the environment were also identified in the 2007 AQMP. As a result, mitigation measures HWQ-4 and HWQ-5 were identified to mitigate this type of potential water quality impact. It was concluded that implementing these two mitigation measures would reduce potential water quality impacts from illegal disposal of spent batteries to less than significant. However, because no 2007 AQMP black box control measures contributed to this water quality impact, the mitigation measures are no longer applicable. As indicated in Chapter 2 of this [Final](#) Program EIR, the SCAQMD and CARB have adopted all short-term control measures within their authority, so that only black box

control measures remain. Since Alternative 1 does not include short-term control measures, potential hydrology and water quality materials impacts would be even less compared to the 2007 AQMP when it was originally adopted. Consequently, overall hydrology and water quality impacts from Alternative 1 are concluded to be less than significant and less than hydrology and water quality impacts from the 2012 AQMP.

Since, anticipated project-specific hydrology and water quality impacts from Alternative 1 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific hydrology or water quality impacts would be less significant and less than those generated by the 2012 AQMP, Alternative 1 would not contribute to significant adverse cumulative hydrology or water quality impacts generated by the 2012-2035 RTP/SCS. Since hydrology and water quality impacts from Alternative 1 are not cumulatively considerable, cumulative hydrology and water quality impacts from Alternative 1 are not significant and are less than cumulative hydrology and water quality impacts from the 2012 AQMP.

6.5.5.3 Alternative 2 – Localized PM Emissions Control

As explained in Subsection 6.4.2, with the exception of the two episodic PM_{2.5} control measures for Mira Loma, CMALT-2B (formerly MCS-04B in the 6/28/12 NOP/IS) and CMALT-2C (formerly MCS-04C in the 6/28/12 NOP/IS), and one episodic ozone control measure, CMALT-2A (formerly MCS-04A in the 6/28/12 NOP/IS), Alternative 2 includes all of the same PM_{2.5} and ozone control measures as the 2012 AQMP, except for PM_{2.5} Control Measure BCM-02 – Open Burning. As explained in the following subsections, hydrology and water quality impacts from implementing Alternative 2 would be the same as potential hydrology and water quality impacts from implementing the 2012 AQMP. For the complete analysis of hydrology and water quality impacts from the 2012 AQMP, refer to Subchapter 4.5 – Hydrology and Water Quality. Potential hydrology and water quality impacts from implementing Alternative 2 are described in the following subsections.

6.5.5.3.1 *PM_{2.5} Control Measures*

Because Alternative 2 contains most of the same PM_{2.5} control measures as the 2012 AQMP, it has the potential generate the same hydrology and water quality impacts. Potential hydrology and water quality impacts associated with Alternative 2 PM_{2.5} control measures (e.g., BCM-03, IND-01, MCS-01, etc.) were analyzed and the following impacts were identified: water demand and wastewater discharge from operating wet ESPs or wet scrubbers, water quality impacts from the use of alternative fuels and fuel additives, water demand and water quality impacts from wastewater discharges from increased use of water-based formulations. Of the potential hydrology and water quality impacts analyzed, water demand impacts associated with the manufacture and use of waterborne and add-on air pollution control technologies were concluded to be significant. While mitigation measures are available, they can vary from jurisdiction to jurisdiction, and may remain significant. The hydrology and water quality impacts associated with wastewater generation and related wastewater quality are less than significant. Further, the use and application of SBS (BCM-04) on water quality is also expected to be less than significant. Consequently, water

demand impacts from Alternative 2 PM_{2.5} control measures are the same as water demand impacts from 2012 AQMP PM_{2.5} controls and are concluded to be significant.

6.5.5.3.2 *Ozone Control Measures*

Water demand impacts associated with Alternative 2 ozone control measures (CTS-01, CTS-02, CTS-03, CTS-04, and FUG-01) are potentially significant for water demand. Under Alternative 2, water quality impacts associated with wastewater generation and related wastewater quality from the same 2012 AQMP ozone control measures (see Subsection 6.5.5.1.2) are less than significant. Similarly, under Alternative 2 no significant adverse hydrology and water quality impacts are expected from the increased use of alternative fuels (see Subsection 6.5.5.1.2). No significant adverse water quality impacts associated with increase battery use in EV and hybrid vehicles are expected (see Subsection 6.5.5.1.2). Potential spills associated with ammonia are expected to be contained on-site due to the requirement for secondary spill containment devices and berms. Therefore, potential ammonia spills are expected to be less than significant. Overall, water demand impacts from Alternative 2 are concluded to be significant and equivalent to the 2012 AQMP. Water quality impacts from Alternative 2 are concluded to be less than significant and equivalent to the 2012 AQMP.

6.5.5.3.3 *Project-specific and Cumulative Impacts Conclusion*

Under Alternative 2, water demand impacts from some types of air pollution control equipment (wet ESPs) and reformulating coatings with water-based coatings would be the same as water demand impacts from the 2012 AQMP PM_{2.5} and ozone control measures and are potentially significant. As a result, the water demand mitigation measures identified in Subchapter 4.5 of [this Final Program EIR](#) would be applicable to Alternative 2. Similarly, in spite of applying the 2012 AQMP water demand mitigation measures, implementing Alternative 2 PM_{2.5} and ozone control measures has the potential to generate significant adverse water demand impacts. No other hydrology or water quality impacts from Alternative 2 PM_{2.5} or ozone control measures were identified. Therefore, project-specific water demand impacts from implementing Alternative 2 PM_{2.5} and ozone control measures are equivalent to water demand impacts from the 2012 AQMP and are concluded to be significant and unavoidable.

Since, anticipated project-specific water demand impacts from Alternative 2 are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Other hydrology or water quality impacts from implementing Alternative 2 PM_{2.5} and ozone control measures were identified, but concluded to be less than significant. Further, since project-specific hydrology or water quality (water demand) impacts would be significant and approximately equivalent to those generated by the 2012 AQMP, Alternative 2 would contribute to significant adverse cumulative hydrology or water quality (water demand) impacts generated by the 2012-2035 RTP/SCS. Since water demand impacts from Alternative 2 are cumulatively considerable, cumulative water demand impacts from Alternative 2 are significant. No measures beyond those identified in Subchapter 4.5 were identified to mitigate significant adverse cumulative water demand impacts.

6.5.5.4 Alternative 3 – Greater Reliance on NO_x Emissions Reductions

As explained in Subsection 6.4.3, Alternative 3 includes all of the same PM_{2.5} control measures as the 2012 AQMP except it does not include 2012 AQMP Control Measure BCM-01. With regard to ozone control measures, with the exceptions of 2012 AQMP Control Measures ONRD-03 and OFFRD-01, all other ozone control measures are the same as those in the 2012 AQMP. As explained in the following subsections, potential hydrology and water quality impacts from implementing Alternative 3 PM_{2.5} control measures would be the same as potential hydrology and water quality impacts from implementing the 2012 AQMP. It is expected, however, that potential hydrology and water quality impacts from Alternative 3 ozone control measures would be greater than those from the 2012 AQMP.

6.5.5.4.1 *PM_{2.5} Control Measures*

Alternative 3 contains all of the same PM_{2.5} control measures as the 2012 AQMP, except BCM-01, however. BCM-01 was evaluated and it was concluded that it does not have the potential to contribute to hydrology and water quality impacts. Consequently Alternative 3 PM_{2.5} measures would generate hydrology water quality impacts equivalent to the 2012 AQMP. The analysis indicated that the 2012 AQMP has the potential generate potential hydrology and water quality impacts associated with PM_{2.5} control measures (e.g., BCM-03, IND-01, MCS-01, etc.) which were analyzed and the following impacts were identified: water demand and wastewater discharge from operating wet ESPs or wet scrubbers, water quality impacts from the use of alternative fuels and fuel additives, water demand and water quality impacts from wastewater discharges from increased use of water-based formulations. The hydrology and water quality impacts associated with wastewater generation and related wastewater quality are less than significant. Further, the use and application of SBS (BCM-04) on water quality is also expected to be less than significant. Consequently, water demand impacts from Alternative 3 PM_{2.5} control measures are the same as water demand impacts from 2012 AQMP PM_{2.5} controls and are concluded to be significant.

6.5.5.4.2 *Ozone Control Measures*

All ozone control measures in Alternative 3 are identical to those in the 2012 AQMP, except that Alternative 3 ozone Control Measure ONRD-03 could result in approximately 5,000 additional medium-heavy-duty trucks complying with the year 2010 engine exhaust requirements for the years 2013 through 2017 (750 trucks per year that would be diesel or diesel-hybrids that comply with the year 2010 exhaust emission standards and 250 trucks per year that would use CNG engines for a total of 1,000 trucks per year). Similarly, Alternative 3 OFFRD-01 could result in a total of 19,344 additional repowered or replaced vehicles from the year 2014 through 2017. Hydrology and water quality impacts associated with Ozone control measures are potentially significant for water demand (CTS-01, CTS-02, CTS-03, CTS-04, and FUG-01). The water quality impacts associated with wastewater generation and related wastewater quality from 2012 AQMP control measures (CTS-01, CTS-02, CTS-03, CTS-04, and FUG-01) are less than significant. Less than significant adverse hydrology and water quality impacts are expected from the increased use of alternative fuels (IND-01, MSC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-

04, ADV-05, ADV-06, and ADV-07). Similarly, less than significant adverse water quality impacts associated with increase battery use in EV and hybrid vehicles are expected (ONRD-01, ONRD-03, ONRD-04, ONRD-05, ADV-01, ADV-02, ADV-03, ADV-04, ADV-06, and ADV-07). Potential spills associated with ammonia are expected to be contained on-site due to the requirement for secondary spill containment devices and berms. Therefore, potential ammonia spills are expected to be less than significant.

Although it is expected that ozone Control Measure ONRD-03 would result in double the number of trucks complying with the 2010 engine exhaust standards and OFFRD-01 would likely affect approximately three times as many vehicles, water quality impacts could be greater than for the 2012 AQMP, but they are not expected to be significant because the use of alternative fuels is not expected to result in any greater adverse water quality impacts than the use of conventional fuels like diesel or gasoline. Similarly, since none of the alternative fuels typically require water as part of their manufacturing or distribution processes, any increased use of alternative fuels under Alternative 3 would not likely be greater than under the 2012 AQMP.

Mitigation measures to reduce water demand impacts were identified for the 2012 AQMP and would apply to Alternative 3 as well. In spite of implementing the water demand mitigation measures, water demand impacts from Alternative 3 are expected to remain significant and equivalent to the 2012 AQMP and water quality impacts are expected to be less than significant and equivalent to the 2012 AQMP.

6.5.5.4.3 *Project-specific and Cumulative Impacts Conclusion*

Based on the above information, like the 2012 AQMP, Alternative 3 PM_{2.5} and ozone control measures are not expected to create significant adverse project-specific water quality impacts, but would be expected to generate water demand impacts equivalent to the 2012 AQMP. To ensure that water demand impacts remain significant, four mitigation measures were identified. Because Alternative 3 Control Measures ONRD-03 and OFFRD-01 would affect more on- and off-road sources than the comparable measures in the 2012 AQMP, project-specific impacts would be expected to be greater than impacts from the 2012 AQMP, but still less than significant.

Since, anticipated project-specific hydrology and water quality impacts from Alternative 3 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific hydrology or water quality impacts would be significant and greater than those generated by the 2012 AQMP, Alternative 3 would contribute to significant adverse cumulative hydrology or water quality impacts generated by the 2012-2035 RTP/SCS. Since hydrology and water quality impacts from Alternative 3 are cumulatively considerable, cumulative hydrology and water quality impacts from Alternative 3 are significant and greater than cumulative hydrology and water quality impacts from the 2012 AQMP.

6.5.5.5 Alternative 4 – PM2.5 Reduction Strategies Only

As explained in Subsection 6.4.4, Alternative 4 would only include the PM2.5 control measures in Table 6-4 of this chapter. For the complete analysis of hydrology and water quality impacts from 2012 AQMP PM2.5 control measures, refer to Subchapter 4.5 – Hydrology and Water Quality. Because Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2. As a result, impacts from implementing 2007 AQMP black box control measures would be the same as for Alternative 1. Potential hydrology and water quality impacts from implementing Alternative 4 are described in the following subsections.

6.5.5.5.1 *PM2.5 Control Measures*

Because Alternative 4 contains all of the same PM2.5 control measures as the 2012 AQMP, it has the potential generate the same hydrology and water quality impacts. Potential hydrology and water quality impacts associated with Alternative 4 PM2.5 control measures (e.g., BCM-03, IND-01, MCS-01, etc.) were analyzed and the following impacts were identified: water demand and wastewater discharge from operating wet ESPs or wet scrubbers, water quality impacts from the use of alternative fuels and fuel additives, water demand and water quality impacts from wastewater discharges from increased use of water-based formulations. Of the potential hydrology and water quality impacts analyzed, water demand impacts associated with the manufacture and use of waterborne and add-on air pollution control technologies were concluded to be significant. While mitigation measures are available, they can vary from jurisdiction to jurisdiction, and may remain significant. The hydrology and water quality impacts associated with wastewater generation and related wastewater quality are less than significant. Further, the use and application of SBS (BCM-04) on water quality is also expected to be less than significant. Consequently, water demand impacts from Alternative 4 PM2.5 control measures are the same as water demand impacts from 2012 AQMP PM2.5 controls and are concluded to be significant.

6.5.5.5.2 *Ozone Control Measures*

Water demand impacts associated with Alternative 4 ozone control measures (CTS-01, CTS-02, CTS-03, CTS-04, and FUG-01) are potentially significant for water demand. Under Alternative 4, water quality impacts associated with wastewater generation and related wastewater quality from the same 2012 AQMP ozone control measures (see Subsection 6.5.5.1.2) are less than significant. Similarly, under Alternative 4 no significant adverse hydrology and water quality impacts are expected from the increased use of alternative fuels (see Subsection 6.5.5.1.2). No significant adverse water quality impacts associated with increase battery use in EV and hybrid vehicles are expected (see Subsection 6.5.5.1.2). Potential spills associated with ammonia are expected to be contained on-site due to the requirement for secondary spill containment devices and berms. Therefore, potential ammonia spills are expected to be less than significant.

6.5.5.5.3 *Project-specific and Cumulative Impacts Conclusion*

Because Alternative 4 does not specifically include any ozone control measures, like Alternative 1, it relies on the ozone portion of the 2007 AQMP. It was concluded in the 2007 Program EIR that water quality impacts from implementing all 2007 AQMP control measures would not be significant. However, the mitigation measures HWQ1, HWQ2, and HWQ3 were identified to ensure that water quality impacts would remain less than significant (see Subsection 6.5.5.2.3 for a description of these control measures).

Because Control Measure SCLTM-03 contributed to water quality impacts identified in the 2007 AQMP, the same mitigation measures would continue to be applicable under Alternative 4.

Potentially significant water quality impacts from illegal disposal of spent batteries resulting in battery acid leaking into the environment were also identified in the 2007 AQMP. As a result, mitigation measures HWQ4 and HWQ5 were identified to mitigate this type of potential water quality impact. It was concluded that implementing these two mitigation measures would reduce potential water quality impacts from illegal disposal of spent batteries to less than significant. However, because no 2007 AQMP black box control measures contributed to this water quality impact, the mitigation measures are no longer applicable. As indicated in Chapter 2 of this [Final](#) Program EIR, the SCAQMD and CARB have adopted all short-term control measures within their authority, so that only black box control measures remain. Since Alternative 4 does not include short-term control measures, potential hydrology and water quality materials impacts would be even less compared to the 2007 AQMP when it was originally adopted. Consequently, overall hydrology and water quality impacts from Alternative 4 are concluded to be less than significant and less than hydrology and water quality impacts from the 2012 AQMP.

Since, anticipated project-specific hydrology and water quality impacts from Alternative 4 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific hydrology or water quality (water demand) impacts would be significant, but less than those generated by the 2012 AQMP, Alternative 4 would contribute to significant adverse cumulative hydrology or water quality impacts generated by the 2012-2035 RTP/SCS. Since hydrology and water quality impacts from Alternative 4 are cumulatively considerable, cumulative hydrology and water quality impacts from Alternative 4 are significant, but are less than significant cumulative hydrology and water quality impacts from the 2012 AQMP.

6.5.6 Land Use and Planning

The potential direct and indirect land use and planning impacts from implementing the proposed project and the project alternatives were evaluated. The following subsections provide brief discussions of direct and indirect land use and planning impacts from each alternative relative to the 2012 AQMP.

6.5.6.1 Proposed Project

Potential direct and indirect land use and planning impacts from the 2012 AQMP are summarized in the following subsections. For the complete analysis, refer to Subchapter 4.6 - Land Use and Planning.

6.5.6.1.1 *PM2.5 Control Measures*

The analysis in Subchapter 4.6 indicated that no 2012 AQMP PM2.5 control measures were identified that have the potential to significantly adversely affect land use and planning decisions by local land use agencies. Therefore, potential impacts to land use and planning are concluded to be less than significant.

6.5.6.1.2 *Ozone Control Measures*

The analysis in Subchapter 4.6 identified the following 2012 AQMP ozone control measures as having the potential to create significant adverse land use and planning impacts, including visual impacts and impacts to scenic highways, ozone Control Measures ONRD-05, ADV-01, and ADV-2. These control measures identify construction of “wayside” power (such as electricity from overhead wires) as one of the zero emission technologies that could be used to reduce emissions from heavy-duty trucks and locomotives. Wayside power technologies include overhead catenary lines, where power is delivered from the electrical grid through the overhead wire to a pantograph on the vehicle itself. Catenary systems are well-established and efficient in light-rail applications, trolley cars and buses, and even mining trucks.

Control Measure ADV-01 indicates that the I-710 corridor was selected as high priority for introduction of zero-emission technology⁶. The 2012-2035 RTP/SCS also designates a route along the State Route 60 freeway as an east-west freight corridor⁷. In addition, there is currently a pilot project under consideration to install catenary lines at one of two sites, a site along the Terminal Island Freeway and on Navy at the Port of Los Angeles. Construction activities to install catenary lines at these locations would be expected to occur along heavily travelled roadways such as those identified above and possibly on other roads near the ports, such as Sepulveda Boulevard, Terminal Island Freeway, and Alameda Street.

Installation of electric and/or magnetic infrastructure will not change the existing condition (i.e., there will be limited opportunities to cross these major transportation corridors); however, the installation of the electric and/or magnetic infrastructure is not expected to create any new barriers or physically divide an established community. Further, the electric and/or magnetic infrastructure would be expected to be construction within or adjacent to the existing rights-of-way of existing streets and freeways, so no conflict with existing land

⁶ Los Angeles County Metropolitan Transportation Authority, *Alternative Goods Movement Technology Analysis-Initial Feasibility Study Report, Final Report: I-710 Corridor Project EIR/EIS*. Prepared by URS. January 6, 2009.

⁷ Los Angeles County Metropolitan Transportation Authority, *Alternative Goods Movement Technology Analysis-Initial Feasibility Study Report, Final Report: I-710 Corridor Project EIR/EIS*. Prepared by URS. January 6, 2009.

uses, general plans, specific plans, local coastal program, zoning ordinance, or other policies would be expected. Therefore, land use and planning impacts from the 2012 AQMP are concluded to be less than significant.

6.5.6.1.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, it was concluded in Subchapter 4.6 that 2012 AQMP control measures are not expected to conflict with applicable land use plans, policies, or regulations or physically divide an established community. Therefore, no significant adverse project-specific land use impacts are expected.

Since, anticipated project-specific land use and planning impacts from the 2012 AQMP are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). In Chapter 5 potential project-specific land use and planning impacts from the 2012 AQMP were evaluated in connection with land use and planning impacts from SCAG's 2012-2035 RTP/SCS. Further, since project-specific land use and planning impacts would be less than significant for the 2012 AQMP, the 2012 AQMP would not contribute to significant adverse cumulative land use and planning impacts generated by the 2012-2035 RTP/SCS. Since aesthetics impacts from the 2012 AQMP are not cumulatively considerable, cumulative aesthetics impacts from the 2012 AQMP are not significant.

6.5.6.2 *Alternative 1 – No Project Alternative*

The Program EIR for the 2007 AQMP included environmental analyses for all control measures, including the black box control measures. As discussed in Chapter 2 of this [Final](#) Program EIR, all of the SCAQMD's and CARB's short- and mid-term control measures have been adopted. The only remaining control measures are the black box measures. Since the 2007 AQMP now includes only black box measures, land use and planning impacts for Alternative 1 will focus only on potential impacts identified for the black box measures. Potential land use and planning impacts from implementing Alternative 1 are described in the subsection.

6.5.6.2.1 *PM2.5 Control Measures*

As discussed in Subsection 6.4.1, Alternative 1 has no control measures that are considered to be PM2.5 control measures. For this reason and the fact that land use and planning was not an environmental topic identified in the NOP/IS for the 2007 AQMP that could be adversely affected by that AQMP, Alternative 1 is not expected to create any land use and planning impacts.

6.5.6.2.2 *Ozone Control Measures*

All remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. The analysis of potential land use and planning impacts from the 2012 AQMP was not originally identified as a topic that would be adversely affected by the 2012 AQMP. However, public comments received on the 6/28/12 NOP/IS requested that land use and planning be added to the analysis of impacts in the 2012

AQMP [Final](#) Program EIR because it was suggested that construction and operation fixed guideway systems contemplated as part of Control Measure ONRD-05 “may impact established communities.”

As shown in Table 6-4, like Control Measure ONRD-05, 2007 AQMP Control Measure Off-Road Vehicles (SCLTM-02) would also regulate heavy-duty trucks using control technologies such as: expanded modernization and retrofit of heavy-duty trucks and buses; expanded inspection and maintenance program; and advanced near-zero and zero-emitting cargo transportation technologies. However, fixed guideway systems were not identified as a possible method of reducing heavy-duty truck emissions. The NOP/IS for the 2007 AQMP concluded that since the 2007 AQMP did not require construction of structures or new land uses in any areas of the district, no land use and planning impacts would be generated and land use and planning impacts would be less than would occur for the 2012 AQMP.

6.5.6.2.3 *Project-specific and Cumulative Impacts Conclusion*

The NOP/IS for the 2007 AQMP concluded that the 2007 AQMP would not generate any land use and planning impacts. Therefore, consistent with the assumptions in Subsection 6.5.1.2.1, it is presumed that Alternative 1 would not generate significant adverse project-specific land use and planning impacts.

Since, anticipated project-specific land use and planning impacts from Alternative 1 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific land use and planning impacts would be less than those generated by the 2012 AQMP, Alternative 1 would not contribute to significant adverse cumulative land use and planning impacts generated by the 2012-2035 RTP/SCS. Since land use and planning impacts from Alternative 1 are not cumulatively considerable, cumulative land use and planning impacts from Alternative 1 are not significant and would be less than cumulative land use and planning impacts from the 2012 AQMP.

6.5.6.3 Alternative 2 – Localized PM Emissions Control

As explained in Subsection 6.4.2, with the exception of the two episodic PM_{2.5} control measures for Mira Loma, CMALT-2B (formerly MCS-04B in the 6/28/12 NOP/IS) and CMALT-2C (formerly MCS-04C in the 6/28/12 NOP/IS), and one episodic ozone control measure, CMALT-2A (formerly MCS-04A in the 6/28/12 NOP/IS), Alternative 2 includes all of the same PM_{2.5} and ozone control measures as the 2012 AQMP, except for PM_{2.5} Control Measure BCM-02 – Open Burning. As explained in the following subsections, potential land use and planning impacts from implementing Alternative 2 would be the same as potential land use and planning impacts from implementing the 2012 AQMP. For the complete analysis of land use and planning impacts from the 2012 AQMP, refer to Subchapter 4.6 – Land Use and Planning. Potential land use and planning impacts from implementing Alternative 2 are described in the following subsections.

6.5.6.3.1 *PM2.5 Control Measures*

Similar to the analysis of land use and planning impacts for the 2012 AQMP in Subchapter 4.6, no PM2.5 control measures were identified from implementing Alternative 2 that have the potential to significantly adversely affect land use and planning by local land use agencies. The three episodic control measures in this alternative that would apply only to the Mira Loma area do not contain any provisions for constructing wayside electricity such as catenary electric lines. Therefore, potential land use and planning impacts from implementing 2012 AQMP PM2.5 control measures were concluded to be less than significant. This same conclusion applies to Alternative 2.

6.5.6.3.2 *Ozone Control Measures*

Because Alternative 2 contains the same ozone control measures as the 2012 AQMP, except that ozone Control Measure CMALT-2A (similar to 2012 Control Measure ONRD-04) applies only to the Mira Loma area, land use and planning impacts from implementing Alternative 2 ozone control measures would be the same as the land use and planning impacts from implementing the 2012 AQMP ozone control measures. As shown in the analysis of land use and planning impacts for the 2012 AQMP in Subchapter 4.6, implementing ozone control measures from Alternative 2 (e.g., ozone Control Measures ONRD-05, ADV-01, and ADV-2) has the potential to generate adverse land use and planning impacts, such impacts would be less than significant. No other 2012 AQMP ozone control measures were identified that could affect land use and planning. This same conclusion applies to Alternative 2 because it contains the same three ozone control measures that have the potential to affect aesthetics resources.

6.5.6.3.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, potential project-specific adverse land use and planning impacts from Alternative 2 would be the same as potential project-specific land use and planning impacts from the 2012 AQMP and less than significant, because construction of the catenary or overhead power lines would not be expected to conflict with applicable land use plans, policies, or regulations or physically divide an established community.

Since, anticipated project-specific land use and planning impacts from Alternative 2 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific land use and planning impacts would be less than those generated by the 2012 AQMP, Alternative 2 would not contribute to significant adverse cumulative land use and planning impacts generated by the 2012-2035 RTP/SCS. Since land use and planning impacts from Alternative 2 are not cumulatively considerable, cumulative land use and planning impacts from Alternative 2 are not significant and equivalent to the 2012 AQMP.

6.5.6.4 *Alternative 3 – Greater Reliance on NOx Emissions Reductions*

As explained in Subsection 6.4.3, Alternative 3 includes all of the same PM2.5 control measures as the 2012 AQMP except it does not include 2012 AQMP Control Measure BCM-01. With regard to ozone control measures, with the exceptions of 2012 AQMP

Control Measures ONRD-03 and OFFRD-01, all other ozone control measures are the same as those in the 2012 AQMP. As explained in the following subsections, potential land use and planning impacts from implementing Alternative 3 would be the same as potential land use and planning impacts from implementing the 2012 AQMP. For the complete analysis of land use and planning impacts from the 2012 AQMP, refer to Subchapter 4.6 – Land Use and Planning.

6.5.6.4.1 *PM2.5 Control Measures*

Similar to the analysis of land use and planning impacts for the 2012 AQMP in Subchapter 4.6, no PM2.5 control measures were identified from implementing Alternative 3 that have the potential to significantly adversely affect land use and planning by local land use agencies. Potential land use and planning impacts from implementing the 2012 AQMP were concluded to be less than significant (see Subchapter 4.6 of this [Final](#) Program EIR). This same conclusion applies to Alternative 3.

6.5.6.4.2 *Ozone Control Measures*

Similar to the analysis of land use and planning impacts for the 2012 AQMP in Subchapter 4.1, implementing ozone control measures from Alternative 3 (e.g., ozone Control Measures ONRD-05, ADV-01, and ADV-2) has the potential to generate adverse land use and planning impacts. No other 2012 AQMP ozone control measures were identified that could affect land use and planning by local land use agencies. This same conclusion applies to Alternative 3 because it contains the same three ozone control measures that have the potential to generate land use and planning impacts. Consequently, land use and planning impacts from Alternative 3 would be the same as for the 2012 AQMP and both would be less than significant.

6.5.6.4.3 *Project-specific and Cumulative Impacts Conclusion*

As explained above, potential project-specific adverse land use and planning impacts from implementing Alternative 3 PM2.5 and ozone control measures would be the same as potential project-specific land use and planning impacts from implementing 2012 AQMP PM2.5 and ozone control measures and less than significant.

Since, anticipated project-specific land use and planning impacts from Alternative 3 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific land use and planning impacts would be less than those generated by the 2012 AQMP, Alternative 3 would not contribute to significant adverse cumulative land use and planning impacts generated by the 2012-2035 RTP/SCS. Since land use and planning impacts from Alternative 3 are not cumulatively considerable, cumulative land use and planning impacts from Alternative 3 are not significant and equivalent to the 2012 AQMP.

6.5.6.5 *Alternative 4 – PM2.5 Reduction Strategies Only*

As explained in Subsection 6.4.4, Alternative 4 would only include the PM2.5 control measures in Table 6-4 of this chapter. For the complete analysis of land use and planning

impacts from 2012 AQMP PM_{2.5} control measures, refer to Subchapter 4.6 – Land Use and Planning. Because Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2. As a result, impacts from implementing 2007 AQMP black box control measures would be the same as for Alternative 1. Potential land use and planning impacts from implementing Alternative 4 are described in the following subsections.

6.5.6.5.1 PM_{2.5} Control Measures

Similar to the analysis of land use and planning impacts for the 2012 AQMP in Subchapter 4.6, no PM_{2.5} control measures were identified from implementing Alternative 4 that have the potential to significantly adversely affect land use and planning by local land use agencies. Potential land use and planning impacts from implementing the 2012 AQMP were concluded to be less than significant (see Subchapter 4.6 of this [Final](#) Program EIR). This same conclusion applies to Alternative 4.

6.5.6.5.2 Ozone Control Measures

Adopting Alternative 4 means that the ozone SIP portion of the 2007 AQMP would remain in effect. As shown in Table 6-2 and discussed in subsection 6.5.1.2.3, 2012 AQMP Control Measure ONRD-05 would regulate the same emissions sources as 2007 AQMP Control Measure On-road Heavy-duty Vehicles (SCLTM-01B) (e.g., heavy-duty trucks using control technologies such as: expanded modernization and retrofit of heavy-duty trucks and buses; expanded inspection and maintenance program; and advanced near-zero and zero-emitting cargo transportation technologies). However, catenary systems were not identified as a possible method of reducing heavy-duty truck emissions. In fact, it was concluded in the NOP/IS for the 2007 AQMP that some control measures may have beneficial effects on scenic resources by improving visibility as well as improving air quality, preventing smoke, limiting opening burning and wood burning; and minimizing fugitive dust emissions. Therefore, it is concluded that Alternative 4 does not have the potential to generate significant adverse aesthetics impacts.

6.5.6.5.3 Project-specific and Cumulative Impacts Conclusion

Based upon the above conclusions, when considering overall land use and planning impacts from implementing Alternative 4, no significant adverse land use and planning impacts were identified from implementing PM_{2.5} or ozone control measures. Therefore, it is presumed that Alternative 4 would not generate significant adverse land use and planning impacts. Finally, it is concluded that potential adverse land use and planning impacts from implementing Alternative 4 would be less than for the 2012 AQMP because unlike the 2012 AQMP, Alternative 4 does not contain any control measures that adversely affect land use and planning.

Since, anticipated project-specific land use and planning impacts from Alternative 4 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific

land use and planning impacts would be less than those generated by the 2012 AQMP and less than significant, Alternative 4 would not contribute to significant adverse cumulative land use and planning impacts generated by the 2012-2035 RTP/SCS. Since land use and planning impacts from Alternative 4 are not cumulatively considerable, cumulative land use and planning impacts from Alternative 4 are not significant and less than the 2012 AQMP.

6.5.7 Noise

The potential direct and indirect noise impacts from implementing the proposed project and the project alternatives were evaluated. The following subsections provide brief discussions of direct and indirect noise impacts from each alternative relative to the 2012 AQMP.

6.5.7.1 Proposed Project

Potential direct and indirect noise impacts from the 2012 AQMP are summarized in the following subsections. For the complete analysis, refer to Subchapter 4.7 - Noise.

6.5.7.1.1 PM2.5 Control Measures

The analysis in Subchapter 4.7 identified three 2012 AQMP PM2.5 control measures, BCM-03, IND-01, and MCS-01 that have the potential to generate the adverse construction noise/vibration impacts. The analysis of noise impacts in Subchapter 4.7 indicated that three control measures identified here may result in construction activities associated with air pollution control equipment and other control strategies that could generate construction noise/vibration impacts. However, potential adverse construction noise/vibration impacts from implementing PM2.5 control measures were concluded to be less than significant because construction noise/vibration impacts associated with installing control equipment would occur within appropriately zoned industrial and commercial areas, impacts would be temporary and limited to construction activities, and construction noise/vibration impacts to sensitive receptors would not be expected.

6.5.7.1.2 Ozone Control Measures

The analysis in Subchapter 4.7 identified a number of 2012 AQMP ozone control measures as having the potential to create the following adverse construction noise/vibration impacts. Ozone control measures from the 2012 AQMP have the potential to generate adverse noise impacts as a result of construction activities associated with: installing emission control technologies onto stationary source equipment; installing battery charging or fueling infrastructures, as well as transportation infrastructure, constructing wayside power, catenary lines or other similar technologies. Potential noise/vibration impacts of the ozone control measures during the construction phases were determined to be significant. Nine mitigation measures (see Subchapter 4.7, Section 4.7.5) were identified to reduce potential construction noise/vibration, however, construction noise/vibration impacts could remain significant in areas where sensitive receptors are located near transportation corridors.

6.5.7.1.3 *Project-specific and Cumulative Impacts Conclusion*

It was concluded in Subchapter 4.7 that potential construction noise/vibration impacts from implementing 2012 AQMP PM2.5 control measures would be significant. However, in spite of identifying construction noise/vibration mitigation measures, potential construction noise/vibration impacts were concluded to remain significant. Therefore, project-specific construction noise/vibration impacts associated with the 2012 AQMP are concluded to be significant.

Since, anticipated project-specific construction noise/vibration impacts from the 2012 AQMP are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). In Chapter 5 potential project-specific noise and vibration impacts from the 2012 AQMP were evaluated in connection with noise and vibration impacts from SCAG's 2012-2035 RTP/SCS. Further, since project-specific construction noise and vibration impacts would be significant, the 2012 AQMP would contribute to significant adverse cumulative noise and vibration impacts generated by the 2012-2035 RTP/SCS. Since construction noise/vibration impacts from the 2012 AQMP are cumulatively considerable, cumulative construction noise/vibration impacts from the 2012 AQMP are significant.

6.5.7.2 *Alternative 1 – No Project Alternative*

The Program EIR for the 2007 AQMP included environmental analyses for all control measures, including the black box control measures. As discussed in Chapter 2 of this [Final](#) Program EIR, all of the SCAQMD's and CARB's short- and mid-term control measures have been adopted. The only remaining control measures are the black box measures. Since the 2007 AQMP now includes only black box measures, environmental impacts for Alternative 1 will focus only on potential impacts identified for the black box measures.

6.5.7.2.1 *PM2.5 Control Measures*

As discussed in Subsection 6.4.1, Alternative 1 has no control measures that are considered to be PM2.5 control measures. For this reason and the fact that noise was not an environmental topic identified in the NOP/IS for the 2007 AQMP that could be adversely affected by that AQMP, Alternative 1 is not expected to create any noise impacts.

6.5.7.2.2 *Ozone Control Measures*

All remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. The analysis of potential noise impacts from the 2012 AQMP was not originally identified as a topic that would be adversely affected by the 2012 AQMP. However, public comments received on the 6/28/12 NOP/IS requested that noise impacts be added to the analysis of impacts in the 2012 AQMP [Final](#) Program EIR because of the potential for noise impacts “from the construction and operation of control measures in support of the [2012](#) AQMP. In particular it was asserted that construction and operation of Control Measure ONRD-05 could create potential noise impacts to nearby sensitive receptors.

As shown in Table 6-4, most Alternative 1 control measures would regulate mobile sources, although there is one control measure that would regulate consumer products. These control measures do not typically require construction activities and it is unlikely that operation would noticeably affect noise levels because control technologies that control emissions from mobile sources do not typically have movable parts that could generate noise.

Like Control Measure ONRD-05, 2007 AQMP Control Measure Off-Road Vehicles (SCLTM-02) would also regulate heavy-duty trucks using control technologies such as: expanded modernization and retrofit of heavy-duty trucks and buses; expanded inspection and maintenance program; and advanced near-zero and zero-emitting cargo transportation technologies. However, fixed guideway systems were not identified as a possible method of reducing heavy-duty truck emissions. The NOP/IS for the 2007 AQMP concluded that installing air pollution control equipment would not substantially increase ambient [operational] noise levels in the area, either permanently or intermittently, or expose people to excessive noise levels that would be noticeable above and beyond existing ambient levels. Further, it was not expected that affected facilities would exceed noise standards established in local general plans, noise elements, or noise ordinances currently in effect. Consequently noise impacts from Alternative 1 would not be significant and would be less than the 2012 AQMP.

6.5.7.2.3 *Project-specific and Cumulative Impacts Conclusion*

As a result, the NOP/IS for the 2007 AQMP concluded that the 2007 AQMP would not generate any noise impacts. Therefore, consistent with the assumptions in Subsection 6.4.1, it is presumed that Alternative 1 would not generate significant adverse noise impacts.

Since, anticipated project-specific noise impacts from Alternative 1 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific noise and vibration impacts would be less than those generated by the 2012 AQMP, would be less than significant and less than the 2012 AQMP, Alternative 1 would not contribute to significant adverse cumulative noise and vibration impacts generated by the 2012-2035 RTP/SCS. Since noise impacts from Alternative 1 are not cumulatively considerable, cumulative noise impacts from Alternative 1 are not significant and less than noise impacts from the 2012 AQMP.

6.5.7.3 *Alternative 2 – Localized PM Emissions Control*

As explained in Subsection 6.4.2, with the exception of the two episodic PM_{2.5} control measures for Mira Loma, CMALT-2B (formerly MCS-04B in the 6/28/12 NOP/IS) and CMALT-2C (formerly MCS-04C in the 6/28/12 NOP/IS), and one episodic ozone control measure, CMALT-2A (formerly MCS-04A in the 6/28/12 NOP/IS), Alternative 2 includes all of the same PM_{2.5} and ozone control measures as the 2012 AQMP, except for PM_{2.5} Control Measure BCM-02 – Open Burning. As explained in the following subsections, potential noise impacts from implementing Alternative 2 would be the same as potential noise impacts from implementing the 2012 AQMP. For the complete analysis of solid and hazardous waste impacts from the 2012 AQMP, refer to Subchapter 4.7 – Noise. Potential noise impacts from implementing Alternative 2 are described in the following subsections.

6.5.7.3.1 *PM2.5 Control Measures*

Similar to the analysis of construction noise/vibration impacts for the 2012 AQMP in Subchapter 4.7, none of the three PM2.5 control measures in the 2012 AQMP that regulates the same sources as the episodic control measures in Alternative 2 was identified as contributing to construction noise/vibration impacts. However, because all other 2012 AQMP PM2.5 control measures, including those contributing to adverse construction noise/vibration impacts, are also included in Alternative 2, it has the potential to generate the same construction noise/vibration impacts as implementing the 2012 AQMP, which were concluded to be less than significant. This same conclusion applies to Alternative 2.

6.5.7.3.2 *Ozone Control Measures*

Because Alternative 2 contains the same ozone control measures as the 2012 AQMP, except that ozone Control Measure CMALT-2A (similar to 2012 control measure ONRD-04) applies only to the Mira Loma area, potential construction noise/vibration impacts from implementing Alternative 2 ozone control measures would be the same as the solid and hazardous [waste](#) impacts from implementing the 2012 AQMP ozone control measures (e.g., noise from construction activities associated with: installing emission control technologies onto stationary source equipment; installing battery charging or fueling infrastructures, as well as transportation infrastructure, constructing wayside power, catenary lines or other similar technologies). Similar to the significance determination for potential construction noise/vibration impacts of the ozone control measures from the 2012 AQMP, construction noise/vibration during construction phases under Alternative 2 would also be significant. The nine mitigation measures (see Subchapter 4.7, Section 4.7.5) identified to reduce potential construction noise/vibration impacts from the 2012 ozone control measures would continue to apply to Alternative 2; however, construction noise/vibration impacts could remain significant in areas where sensitive receptors are located near transportation corridors.

6.5.7.3.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, potential construction noise/vibration impacts from implementing Alternative 2 PM2.5 control measures would be less than significant. However, implementing Alternative 2 ozone control measures could generate significant adverse construction noise/vibration impacts. In spite of applying construction noise/vibration mitigation measures, potential construction noise/vibration impacts were concluded to be significant. Therefore, project-specific construction noise/vibration impacts associated with Alternative 2 are concluded to be significant.

Since, anticipated project-specific construction noise/vibration impacts from Alternative 2 are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific noise and vibration impacts would be significant and approximately equivalent to those generated by the 2012 AQMP, Alternative 2 would contribute to significant adverse cumulative noise and vibration impacts generated by the 2012-2035 RTP/SCS. Since construction noise/vibration impacts from the Alternative 2 are cumulatively considerable, cumulative construction

noise/vibration impacts from the Alternative 2 are significant and equivalent to the 2012 AQMP.

6.5.7.4 Alternative 3 – Greater Reliance on NOx Emissions Reductions

As explained in Subsection 6.4.3, Alternative 3 includes all of the same PM_{2.5} control measures as the 2012 AQMP except it does not include 2012 AQMP Control Measure BCM-01. With regard to ozone control measures, with the exceptions of 2012 AQMP Control Measures ONRD-03 and OFFRD-01, all other ozone control measures are the same as those in the 2012 AQMP. As explained in the following subsections, potential noise impacts from implementing Alternative 3 would be the same as potential noise impacts from implementing the 2012 AQMP. For the complete analysis of noise impacts from the 2012 AQMP, refer to Subchapter 4.7 – Noise.

6.5.7.4.1 *PM_{2.5} Control Measures*

Similar to the analysis of construction noise/vibration impacts for the 2012 AQMP in Subchapter 4.7, no PM_{2.5} control measures were identified from implementing Alternative 3 that have the potential to generate significant adverse construction noise/vibration impacts. Potential construction noise/vibration impacts from implementing the 2012 AQMP were concluded to be less than significant (see Subchapter 4.7 of this [Final](#) Program EIR). This same conclusion applies to Alternative 3.

6.5.7.4.2 *Ozone Control Measures*

All ozone control measures in Alternative 3 are identical to those in the 2012 AQMP, except that Alternative 3 ozone control measure ONRD-03 could result in approximately 5,000 additional medium-heavy-duty trucks complying with the year 2010 engine exhaust requirements for the years 2013 through 2017 (750 trucks per year that would be diesel or diesel-hybrids that comply with the year 2010 exhaust emission standards and 250 trucks per year that would use CNG engines for a total of 1,000 trucks per year). Alternative 3 ozone Control Measure OFFRD-01 was evaluated and it was concluded that it did not have the potential to generate noise impacts.

The analysis of the 2012 AQMP ozone control measures, including Control Measure ONRD-03, indicated that the 2012 AQMP has the potential to create adverse noise impacts as a result of construction activities associated with: installing emission control technologies onto stationary source equipment; installing battery charging or fueling infrastructures, as well as transportation infrastructure, constructing wayside power, catenary lines or other similar technologies. Potential noise/vibration impacts of the ozone control measures during the construction phases were determined to be significant. Although Alternative 3 ozone Control Measure ONRD-03 is expected to double the number of trucks complying with the year 2010 engine exhaust standards, they would use the same sources of electricity as trucks under the 2102 AQMP. Consequently, no additional construction noise impacts would occur under Alternative since no additional sources of electricity would need to be constructed. Nine mitigation measures (see Subchapter 4.7, Section 4.7.5) were identified to reduce potential construction noise/vibration, however, construction noise/vibration impacts

from Alternative 3 could remain significant in areas where sensitive receptors are located near transportation corridors and equivalent to the 2012 AQMP.

6.5.7.4.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, potential construction noise/vibration impacts from implementing Alternative 3 PM2.5 control measures would be less than significant. However, implementing Alternative 3 ozone control measures could generate significant adverse construction noise/vibration impacts. In spite of applying construction noise/vibration mitigation measures, potential construction noise/vibration impacts were concluded to be significant. Therefore, project-specific construction noise/vibration impacts associated with Alternative 3 are concluded to be significant.

Since, anticipated project-specific construction noise/vibration impacts from Alternative 3 are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific noise and vibration impacts would be significant and approximately equivalent to those generated by the 2012 AQMP, Alternative 3 would contribute to significant adverse cumulative noise and vibration impacts generated by the 2012-2035 RTP/SCS. Since construction noise/vibration impacts from the Alternative 3 are cumulatively considerable, cumulative construction noise/vibration impacts from the Alternative 3 are significant and equivalent to the 2012 AQMP.

6.5.7.5 *Alternative 4 – PM2.5 Reduction Strategies Only*

As explained in Subsection 6.4.4, Alternative 4 would only include the PM2.5 control measures in Table 6-4 of this chapter. For the complete analysis of noise impacts from 2012 AQMP PM2.5 control measures, refer to Subchapter 4.7 – Noise. Because Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2. As a result, impacts from implementing 2007 AQMP black box control measures would be the same as for Alternative 1. Potential noise impacts from implementing Alternative 4 are described in the following subsections.

6.5.7.5.1 *PM2.5 Control Measures*

Similar to the analysis of construction noise/vibration impacts for the 2012 AQMP in Subchapter 4.7, no PM2.5 control measures were identified from implementing Alternative 4 that have the potential to generate significant adverse construction noise/vibration impacts. Potential construction noise/vibration impacts from implementing the 2012 AQMP were concluded to be less than significant (see Subchapter 4.7 of this [Final](#) Program EIR). This same conclusion applies to Alternative 4.

6.5.7.5.2 *Ozone Control Measures*

Adopting Alternative 4 means that the ozone SIP portion of the 2007 AQMP would remain in effect. The NOP/IS for the 2007 AQMP concluded that the 2007 AQMP may require existing commercial or industrial owners/operators of affected facilities to install air

pollution control equipment or modify their operations to reduce stationary source emissions. Potential modifications would occur at facilities typically located in appropriately zoned industrial or commercial areas. Further, ambient noise levels in commercial and industrial areas are typically driven primarily by freeway and/or highway traffic in the area and any heavy-duty equipment used for materials manufacturing or processing at nearby facilities. It was concluded in the 2007 AQMP NOP/IS that, since modifications to install air pollution control equipment would not substantially increase ambient [operational] noise levels in the area, either permanently or intermittently or expose people to excessive noise levels that would be noticeable above and beyond existing ambient levels, noise impacts from the 2007 AQMP would be less than significant. Therefore, consistent with the assumptions in Subsection 6.4.1, it is presumed that implementing Alternative 4 ozone control measures would not generate significant adverse noise impacts and noise impacts would be less than noise impacts from the 2012.

6.5.7.5.3 *Project-specific and Cumulative Impacts Conclusion*

Based on the above information, implementing Alternative 4 PM_{2.5} control measures would not generate significant adverse noise impacts. As indicated in the 2007 AQMP NOP IS, the 2007 AQMP would not generate any adverse noise impacts. Therefore, consistent with the assumptions in Subsection 6.4.1, it is presumed that Alternative 4 would not generate significant adverse project-specific noise impacts, which means that noise impacts would be less than for the 2012 AQMP, which were concluded to be significant.

Since, anticipated project-specific noise impacts from Alternative 4 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific construction noise and vibration impacts would be less than significant and less than those generated by the 2012 AQMP, Alternative 4 would not contribute to significant adverse cumulative noise and vibration impacts generated by the 2012-2035 RTP/SCS. Since noise impacts from Alternative 4 are not cumulatively considerable, cumulative noise impacts from Alternative 4 are not significant and less than noise impacts from the 2012 AQMP.

6.5.8 Solid and Hazardous Waste

The potential direct and indirect solid and hazardous waste impacts from implementing the proposed project and the project alternatives were evaluated. The following subsections provide brief discussions of direct and indirect aesthetics impacts from each alternative relative to the 2012 AQMP.

6.5.8.1 Proposed Project

Potential direct and indirect solid and hazardous waste impacts from the 2012 AQMP are summarized in the following subsections. For the complete analysis, refer to Subchapter 4.8 – Solid and Hazardous Waste.

6.5.8.1.1 *PM2.5 Control Measures*

The analysis in Subchapter 4.8 identified three 2012 AQMP PM2.5 control measures, BCM-03, IND-01, and MCS-01 that have the potential to generate the following adverse solid hazardous waste impacts. PM2.5 Control Measures BCM-01 and MCS-01 have the potential to generate solid waste associated with air pollution control equipment (e.g., filters). PM2.5 Control Measure IND-01 was also identified as having the potential generate solid waste impacts due to early retirement of equipment, solid was associated with air pollution control equipment, and EV battery disposal. However, potential adverse solid and hazardous waste impacts from implementing PM2.5 control measures were concluded to be less than significant.

6.5.8.1.2 *Ozone Control Measures*

The analysis in Subchapter 4.8 identified a number of 2012 AQMP ozone control measures as having the potential to create the following adverse solid and hazardous waste impacts. Potential solid and hazardous waste impacts from ozone control measures could occur due to burner replacement and SCR catalyst disposal. Similarly, potential solid and hazardous waste impacts from implementing ozone control measures from combustion equipment replacement, generation of solid waste from air pollution control equipment (e.g., used filters), and EV battery disposal. Finally, solid and hazardous waste impacts from implementing ozone control measures could potentially result in an increase in solid waste generation from early retirement of vehicles and EV battery disposal. However, potential adverse solid and hazardous waste impacts from implementing ozone control measures were concluded to be less than significant.

6.5.8.1.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, it was concluded in Subchapter 4.8 that potential solid and hazardous waste impacts from implementing the 2012 AQMP would be less than significant. Therefore, project-specific solid and hazardous waste impacts associated with the 2012 AQMP are less than significant.

Since anticipated project-specific solid and hazardous waste impacts from the 2012 AQMP are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). In Chapter 5 potential project-specific solid and hazardous waste impacts from the 2012 AQMP were evaluated in connection with air quality impacts from SCAG's 2012-2035 RTP/SCS. Further, since project-specific solid and hazardous waste impacts would be less than significant, the 2012 AQMP would not contribute to significant adverse cumulative solid and hazardous waste impacts generated by the 2012-2035 RTP/SCS. Since solid and hazardous waste impacts from the 2012 AQMP are not cumulatively considerable, cumulative solid and hazardous waste impacts from the 2012 AQMP are not significant.

6.5.8.2 *Alternative 1 – No Project Alternative*

The Program EIR for the 2007 AQMP included environmental analyses for all control measures, including the black box control measures. As discussed in Chapter 2 of this [Final](#)

Program EIR, all of the SCAQMD's and CARB's short- and mid-term control measures have been adopted. The only remaining control measures are the black box measures. Since the 2007 AQMP now includes only black box measures, environmental impacts for Alternative 1 will focus only on potential impacts identified for the black box measures.

6.5.8.2.1 PM2.5 Control Measures

As discussed in Subsection 6.4.1, Alternative 1 has no control measures that are considered to be PM2.5 control measures. For this reason, Alternative 1 is not expected to create any solid and hazardous waste impacts from PM2.5 control measures.

6.5.8.2.2 Ozone Control Measures

Potential impacts from adopting the 2007 AQMP were evaluated in the 2007 Program EIR. The 2007 Program EIR included an analysis of solid and hazardous waste impacts from all control measures, including black box control measures. As a result, consistent with the assumptions in Subsection 6.5.1.2 regarding the applicability of the significance determinations from the 2007 Program EIR, it is concluded that Alternative 1 does not have the potential to generate potentially significant solid and hazardous waste impacts as shown in Table 6-10 and described in the following paragraphs.

All remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. It was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-01 regulating on-road light-duty passenger vehicles and heavy-duty vehicles could generate potentially significant adverse solid and hazardous waste impacts. The reason for this conclusion was that accelerated penetration of low or zero emission vehicles could generate solid waste impacts from disposal of old batteries and replaced vehicles. This impact, however, was concluded to be less than significant.

Similarly, it was concluded in the Program EIR for the 2007 AQMP that the black box Control Measure SCLTM-02 regulating off-road heavy duty vehicles could also generate potentially significant adverse solid and hazardous waste impacts for the same reason identified for SCLTM-01 (e.g., accelerated penetration of low or zero emission vehicles could generate solid waste impacts from disposal of old batteries and replaced vehicles). This impact, however, was concluded to be less than significant. Therefore, solid and hazardous waste impacts from Alternative 1 are less than significant and less than the solid and hazardous waste impacts from the 2012 AQMP.

6.5.8.2.3 Project-specific and Cumulative Impacts Conclusion

It was concluded in the 2007 Program EIR that all 2007 AQMP control measures would not generate significant adverse solid and hazardous waste impacts. As indicated in Subsection 6.4.1, the SCAQMD and CARB have adopted all short-term control measures within their authority, so that only black box control measures remain. Since Alternative 1 does not include short-term control measures, potential solid and hazardous waste impacts would be even less compared to the 2007 AQMP when it was originally adopted. Consequently,

overall solid and hazardous waste impacts from Alternative 1 are concluded to be less than significant.

Since, anticipated project-specific solid and hazardous waste impacts from Alternative 1 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific solid and hazardous waste impacts would be less than significant and less than those generated by the 2012 AQMP, Alternative 1 would not contribute to significant adverse cumulative solid and hazardous waste impacts generated by the 2012-2035 RTP/SCS. Since solid and hazardous waste impacts from Alternative 1 are not cumulatively considerable, cumulative solid and hazardous waste impacts from Alternative 1 are not significant and less than the solid and hazardous waste impacts from the 2012 AQMP.

6.5.8.3 Alternative 2 – Localized PM Emissions Control

As explained in Subsection 6.4.2, with the exception of the two episodic PM_{2.5} control measures for Mira Loma, CMALT-2B (formerly MCS-04B in the 6/28/12 NOP/IS) and CMALT-2C (formerly MCS-04C in the 6/28/12 NOP/IS), and one episodic ozone control measure, CMALT-2A (formerly MCS-04A in the 6/28/12 NOP/IS), Alternative 2 includes all of the same PM_{2.5} and ozone control measures as the 2012 AQMP, except for PM_{2.5} Control Measure BCM-02 – Open Burning. As explained in the following subsections, potential solid and hazardous waste impacts from implementing Alternative 2 would be the same as the potential solid and hazardous [waste](#) impacts from implementing the 2012 AQMP. For the complete analysis of the solid and hazardous waste impacts from the 2012 AQMP, refer to Subchapter 4.8 – Solid and Hazardous Waste. Potential solid and hazardous [waste](#) impacts from implementing Alternative 2 are described in the following subsections.

6.5.8.3.1 PM_{2.5} Control Measures

Similar to the analysis of solid and hazardous [waste](#) impacts for the 2012 AQMP in Subchapter 4.8, none of the three PM_{2.5} control measures in the 2012 AQMP that regulates the same sources as the episodic control measures in Alternative 2 was identified as contributing to solid and hazardous waste impacts. However, because all other 2012 AQMP PM_{2.5} control measures, including those contributing to adverse solid and hazardous [waste](#) impacts, are also included in Alternative 2, it has the potential to generate the same solid and hazardous [waste](#) impacts as implementing the 2012 AQMP, which were concluded to be less than significant. This same conclusion applies to Alternative 2.

6.5.8.3.2 Ozone Control Measures

Because Alternative 2 contains the same ozone control measures as the 2012 AQMP, except that ozone Control Measure CMALT-2A (similar to 2012 Control Measure ONRD-04) applies only to the Mira Loma area, potential solid and hazardous waste impacts from implementing Alternative 2 ozone control measures would be the same as the solid and hazardous [waste](#) impacts from implementing the 2012 AQMP ozone control measures. As shown in the analysis of solid and hazardous [waste](#) impacts for the 2012 AQMP in Subchapter 4.8, implementing ozone control measures from Alternative 2 (CMB-01, CMB-

02, CMB-03, INC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07), have the potential to generate adverse impacts to solid and hazardous [waste](#) impacts. No other 2012 AQMP ozone control measures were identified that could affect aesthetic resources. Such impacts associated with implementing the 2012 AQMP ozone control measures were concluded to be less than significant. This same conclusion applies to Alternative 2 because it contains the same ozone control measures identified above that have the potential to affect solid and hazardous [waste](#) resources.

6.5.8.3.3 Project-specific and Cumulative Impacts Conclusion

Overall, potential project-specific adverse solid and hazardous [waste](#) impacts from Alternative 2 would be the same as potential project-specific solid and hazardous [waste](#) impacts from the 2012 AQMP and less than significant, because wastes generated by Alternative 2 (e.g., spent batteries) are required to be, and are largely recycled. For equipment that may be retired before the end of its useful life, that equipment may be reused in areas outside the district.

Since, anticipated project-specific solid and hazardous [waste](#) impacts from Alternative 2 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific solid and hazardous waste impacts would be less than those than significant and approximately equivalent to those generated by the 2012 AQMP, Alternative 2 would not contribute to significant adverse cumulative solid and hazardous waste impacts generated by the 2012-2035 RTP/SCS. Since solid and hazardous [waste](#) impacts from Alternative 2 are not cumulatively considerable, cumulative solid and hazardous [waste](#) impacts from Alternative 2 are not significant and equivalent to the 2012 AQMP.

6.5.8.4 Alternative 3 – Greater Reliance on NOx Emissions Reductions

As explained in Subsection 6.4.3, Alternative 3 includes all of the same PM_{2.5} control measures as the 2012 AQMP except it does not include 2012 AQMP Control Measure BCM-01. With regard to ozone control measures, with the exceptions of 2012 AQMP Control Measures ONRD-03 and OFFRD-01, all other ozone control measures are the same as those in the 2012 AQMP. As explained in the following subsections, potential solid and hazardous waste impacts from implementing Alternative 3 would be the same as potential solid and hazardous waste impacts from implementing the 2012 AQMP. For the complete analysis of solid and hazardous waste impacts from the 2012 AQMP, refer to Subchapter 4.8 – Solid and Hazardous Waste.

6.5.8.4.1 PM_{2.5} Control Measures

Similar to the analysis of solid and hazardous waste impacts for the 2012 AQMP in Subchapter 4.8, no PM_{2.5} control measures were identified from implementing Alternative 3 that have the potential to generate significant adverse solid and hazardous waste impacts. Potential solid and hazardous waste impacts from implementing the 2012 AQMP were

concluded to be less than significant (see Subchapter 4.8 of this [Final](#) Program EIR). This same conclusion applies to Alternative 3.

6.5.8.4.2 *Ozone Control Measures*

Alternative 3 ozone control measures were evaluated for the potential to generate solid or hazardous wastes. The following potential solid or hazardous waste impacts were identified: combustion equipment replacement, generation of solid waste from air pollution control equipment (e.g., used filters), early retirement and replacement of on- and off-road vehicles, and EV battery disposal. The analysis concluded that Alternative 3 ozone control measure would not be expected to generate significant adverse solid and hazardous waste generation from the control measures evaluated (CMB-01, CMB-02, CMB-03, INC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07). The analysis indicated that the solid and hazardous waste impacts associated with spent batteries are required to be and are largely recycled. Further, for equipment that may be retired before the end of its useful life, it would likely be reused in areas outside the district. Equipment with no remaining useful life is expected to be recycled for metal content.

All ozone control measures in Alternative 3 are identical to those in the 2012 AQMP, except that Alternative 3 ozone Control Measure ONRD-03 could result in approximately 5,000 additional medium-heavy-duty trucks complying with the year 2010 engine exhaust requirements for the years 2013 through 2017 (750 trucks per year that would be diesel or diesel-hybrids that comply with the year 2010 exhaust emission standards and 250 trucks per year that would use CNG engines for a total of 1,000 trucks per year). Similarly, Alternative 3 OFFRD-01 could result in a total of 19,344 additional repowered vehicles from the year 2014 through 2017. Although it is possible that Alternative 3 Control Measures ONRD-03 and OFFRD-01 could generate greater solid waste impacts than the 2012 AQMP, for the same reason identified above for the 2012 AQMP, solid waste impacts from Alternative 3 concluded to be less than significant.

6.5.8.4.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, potential project-specific adverse solid and hazardous [waste](#) impacts from Alternative 3 would be greater than potential project-specific solid and hazardous [waste](#) impacts from the 2012 AQMP, but would still be less than significant, because wastes generated by Alternative 3 (e.g., spent batteries) are required to be, and are largely recycled. For equipment that may be retired before the end of its useful life, that equipment may be reused in areas outside the district.

Since, anticipated project-specific solid and hazardous [waste](#) impacts from Alternative 3 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Although project-specific solid and hazardous waste impacts would be less than significant, but greater than those generated by the 2012 AQMP, Alternative 1 would not contribute to significant adverse cumulative solid and hazardous waste impacts generated by the 2012-2035 RTP/SCS. Since solid and hazardous [waste](#) impacts from Alternative 3 are not cumulatively considerable, cumulative

solid and hazardous [waste](#) impacts from Alternative 3 are not significant and greater than those generated by the 2012 AQMP.

6.5.8.5 Alternative 4 – PM2.5 Reduction Strategies Only

As explained in Subsection 6.4.4, Alternative 4 would only include the PM2.5 control measures in Table 6-4 of this chapter. For the complete analysis of solid and hazardous waste impacts from 2012 AQMP PM2.5 control measures, refer to Subchapter 4.8 – Solid and Hazardous Waste. Because Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2. As a result, impacts from implementing 2007 AQMP black box control measures would be the same as for Alternative 1. Potential solid and hazardous waste impacts from implementing Alternative 4 are described in the following subsections.

6.5.8.5.1 *PM2.5 Control Measures*

The analysis of 2012 AQMP PM2.5 control measures identified three 2012 AQMP PM2.5 control measures, BCM-03, IND-01, and MCS-01, that have the potential to generate the following adverse solid hazardous waste impacts. PM2.5 Control Measures BCM-01 and MCS-01 have the potential to generate solid waste associated with air pollution control equipment (e.g., filters). PM2.5 Control Measure IND-01 was also identified as having the potential generate solid waste impacts due to early retirement of equipment, solid was associated with air pollution control equipment, and EV battery disposal. However, potential adverse solid and hazardous waste impacts from implementing PM2.5 control measures were concluded to be less than significant. Because Alternative 4 includes all of the same PM2.5 control measures as the 2012 AQMP, solid and hazardous waste impacts would be the same.

6.5.8.5.2 *Ozone Control Measures*

Adopting Alternative 4 means that the ozone SIP portion of the 2007 AQMP would remain in effect. As shown in Table 6-2, there are a number 2012 AQMP ozone control measures that would regulate similar sources to those regulated by the remaining 2007 AQMP black box measures that have the potential to generate adverse solid and hazardous waste impacts (Table 6-22). However, the same reasons solid and hazardous waste impacts from the 2012 AQMP would be less than significant would apply to Alternative 4. Therefore, it is concluded that Alternative 4 does not have the potential to generate significant adverse solid and hazardous waste impacts and impacts would be less than solid and hazardous waste impacts from the 2012 AQMP because more ozone control measures with the potential to generate adverse solid and hazardous waste impacts were identified.

TABLE 6-22

Long-Term (Black Box) Control Measures from the 2007 AQMP

SOURCE CATEGORY	2012 AQMP CONTROL MEASURES AFFECTING SAME SOURCE
Light Duty Vehicles (SCLTM-01A)	ONRD-01 & ADV-01
On-Road Heavy Duty Vehicles (SCLTM-01B)	ONRD-03, ONRD-05 & ADV-06
Off-Road Vehicles (SCLTM-02)	OFFRD-01 & ADV-06
Marine Vessels	IND-01, OFFRD-05 & ADV-05
Locomotives	OFFRD-02, OFFRD-03 & ADV-02
Aircraft	ADV-07

6.5.8.5.3 *Project-specific and Cumulative Impacts Conclusion*

Based upon the above conclusions, when considering overall solid and hazardous waste impacts from implementing Alternative 4, although some 2007 black box measures have the potential to generate adverse solid and hazardous waste impacts, no significant adverse solid and hazardous waste impacts were identified from implementing PM_{2.5} or ozone control measures. Finally, it is concluded that potential adverse solid and hazardous waste impacts from implementing Alternative 4 would be less than for the 2012 AQMP because more ozone control measures with the potential to generate adverse solid and hazardous waste impacts were identified. As a result, Alternative 4 would not generate significant adverse solid and hazardous waste impacts and solid and hazardous waste impacts would be less than those from the 2012 AQMP.

Since, anticipated project-specific solid and hazardous waste impacts from Alternative 4 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific solid and hazardous waste impacts would be less than significant and less than those generated by the 2012 AQMP, Alternative 4 would not contribute to significant adverse cumulative solid and hazardous waste impacts generated by the 2012-2035 RTP/SCS. Since solid and hazardous waste impacts from Alternative 4 are not cumulatively considerable, cumulative solid and hazardous waste impacts from Alternative 4 are not significant and less than the 2012 AQMP.

6.5.9 Transportation and Traffic

The potential direct and indirect transportation and traffic impacts from implementing the proposed project and the project alternatives were evaluated. The following subsections provide brief discussions of direct and indirect hazards and hazardous materials impacts from each alternative relative to the 2012 AQMP.

6.5.9.1 Proposed Project

Potential direct and indirect transportation and traffic impacts from the 2012 AQMP are summarized in the following subsections. For the complete analysis, refer to Subchapter 4.9 – Transportation and Traffic.

6.5.9.1.1 *PM2.5 Control Measures*

The analysis in Subchapter 4.9 – Transportation and Traffic, indicated that no 2012 AQMP PM2.5 control measures were identified that have the potential to significantly adversely affect transportation and traffic. Therefore, potential impacts to transportation and traffic are concluded to be less than significant.

6.5.9.1.2 *Ozone Control Measures*

The analysis in Subchapter 4.9 identified the following three 2012 AQMP ozone control measures as having the potential to create significant adverse transportation and traffic impacts: ONRD-05, ADV-01, and ADV-02. It was determined that these three 2012 AQMP ozone control measures could generate potential traffic impacts due to construction and operation of wayside sources of electricity, such as overhead catenary lines; battery charging stations; alternative fuel fueling infrastructure; and magnetic infrastructure. The potential transportation and traffic impacts of these ozone control measures were determined to be significant and mitigation measures would be required. It is not feasible to identify project- and site-specific mitigation measures for future traffic and transportation projects in this [Final](#) Program EIR. Instead, appropriate project-specific mitigation measures would to be identified by the appropriate lead agency⁸ in the CEQA/NEPA document prepared for each future project that may be proposed. However, standard traffic construction mitigation measures, such as a traffic management plan containing mitigation measures such as those identified in transportation traffic Subchapter 4.9 would likely be implemented⁹. The analysis of 2012 AQMP ozone control measures concluded that the potential exists for future traffic and transportation impacts to be significant and unavoidable (i.e., significant even after standard types of roadway construction mitigation measures are identified and imposed).

6.5.9.1.3 *Project-specific and Cumulative Impacts Conclusion*

Overall, it was concluded in Subchapter 4.9 that in spite of identifying a roadway construction mitigation measure, implementing 2012 AQMP ozone control measures has the potential to generate significant adverse traffic impacts from construction future wayside sources of energy. Although temporary in nature, traffic impacts during construction are still considered to be significant. Similarly, traffic impacts during the operation of roadways dedicated as truck lanes for vehicles using the overhead catenary electrical lines or fixed guideway systems are also considered to be significant because traffic patterns and

⁸ The SCAQMD has no jurisdiction over constructing and operating roadways.

⁹ The traffic construction mitigation measure identified in Subchapter 4.9 is from SCAG's 2012 – 2035 RTP/SCS.

congestion may be adversely affected. Therefore, project-specific transportation and traffic impacts from implementing 2012 AQMP ozone control measures are concluded to be significant and unavoidable.

Since, anticipated project-specific transportation and traffic impacts from the 2012 AQMP are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). In Chapter 5 potential project-specific transportation and traffic impacts from the 2012 AQMP were evaluated in connection with transportation and traffic impacts from SCAG's 2012-2035 RTP/SCS. Further, since project-specific transportation and traffic impacts were concluded to be significant, the 2012 AQMP would contribute to significant adverse cumulative transportation and traffic impacts generated by the 2012-2035 RTP/SCS. Since transportation and traffic impacts from the 2012 AQMP are cumulatively considerable, cumulative transportation and traffic impacts from the 2012 AQMP are significant. No measures beyond that identified in Subchapter 4.9 were identified to mitigate significant adverse cumulative transportation and traffic impacts.

6.5.9.2 Alternative 1 – No Project Alternative

The Program EIR for the 2007 AQMP included environmental analyses for all control measures, including the black box control measures. As discussed in Chapter 2 of this [Final](#) Program EIR, all of the SCAQMD's and CARB's short- and mid-term control measures have been adopted. The only remaining control measures are the black box measures. Since the 2007 AQMP now includes only black box measures, environmental impacts for Alternative 1 will focus only on potential impacts identified for the black box measures.

6.5.9.2.1 *PM2.5 Control Measures*

As discussed in Subsection 6.4.1, Alternative 1 has no control measures that are considered to be PM2.5 control measures. For this reason and the fact that transportation and traffic was not an environmental topic identified in the NOP/IS for the 2007 AQMP that could be adversely affected by that AQMP, Alternative 1 is not expected to create any transportation and traffic impacts.

6.5.9.2.2 *Ozone Control Measures*

All remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. The analysis of potential transportation and traffic impacts from the 2012 AQMP was not originally identified as a topic that would be adversely affected by the 2012 AQMP. However, public comments received on the 6/28/12 NOP/IS requested that transportation and traffic impacts be added to the analysis of impacts in the 2012 AQMP [Final](#) Program EIR because of the potential for transportation and traffic impacts on major traffic corridors from the use of catenary systems that could affect heavy-duty truck lane choice by trucks and traffic flow patterns. The only control measures from the 2012 AQMP that include catenary systems as a means of reducing emissions are ONRD-05 and ADV-01.

As shown in Table 6-4, like Control Measures ONRD-05 and ADV-01, 2007 AQMP Control Measure On-road Heavy-duty Vehicles (SCLTM-01B) would also regulate heavy-

duty trucks using control technologies such as: expanded modernization and retrofit of heavy-duty trucks and buses; expanded inspection and maintenance program; and advanced near-zero and zero-emitting cargo transportation technologies. However, fixed guideway systems were not identified as a possible method of reducing heavy-duty truck emissions. Consequently, implementing the black box measures of the 2007 AQMP would not generate any transportation and traffic impacts, so transportation and traffic impacts would be less than those for the 2012 AQMP.

6.5.9.2.3 *Project-specific and Cumulative Impacts Conclusion*

The NOP/IS for the 2007 AQMP concluded that, overall, controlling emissions at existing commercial or industrial facilities and establishing mobile source exhaust and fuel specifications would not impede traffic patterns in any way. Further, the 2007 AQMP included TCMS, which were expected to reduce vehicle trips and vehicle miles traveled and result in greater reliance on mass transit, ridesharing, telecommunications, etc., resulting in reduced traffic congestion, a beneficial effect. As a result, the NOP/IS for the 2007 AQMP concluded that the 2007 AQMP would not generate any transportation and traffic impacts. Therefore, consistent with the assumptions in Subsection 6.4.1, it is presumed that Alternative 1 would not generate significant adverse transportation and traffic impacts, which means that transportation and traffic impacts would be less than for the 2012 AQMP, which were concluded to be significant.

Since, anticipated project-specific transportation and traffic impacts from Alternative 1 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Although project-specific transportation and traffic impacts would be less than significant and less than those generated by the 2012 AQMP, Alternative 1 would not contribute to significant adverse cumulative transportation and traffic impacts generated by the 2012-2035 RTP/SCS. Since transportation and traffic impacts from Alternative 1 are not cumulatively considerable, cumulative transportation and traffic impacts from Alternative 1 are not significant.

6.5.9.3 *Alternative 2 – Localized PM Emissions Control*

As explained in Subsection 6.4.2, with the exception of the two episodic PM_{2.5} control measures for Mira Loma, CMALT-2B (formerly MCS-04B in the 6/28/12 NOP/IS) and CMALT-2C (formerly MCS-04C in the 6/28/12 NOP/IS), and one episodic ozone control measure, CMALT-2A (formerly MCS-04A in the 6/28/12 NOP/IS), Alternative 2 includes all of the same PM_{2.5} and ozone control measures as the 2012 AQMP, except for PM_{2.5} Control Measure BCM-02 – Open Burning. As explained in the following subsections, transportation and traffic impacts from implementing Alternative 2 would be the same as potential transportation and traffic impacts from implementing the 2012 AQMP. For the complete analysis of transportation and traffic impacts from the 2012 AQMP, refer to Subchapter 4.9 – Transportation and Traffic. Potential transportation and traffic impacts from implementing Alternative 2 are described in the following subsections.

6.5.9.3.1 *PM2.5 Control Measures*

Similar to the analysis of potential transportation and traffic impacts for the 2012 AQMP in Subchapter 4.9, no PM2.5 control measures were identified from implementing Alternative 2 that have the potential to significantly adversely affect transportation and traffic. The three episodic control measures in this alternative that would apply only to the Mira Loma area do not contain any provisions for constructing wayside electricity such as catenary electric lines. Therefore, potential transportation and traffic impacts from implementing 2012 AQMP PM2.5 control measures were concluded to be less than significant. This same conclusion applies to Alternative 2.

6.5.9.3.2 *Ozone Control Measures*

Because Alternative 2 contains the same ozone control measures as the 2012 AQMP, except that ozone Control Measure CMALT-2A (similar to 2012 Control Measure ONRD-04) applies only to the Mira Loma area, transportation and traffic impacts from implementing Alternative 2 ozone control measures would be the same as the transportation and traffic impacts from implementing the 2012 AQMP ozone control measures. As shown in the analysis of transportation and traffic impacts for the 2012 AQMP in Subchapter 4.9, implementing ozone control measures from Alternative 2 (e.g., ozone Control Measures ONRD-05, ADV-01, and ADV-2), has the potential to generate significant adverse transportation and traffic impacts from the construction and operation of wayside sources of electricity, such as overhead catenary lines; battery charging stations; alternative fuel fueling infrastructure; and magnetic infrastructure. Because implementing the three Alternative 2 ozone control measures identified above has the potential to generate significant adverse transportation and traffic impacts from constructing and operating of wayside sources of electricity, the standard traffic construction mitigation measure (e.g., the traffic management plan measures identified in [the](#) transportation [and](#) traffic Subchapter 4.9) would also apply to Alternative 2.

6.5.9.3.3 *Project-specific and Cumulative Impacts Conclusion*

Based on the above information, it is concluded that, in spite of identifying a roadway construction mitigation measure, implementing Alternative 2 ozone control measures has the potential to generate significant adverse traffic impacts from constructing future wayside sources of energy. Although temporary in nature, traffic impacts during construction are still considered to be significant. Similarly, traffic impacts during the operation of roadways dedicated as truck lanes for vehicles using the overhead catenary electrical lines or fixed guideway systems are also considered to be significant because traffic patterns and congestion may be adversely affected. Therefore, project-specific transportation and traffic impacts from implementing Alternative 2 ozone control measures are concluded to be significant and unavoidable and are equivalent to transportation and traffic impacts from the 2012 AQMP.

Since, anticipated project-specific transportation and traffic impacts from Alternative 2 are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific transportation and traffic

impacts would be significant and approximately equivalent to those generated by the 2012 AQMP, Alternative 2 would contribute to significant adverse cumulative transportation and traffic impacts generated by the 2012-2035 RTP/SCS. Since project-specific transportation and traffic impacts from Alternative 2 are cumulatively considerable, cumulative transportation and traffic impacts from Alternative 2 are significant and would be equivalent to transportation and traffic impacts from the 2012 AQMP. No measures beyond that identified in Subchapter 4.9 were identified to mitigate significant adverse cumulative transportation and traffic impacts.

6.5.9.4 Alternative 3 – Greater Reliance on NO_x Emissions Reductions

As explained in Subsection 6.4.3, Alternative 3 includes all of the same PM_{2.5} control measures as the 2012 AQMP except it does not include 2012 AQMP Control Measure BCM-01. With regard to ozone control measures, with the exceptions of 2012 AQMP Control Measures ONRD-03 and OFFRD-01, all other ozone control measures are the same as those in the 2012 AQMP. As explained in the following subsections, potential transportation and traffic impacts from implementing Alternative 3 would be the same as potential transportation and traffic impacts from implementing the 2012 AQMP. For the complete analysis of transportation and traffic impacts from the 2012 AQMP, refer to Subchapter 4.9 – Transportation and Traffic.

6.5.9.4.1 *PM_{2.5} Control Measures*

Similar to the analysis of transportation and traffic impacts for the 2012 AQMP in Subchapter 4.9, no PM_{2.5} control measures were identified from implementing Alternative 3 that have the potential to significantly adversely affect transportation and traffic. Therefore, potential transportation and traffic impacts from implementing 2012 AQMP PM_{2.5} control measures were concluded to be less than significant. This same conclusion applies to Alternative 3.

6.5.9.4.2 *Ozone Control Measures*

All ozone control measures in Alternative 3 are identical to those in the 2012 AQMP, except that Alternative 3 ozone Control Measure ONRD-03 could result in approximately 5,000 additional medium-heavy-duty trucks complying with the year 2010 engine exhaust requirements for the years 2013 through 2017 (750 trucks per year that would be diesel or diesel-hybrids that comply with the year 2010 exhaust emission standards and 250 trucks per year that would use CNG engines for a total of 1,000 trucks per year) would comply with the 2010 on-road vehicle exhaust requirements using CNG engines and the rest would be diesel or diesel hybrid). Similarly, Alternative 3 OFFRD-01 could result in a total of 19,344 additional repowered vehicles from the year 2014 through 2017. Because the remaining Alternative 3 ozone control measures are the same as the 2012 AQMP, transportation and traffic impacts from implementing Alternative 3 ozone control measures would be the same as the transportation and traffic impacts from implementing the 2012 AQMP ozone control measures. As shown in the analysis of transportation and traffic impacts for the 2012 AQMP in Subchapter 4.9, implementing ozone control measures from Alternative 3 (e.g., ozone Control Measures ONRD-05 and ADV-01) has the potential to generate significant

adverse transportation and traffic impacts from the construction and operation of wayside sources of electricity, such as overhead catenary lines; battery charging stations; alternative fuel fueling infrastructure; and magnetic infrastructure. Because implementing the two Alternative 3 ozone control measures identified above has the potential to generate significant adverse transportation and traffic impacts from constructing and operating of wayside sources of electricity, the standard traffic construction mitigation measure (e.g., the traffic management plan measures identified in [the transportation and traffic Subchapter 4.9](#)) would also apply to Alternative 3. In spite of implementing these traffic mitigation measures, transportation and traffic impacts from Alternative 3 remain significant and greater than the 2012 AQMP.

6.5.9.4.3 *Project-specific and Cumulative Impacts Conclusion*

Based on the above information, it is concluded that, in spite of identifying a roadway construction mitigation measure, implementing Alternative 3 ozone control measures has the potential to generate significant adverse traffic impacts from constructing future wayside sources of energy. Although temporary in nature, traffic impacts during construction are still considered to be significant. Similarly, traffic impacts during the operation of roadways dedicated as truck lanes for vehicles using the overhead catenary electrical lines or fixed guideway systems are also considered to be significant because traffic patterns and congestion may be adversely affected. Therefore, project-specific transportation and traffic impacts from implementing Alternative 3 ozone control measures are concluded to be significant and unavoidable and are equivalent to transportation and traffic impacts from the 2012 AQMP.

Since, anticipated project-specific transportation and traffic impacts from Alternative 3 are concluded to be significant, they are considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific transportation and traffic impacts would be significant and greater than those generated by the 2012 AQMP, Alternative 3 would contribute to significant adverse cumulative transportation and traffic impacts generated by the 2012-2035 RTP/SCS. Since transportation and traffic impacts from Alternative 3 are cumulatively considerable, cumulative transportation and traffic impacts from Alternative 3 are significant and greater than transportation and traffic impacts from the 2012 AQMP. No measures beyond that identified in Subchapter 4.9 were identified to mitigate significant adverse cumulative transportation and traffic impacts.

6.5.4.5 *Alternative 4 – PM2.5 Reduction Strategies Only*

As explained in Subsection 6.4.4, Alternative 4 would only include the PM2.5 control measures in Table 6-4 of this chapter. For the complete analysis of transportation and traffic impacts from 2012 AQMP PM2.5 control measures, refer to Subchapter 4.9 – Transportation and Traffic. Because Alternative 4 does not address attaining either the federal one-hour or eight-hour ozone standards, the ozone SIP portion of the 2007 AQMP would remain in effect, which includes only the black box measures in Table 6-2. As a result, impacts from implementing 2007 AQMP black box control measures would be the same as for Alternative 1. Potential transportation and traffic impacts from implementing Alternative 4 are described in the following subsections.

6.5.9.4.1 *PM2.5 Control Measures*

Similar to the analysis of transportation and traffic impacts for the 2012 AQMP in Subchapter 4.9, no PM2.5 control measures were identified from implementing Alternative 4 that have the potential to significantly adversely affect transportation and traffic. Therefore, potential transportation and traffic impacts from implementing 2012 AQMP PM2.5 control measures were concluded to be less than significant. This same conclusion applies to Alternative 4.

6.5.9.4.2 *Ozone Control Measures*

As already indicated, all remaining black box measures from the 2007 AQMP that comprise Alternative 1 are assumed to be ozone control measures. This assumption also applies to the ozone control measures of Alternative 4.

As shown in Table 6-4, like Control Measures ONRD-05 and ADV-01, 2007 AQMP Control Measure On-road Heavy-duty Vehicles (SCLTM-01B) would also regulate heavy-duty trucks using control technologies such as: expanded modernization and retrofit of heavy-duty trucks and buses; expanded inspection and maintenance program; and advanced near-zero and zero-emitting cargo transportation technologies. However, fixed guideway systems were not identified as a possible method of reducing heavy-duty truck emissions. Consequently, implementing the black box measures of the 2007 AQMP would not generate any transportation and traffic impacts.

6.5.9.4.3 *Project-specific and Cumulative Impacts Conclusion*

The NOP/IS for the 2007 AQMP concluded that, overall, controlling emissions at existing commercial or industrial facilities and establishing mobile source exhaust and fuel specifications would not impede traffic patterns in any way. Further, the 2007 AQMP included TCMs, which were expected to reduce vehicle trips and vehicle miles traveled and result in greater reliance on mass transit, ridesharing, telecommunications, etc., resulting in reduced traffic congestion, a beneficial effect. As a result, the NOP/IS for the 2007 AQMP concluded that the 2007 AQMP would not generate any transportation and traffic impacts. This conclusion also applies to Alternative 4, which means that transportation and traffic impacts from Alternative 4 would be less than for the 2012 AQMP, which were concluded to be significant.

Since, anticipated project-specific transportation and traffic impacts from Alternative 4 are concluded to be less than significant, they are not considered to be cumulatively considerable as defined in CEQA Guidelines §15064 (h)(1). Further, since project-specific transportation and traffic impacts would be less than significant and less than those generated by the 2012 AQMP, Alternative 4 would not contribute to significant adverse cumulative transportation and traffic impacts generated by the 2012-2035 RTP/SCS. Since transportation and traffic impacts from Alternative 4 are not cumulatively considerable, cumulative transportation and traffic impacts from Alternative 1 are not significant.

6.6 COMPARISON OF THE PROJECT ALTERNATIVES TO THE 2012 AQMP

Pursuant to CEQA Guidelines §15126.6 (d), “The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.” The sections above provide a comprehensive analysis of potential impacts generated by each project alternative and compares impacts to those generated by the 2012 AQMP. Table 6-23 provides a matrix displaying the major characteristics and significant environmental effects of each alternative compared to the 2012 AQMP.

TABLE 6-23

Comparison of the Project Alternatives to the Proposed 2012 AQMP

Environmental Topic	PROJECT				
	2012 AQMP	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Aesthetics					
PM2.5	NS	NS (=)	NS (=)	NS (=)	NS (=)
Ozone	NS	NS (=)	NS (=)	NS (=)	NS (-)
Cumulative	NS	NS (=)	NS (=)	NS (=)	NS (-)
Direct Air Quality Impacts - PM2.5 Attainment year					
	2014	2019	2017	2017	2014
Secondary Air Quality Impacts					
PM2.5 Construction	S	NS (-)	S (=)	S (=)	S (=)
PM2.5 Operation	NS	NS (-)	NS (-)	NS (-)	NS (=)
Ozone Construction	S	NS (-)	S (=)	S (=)	NS (-)
Ozone Operation	NS	NS (-)	NS (-)	S (=)	NS (-)
Cumulative	S	NS (-)	S (-)	S (=)	NS (-)

TABLE 6-23 (Continued)

Comparison of the Project Alternatives to the Proposed 2012 AQMP

Environmental Topic	PROJECT				
	2012 AQMP	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Energy					
PM2.5	S	NS (-)	S (=)	S (=)	S (=)
Ozone	S	NS (-)	S (=)	S (+)	NS (-)
Cumulative	S	NS (-)	S (=)	S (+)	S (-)
Hazards and Hazardous Materials					
PM2.5	S	NS (-)	S (-)	S (=)	S (=)
Ozone	S	NS (-)	S (-)	S (+)	NS (-)
Cumulative	S	NS (-)	S (-)	S (+)	S (-)
Hydrology and Water Quality					
PM2.5	S	NS (-)	S (=)	S (=)	S (=)
Ozone	S	NS (-)	S (=)	S (=)	NS (-)
Cumulative	S	NS (-)	S (=)	S (=)	S (-)
Land Use and Planning					
PM2.5	NS	NS (-)	NS (=)	NS (=)	NS (=)
Ozone	NS	NS (-)	NS (=)	NS (=)	NS (-)
Cumulative	NS	NS (-)	NS (=)	NS (=)	NS (-)
Noise					
PM2.5	NS	NS (-)	NS (=)	NS (=)	NS (=)
Ozone	S	NS (-)	S (=)	S (=)	NS (-)
Cumulative	S	NS (-)	S (=)	S (=)	NS (-)
Solid and Hazardous Waste					
PM2.5	NS	NS (-)	NS (=)	NS (=)	NS (=)
Ozone	NS	NS (-)	NS (=)	NS (+)	NS (-)
Cumulative	NS	NS (-)	NS (=)	NS (+)	NS (-)

TABLE 6-23 (Concluded)

Comparison of the Project Alternatives to the Proposed 2012 AQMP

Environmental Topic	PROJECT				
	2012 AQMP	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Traffic Transportation					
PM2.5	NS	NS (-)	NS (=)	NS (=)	NS (=)
Ozone	S	NS (-)	S (=)	S (+)	NS (-)
Cumulative	S	NS (-)	S (=)	S (+)	NS (-)

Notes:

S = Significant

NS = Not Significant

(-) = Potential impacts are less than the proposed project.

(+) = Potential impacts are greater than the proposed project.

(=) = Potential impacts are approximately the same as the proposed project.

6.7 ENVIRONMENTALLY SUPERIOR AND LOWEST TOXIC ALTERNATIVE

Pursuant to CEQA Guidelines §15126.6 (e)(2), if the environmentally superior alternative is the “no project” alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Alternative 1 – No Project Alternative, continued implementation of the 2007 AQMP is considered to be the environmentally superior alternative because it is not expected to generate any significant adverse impacts to any environmental topic areas. Alternative 1 (the 2007 AQMP) was originally drafted to demonstrate compliance with the federal eight-hour ozone and PM2.5 standards and does not specifically address attaining the federal 24-hour PM2.5 standard. Although Alternative 1 would ultimately achieve the federal 24-hour PM2.5 standard by the year 2019, it is not clear at this point if it would be approvable by U.S. EPA.

Based on the above, since the No Project Alternative was deemed the environmentally superior alternative, an alternative from the remaining alternatives must be selected. Based on the analysis of potential impacts from each of the project alternatives, it is concluded that Alternative 4 – PM2.5 Emissions Reduction Strategies Only, is the environmentally superior alternative. This conclusion is based on the fact that the ozone portion of Alternative 4 relies on continued implementation of the ozone portion of the 2007 AQMP. The 2007 AQMP has fewer ozone control measures and the ozone control measures are less likely to cause significant adverse impacts because they do not affect as many sources or control technologies do not produce as many secondary impacts.

In accordance with SCAQMD’s policy document Environmental Justice Program Enhancements for FY 2002-03, Enhancement II-1 recommends that all SCAQMD CEQA documents required to include an alternatives analysis, also include and identify a feasible project alternative with the lowest air toxics emissions. In other words, for any major equipment or process type under the scope of the proposed project that creates a significant environmental impact, at least one alternative, where feasible, shall be considered from a

“least harmful” perspective with regard to hazardous or toxic air pollutants. It is expected that potential energy, hazards and hazardous materials, hydrology and water quality, and solid waste impacts associated with earlier penetration of on-road and off-road fleets using alternative fuels, would be less under Alternative 1 – No Project Alternative because it would avoid significant adverse impacts to all environmental topic areas evaluated compared to the remaining alternatives. Thus, from an air toxics perspective, when compared to the proposed project and the other alternatives under consideration, if implemented, Alternative 1 is considered the lowest toxic alternative.

6.8 CONCLUSION

Of the project Alternatives, Alternative 1 would generate the least severe and fewest number of environmental impacts compared to the 2012 AQMP. However, of the project alternatives it would achieve the fewest of the project objectives, namely only project objective 7 – Update planning assumptions and the best available information such as SCAG’s 2012 RTP, CARB’s latest EMFAC2011 for the on-road mobile source emissions inventory, and CARB’s OFF-ROAD 2011 model; 8 – Update emission inventories using 2008 as the base year and incorporate emission reductions achieved from all applicable rules and regulations and the latest demographic forecasts; and 11 – Continue to work closely with businesses and industry groups to identify the most cost-effective and efficient path to meeting clean air goals while being sensitive to their economic concerns; would not attain them as effectively as the 2012 AQMP, project objectives 4 – Continue making expeditious progress towards attaining the federal eight-hour ozone standard and demonstrate attainment of the federal one-hour ozone standard (revoked) by 2022 – 2023; 5 – Reduce population exposure to ozone through continued progress towards attaining the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023; and 6 – Reduce nonattainment pollutants at a rate of five percent per year, or include all feasible measures and an expeditious adoption schedule, or would not achieve them at all, project objectives 1 – Reduce PM_{2.5} nonattainment pollutants and their precursors on an expeditious implementation schedule; 2 – Demonstrate attainment of the 24-hour PM_{2.5} national ambient air quality standard at the earliest possible date; 3 – Reduce population exposure to PM_{2.5} achieving the 24-hour PM_{2.5} national ambient air quality standard; 9 – Update any remaining control measures from the 2007 AQMP and incorporated into the 2012 AQMP as appropriate; and 10 – Compliance with federal contingency measure requirements.

Alternative 2 would be expected to generate equivalent impacts to the 2012 AQMP in all environmental topic areas analyzed. It would achieve all of the project objectives, but would not achieve the objectives related to reducing PM_{2.5} emissions as well as the 2012 AQMP because it is projected to achieve the federal 24-hour PM_{2.5} standard in 2017, two years later than the 2012 AQMP.

Alternative 3 has the potential to generate greater impacts than the 2012 AQMP because Alternative 3 ozone Control Measure ONRD-03 could result in accelerated penetration of approximately 5,000 additional medium-heavy-duty trucks for the years 2013 through 2017 (750 trucks per year that would be diesel or diesel-hybrids that comply with the year 2010 exhaust emission standards and 250 trucks per year that would use CNG engines for a total of 1,000 trucks per year). Similarly, Alternative 3 OFFRD-01 could result in a total of

19,344 additional repowered or replaced vehicles from the year 2014 through 2017. To the extent that these ozone control measures contribute to environmental impacts, they would be greater than environmental impacts from the 2012 as shown in Table 6-23. Consequently, Alternative 3 does meet the CEQA requirement to reduce environmental impacts compared to the proposed project.

As shown in Table 6-23, Alternative 4 would generate fewer environmental impacts or less severe impacts than the 2012 AQMP. It would achieve all but three ~~four~~ of the project objectives, objectives 4 – Continue making expeditious progress towards attaining the federal eight-hour ozone standard and demonstrate attainment of the federal one-hour ozone standard (revoked) by 2022 – 2023; 5 – Reduce population exposure to ozone through continued progress towards attaining the federal one-hour (revoked) and eight-hour ozone standards by 2022 – 2023; and 9 – Update any remaining control measures from the 2007 AQMP and incorporated into the 2012 AQMP as appropriate. As shown in the air quality Table 6-19, Alternative 4 would not be as effective as the 2012 AQMP in making expeditious progress toward attaining the federal one-hour ozone standard (revoked) or the federal eight-hour ozone standard. Similarly, because a large amount of emission reductions from the ozone control measures are from stationary sources, in addition to obtaining NOx and VOC emission reductions, they would also obtain PM emission reductions, thus, further enhancing the SCAQMD's ability, not only to attain the federal 24-hour PM2.5 standard, but to maintain the standard in the future. Similarly, since Alternative 4 focuses primarily on PM2.5 emission reductions, it would not likely be as effective as the 2012 AQMP achieving project objective 6 – Reduce nonattainment pollutants at a rate of five percent per year, or include all feasible measures and an expeditious adoption schedule.

Based on the above information, the 2012 AQMP is the most effective project that achieves the project objectives relative to environmental impacts generated.

CHAPTER 7

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Organizations and Persons Consulted

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7.1 ORGANIZATIONS AND PERSONS CONSULTED

The CEQA statutes and Guidelines require that organizations and persons consulted be provided in the [Final Program EIR](#). A number of organizations, state and local agencies, and private industry have been consulted. The following organizations and persons have provided input into this document.

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CHAPTER 8

ACRONYMS

Acronyms

8.0 ACRONYMS

ABBREVIATION	DESCRIPTION
AAs	Administering Agencies
AB	Assembly Bill
AB32	California's Global Warming Solutions Act of 2006
AB939	California Integrated Waste Management Act of 1989
AB2588	Air Toxic "Hot Spots" Information and Assessment Act
ACGIH	American Conference of Governmental Industrial Hygienists
af	acre-feet
AFV	Alternative Fuel Vehicles
AIChE	American Institute of Chemical Engineers
ALUC	Airport Land Use Commission
AMP	Alternative Marine Power
ANPR	Advance Notice of Proposed Rulemaking
API	American Petroleum Institute
APS	Alternative Planning Strategy
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	Air Resources Board
ASTM	American Society for Testing and Materials
ATCM	Airborne Toxic Control Measure
ATCP	Air Toxics Control Plan
ATPZEVs	Advanced Technology Partial Zero-Emission Vehicles
AVL	automated vehicle location
AVR	Average Vehicle Ridership
AVTA	Advanced Vehicle Testing Activity
BACT	Best Available Control Technology
BACM	Best Available Control Measures
BARCT	Best Available Retrofit Control Technology
BART	Best Available Retrofit Technology
Basin	South Coast Air Basin
BAU	business-as-usual
BLEVE	boiling liquid expanding vapor explosion
BLM	Bureau of Land Management
BMP	Best Management Practices
BNSF	Burlington Northern Santa Fe Railway
BOD	Bio-chemical Oxygen Demand
BPTCP	Bay Protection and Toxic Clean Up Plan
Btu	British Thermal Units
Btu/hr	British Thermal Units per hour
°C	Degrees Centigrade
CAA	Clean Air Act
CAAP	Clean Air Action Plan
CAFE	Corporate Average Fuel Economy
CaH2Net	California Hydrogen Highway Network

CalARP	California Accidental Release Prevention Program
CalEMA	California Emergency Management Agency
CalEPA	California Environmental Protection Agency
CalRecycle	(formerly known as the California Integrated Waste Management Board)
Caltrans	California Department of Transportation
CalOSHA	California Occupational Safety and Health Administration
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCC	California Coastal Commission
CCP	Clean Communities Plan
CCR	California Code of Regulations
CDF	California Department of Forestry and Fire Protection
CDPR	California Department of Parks and Recreation
CEC	California Energy Commission
CE-CERT	College of Engineering Center for Environmental Research and Technology
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQA	California Environmental Quality Act
CFCs	Chloroflorocarbons
CFR	Code of Federal Regulations
CH ₄	Methane
CHMIRS	California Hazardous Materials Incident Reporting System
CHP	California Highway Patrol
CIP	Capital Improvement Program
CIWMB	California Integrated Waste Management Board
CIWMP	Countywide Integrated Waste Management Plan
CLEEN	Continuous Lower Energy, Emissions and Noise
CM	Control Measure
CMAAs	Congestion Management Agencies
CMB	Combustion Sources
CMPs	Congestion Management Programs
CMS	Congestion Management System
CMAQ	Community Multiscale Air Quality
CNEL	Community Noise Equivalent Level
CNG	Compressed Natural Gas
CNS	Central nervous system
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ e	CO ₂ equivalents
COHb	Carboxyhemoglobin
CPUC	California Public Utilities Commission
CPSC	Consumer Products Safety Commission
CRA	Colorado River Aqueduct
CSI	California Solar Initiative

CTS	Coatings and Solvents
CUPA	Certified Unified Program Agency
CVRP	Clean Vehicle Rebate Pilot
CVWD	Coachella Valley Water District
CWA	Clean Water Act
CWAP	Clean Water Action Plan
CWM	Chemical Waste Management
CWMI	Chemical Waste Management Inc.
dB	decibels
dBA	decibels (A-weighted)
DC	direct current
Delta	Sacramento-San Joaquin Delta
DHS	Department of Health Services
DMC	dimethyl carbonate
DOT	Department of Transportation
DPF	Diesel Particulate Filters
DPM	Diesel Particulate Matter
DPR	Department of Pesticide Regulation
DRRP	Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (also known as the Diesel Risk Reduction Plan)
DTSC	California Department of Toxic Substances Control
DTIM	Direct Travel Impact Model
DWR	California Department of Water Resources
EAP	Emergency Action Plan
ECA	Emissions Control Area
EDMS	Emissions and Dispersion Modeling System
EFMP	Enhanced Fleet Modernization Program
EHS	Extremely Hazardous Substances
EIA	Energy Information Administration
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act of 2007
EJ	Environmental Justice
EJAG	Environmental Justice Advisory Group
EMFAC	Emission Factors Model
EMFAC 2011	2011 Emission Factors model
EMWD	Eastern Municipal Water District
EOR	Enhanced Oil Recovery
EPA	Environmental Protection Agency
EPAct	Energy Policy Act
EPCRA	Emergency Planning and Community Right-to-Know Act
ERPG	Emergency Response Planning Guideline
ERPG-2	Emergency Response Planning Guide Level 2
ERPG-3	Emergency Response Planning Guide Level 3
ESP	Electrostatic Precipitators

EVs	Electric Vehicles
EVSE	electric vehicle supply equipment
E85	Ethanol
°F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FCCU	Fluid Catalytic Cracking Unit
FCV	fuel cell vehicles
FDA	Food and Drug Administration
FDDA	four dimensional data assimilation
FEMA	Federal Emergency Management Agency
FEIR	Final Environmental Impact Report
FePo	iron phosphate
FESA	Federal Endangered Species Act
Fe ₂ O ₃	iron oxide
FFVs	Flexible Fuel Vehicles
FHWA	Federal Highway Administration
FIP	Federal Implementation Plan
FMCSA	Federal Motor Carrier Safety Administration
FMVSS	Federal Motor Vehicle Safety Standard
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
ft ²	square feet
FUA	Fuel Use Act
FUG	Fugitive Emissions
GHG	Greenhouse Gas
GHGRP	Greenhouse Gas Reporting Program
GRAS	Generally Recognized As Safe
GVWR	gross vehicle weight rating
GWh	gigawatt hour
H ₂	Hydrogen
H ₂ S	Hydrogen Sulfide
H ₂ SO ₄	Sulfuric Acid
HAPs	Hazardous Air Pollutants
HCFCs	Hydrochlorofluorocarbons
HDV	Heavy Duty Vehicles
HEPA	High-Efficiency Particulate Air Arrestor
HFCs	hydrofluorocarbons
HGS	Harbor Generating Station
HI	Hazard Index
HMTA	Hazardous Materials Transportation Act
HNO ₃	Nitric Acid
HOV	High Occupancy Vehicle
hp	horsepower
HRA	Health Risk Assessment
HOT	High-Occupancy Toll

HQTAs	High Quality Transit Areas
HSC	Health and Safety Code
HUD	Housing and Urban Development
HVIP	Hybrid Vehicle Incentives Project
HWCA	Hazardous Waste Control Act
HWMP	Hazardous Waste Management Plan
IARC	International Agency for Research on Cancer
ICEs	Internal Combustion Engines
ICTA	International Center for Technology Assessment
IDLH	Immediately Dangerous to Life and Health
IGR	Intergovernmental Review
IMO	International Maritime Organization
IM	industrial maintenance
IOUs	Investor Owned Utilities
IRP	Integrated Water Resources Plan
IRWD	Irvine Ranch Water District
ITS	Intelligent Transportation Systems
kW	Kilowatt
kWh	Kilowatt Hour
°K	degrees Kelvin
LAA	Los Angeles Aqueduct
LACDPW	Los Angeles County Department of Public Works
LACFD	Los Angeles County Fire Department
LACSD	Los Angeles County Sanitation Districts
LADPW	Los Angeles Department of Public Works
LADWP	Los Angeles Department of Water and Power
LAER	Lowest Achievable Emission Reduction
LAFCO	Local Agency Formation Commission
LAX	Los Angeles International Airport
LBGOD	Long Beach Gas & Oil Department
lbs	pounds
lbs/day	pounds per day
lbs/gal	pounds per gallon
lbs/hr	pounds per hour
LCFS	Low-Carbon Fuel Standard
LCP	local coastal program
LDAR	Leak Detection and Repair
LEAs	Local Enforcement Agencies
LEL	Lower Explosive Limit
LEPC	Local Emergency Planning Committee
LEV III	Low-Emission Vehicle
Leq	Equivalent Continuous Level
LID	Low Impact Development
Li-ion	lithium ion
Lmax	maximum measured noise level
LNG	Liquefied Natural Gas

LOS	Level of Service
LPG	Liquefied Petroleum Gas
LRP	Local Resources Program
LRT	light rail transit
LTCP	Long-Term Conservation Plan
LUPs	land use plans
LVP-VOC	low vapor pressure volatile organic compounds
MAF	Million acre-feet
MATES	Multiple Air Toxic Exposure Study
MATES II	Multiple Air Toxic Exposure Study II
MATES III	Multiple Air Toxic Exposure Study III
MCLs	Maximum Containment Levels
MDAB	Mojave Desert Air Basin
MECA	Manufacturer's of Emission Controls Association
MEGAN	Model of Emissions of Gases and Aerosols from Nature
MEK	methyl ethyl ketone
MeTHF	methyltetrahydrofuran
Metro	Los Angeles County Metropolitan Transit Authority
mgd	million gallons per day
mg/L	milligrams per liter
mg/m ³	milligrams per cubic meter
MIBK	methyl isobutyl ketone
MIR	Maximum Incremental Reactivity
MMTCO ₂ e	million metric tons of carbon dioxide equivalent
MnO	manganese oxide spinel
MoO ₃	molybdc anhydride
MTCO ₂ e/year	CO ₂ equivalent emissions per year
MRFs	Material Recovery Facilities
MPO	Metropolitan Planning Organization
m/s	meters per second
MSDS	Material Safety Data Sheet
MSRC	Mobile Source Air Pollution Reduction Review Committee
MS4s	municipal separate storm sewer systems
MTBE	methyl tertiary butyl ether
MW	megawatts
Metropolitan	Metropolitan Water District of Southern California
MWD	Metropolitan Water District
M85	Methanol
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCA	nickel-cobalt- aluminum
NCEP	National Centers for Environmental Prediction
NCM	nickel-cobalt-manganese
NCP	National Contingency Plan
NECPA	National Energy Conservation Policy Act
NEC	National Electric Code

NESHAPS	National Emission Standards for Hazardous Air Pollutants
NPDES	National Pollutant Discharge Elimination System
NFC	National Fire Codes
NFPA	National Fire Protection Association
NHTSA	National Highway Traffic Safety Administration
NiMH	nickel-metal hydride
NIOSH	National Institute of Occupational Safety and Health
N ₂	Nitrogen
N ₂ O	Nitrous Oxide
NO	Nitric Oxide
NO ₂	Nitrogen Dioxide
NOP	Notice of Preparation
NOP/IS	Notice of Preparation/Initial Study
NO _x	Nitrogen Oxide
NPS	National Park Service
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NS	No significant impacts
NSPS	New Source Performance Standards
O ₂	Oxygen
O ₃	Ozone
OCA	Off-site Consequences Analyses
OCHCA	Orange County Health Care Agency
OCS	Outer Continental Shelf
OCSD	Orange County Sanitation District
OCTA	Orange County Transportation Authority
OCWD	Orange County Water District
ODS	Ozone Depleting Substances
OEHHA	Office of Environmental Health Hazards Assessment
OES	Office of Emergency Services
OHMS	Office of Hazardous Materials Safety
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PAHs	Polynuclear Aromatic Hydrocarbons
Pb	lead
PCBF	Perchlorobenzotrifluoride
PCBTF	p-chlorobenzotrifluoride
PCE	passenger car equivalents
PD	positive displacement
PEIR	Program Environmental Impact Report
PELs	Permissible Exposure Limits
PEVs	plug-in electric vehicles
PFCs	Perfluorocarbons
PG&E	Pacific Gas & Electric
pH	potential hydrogen ion concentration
PM	Particulate Matter

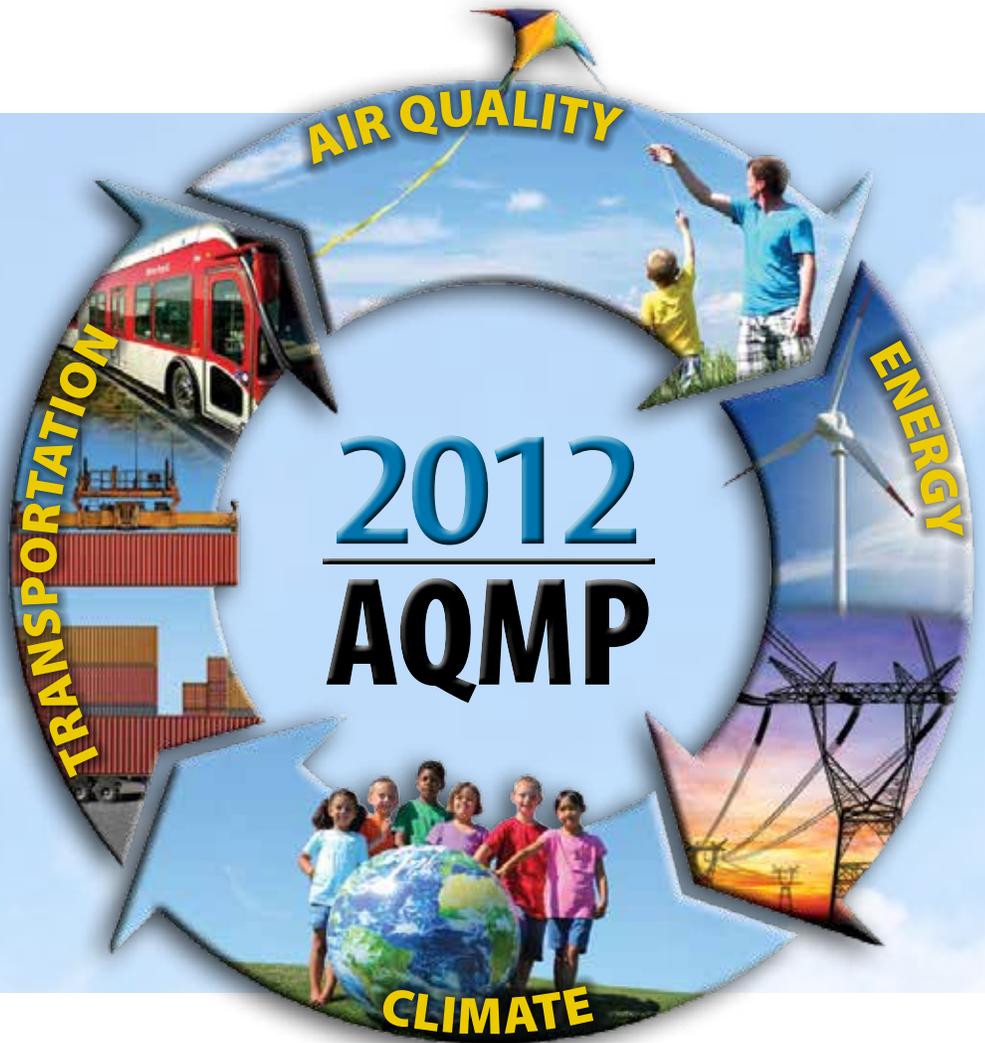
PM10	particulate matter less than 10 microns equivalent aerodynamic diameter
PM2.5	particulate matter less than 2.5 microns equivalent aerodynamic diameter
POTW	Publicly Owned Treatment Works
POUs	publicly owned utilities
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
Program EIR	Program Environmental Impact Report
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
psig	pounds per square inch (gauge)
PSM	Process Safety Management
PSU	Primers, Sealers, and Undercoaters
PTFE	Polytetrafluoroethylene
PUC	Public Utilities Commission
PURPA	Public Utility Regulatory Policies Act of 1978
PV	Photovoltaic
PVC	Polyvinyl Chloride
PZEV	Partial Zero Emission Vehicle
PX	Power Exchange
Qfs	qualifying facilities
QSA	Quantified Settlement Agreement
QVT	Qualified Vehicle Testers
RCRA	Resource Conservation and Recovery Act
RCTC	Riverside County Transportation Commission
RECLAIM	Regional Clean Air Incentives Market
RELOOC	Regional Landfill Options for Orange County
RELS	Reference Exposure Levels
RFS	Renewable Fuel Standard
RFS2	2007 Renewable Fuel Standard
RHNA	Regional Housing Needs Assessment
RMP	Risk Management Program
RMS	Root Mean Squared
ROC	Reactive Organic Compound
ROG	Reactive Organic Gas
RPS	Renewable Portfolio Standard
RQs	Reportable Quantities
RRF	Relative Response Factors
RRWG	Reactivity Research Working Group
RSPA	Research and Special Programs Administration
RTAC	Regional Targets Advisory Committee
RTC	RECLAIM Trading Credit
RTIP	Regional Transportation Implementation Plan
RTP	Regional Transportation Plan

RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SB	Senate Bill
SBS	sodium bisulfate
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCR	Selective Catalytic Reduction
SCRRA	Southern California Regional Rail Authority
SCS	Sustainable Communities Strategy
SCHWMA	Southern California Hazardous Waste Management Authority
SDG&E	San Diego Gas & Electric
SEL	Sound Exposure Level
SF ₆	Sulfur Hexafluoride
SGVEWP	San Gabriel Valley Energy Wise Program
SIP	State Implementation Plan
SNCR	selective non-catalytic reduction
SO ₂	sulfur dioxide
SO ₃	Sulfur Trioxide
SoCalGas	Southern California Gas Company
SOON	Surplus Off-Road Option for NO _x
SO ₂	sulfur dioxide
SO _x	sulfur oxide
SPCC	Spill Prevention, Control and Countermeasure
SRRE	Source Reduction and Recycling Element
SSAB	Salton Sea Air Basin
STE	solar thermal energy
STEL	short-term exposure limits
SWFPs	Solid Waste Facility Permits
SWP	State Water Project
SWMD	Solid Waste Management Division
SWMP	Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminant
TAF	Thousand Acre-Feet
TAO	Technology Advancement Office
TAZ	transportation analysis zone
TBA	tert-butyl alcohol
T-BAc	tertiary butyl acetate
TCM	Transportation Control Measure
TDM	Transportation Demand Management

TDS	Total Dissolved Solids
TEA-21	Transportation Equity Act for the 21st Century
TEUs	twenty-foot Equivalent Units
TiO ₂	titanium dioxide
TLVs	Threshold Limit Values
TMCs	Transportation Management Centers
TMDLS	Total Maximum Daily Loads
tpd	tons per day
tpy	tons per year
TRI	Toxic Release Inventory
TRUs	transport refrigeration units
TSCA	Toxic Substances Control Act
TSM	Transportation Systems Management
TSS	Total Suspended Solids
TWA	time-weighted average
UCI	University of California, Irvine
UCLA	University of California, Los Angeles
UEL	upper explosive limit
UFC	Uniform Fire Code
Union Pacific	Union Pacific Railroad
U.S.	United States
USBR	United States Bureau of Reclamation
U.S. ACOE	United States Army Corps of Engineers
U.S. DOE	United States Department of Energy
U.S. DOT	United States Department of Transportation
U.S. EPA	United States Environmental Protection Agency
U.S. FWS	United States Fish and Wildlife Service
U.S. FS	United States Forest Service
UP	Union Pacific Railroad
UST	Underground Storage Tank
UWA	Unified Watershed Assessment
V/C	Volume to Capacity Ratio
VGS	Valley Generating Station
VHD	Vehicle Hours of Delay
VHT	Vehicle Hours of Travel
VMT	Vehicle Miles Traveled
VOC	volatile organic compounds
V ₂ O ₅	vanadium pentoxide
WBMWD	West Basin Metropolitan-Municipal Water District
WCI	Western Climate Initiative
WDR	Waste Discharge Requirements
WGS	Wet Gas Scrubber
WO ₃	tungsten trioxide
WRD	Water Replenishment District
WRF	Weather Research and Forecasting Model
ZEV	Zero-Emission Vehicle

$\mu\text{g/l}$	micrograms per liter
$\mu\text{g/m}^3$	micrograms per cubic meter
<u>μm</u>	<u>micrometer or micron</u>

Final Program Environmental Impact Report for the 2012 Air Quality Management Plan



Volume 2:
Final Program EIR
Appendices

SCH #2012061093

November 2012

South Coast Air Quality Management District

Cleaning the air that we breathe...



**APPENDIX A (OF THE FINAL PROGRAM EIR FOR THE 2012
AQMP)**

**RECIRCULATED NOTICE OF PREPARATION / INITIAL
STUDY – AUGUST 2, 2012**



South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

SUBJECT: RECIRCULATED NOTICE OF PREPARATION OF A DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT

PROJECT TITLE: 2012 AIR QUALITY MANAGEMENT PLAN (AQMP)

In accordance with the California Environmental Quality Act (CEQA), the South Coast Air Quality Management District (SCAQMD) will be the Lead Agency for the project identified above. This Notice of Preparation (NOP) and Initial Study (IS) serve two purposes: 1) to solicit information on the scope of the environmental analysis for the proposed project; and 2) to notify the public that the SCAQMD will prepare a Draft Program Environmental Impact Report (Program EIR) to further assess potential adverse environmental impacts that may result from implementing the proposed project.

The NOP/IS is being recirculated because changes were made to the 2012 AQMP project description subsequent to release of the original NOP/IS on June 27, 2012. Recirculation of the NOP/IS allows the public the full 30 days to review the revised project description and provide comments as necessary on the environmental analysis for the 2012 AQMP.

This cover letter and Revised NOP and the attached IS are not SCAQMD applications or forms requiring a response from you. Their purpose is simply to provide information to you on the above project. If the proposed project has no bearing on you or your organization, no action on your part is necessary.

Comments submitted on the June 27, 2012 NOP/IS will continue to be included in the administrative record for the project and responses to these comments will be prepared and included in the Draft PEIR. Therefore, these comment letters need not be submitted a second time. Please focus your comments on the changes to the project description made subsequent to June 27, 2012. Comments focusing on your area of expertise, your agency's area of jurisdiction, or issues relative to the environmental analysis should be addressed to Mr. Jeffrey J. Inabinet (c/o CEQA) at the address shown above, or sent by FAX to (909) 396-3324 or by e-mail to jinabinet@aqmd.gov. Comments must be received no later than 5:00 PM on August 31, 2012. Please include the name and phone number of the contact person for your agency. Questions relative to the proposed 2012 AQMP should be directed to Mr. Michael Krause at (909) 396-2706.

Two public workshops/CEQA scoping meetings will be held for the proposed project at the following locations and times.

Workshop Date	Time	Locations	Address	County
Thursday 8/9/12	2:00 PM	Coachella Valley Association of Governments	73-710 Fred Waring Drive Palm Desert, CA 92260	Riverside
Thursday 8/23/12	9:00 AM	South Coast Air Quality Management District	21865 Copley Drive, Diamond Bar, CA 91765	Los Angeles

The final Public Hearing is currently scheduled for Friday, November 2, 2012 at 9:00 am at the SCAQMD headquarters, at which time the Governing Board will consider certifying the Program EIR and approving the 2012 AQMP. Please note, the Public Hearing date is subject to change.

Date: August 1, 2012

Signature: *Steve Smith*

Steve Smith, Ph.D.
Program Supervisor
Planning, Rules, and Area Sources

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765-4182
RECIRCULATED NOTICE OF PREPARATION OF A
DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT

Project Title:

Draft Program Environmental Impact Report: 2012 Air Quality Management Plan (AQMP)

Project Location:

South Coast Air Quality Management District (SCAQMD) area of jurisdiction consisting of the four-county South Coast Air Basin (Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of the Salton Sea Air Basin and the Mojave Desert Air Basin

Description of Nature, Purpose, and Beneficiaries of Project:

The 2012 AQMP identifies control measures to demonstrate that the region will attain the federal 24-hour standard for particulate matter less than 2.5 microns in diameter (PM_{2.5}) by the applicable target dates and provides Clean Air Act §182(e)(5) proposed implementation measures to assist in achieving the one-hour (revoked) and 8-hour ozone standards by the applicable date. The Draft 2012 AQMP control measures consist of three components: 1) the SCAQMD's Stationary and Mobile Source Control Measures; 2) State and Federal Control Measures; and 3) Regional Transportation Strategy and Control Measures provided by SCAG. Overall, the Draft 2012 AQMP includes stationary and mobile source measures. The AQMP also includes the most current air quality setting, updated emissions inventories of stationary and mobile sources, updated growth projections, new modeling techniques, compliance with contingency requirements, and an implementation schedule for adoption of the proposed control measures. Subsequent to the release of the June 27, 2012 NOP/IS, the following changes were made to the 2012 AQMP: control measure MCS-04a has been folded into control measure ONRD-04; control measure MCS-04b is now control measure BCM-01; control measure MCS-04c is now BCM-04; these three CMs would now apply to the entire Basin instead of just the Mira Loma area; and new control BCM-02 – Further Reductions from Open Burning, that would apply to the entire district, has been added to the 2012 AQMP.

Lead Agency:

South Coast Air Quality Management District

Division:

Planning, Rule Development and Area Sources

Initial Study and all supporting documentation are available at:

SCAQMD Headquarters
 21865 Copley Drive
 Diamond Bar, CA 91765

or by calling:

(909) 396-2039

Initial Study is also available by accessing the SCAQMD's website at:

<http://www.aqmd.gov/ceqa/aqmd.html>

The Public Notice of Preparation is provided through the following:

Los Angeles Times
 (August 2, 2012)

AQMD Website

AQMD Public Information Center

AQMD Mailing List & Interested Parties

Recirculated Notice of Preparation / Initial Study Review Period:

August 2, 2012 – August 31, 2012

Scheduled Public Workshops/CEQA Scoping Meeting Dates:

Workshop Date	Time	Location	Address	County
Thursday 8/9/12	2:00 PM	Coachella Valley Association of Governments	73-710 Fred Waring Drive Palm Desert, CA 92260	Riverside
Thursday, 8/23/12	9:00 AM	South Coast Air Quality Management District	21865 Copley Drive, Diamond Bar, CA 91765	Los Angeles

Scheduled Public Hearing Date:

November 2, 2012, 9:00 a.m.; SCAQMD Headquarters
 (Date subject to change)

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

**Recirculated Initial Study for the Draft Program Environmental Impact
Report for: 2012 Air Quality Management Plan (AQMP)**

August 1, 2012

SCH No.: 2012061093

SCAQMD No.: 20120628JI

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CHAPTER 1

PROJECT DESCRIPTION

Recirculation of the Notice of Preparation (NOP) of a Draft Program Environmental Impact Report for the 2012 Air Quality Management Plan (AQMP) and Initial Study (IS)

Introduction

Agency Authority

Project Location

Background

Overall Attainment Strategy

Purpose of the 2012 AQMP

Project Description

Draft 2012 AQMP Control Measures

Project Objectives

Project Alternatives

1.0 Recirculation of the Notice of Preparation (NOP) / Initial Study (IS) of a Draft Program Environmental Impact Report for the 2012 Air Quality Management Plan (AQMP) and Initial Study (IS)

On June 27, 2012, the South Coast Air Quality Management District (SCAQMD) released a NOP/IS for the 2012 AQMP for a 30-day public review period. Subsequent to release of the NOP/IS, changes were made to the control strategy in the 2012 AQMP. As a result of these changes, the project description in the NOP/IS was not entirely consistent with project described in the 2012 AQMP. Specifically, the following changes were made to the 2012 AQMP: control measure MCS-04a was folded into control measure ONRD-04; control measure MCS-04b is now control measure BCM-01; control measure MCS-04c is now control measure BCM-04; these three CMs would now apply to the entire Basin instead of just the Mira Loma area; and new control BCM-02 – Further Reductions from Open Burning, has been added to the 2012 AQMP and applies to the entire district.

To afford the public the fullest opportunity to review and comment on the preliminary environmental evaluation of the 2012 AQMP, the NOP/IS has been revised to include an updated accurate project description and the NOP/IS is being recirculated for a second 30-day public review period.

Nine comment letters were received on the June 27, 2012 NOP/IS for the 2012 AQMP. As result of these comment letters the following changes have been made to the environmental analysis in Chapter 2 of this NOP/IS. An analysis of potential solid waste impacts has been added for control measure FUG-01. In addition, the environmental topic of potential traffic impacts has been added to the list of environmental topic areas that will be evaluated in the Program EIR.

Responses to comments submitted on the June 27, 2012, will be prepared and included in the Draft PEIR along with responses to comments received on this NOP/IS. Therefore, these comment letters need not be submitted a second time. Please focus your comments on the changes to the project description made subsequent to June 27, 2012.

1.1 Introduction

The SCAQMD was created by the California legislature in 1977¹ as the public agency responsible for developing and enforcing air pollution control regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin and Mojave Desert Air Basin referred to herein as the district. The Lewis Air Quality Act (now known as the Lewis-Presley Air Quality Management Act) requires the SCAQMD to prepare and adopt an Air Quality Management Plan (AQMP) consistent with federal planning requirements. In 1977,

¹ The Lewis-Presley Air Quality Management Act, 1976 Cal. State. ch. 324 (codified at H & S Code, Sections 40400 - 40540).

amendments to the federal Clean Air Act (CAA) included requirements for submitting State Implementation Plans (SIPs) for nonattainment areas that fail to meet all federal ambient air quality standards (CAA § 172) and similar requirements exist in state law (Health & Safety Code §40462). The federal CAA was amended in 1990 to specify attainment dates and SIP requirements for ozone, carbon monoxide (CO), nitrogen dioxide (NO₂) and particulate matter with an aerodynamic diameter of less than 10 microns (PM₁₀). In 1997, the United States Environmental Protection Agency (EPA) promulgated ambient air quality standards for a new pollutant, particulate matter with an aerodynamic diameter less than 2.5 microns (PM_{2.5}). The California Clean Air Act (CCAA), adopted in 1988, requires the SCAQMD to endeavor to achieve and maintain state ambient air quality standards for ozone, CO, sulfur dioxide (SO₂), and NO₂ by the earliest practicable date (Health & Safety Code §40910). The CCAA also requires a three-year plan review if necessary, and an update to the AQMP. The EPA is required to periodically update the national ambient air quality standards. The AQMP revision currently under development is primarily triggered by an update to the PM_{2.5} standard, but also provides requirements to attain the (revoked) one-hour ozone standard and measures to continue making progress toward attaining the 8-hour ozone standard.

The South Coast Air Basin (Basin), which includes all of Orange County and the nondesert portions of Los Angeles, San Bernardino and Riverside counties, has one of the worst air quality problems in the nation. Though there have been significant improvements in air quality in the Basin over the last two decades, some ambient air quality standards are still exceeded relatively frequently and by a wide margin. The 2007 AQMP concluded that major reductions in emissions of oxides of sulfur (SO_x), particulate matter less than 2.5 microns (PM_{2.5}) and oxides of nitrogen (NO_x) are necessary to attain the air quality standards for ozone and particulate matter by the dates mandated by federal law. Less emphasis is placed on emission reductions from volatile organic compounds (VOCs) because of the greater emphasis on NO_x emission reductions, which is a precursor to both ozone and PM. Ozone, a criteria pollutant, is formed when VOCs react with NO_x in the atmosphere and has been shown to adversely affect human health. NO_x also contributes to the formation of PM₁₀ and PM_{2.5}.

1.2 Background

The first AQMP was prepared and approved by the SCAQMD in 1979 and has been updated and revised eight times since first adopted. The 2012 AQMP will be the tenth plan, not including certain SIPs for specific pollutants, e.g., PM₁₀ for the Coachella Valley and lead, prepared by the SCAQMD. The following bullets summarize the main components of the past AQMP updates and revisions:

- The 1982 AQMP was revised to reflect better data and modeling tools.

- In 1987, a federal court ordered the U.S. Environmental Protection Agency (U.S. EPA) to disapprove the 1982 AQMP because it did not demonstrate attainment of all national ambient air quality standards (NAAQS) by 1987 as required by the CAA. This, in part, led to the preparation of the 1989 AQMP.
- The 1989 AQMP was adopted on March 17, 1989 and was specifically designed to attain all NAAQS. This plan called for three “tiers” of measures as needed to attain all standards and relied on significant future technology advancement to attain these standards.
- In 1991, the SCAQMD prepared and adopted the 1991 AQMP to comply with the CCAA.
- In 1992, the 1991 AQMP was amended to add a control measure containing market incentive programs.
- In 1994, the SCAQMD prepared and adopted the 1994 AQMP to comply with the CCAA three-year update requirement and to meet the federal CAA requirement for an ozone SIP. The AQMP, as adopted in 1994, included the following:
 - All geographical areas under the jurisdiction of the SCAQMD (referred to here as the district), as opposed to just the South Coast Air Basin;
 - The basic control strategies remained the same although the three-tiered structure of control measures was replaced and measures previously referred to as Tier I, II or III were replaced with short-/intermediate-term or long-term control measures;
 - Updated and refined control measures carried over from 1991;
 - Best Available Control Measure (BACM) PM10 Plan;
 - The ozone attainment demonstration plan;
 - Amendments to the federal Reactive Organic Compound (ROC) Rate-of-Progress Plan (also referred to as the volatile organic compound (VOC) Rate-of-Progress Plan); and
 - Attainment Demonstration Plans for the federal PM10, nitrogen dioxide, and carbon monoxide air quality standards; etc.
- The 1997 AQMP was designed to comply with the three-year update requirements specified in the CCAA as well as to include an attainment demonstration for PM10 as required by the federal CAA. Relative to ozone, the 1997 AQMP contained the following changes to the control strategies compared to the 1994 AQMP:

- ❑ Less reliance on transportation control measures (TCMs);
- ❑ Less reliance on long-term control measures that rely on future technologies as allowed under §182(e)(5) of the CAA; and
- ❑ Removal of other infeasible control measures and indirect source measures.
- In 1999, the ozone plan portion of the 1997 AQMP was amended to address partial disapproval of the 1997 AQMP by the U.S. EPA and a settlement of litigation by environmental groups challenging the 1997 AQMP to provide the following:
 - ❑ Greater emission reductions in the near-term than would occur under the 1997 AQMP;
 - ❑ Early adoption of the measures that would otherwise be contained in the next three-year update of the AQMP; and
 - ❑ Additional flexibility relative to substituting new measures for infeasible measures and recognition of the relevance of cost effectiveness in determining feasibility.
- In April 2000, U.S. EPA approved the 1999 ozone SIP to the 1997 plan. The 1999 Amendment in part addressed the State's requirements for a triennial plan update.
- The 2003 AQMP was approved and adopted by the SCAQMD in August 2003. The 2003 AQMP was never fully approved by the U.S. EPA as part of the SIP. The 2003 AQMP addressed the following control strategies:
 - ❑ Attaining the federal PM10 ambient air quality standard for the South Coast Air Basin and Coachella Valley- these portions were approved by the U.S. EPA ; in both areas, the attainment demonstration was disapproved after the California Air Resources Board (CARB) withdrew its measures;
 - ❑ Attaining the federal one-hour ozone standard;
 - ❑ 1997/1999 control measures not yet implemented;
 - ❑ Revisions to the Post-1996 VOC Rate-of-Progress Plan and SIP for CO; and
 - ❑ Initial analysis of emission reductions necessary to attain the PM2.5 and eight-hour ozone standards; etc.
 - ❑ The 2003 AQMP was partially approved and partially disapproved by EPA,
- The SCAQMD Governing Board approved the 2007 AQMP on June 1, 2007. On September 27, 2007, CARB adopted the State Strategy for the 2007 State

Implementation Plan and the 2007 South Coast Air Quality Management Plan as part of the (SIP). The 2007 SIP was then forwarded to U.S. EPA for approval. The following summarize the major components of the 2007 AQMP:

- ❑ The most current air quality setting (i.e., 2005 data);
- ❑ Updated emission inventories using 2002 as the base year, which also incorporate measures adopted since adopting the 2003 AQMP;
- ❑ Updated emission inventories of stationary and mobile on-road and off-road sources;
- ❑ 2003 AQMP control measures not yet implemented (eight of the control measures originally contained in the 2003 AQMP have been updated or revised for inclusion into the Draft 2007 AQMP);
- ❑ 24 new measures are incorporated into the 2007 AQMP based on replacing the SCAQMD's long-term control measures from the 2003 AQMP with more defined or new control measures and control measure adoption and implementation schedules;
- ❑ SCAQMD's recommended control measures aimed at reducing emissions from sources that are primarily under State and federal jurisdiction, including on-road and off-road mobile sources, and consumer products;
- ❑ SCAG's regional transportation strategy and control measures; and
- ❑ Analysis of emission reductions necessary and attainment demonstrations to achieve the federal eight-hour ozone and PM_{2.5} air quality standards.

On November 22, 2010, U.S. EPA issued a notice of proposed partial approval and partial disapproval of the 2007 South Coast SIP for the 1997 Fine Particulate Matter Standards and the corresponding 2007 State Strategy. Specifically, U.S. EPA proposed approving the SIP's inventory and regional modeling analyses, but it also proposed disapproving the attainment demonstration because it relied too extensively on commitments to emission reductions in lieu of fully adopted, submitted, and SIP-approved rules. The notice also cited deficiencies in the SIP's contingency measures.

- In response to U.S. EPA's proposed partial disapproval of the 2007 SIP, on March 4, 2011, the SCAQMD Governing Board approved Revisions to the 2007 PM_{2.5} and Ozone State Implementation Plan for South Coast Air Basin and Coachella Valley. The revisions to the 2007 PM_{2.5} and Ozone SIP consist of the following:
 - ❑ Updated implementation status of SCAQMD control measures necessary to meet the 2015 PM_{2.5} attainment date;

- Revisions to the control measure adoption schedule;
 - Changes made to the emission inventory resulting from California Air Resources Board's (CARB's) December 2010 revisions to the on-road truck and off-road equipment rules; and
 - An SCAQMD commitment to its "fair share" of additional NO_x emission reductions, if needed, in the event U.S. EPA does not voluntarily accept the "federal assignment."
- In response to the July 14, 2011 U.S. EPA notice of proposed partial approval and partial disapproval of the 2007 South Coast SIP for the 1997 Fine Particulate Matter Standards, at the October 7, 2011 public hearing, the SCAQMD Governing Board approved Further Revisions to PM_{2.5} and Ozone State Implementation Plan for South Coast Air Basin and Coachella Valley. Revisions to the PM_{2.5} SIP included a three-prong approach for identifying contingency measures needed to address U.S. EPA's partial disapproval:
 - Equivalent emissions reductions achieved through improvements in air quality;
 - Relying on committed emissions reductions for the 2007 ozone plan; and
 - Quantifying excess emissions reductions achieved by existing rules and programs that were not originally included in the 2007 PM_{2.5} SIP;
 - U.S. EPA approved the PM_{2.5} SIP except for contingency measures on November 9, 2011. Action is pending on the contingency measures;
 - U.S. EPA fully approved the 2007 SIP for the 8-hour ozone standard on March 1, 2012.

1.2.1 Progress Implementing the 2007 AQMP

The SCAQMD has fulfilled the majority of its emissions reductions commitments specified in the 2007 SIP. Table 1-1 summarizes the progress achieved toward fulfilling SCAQMD's emissions reductions commitments to attain the 1997 PM_{2.5} annual and federal 8-hour ozone standards by the required dates. Through January 31, 2011, the SCAQMD Governing Board has amended and adopted 12 rules. The majority of these rules have been submitted to U.S. EPA and approved as part of the SIP. Several recently adopted SCAQMD rules have been submitted to CARB and have been or are expected to be submitted to and subsequently evaluated by U.S. EPA. As shown in Table 1-1, for the control measures adopted by the District over this period, 22.5 tons per day of VOC reductions, 7.6 tons per day of NO_x reductions, 4.0 tons per day of SO_x reductions, and 1.0 tons per day of PM_{2.5} reductions will be achieved by 2014. Additional reductions from these adopted rules will be achieved by 2023.

TABLE 1-1
Total 2007 AQMP Emission Reductions
from SCAQMD Control Measures (tons per day)

Pollutant	COMMITMENT ^a		ACHIEVED ^a	
	2014	2023	2014	2023
VOC	10.4	19.2	22.5	26.4
NO _x	10.8	9.2	7.6	10.3
PM _{2.5}	2.9	5.4	1.0	1.6
SO _x	2.9	2.9	4.0	5.7

Source: 2012 AQMP, Chapter 1, Table 1-2

^a 2014 reductions estimated in average annual day, 2023 in planning inventory.

Table 1-2 lists the 2007 AQMP's control measure commitments that have been adopted (either entirely or partially) by CARB since the 2007 AQMP was adopted. The emissions are presented in terms of remaining emissions, rather than reductions, due to some significant changes to the inventory that preclude a direct comparison of committed emissions to those achieved. The table is based on SIP revisions submitted to U.S. EPA in 2011, and thus reflect adopted measures through specific dates in 2011 as described in the footnotes. To date, CARB has achieved more than the committed 2014 emissions reductions for all pollutants for these source categories. The same is true for VOC and NO_x emissions in 2023.

TABLE 1-2
South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
	2014 ^a	2023 ^b	2014 ^a	2023 ^b
NO_x EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	134.2	74.3	131.6	73.1
Cleaner In-Use Heavy-Duty Trucks & Buses	151.2	76.8	132.6	49.4
Cleaner In-Use Off-Road Equipment (over 25hp)	28.0	18.9	27.5	15.8
Ship Auxiliary Engine Cold Ironing & Clean Tech.	23.7	40.3	15.6	12.0
Cleaner Main Ship Engines and Fuel - Main Engines	38.5	65.8	20.9	21.3

TABLE 1-2 (Continued)

South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
	2014 ^a	2023 ^b	2014 ^a	2023 ^b
NO_x EMISSIONS (TPD)^c				
Accelerated Intro. of Cleaner Line-Haul Locomotives	18.3	21.0	18.3	21.0
Clean Up Existing Harbor Craft	15.2	18.4	11.1	8.4
Cargo Handling Equipment	3.2	1.8	3.2	1.8
New Emission Standards for Recreational Boats	11.0	18.3	11.0	18.3
Co-Benefits from Greenhouse Gas Reduction Measures ^d	--	--	--	--
All other local, state, and federal emissions	166	157	159	147 ^e
TOTAL NO_x REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	589	493	530	368
VOC EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	132.1	97.4	123.5	92.1
Cleaner In-Use Heavy-Duty Trucks & Buses	8.7	6.6	5.4	5.3
Cleaner In-Use Off-Road Equipment (over 25hp)	2.6	2.0	2.5	1.7
Ship Auxiliary Engine Cold Ironing & Clean Tech.	0.9	1.5	0.7	0.9
Cleaner Main Ship Engines and Fuel - Main Engines	1.9	3.2	1.4	2.5
Accelerated Intro. of Cleaner Line-Haul Locomotives	2.3	2.4	2.3	2.4
Clean Up Existing Harbor Craft	1.2	1.0	1.1	0.5
Cargo Handling Equipment	0.3	0.6	0.3	0.6
New Emission Standards for Recreational Boats	37.9	50.8	37.9	50.8
Expanded Off-Road Rec. Vehicle Emission Standards	6.7	13.4	6.7	13.4
Consumer Products Program	102.6	109.5	96.7	102.4
All other local, state, and federal emissions	221	241	206	226 ^e
TOTAL VOC REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	518	529	485	498

TABLE 1-2 (Concluded)
South Coast Air Basin Remaining Emissions Due to CARB Actions

CARB REGULATIONS	COMMITMENT		ACHIEVED	
	2014 ^a	2023 ^b	2014 ^a	2023 ^b
PM2.5 EMISSIONS (TPD)^c				
Smog Check Improvements (BAR)	7.8	--	7.5	--
Cleaner In-Use Heavy-Duty Trucks & Buses	6.0	--	3.4	--
Cleaner In-Use Off-Road Equipment (over 25hp)	1.3	--	1.3	--
Ship Auxiliary Engine Cold Ironing & Clean Tech.	0.5	--	0.4	--
Cleaner Main Ship Engines and Fuel - Main Engines	3.9	--	0.4	--
Accelerated Intro. of Cleaner Line-Haul Locomotives	0.7	--	0.7	--
Clean Up Existing Harbor Craft	0.6	--	0.4	--
Cargo Handling Equipment	0.1	--	0.1	--
All other local, state, and federal emissions	74	--	73	--
TOTAL PM2.5 REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	95	--	87	--
SOx EMISSIONS (TPD)^c				
Cleaner In-Use Heavy-Duty Trucks & Buses	0.3	--	0.3	--
Ship Auxiliary Engine Cold Ironing & Clean Tech.	1.1	--	0.8	--
Cleaner Main Ship Engines and Fuel - Main Engines	38.7	--	1.7	--
All other local, state, and federal emissions	21	--	17	--
TOTAL SOx REMAINING EMISSIONS WITH RULES ADOPTED TO DATE	61	--	20	--

- a. The 2014 emissions data reflect the 2014 Emissions Inventory that was included in the March 2011 *Progress Report on Implementation of PM2.5 State Implementation Plans*. The inventory is in the process of being updated, and may change slightly in the final AQMP draft.
- b. The 2023 emissions data tables reflect the 2023 Emissions Inventory that was current as of August 2011. The inventory is in the process of being updated, and may change slightly in the final AQMP draft.
- c. These are remaining emissions. If achieved emissions are lower than the committed emissions, it means the SIP targets are met.
- d. Remaining emissions are included in “other local, state, and federal emissions”
- e. Includes benefits of local emission reductions that were not reflected in the revised RFP estimates.

1.3 Agency Authority – 2012 AQMP

The 2012 AQMP sets forth emission reduction programs which require the cooperation of all levels of government: local, regional, state, and federal, as well as public engagement. Each level is represented in the AQMP by the appropriate agency or jurisdiction that has the authority over specific emissions sources. Accordingly, each agency or jurisdiction commits to specific planning and implementation responsibilities.

At the federal level, the U.S. EPA is charged with establishing emission standards of motor vehicle standards; train, airplane, and ship pollutant exhaust and fuel standards; and regulation of non-road engines less than 175 horsepower. CARB, representing the state level, also oversees development of 2012 AQMP control measures for on-road vehicle emission standards in California; motor vehicle fuel specifications; some off-road source emission standards and fuel standards, including marine vessels; and consumer product standards. At the regional level, the SCAQMD is responsible primarily for non-vehicular sources and has limited authority over mobile sources (e.g., in-use fleet regulations, incentives for accelerated vehicle turnover, reduction in average vehicle ridership, etc.). In addition, the SCAQMD has lead responsibility for developing stationary, some area, and indirect source control measures and coordinating the development and adoption of the 2012 AQMP. Lastly, at the local level, the cities and counties and their various departments (e.g., harbors and airports) have a dual role related to transportation and land use. Their efforts are coordinated through the regional metropolitan planning organization for the South Coast Air Basin, the Southern California Association of Governments (SCAG), which is responsible for preparing the transportation control measure component of the 2012 AQMP. Interagency commitment and cooperation are the keys to success of the 2012 AQMP.

1.4 Agency Authority – CEQA

CEQA, Public Resources Code §21000 *et seq.*, requires that the environmental impacts of proposed projects be evaluated and that feasible methods to reduce, avoid or eliminate significant adverse impacts of these projects be identified and implemented. The lead agency is the “public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment” (Public Resources Code Section 21067). Since the SCAQMD has the primary responsibility for supervising or approving the entire project as a whole, it is the most appropriate public agency to act as lead agency (CEQA Guidelines Section 15051(b)).

A Program Environmental Impact Report (Program EIR) for the 2012 AQMP is considered to be the appropriate document pursuant to CEQA Guidelines Section 15168(a)(3), because the 2012 AQMP constitutes a series of actions that can be characterized as one large project and are related in the connection with the issuance or rules, regulations, plans, or other criteria to govern the conduct of a continuing program.

As the lead agency SCAQMD for proposed 2012 AQMP, SCAQMD staff prepared Notice of Preparation/Initial Study (NOP/IS) for the proposed 2012 AQMP Program EIR. The NOP/IS was released for a 30-day public review and comment period. The NOP/IS was

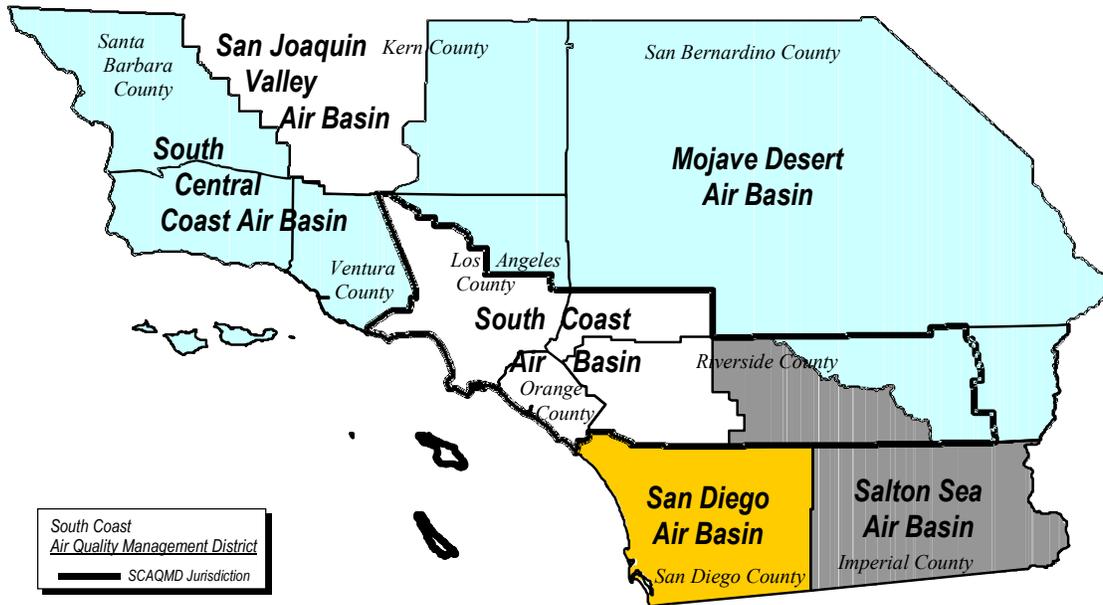
also recirculated for a 30-day public review and comment period from August 2 through August 31, 2012 due to changes in the project description since the original NOP/IS circulation.

1.5 Project Location

The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Basin) (all of Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB), referred to hereafter as the district. The Basin, which is a subregion of the SCAQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federal nonattainment area (known as the Coachella Valley Planning Area) is a subregion of the Riverside County and the SSAB that is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east (Figure 1-1).

1.6 Overall Attainment Strategy

The overall control strategy for the Draft 2012 AQMP is designed to meet applicable federal and state requirements. The focus of the AQMP is to demonstrate attainment of the federal 24-hour PM_{2.5} ambient air quality standard by 2014, while making expeditious progress toward attainment of state standards. In addition, to further implement the existing 8-hour ozone plan, the 2012 AQMP includes section 182(e)(5) implementation measures designed to assist in future attainment of the 8-hour ozone standard (refer to subsection 1.6.1). The proposed control measures in the Draft 2012 AQMP are based on implementing all feasible control measures through the application of available technologies and management practices as well as development and implementation of advanced technologies and control methods. For purposes of the environmental analysis, it is expected that full implementation of all section 182(e)(5) measures for the one-hour ozone standard would have the same environmental effects as implementing the section 182(e)(5) measures for the 8-hour standard that were already analyzed in the EIR for the 2007 AQMP. These measures rely on proposed actions to be taken by several agencies that currently have the statutory authority to implement such measures. Similar to the approaches taken in previous AQMPs, the SIP commitment includes an adoption and implementation schedule for each control measure. Each agency is also committed to achieving a total emission reduction target with the ability to substitute specified control measures for control measures deemed infeasible, as long as equivalent reductions are met by other means. These measures are also designed to satisfy the federal Clean Air Act requirement of reasonably available control technologies [§172(c)], and the California requirement of Best Available Retrofit Control Technologies (BARCT) [Health and Safety Code §40440(b)(1)].



**FIGURE 1-1
Southern California Air Basins**

To ultimately achieve the 24-hour PM_{2.5} ambient air quality standards and demonstrate attainment, PM emissions reductions will be necessary, not only from non-vehicular sources under the jurisdiction of the SCAQMD, but substantial PM reductions will be necessary from sources primarily under the jurisdiction of CARB (e.g., on-road motor vehicles, off-road equipment, and consumer products) and U.S. EPA (e.g., aircraft, ships, trains, and pre-empted off-road equipment). Without an adequate and fair-share level of reductions from all sources, the emissions reduction burden would unfairly be shifted to stationary sources that are already stringently regulated. The SCAQMD will continue to work closely with CARB to further control mobile source emissions where federal or State actions do not meet regional needs.

1.6.1 One-hour Ozone Standard Attainment Strategy

The federal one-hour ozone standard was revoked, effective one year after the eight-hour standard designations were effective (i.e., 2005). U.S. EPA guidance indicated that while certain planning requirements remained in effect, a new SIP would not be required if an area failed to attain the standard by the attainment date. However, recent litigation and court decisions have suggested that there likely will be a need for the SCAQMD to prepare a new one-hour ozone SIP in the near future. If a one-hour ozone SIP is requested by U.S. EPA,

the SIP would be due within 12 months of such a SIP call. The attainment demonstration in the SIP would have to show attainment within five years with a potential five-year extension, which would be a similar timeframe (2022) as is required for the 1997 eight-hour ozone standard (deadline of 2023). However, many new technical issues such as modeling for the attainment demonstration and other CAA requirements would require U.S. EPA's guidance, since the previous preambles/guidelines are no longer directly applicable. Based on previous modeling estimates, the control strategies that are needed to attain the eight-hour ozone standard are nearly identical to those that would be needed to attain the one-hour ozone standard.

Although the primary purpose of the 2012 AQMP Basin is to set forth a comprehensive and integrated program that will lead the Basin into compliance with the federal 24-hour PM_{2.5} air quality standard, it will also provide an update of the Basin's projections in meeting the federal one-hour and eight-hour ozone standards. The AQMP will update specific elements of the previously approved 8-hour ozone SIP: 1) an updated emissions inventory, and 2) new control measures and commitments for emissions reductions to help fulfill the §182(e)(5) portion of the 8-hour ozone SIP and one-hour ozone SIP.

Regardless of whether or not U.S. EPA requests that the SCAQMD prepare a one-hour ozone SIP, the multi-agency effort to identify 2012 AQMP control measures that specifically address the SCAQMD's efforts to continue making progress towards attaining all state and national ambient air quality standards for ozone. For example, there are four coatings and solvent control measures (CTS 01, CTS02, CTS-03, and CTS-04; Table 1-3); two combustion control measures (CMB-01, RECLAIM phase 2, and CMB-02; Table 1-3); and five §182(e)(5) on-road mobile source control measures, five off-road mobile source control measures, and seven advanced control measures (Table 1-4) that all primarily address attaining the ozone standards.

No other control measures to attain the ozone standards were identified during the multi-agency effort to identify 2012 AQMP control measures. As a result, no additional control measures to address progress in attaining the ozone standards would likely be identified. This means that a one-hour ozone SIP would include all of the same ozone-related control measures as the 2012 AQMP. Further, by analyzing the 2012 AQMP ozone-related control measures in this Program EIR, this Program EIR would also serve as the CEQA document for a one-hour ozone SIP.

1.7 Purpose of the 2012 AQMP

The 2012 AQMP will provide an updated air pollution control strategy to attain federal ambient air quality standards and has been developed as an integrated Plan taking into consideration: air quality improvement needs, climate change, transportation, and energy reliability. The 2012 AQMP focuses on PM reductions to attain the federal 24-hour PM_{2.5} standard by 2014. The 2012 AQMP also includes ozone reduction strategies to make expeditious progress in attaining the state one-hour and eight-hour standards and the federal eight-hour ozone standards (80 parts per billion (ppb) by 2023 and 75 ppb by 2032). The 2012 AQMP also provides for meeting requirements applicable under the (revoked) one-

hour federal ozone standard. In particular the ozone strategy approach relies heavily on NOx emission reductions, primarily from mobile sources, and identifies actions that can be taken in the next two to three years. The 2012 AQMP relies upon the most recent planning assumptions and the best available information such as CARB's latest EMFAC2011 for the on-road mobile source emissions inventory, CARB's OFF-ROAD 2011 model for the off-road mobile source emission inventory, the latest point source and improved area source inventories as well as the use of new episodes and air quality modeling analysis, and SCAG's forecast assumptions based on its recent 2012 Regional Transportation Plan. The 2012 AQMP includes the current and future air quality in the Coachella Valley. The 2012 AQMP also includes a discussion of ultra-fine particles, near roadway exposure and energy.

It is expected that implementing the 2012 control measures will provide substantial benefits of improved air quality, which are numerous and far-reaching. From a public health standpoint, air pollution has been linked to long-term health problems affecting the lungs, heart, blood, brain and immune and nervous systems. Therefore, improving air quality is expected to result in improvements to public health. Additional benefits include improved visibility, reduced destruction of materials and buildings, reduced damage to agricultural crops and habitat for wildlife and, more efficient land use patterns and transportation systems. 2012 AQMP control measures have the potential reduce reliance on traditional petroleum fuels, thus, providing reductions in greenhouse gas emissions. The following sections summarize the overall components of the 2012 AQMP and the specific control measures that comprise the 2012 AQMP.

1.8 Project Description

The Draft 2012 AQMP control measures consist of three components: 1) the SCAQMD's Stationary and Mobile Source Control Measures including; 2) SCAQMD, State, and Federal Mobile Source Control Measures; and 3) Regional Transportation Strategy and Control Measures provided by SCAG. Overall, the Draft 2012 AQMP includes stationary and mobile source measures. These measures primarily rely on the traditional command-and-control approach, facilitated by market incentive programs, as well as advanced technologies expected to be implemented by 2015 (for PM2.5). A summary of these measures is provided in the following subsections. The following bullet points summarize the major components of the 2012 AQMP:

- The most current air quality setting (i.e., 2008 data);
- Updated emission inventories using 2008 as the base year, which also incorporate measures adopted since adopting the 2007 AQMP;
- Updated emission inventories of stationary and mobile on-road and off-road sources;
- Consider action on the 2007 AQMP control measures not yet implemented (through January 31, 2011, the SCAQMD Governing Board has amended and adopted 13 rules achieving approximately 96 percent of the SCAQMD's SIP commitment outlined in the 2007 AQMP);

- New measures are to be incorporated into the Draft 2012 AQMP;
- SCAG's 2012 regional transportation strategy and control measures;
- Analysis of emission reductions necessary to achieve the federal 24-hour PM_{2.5} air quality standards, and (revoked) one-hour ozone standard;
- Overview of state and federal planning requirements;
- Implementation schedule for adoption of the proposed control measures;
- Latest information on near-roadway emissions of combustion-related pollutants with particular focus on ultrafine particulates formation, transport, exposure, and health effects and potential control strategies, although there are no ambient air quality standards specifically for ultrafine particulates; and
- Energy Policy Update including: energy consumption, costs, associated emissions for base year 2008 and the future AQMP years, and associated energy impacts and GHG emissions inventory in the Basin.

1.8.1 Stationary Source Control Measures

The stationary source control measures included in the Draft 2012 AQMP would further reduce emissions from both point sources (permitted facilities) and area sources (generally small and non-permitted). The proposed control strategies for stationary sources under the SCAQMD's jurisdiction include implementing the remaining revised and partially implemented measures from the 2007 AQMP and new measures that are deemed feasible, which will provide additional emission reduction opportunities. In light of significant reductions needed for PM_{2.5} attainment demonstrations, the SCAQMD will work closely with CARB to further regulate mobile sources. In addition to PM reduction control measures, the 2012 AQMP also identifies control measures to be implemented by the SCAQMD to make progress towards attaining ambient air quality standards for ozone. These control measures include short-term and Clean Air Act §182(e) implementation, and would regulate stationary and mobile sources.

The basic principles followed in developing the SCAQMD's stationary source control measures included: 1) identify PM_{2.5}, ammonia and NO_x reduction opportunities and maximize reductions by the earliest possible and feasible attainment year, and 2) initiate programs or rulemaking activities for further VOC and NO_x control strategies to maximize ozone reductions by the year 2022-2023 timeframe. Therefore, the proposed control strategy for stationary sources under the SCAQMD's jurisdiction includes some revised and partially implemented measures from the 2007 AQMP and new measures that are deemed feasible to provide additional control opportunities. In addition, to foster further technology advancement, long-term measures are also included to achieve additional reductions from stationary sources based on implementation and accelerated penetration of advanced technologies. For each control measure, the SCAQMD will seek to achieve the maximum reduction potential that is technically feasible and cost-effective. The control measures to be

implemented by the SCAQMD are listed in Table 1-3 summarized in the paragraphs following Table 1-3.

**TABLE 1-3
Stationary Source Control Measures Categorized by Source Type**

Number	Title	CM Type	Adoption	Implementation Period	Reduction (tpd)
PM SOURCES					
BCM-01 <i>(formerly MCS-04B)</i>	Further Reductions from Residential Wood Burning Devices [PM2.5]	Short-term 24-hr PM2.5	2013	2013-2014	7.1 ^a
BCM-02 <i>(new)</i>	Further Reductions from Open Burning [PM2.5]	Short-term 24-hr PM2.5	2013	2013-2014	4.6 ^b
BCM-03 <i>(formerly BCM-01 & BCM-05 in the 2007 AQMP)</i>	Emission Reductions from Under-Fired Charbroilers [PM2.5]	Short-term 24-hr PM2.5	Phase I – 2013 (<i>Tech Assessment</i>) Phase II - TBD	TBD	1.0 ^c
BCM-04 <i>(formerly MCS-04B)</i>	Further Ammonia Reductions from Livestock Waste [NH3]	Short-term 24-hr PM2.5	Phase I – 2013-2014 (<i>Tech Assessment</i>) Phase II - TBD	TBD	TBD ^d
COMBUSTION SOURCES					
CMB-01	Further NOx Reductions from RECLAIM [NOx] – <i>Phase I</i>	Short-term 24-hr PM2.5	2013	2014	2-3
CMB-01	Further NOx Reductions from RECLAIM [NOx] – <i>Phase II</i>	Section 182 (e)(5) implementation	2015	2020	1-2
CMB-02	NOx Reductions from Biogas Flares [NOx]	Section 182 (e)(5) implementation	2015	Beginning 2017	Pending ^e

TABLE 1-3 (Continued)
Stationary Source Control Measures Categorized by Source Type

Number	Title	CM Type	Adoption	Implementation Period	Reduction (tpd)
COMBUSTION SOURCES (Cont.)					
CMB-03	Reductions from Commercial Space Heating [NO _x]	Section 182 (e)(5) implementation	Phase I – 2014 (<i>Tech Assessment</i>) Phase II - 2016	Beginning 2018	0.18 by 2023 0.6 (total)
COATINGS AND SOLVENTS					
CTS-01	Further VOC Reductions from Architectural Coatings (R1113) [VOC]	Section 182 (e)(5) implementation	2015 - 2016	2018 - 2020	2-4
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]	Section 182 (e)(5) implementation	2013 - 2016	2015 - 2018	1-2
CTS-03	Further VOC Reductions from Mold Release Products [VOC]	Section 182 (e)(5) implementation	2014	2016	0.8 – 2
CTS-04	Further VOC Reductions from Consumer Products [VOC]	Section 182 (e)(5) implementation	2013 - 2015	2018	N/A ^f
PETROLEUM OPERATIONS AND FUGITIVE VOC					
FUG-01	Further VOC Reductions from Vacuum Trucks [VOC]	Section 182 (e)(5) implementation	2014	2016	1 ^g
FUG-02	Emission Reduction from LPG Transfer and Dispensing [VOC] – <i>Phase II</i>	Section 182 (e)(5) implementation	2015	2017	1-2
FUG-03	Further VOC Reductions from Fugitive VOC Emissions [VOC]	Section 182 (e)(5) implementation	2015 -2016	2017-2018	1-2
MULTIPLE COMPONENT SOURCES					
MCS-01	Application of All Feasible Measures Assessment [All Pollutants]	Short-term 24-hr PM _{2.5} and section 182(e)(5) implementation	Ongoing	Ongoing	TBD ^d
MCS-02	Further Emission Reductions from Green Waste Processing (Chipping and Grinding Operations Not Associated with Composting) [VOC]	Section 182 (e)(5) implementation	2015	2016	1 ^g

TABLE 1-3 (Concluded)
Stationary Source Control Measures Categorized by Source Type

MULTIPLE COMPONENT SOURCES					
Number	Title	CM Type	Adoption	Implementation Period	Reduction (tpd)
MCS-03 <i>(formerly MCS-06 in the 2007 AQMP)</i>	Improved Start-up, Shutdown and Turnaround Procedures [All Pollutants]	Section 182 (e)(5) implementation	Phase I – 2012 (<i>Tech Assessment</i>) Phase II - TBD	Phase I – 2013 (<i>Tech Assessment</i>) Phase II - TBD	TBD ^d
INDIRECT SOURCES					
IND -01 <i>(formerly MOB-03)</i>	Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources [NO _x , SO _x , PM _{2.5}]	Short-term 24-hr PM _{2.5}	2013	12 months after trigger	N/A ^f
INCENTIVE PROGRAMS					
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NO _x]	Section 182 (e)(5) implementation	2014	Within 12 months after funding availability	TBD ^h
INC-02	Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies [All Pollutants]	Section 182 (e)(5) implementation	2014-2015	Beginning 2015	N/A ^f
EDUCATIONAL PROGRAMS					
EDU-01 <i>(formerly MCS-02, MCS-03)</i>	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]	Short-term 24-hr PM _{2.5} and Section 182 (e)(5) implementation	Ongoing	Ongoing	N/A ^f

- a. Winter average day reductions based on episodic conditions and 75 percent compliance rate
- b. Reduction based on episodic day conditions
- c. Will submit into SIP once technically feasible and cost effective options are confirmed
- d. TBD are reductions to be determined once the technical assessment is complete, and inventory and control approach are identified
- e. Pending because emission reductions will be provided prior to the Final Draft
- f. N/A are reductions that cannot be quantified due to the nature of the measure (e.g., outreach, incentive programs) or if the measure is designed to ensure reductions that have been assumed to occur will, in fact, occur
- g. Reductions submitted in SIP once emission inventories are included in the SIP
- h. TBD are reductions to be determined once the inventory and control approach are identified.

Summaries of the Stationary Source Control Measures

BCM-01 – Further Reductions from Residential Wood Burning Devices [PM_{2.5}] *(formerly BCM-05 in the 2007 AQMP)* *(formerly control measure MCS-04B in the NOP/IS for the 2012 AQMP)*: The purpose of this measure would be to seek further PM_{2.5} emissions reductions from residential wood burning fireplaces and wood stoves whenever key areas in the South Coast Air Basin are forecast to approach the federal 24-

hour PM_{2.5} standard. A review of other California air district regulations has indicated that the most appropriate amendment to the existing AQMD wood smoke control program would be to decrease the mandatory wood burning curtailment forecast threshold from 35 µg/m³ to a more conservative 30 µg/m³. In addition to the existing sub-regional curtailment program of Rule 445 (based on areas forecast to exceed the existing PM_{2.5} standard), this measure would implement a curtailment that would apply Basin-wide whenever a PM_{2.5} level of greater than 30 µg/m³ is forecast at any monitoring station at which the design value has exceeded the current PM_{2.5} 24-hour standard of 35 µg/m³ for either of the two previous periods. Lowering the wood burning curtailment forecast threshold and applying the curtailment to the entire Basin when triggered could potentially reduce Basin-wide ambient PM_{2.5} concentrations on these episodic no-burn days by about 7.1 tons per winter day (assuming 75% rule effectiveness).

BCM-02 – Further Reductions from Open Burning [PM_{2.5}] (new control measure added after the release of the NOP/IS): Rule 444 outlines the criteria and guidelines for agricultural and prescribed burning, as well as training burns, to minimize PM emissions and smoke in a manner that is consistent with state and federal laws. Agricultural burning is open burning of vegetative materials produced from the growing and harvesting of crops. Prescribed burning is a planned open burning of vegetative materials, usually conducted by a fire protection agency and/or department of forestry, to promote a healthier habitat for plants and animals, to prevent plant disease and pests, and to reduce the risk of wild fires. Training burns are hands-on instructional events conducted by fire protection agencies on methods of preventing and/or suppressing fire. Rule 444 currently contains requirements that a no-burn day may be called under a combination of geographical, meteorological, and air quality conditions. This control measure would potentially increase the number of no-burn days by establishing an additional criteria for no-burn during episodic days as described in control measure BCM-01 by implementing a curtailment that would apply Basin-wide whenever a PM_{2.5} level of greater than 30 µg/m³ is forecast at any monitoring station at which the design value has exceeded the current PM_{2.5} 24-hour standard of 35 µg/m³ for either of the two previous periods. Enhancing the open burning restrictions with this new threshold criteria and applying a curtailment to the entire Basin could potentially reduce Basin-wide ambient PM_{2.5} concentrations on these episodic no-burn days by about 4.6 tons per winter day. Since the burning would likely be shifted to other days, the total annual emissions would remain the same, but would not occur on days where high PM_{2.5} levels are forecast.

BCM-03 – Emission Reductions from Under-Fired Charbroilers (Rule 1138) [PM_{2.5}] (formerly BCM-05 in the 2007 AQMP) (formerly control measure BCM-01 in the NOP/IS for the 2012 AQMP): This proposed measure seeks emission reductions by potentially requiring new and/or existing medium to large volume restaurants with under-fired charbroilers to install control devices meeting a minimum efficiency requirement. Under-fired charbroilers are responsible for the majority of emissions from restaurant operations – 84 percent of PM and 71 percent of VOC emissions. Several control options are currently being evaluated and tested including electrostatic precipitators (ESP), high efficiency particulate arresting (HEPA) filters, wet scrubbers, and thermal oxidizers. Under-fired charbroilers are one of the largest unregulated sources of directly emitted PM. A technical assessment of potential control technologies is currently ongoing at University of

California, Riverside (CE-CERT), to evaluate the efficiency and the cost-effectiveness of various control devices for the capture and control of filterable and/or condensable forms of PM from under-fired charbroilers. The Bay Area AQMD adopted a rule for commercial cooking equipment that controls both chain-driven and under-fired charbroilers. The Bay Area measure will be evaluated to meet the all feasible measures requirement. A rule will be developed if deemed feasible. Technical and economic feasibility, as well as affordability of controls, particularly for existing restaurants relative to retrofit installation and operation/maintenance, will be considered in conjunction with any future rule development to establish requirements for under-fired charbroilers.

BCM-04 – Further Ammonia Reductions from Livestock Waste [Ammonia] (formerly MCS-05 in the 2007 AQMP) (formerly control measure MCS-04C in the NOP/IS for the 2012 AQMP): This measure seeks to reduce ammonia emissions from livestock operations with emphasis on dairies. Existing Rule 1127 – Emission Reductions from Livestock Waste requires best management practices for dairies and specific requirements regarding manure removal, handling, and composting; however, the rule does not focus on fresh manure, which is one of the largest dairy sources of ammonia emissions. An assessment will be conducted to evaluate the use of sodium bisulfate (SBS) at local dairies to evaluate the technical and economic feasibility of its application. Reducing pH level in manure through the application of acidulant additives (acidifier), such as SBS, is one of the potential mitigations for ammonia. SBS is currently being considered for use in animal housing areas where high concentrations of fresh manure are located. Research indicates that best results occur when SBS is used on “hot spots”. SBS can also be applied to manure stock piles and at fencelines, and upon scraping manure to reduce ammonia spiking from the leftover remnants of manure and urine. A rule will be developed if deemed feasible. SBS application may be required seasonally or episodically during times when high ambient PM2.5 levels are forecast.

CMB-01 – Further NO_x Reductions from RECLAIM [NO_x] – Phase I: This proposed control measure will seek further reductions of 2 tpd of NO_x allocations by 2014. In addition, staff would seek to identify appropriate approaches during rulemaking to implement the allocation shaving methodology. The control measure has the ability to produce co-benefits in the reduction of PM2.5 and ozone.

CMB-01 – Further Emission Reductions from NO_x RECLAIM [NO_x] – Phase II: This proposed control measure would seek further reductions in NO_x allocations by the year 2020. This phase of control is to implement periodic BARCT evaluation as required under state law. The control measure has the ability to produce co-benefits in the reduction of PM2.5 and ozone.

CMB-02 – NO_x Reductions from Biogas Flares [NO_x]: There are no source specific rules regulating NO_x emissions from biogas flares. Flare NO_x emissions are regulated through new source review and BACT. This control measure proposes that, consistent with the feasible measures, older biogas flares be gradually replaced with new flares that meet current BACT. Strategies that minimize flaring and associated emissions can also be considered as alternative control options.

CMB-03 – Reductions from Commercial Space Heating [NOx] (Rule 1111): This control measure would apply to space heaters used for comfort heating. SCAQMD Rule 1111 - NOx Emissions from Natural Gas-Fired Fan Type Central Furnaces, regulates natural gas-fired commercial space heaters with input rates less than 175,000 Btu/hr. This control measure is expected to reduce NOx emissions from affected heaters by reducing the NOx emission control limit for new space heaters for commercial applications, which can be achieved through the use of low-NOx burners or other low emitting combustion technologies.

CTS-01 – Further VOC Reductions from Architectural Coatings (Rule 1113) [VOC]: SCAQMD adopted Rule 1113 – Architectural Coatings, in 1977 and it has undergone numerous amendments. This proposed control measure seeks to reduce VOC emissions from large volume coating categories such as flat, non-flat and primer, sealer, undercoaters (PSU) and from phasing out the currently exempt use of high-VOC architectural coatings sold in one liter containers or smaller. Additional VOC emission reductions could be achieved from the application of architectural coatings by use of application techniques with greater transfer efficiency. Such transfer efficiency improvements could be achieved through the use of a laser paint targeting system, which has been shown to improve transfer efficiency on average by 30 percent over equipment not using a targeting system, depending on the size, shape and configuration of the substrate. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule.

CTS-02 – Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]: This control measure seeks to reduce VOC emissions from miscellaneous coating, adhesive, solvent and lubricant categories by further limiting the allowable VOC content in formulations. Examples of the miscellaneous categories to be considered include, but are not limited to, coatings used in aerospace and marine applications; adhesives used in a variety of sealing applications; solvents for graffiti abatement activities; and lubricants used as metalworking fluids to reduce heat and friction to prolong the life of the tool, improve product quality, and carry away debris. Reductions would be achieved by lowering the VOC content of the coatings, adhesives and lubricants. For solvents, reductions could be achieved with the use of alternative low-VOC products or non-VOC product/equipment at industrial facilities. The proposal is anticipated to be accomplished with a multi-phase adoption and implementation schedule.

CTS-03 – Further VOC Reductions from Mold Release Products [VOC]: Metal, fiberglass, composite and plastic products are often manufactured using molds which form the part into a particular configuration. Mold release agents are used to ensure that the parts, as they are made, can be released easily and quickly from the molds. These agents are often blended with VOC solvent carriers and may also contain toxic components such as toluene and xylene. Mold release products are also used for concrete stamping operations to keep the mold from adhering to the fresh concrete. Residential and commercial concrete stamping is a rapidly growing industry and overall VOC emissions are estimated to be significant. This control measure would reduce VOC emissions from mold release products on metal, fiberglass, composite and plastic products, as well as concrete stamping operations, by requiring the use of low-VOC content mold release products.

CTS-04 – Further VOC Reductions from Consumer Products [VOC]: This measure seeks to eliminate or revise the exemption for low vapor pressure solvents in CARB’s consumer products regulation, which exempts low vapor pressure volatile organic compounds (LVP-VOC) from counting towards the compliance obligation for consumer product VOC limits. Recent testing conducted by the District on institutional cleaners found that traditionally formulated consumer products may contain significant amounts of LVP-VOC solvents. In some cases, such as certain multipurpose solvents, the products were 100 percent LVP-VOC solvents. Further testing indicated that many of the LVP-VOC solvents evaporate nearly as quickly as the traditional solvents they were meant to replace and have Maximum Incremental Reactivity (MIR) values well above the threshold considered to be non-reactive, currently based on ethane. Therefore, an evaluation of the continued need for use of LVP-VOC solvents in certain categories is warranted

FUG-01 – Further VOC Reductions from Vacuum Trucks [VOC]: This control measure seeks to reduce emissions from the further venting of vacuum trucks. Emissions from such operations can be reduced through the utilization of control technologies, including but not limited to, carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers and liquid scrubbers. Additionally, implementation of a leak detection and repair (LDAR) program may further reduce fugitive emissions.

FUG-02 – Emission Reduction from LPG Transfer and Dispensing [VOC]: In June 2012, the SCAQMD adopted phase I Rule 1177 - Liquefied Petroleum Gas (LPG) Transfer and Dispensing. Rule 1177 requires use of low-emission fixed liquid level gauges or equivalent alternatives while filling LPG-containing tanks and cylinders, use of low-emission connectors, routine leak checks and repairs of LPG transfer and dispensing equipment. The purpose of control measure FUG-02 is to further reduce fugitive VOC emissions associated with the transfer and dispensing of LPG by expanding rule applicability to include LPG transfer and dispensing at currently exempted facilities such as refineries, marine terminals, natural gas processing plants and pipeline transfer stations, as well as facilities that conduct fill-by-weight techniques.

FUG-03 – Further VOC Reductions from Fugitive VOC Emissions [VOC]: This control measure would broaden the applicability of improved leak detection and repair (LDAR) programs to remove additional fugitive VOC emissions. Areas for further study may include, but are not limited to, Rule 1142 - Marine Vessel Tank Operations, and wastewater separators. This control measure would explore the opportunity of incorporating a recently developed advanced optical gas imaging technology to detect leaks (Smart LDAR) to more easily identify and repair leaks in a manner that is less time consuming and labor intensive. Additionally, vapor recovery systems are currently required to have a control efficiency of 95 percent. In an effort to further reduce VOC emissions from these types of operations, this control measure would explore opportunities and the feasibility of further improving the collection/control efficiency of existing control systems, resulting in additional VOC reductions.

MCS-01 – Application of All Feasible Measures Assessment [All Pollutants]: This control measure is to address the state law requirement for all feasible measures for ozone. Existing rules and regulations for pollutants such as VOC, NOx, SOx and PM typically

reflect BARCT requirements at the time the rules or regulations were adopted or amended. However, BARCT continually evolves as feasible and cost-effective new technology becomes available or becomes more efficient. Through this proposed control measure, the SCAQMD would commit to the adoption and implementation of the new retrofit control technology standards. Finally, staff would review actions taken by other air districts for applicability in the district.

MCS-02 – Further Emission Reductions from Green Waste Processing (Chipping and Grinding Not Associated with Composting) [VOC]: Chipped or ground greenwaste and/or woodwaste have the potential to emit VOCs when being stockpiled or land-applied for various purposes. Chipping and grinding is a process to mechanically reduce the size of greenwaste and woodwaste pieces. SCAQMD rules have established best management practices (BMPs) for greenwaste composting and related operations under Rule 1133.1 – Chipping and Grinding Activities, and Rule 1133.3 – Greenwaste Composting Operations. During rule development, stakeholders raised the need to develop a holistic approach to identifying and accounting for emissions from all greenwaste streams and reducing potential emissions from greenwaste material handling operations at chipping and grinding facilities and other related facilities, not just the ones associated with composting operations. This control measure would seek to establish additional BMPs for handling processed or unprocessed greenwaste material by greenwaste processors, haulers, and operators who inappropriately stockpile material or directly apply the material to land. The implementation of the control measure would be in two phases. First, the existing database would be reviewed to refine greenwaste material inventory, and second, a rule would potentially be developed to incorporate technically feasible and cost-effective BMPs or controls.

MCS-03 – Improved Start-up, Shutdown and Turnaround Procedures [All Pollutants] (formerly MCS-06 in the 2007 AQMP): This proposed control measure seeks to reduce emissions during equipment startup, shutdown, and turnaround. Opportunities for further reducing emissions from start-up, shut-down and turnaround activities potentially exist at refineries as well as other industries. Examples of possible areas for improvement may include implementing BMPs, promoting better engineering and equipment design, diverting or eliminating process streams that are vented to flares, and installing redundant equipment to increase operational reliability. This measure will be implemented through a two-phase effort to first collect/refine emissions and related data and then, based on the data collected, assess viable controls, if appropriate.

IND-01 - Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources [NO_x, SO_x, PM_{2.5}] (formerly MOB-03 in the 2007 AQMP): This measure would be designed to ensure NO_x, SO_x and PM_{2.5} emissions reductions from port-related sources are sufficient to attain the 24-hour federal PM_{2.5} ambient air quality standard. If emission levels projected to result from the current regulatory requirements and voluntary reduction strategies specified by the Ports are not realized, the 24-hr federal PM_{2.5} ambient air quality standard may not be achieved. This control measure is designed to ensure that the necessary emission reductions from port-related sources projected in the 2012 AQMP milestone years are achieved or if it is later determined through a SIP amendment that additional region-wide reductions are needed due to the change in Basin-

wide carrying capacity for PM_{2.5} attainment. In this case, the ports will be required to further reduce their emissions on a “fair-share” basis.

INC-01: Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NO_x]: The primary objective of this measure is to develop a program that promotes and encourages adoption and installation of cleaner, more efficient combustion equipment, such as boilers, water heaters and commercial space heating, through economic incentive programs subject to the availability of public funding. Incentives may include grants for new purchases of equipment as well as loan programs in areas where long-term cost savings from increased efficiency are achieved.

INC-02: Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies [All Pollutants]: This proposed measure is aimed at providing incentives for companies to manufacture zero and near-zero emission technologies locally, thus, populating the market, potentially lowering the purchase cost, and increasing demand. With availability and usage of such technologies, air quality benefits would be achieved. This proposed measure focuses on two elements: 1) processing the required air permit(s) in an expedited procedure; and 2) prioritizing the preparation, circulation and certification of any applicable CEQA document where the SCAQMD is the lead agency. A stakeholder process will be initiated to design the program and collaborate with other existing AQMD or local programs.

EDU-01: Further Criteria Pollutant Reductions from Education Outreach and Incentives [All Pollutants] (formerly MCS-02, MCS-03): This proposed control measure would provide educational outreach and incentives for consumers to contribute to clean air efforts. Examples include the usage of energy efficient products, new lighting technology, “super compliant” coatings, tree planting, and the use of lighter colored roofing and paving materials which reduce VOC or NO_x by lowering the ambient temperature. In addition, this proposed measure intends to increase the effectiveness of energy conservation programs through public education and awareness as to the environmental effects and benefits from conservation. Finally, educational and incentive tools to be used include social comparison applications (e.g., lifestyle comparisons of personal energy use and efficiency), social media, and public/private partnerships.

1.8.2 Mobile Source Control Measures (Federal, State and/or District)

This subsection describes SCAQMD staff’s proposed control measures to be included in the 2012 AQMP to reduce mobile source emissions to provide progress in attaining the eight-hour ozone and one-hour ozone ambient air quality standards by 2022-2023. The §182(e)(5) proposed implementation measures presented in this subsection are based upon a variety of control technologies that are commercially available and/or technologically feasible to implement in the next several years. The focus of these measures includes accelerated retrofits or replacement of legacy fleets of vehicles or equipment, acceleration of vehicle turnover through voluntary vehicle retirement programs, and greater use of cleaner fuels in the near-term. In the longer-term, in order to attain the federal ozone ambient air quality standard, there is a need to increase the penetration and deployment of near-zero and zero-emissions vehicles such as plug-in hybrids, battery-electric, and fuel cell vehicles;

accelerate the penetration and use of cleaner fuels (either alternative fuels or new formulations of gasoline and diesel fuels); and obtain additional emission reductions from aircraft engines. As set forth in the descriptions of individual control measures in Table 2-4, some of the measures will likely require action by CARB, while some control measures recognize actions being taken by other agencies.

**TABLE 1-4
Mobile Source Control Measures Categorized by Source Type**

§182(e) Proposed Implementation 8-Hour Ozone Measures – On-Road Mobile Sources				
CM Number	Title	Adoption	Implementation Period	Reduction (tpd)
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles [VOC, NOx, PM]	N/A	Ongoing	TBD ^a
ONRD-02	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles [VOC, NOx, PM]	N/A	Ongoing	TBD ^a
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero Emission Light Heavy-Duty Vehicles [NOx, PM]	N/A	Ongoing	TBD ^a
ONRD-04	Accelerated Retirement of Older Heavy-Duty Vehicles [NOx, PM]	N/A	Ongoing	TBD ^{a,b}
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NOx, PM]	2014	2015-2020	0.75 [NOx] 0.025 [PM2.5]
§182(e) Proposed Implementation 8-Hour Ozone Measures – Off-Road Mobile Sources				
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment [NOx]	N/A	Ongoing	7.5
OFFRD-02	Further Emission Reductions from Freight Locomotives [NOx, PM]	Ongoing	2015 -2023	12.7 [NOx] 0.32 [PM2.5]
OFFRD-03	Further Emission Reductions from Passenger Locomotives [NOx, PM]	Ongoing	Beginning 2014	3.0 [NOx] ^c 0.06 [PM2.5] ^c
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels While at Berth [NOx, PM]	N/A	Ongoing	TBD ^a
OFFRD-05	Emission Reductions from Ocean-Going marine Vessels [NOx]	N/A	Ongoing	TBD ^a

**TABLE 1-4 (Concluded)
Mobile Source Control Measures Categorized by Source Type**

§182(e) Proposed Implementation Measures to Deploy Advanced Control Technologies				
ADV-01	§182(e) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles [NOx]	N/A	2012 and on	TBD ^d
ADV-02	§182(e) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives [NOx]	N/A	2012 and on	TBD ^d
ADV-03	§182(e) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment [NOx]	N/A	2012 and on	TBD ^d
ADV-04	§182(e) Proposed Implementation Measures for the Deployment of Cleaner Commercial Harborcraft [NOx]	N/A	2012 and on	TBD ^d
ADV-05	§182(e) Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx]	N/A	2012 and on	TBD ^d
ADV-06	§182(e) Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment [NOx]	N/A	2012 and on	TBD ^d
ADV-07	§182(e) Proposed Implementation Measures for the Deployment of Cleaner Aircraft Engines [NOx]	N/A	2012 and on	TBD ^d

- a. Emission reductions will be determined after projects are identified and implemented
- b. Reductions achieved locally in Mira Loma region
- c. Submitted into the SIP once technically feasible and cost effective options are confirmed
- d. Emission reductions will be quantified after the projects are demonstrated.

Summaries of §182(e)(5) Implementation 8-Hour Ozone Measures – On-Road Mobile Sources

By 2023, it is estimated that about 12 million vehicles will be operating in the Basin. To address emissions from these vehicles, SCAQMD staff is proposing five on-road mobile source control measures. The first two measures focus on on-road light- and medium-duty vehicles operating in the South Coast Air Basin, while the remaining three measures focus on heavy-duty vehicles. Summaries of each of the five on-road mobile source control measures are provided in the following paragraphs.

ONRD-01 – Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles [NOx]: This measure proposes to continue incentives for the purchase of zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode. The state Clean Vehicle Rebate Pilot (CVRP) program is proposed to continue from 2015 to 2023 with a proposed funding for up to \$5,000 per vehicle. The

proposed measure seeks to provide funding assistance for up to 1,000 zero-emission or partial-zero emission vehicles per year.

ONRD-02 – Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles [NO_x]: This proposed measure calls for promoting the permanent retirement of older eligible vehicles through financial incentives currently offered through local funding incentive programs and the AB 118 Enhanced Fleet Modernization Program (EFMP). The proposed measure seeks to retire up to 2,000 older light- and medium-duty vehicles (up to 8,500 lbs gross vehicle weight) per year. Funding incentives of up to \$2,500 per vehicle are proposed for the scrapping of the vehicle, which may include a replacement voucher for a newer or new vehicle.

ONRD-03 – Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium Heavy-Duty Vehicles [NO_x]: The objective of the proposed action is to accelerate the introduction of advanced hybrid and zero-emission technologies for Class 4 through 6 heavy-duty vehicles. The state is currently implementing a Hybrid Vehicle Incentives Project (HVIP) program to promote zero-emission and hybrid heavy-duty vehicles. The proposed measure seeks to continue the program from 2015 to 2023 to deploy up to 1,000 zero- and partial-zero emission vehicles per year with up to \$25,000 funding assistance per vehicle. Zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode would be given the highest priority.

ONRD-04 – Accelerated Retirement of Older Heavy-Duty Vehicles [NO_x]: This proposed measure seeks to replace up to 1,000 heavy-duty vehicles per year with newer or new vehicles that at a minimum, meet the 2010 on-road heavy-duty NO_x exhaust emissions standard of 0.2 g/bhp-hr. Given that exceedances of the 24-hour PM_{2.5} air quality standard occur in the Mira Loma region, priority will be placed on replacing older diesel trucks that operate primarily at the warehouse and distribution centers located in the Mira Loma area. Funding assistance of up to \$35,000 per vehicle is proposed and the level of funding will depend upon the NO_x emissions certification level of the replacement vehicle. In addition, a provision similar to the Surplus Off-Road Option for NO_x (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation will be sought to ensure that additional NO_x emission reduction benefits are achieved.

ONRD-05 – Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NO_x, PM]: This proposed control measure calls for a requirement that any cargo container moved between the Ports of Los Angeles and Long Beach to the nearby railyards (the Intermodal Container Transfer Facility and the proposed Southern California International Gateway) be with zero-emission technologies. The measure would be fully implemented by 2020 through the deployment of zero-emission trucks or any alternative zero-emission container movement system such as a fixed guideway system. The measure calls for CARB to either adopt a new regulation or amend an existing regulation to require such deployment by 2020. To the extent the measure can feasibly be extended beyond near-dock railyards, this would be considered for adoption by CARB.

§182(e)(5) Implementation 8-Hour Ozone Measures – Off-Road Mobile Sources: SCAQMD staff is proposing five control measures that seek further emission reductions from off-road mobile sources and industrial equipment. Off-road mobile sources such as aircraft, locomotives, and marine vessels are principally regulated by federal and state agencies. In addition, several of the off-road mobile source control measures include certain local actions that can result in emission reductions beyond the emissions standard setting authority of the state and EPA. Summaries of each of the five off-road mobile source control measures are provided in the following paragraphs.

OFFRD-01 – Extension of the SOON Provision for Construction/Industrial Equipment [NO_x]: This measure seeks to continue the Surplus Off-Road Option for NO_x (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation beyond 2014 through the 2023 timeframe. In order to implement the SOON program in this timeframe, funding of up to \$30 million per year would be sought to help fund the repower or replacement of older Tier 0 and Tier 1 equipment, with reductions that are considered surplus to the statewide regulation with Tier 4 or cleaner engines.

OFFRD-02 – Further Emission Reductions from Freight Locomotives [NO_x]: The proposed control measure is to meet the commitment in the 2007 SIP for the accelerated use of Tier 4 locomotives in the South Coast Air Basin. The measure calls for CARB to seek further emission reductions from freight locomotives through enforceable mechanisms within its authority to achieve 95 percent or greater introduction of Tier 4 locomotives by 2023.

OFFRD-03 – Further Emission Reductions from Passenger Locomotives [NO_x]: This measure recognizes the recent actions by the Southern California Regional Rail Authority (SCRRA or Metrolink) to consider replacement of their existing Tier 0 passenger locomotives with Tier 4 locomotives. The SCRRA adopted a plan that contains a schedule to replace their older existing passenger locomotives with Tier 4 locomotives by 2017. More recently, SCRRA released a Request for Quotes on the cost of new or newly manufactured passenger locomotives with locomotive engines that meet Tier 4 emission levels.

OFFRD-04 – Further Emission Reductions from Ocean-Going Marine Vessels While at Berth [NO_x]: This measure seeks additional emission reductions from ocean-going marine vessels while at berth. The actions would affect ocean-going vessels that are not subject to the statewide Shorepower Regulation or vessel calls that are considered surplus to the statewide regulation. The measure seeks at a minimum to have an additional 25 percent of vessel calls beyond the statewide regulation to deploy shorepower technologies or alternative forms of emissions reduction as early as possible. Such actions could be implemented through additional incentives programs or through the San Pedro Bay Ports as part of the implementation of the Ports Clean Air Action Plan.

OFFRD-05 – Emission Reductions from Ocean-Going Marine Vessels [NO_x]: This measure recognizes the recent actions at the Ports of Los Angeles and Long Beach to initiate an incentives program for cleaner ocean-going vessels to call at the ports. The program has been initiated as part of the San Pedro Bay Ports Clean Air Action Plan. The program will

provide financial incentives for cleaner Tier 2 and Tier 3 ocean-going vessels to call at the ports. This measure also recognizes the need to monitor progress under such programs and augment them as necessary to ensure sufficient results. The program will be monitored on annual basis and, if necessary, any adjustments to the program will be made.

§182(e)(5) Implementation to Deploy Advanced Control Technologies

SCAQMD staff is also proposing the following seven additional §182(e) proposed implementation measures to deploy the cleanest control technologies as early as possible and the development, demonstration, and deployment of near-zero and zero-emission technologies. Many of these actions have already begun. However, additional research and development will be needed that will lead to commercial development of control technologies that achieve emission levels below current adopted emission standards. Other near-zero and zero-emission technologies that are commercially available will require infrastructure development to facilitate their deployment.

ADV-01 – §182(e)(5) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles [NOx] This measure would continue the efforts underway to develop zero-emission and near-zero emission technologies for on-road heavy-duty vehicle applications. Such technologies include, but not limited to, fuel cell, battery-electric, hybrid-electric with all electric range, and overhead catenary systems. Hybrid-electric systems incorporate an engine powered by conventional fuels or alternative fuels such as natural gas. The actions provided in the proposed measure are based on the SCAG 2012 Regional Transportation Plan.

ADV-02 – §182(e)(5) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives [NOx] This measure calls for the development and deployment of zero-emission and near-zero emission technologies for locomotives. Such technologies include overhead catenary systems, hybrid locomotives that have some portion of their operation in an “all electric range” mode, and alternative forms of external power such as a battery tender car. The actions provided in the proposed measure are based on the SCAG 2012 Regional Transportation Plan. The zero-emission technologies could apply to freight and passenger locomotives.

ADV-03 – §182(e)(5) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment [NOx] This measure recognizes the actions underway to develop and deploy zero- and near-zero emission technologies for various cargo handling equipment. The San Pedro Bay Ports are currently demonstrating battery-electric yard tractors. In addition, battery-electric, fuel cell, and hybridized systems could be deployed on smaller cargo handling equipment. In addition, the use of alternative fuels for conventional combustion engines could potentially result in greater emissions benefits.

ADV-04 – §182(e)(5) Proposed Implementation Measures for the Deployment of Cleaner Commercial Harborcraft [NOx] Several commercial harbor craft operators have begun deployment of hybrid systems in their harbor craft to further reduce criteria pollutant emissions and improve fuel efficiency. Other cleaner technologies include the use of alternative fuels, retrofit of existing older marine engines with selective catalytic converters,

and diesel particulate filters. This measure recognizes several efforts between the District and the Ports of Los Angeles and Long Beach to further demonstrate control technologies that could be deployed on commercial harbor craft that could go beyond the statewide Harbor Craft Regulation.

ADV-05 – §182(e)(5) Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx] The Ports of Los Angeles and Long Beach, CARB, and the District have sponsored research and demonstration of various control technologies to further reduce emissions from ocean-going vessels. In addition, the San Pedro Bay Ports Clean Air Action Plan contains a measure to further demonstrate such technologies on ocean-going vessels. This measure recognizes many of these efforts and the need to further demonstrate retrofit technologies on existing ocean-going vessels.

ADV-06 – §182(e)(5) Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment [NOx] The District, Mobile Source Air Pollution Reduction Review Committee (MSRC), and CARB have been conducting an off-road “showcase” program for retrofit technologies to further reduce emissions from older off-road equipment. In addition, several major off-road engine manufacturers are investigating the potential use of hybrid systems to further reduce criteria pollutant and greenhouse gas emissions. Potential advanced technologies include hybrid systems that utilize batteries, fuel cells, or plug-in capabilities, which could result in lower emissions compared to Tier 4 emission levels when combined with future Tier 4 compliant engines. The measure is implemented by the District, CARB and U.S. EPA.

ADV-07 – §182(e)(5) Proposed Implementation Measures for the Deployment of Cleaner Aircraft Engines [NOx] This measure recognizes the efforts of the Federal Aviation Administration’s Continuous Lower Energy, Emissions and Noise (CLEEN) Program. The goal of the CLEEN Program is the development of new aircraft engines that potentially can be up to 60 percent cleaner in NOx emissions than current aircraft engines. The actions under this measure are to continue the development of cleaner aircraft engines and work with the airlines and local airport authorities to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin.

1.8.3 Transportation Control Measures from the Southern California Association of Governments 2012 Regional Transportation Plan and Sustainable Communities Strategy

The Southern California Association of Governments (SCAG), the Metropolitan Planning Organization (MPO) for Southern California, is mandated to comply with federal and state transportation and air quality regulations. Further, pursuant to California Health and Safety Code (HSC) §40460, SCAG has the responsibility of preparing and approving the portions of the AQMP related to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. The SCAQMD combines its portion of the AQMP with those portions prepared by SCAG and required by HSC §40460.

The transportation strategy and transportation control measures (TCMs) to be included as part of the 2012 PM2.5 AQMP and SIP for the South Coast Air Basin, as defined in the Health and Safety Code, are based on SCAG's adopted 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and 2011 Federal Transportation Improvement Program (FTIP), which were developed in consultation with federal, state and local transportation and air quality planning agencies and other stakeholders. A list of the TCMs from the 2012-2035 RTP/SCS can be found in Appendix B of this recirculated NOP/IS.

The Regional Transportation Strategy and Transportation Control Measures portion of the 2012 AQMP/SIP consists of the following three related sections.

- Section I. Linking Regional Transportation Planning to Air Quality Planning: As required by federal and state laws, SCAG is responsible for ensuring that the regional transportation plan, program, and projects are supportive of the goals and objectives of AQMPs/SIPs. SCAG is also required by state law to develop demographic projections and regional transportation strategy and control measures for the AQMPs/SIPs. SCAG prepares the RTP/SCS, which is updated every four years, and the Federal Transportation Improvement Plan biennially.
- Section II. Regional Transportation Strategy and Transportation Control Measures: The 2012-2035 RTP/SCS was formally adopted by the SCAG Regional Council on April 4, 2012. The 2012-2035 RTP/SCS contains a host of improvements to every component of the regional multimodal transportation system including:
 - Active transportation (non-motorized transportation, such as biking and walking)
 - Transportation demand management (TDM)
 - Transportation system management (TSM)
 - Transit
 - Passenger and high-speed rail
 - Goods movement
 - Aviation and airport ground access
 - Highways
 - Arterials
 - Operations and maintenance

Included within these transportation system improvements are projects that reduce vehicle use or change traffic flow or congestion conditions ("TCMs"). TCMs include the following three main categories of transportation improvement projects and programs:

- High occupancy vehicle (HOV) measures,
- Transit and systems management measures, and
- Information-based transportation strategies.

- Section III. Reasonably Available Control Measure Analysis: As required by the CAA, a RACM analysis must be included as part of the overall control strategy in the AQMP/SIP to ensure that all potential control measures are evaluated for implementation and that justification is provided for those measures that are not implemented. Based on this comprehensive review, it is determined that the TCMs being implemented in the South Coast Air Basin are inclusive of all TCM RACM. None of the candidate measures reviewed and determined to be infeasible meets the criteria for RACM implementation.

The 2012-2035 RTP/SCS was formally adopted by the SCAG Regional Council on April 4, 2012. In conjunction with preparing the 2012-2035 RTP/SCS, SCAG also prepared a 2012 Final Program EIR (State Clearinghouse # 2011051018) for the 2012-2035 RTP/SCS to evaluate potential impacts from the project at the program level. Potential adverse impacts from implementing the TCMs were also evaluated in the 2012 Final Program EIR. The Program EIR for the 2012 AQMP will rely on the environmental analyses in SCAG's 2012 Final Program EIR for the 2012-2035 RTP/SCS for the evaluation of the environmental impacts of implementing the TCMs. Environmental impacts from implementing the TCMs will be addressed in the Draft Program EIR for the 2012 AQMP under cumulative impacts.

1.8.3 Coordination with the State's Greenhouse Gas Reduction Efforts

The Basin faces several ozone and PM attainment challenges, as strategies for significant emission reductions become harder to identify and the federal standards continue to become more stringent. California's Greenhouse Gas reductions targets under AB32 add new challenges and timelines that affect many of the same sources that emit criteria pollutants. In finding the most cost-effective and efficient path to meet multiple deadlines for multiple air quality and climate objectives, it is essential that an integrated planning approach is developed. Responsibilities for achieving these goals span all levels of government, and coordinated and consistent planning efforts among multiple government agencies are a key component of an integrated approach.

To this end, and concurrent with the development of the 2012 AQMP, the District, the Air Resources Board, and San Joaquin Valley Air Pollution Control District engaged in a joint effort to take a coordinated and integrated look at strategies needed to meet California's multiple air quality and climate goals, as well as its energy policies. California's success in reducing smog has largely relied on technology and fuel advances, and as health-based air quality standards are tightened, the introduction of cleaner technologies must keep pace. More broadly, a transition to zero- and near-zero emission technologies is necessary to meet 2023 and 2032 air quality standards and 2050 climate goals. Many of the same technologies will address air quality, climate and energy goals. As such, strategies developed for air quality and climate change planning should be coordinated to make the most efficient use of limited resources and the time needed to develop cleaner technologies. The product of this collaborative effort, the draft *Vision for Clean Air: A Framework for Air Quality and Climate Planning*, examines how those technologies can meet both air quality and climate goals over time. A public review draft of this document is now available at <http://www.aqmd.gov/aqmp/2012aqmp/> and serves as context and a resource for the 2012 AQMP.

1.8.4 Ultrafine Particles

The Draft 2012 AQMP also includes a discussion of the emerging issues of ultrafine particle and near-roadway exposures. There is growing concern about the potential health effects as caused by exposure for people living near major roadways to criteria pollutants and air toxics emitted from both gasoline and diesel vehicles (HEI, 2010). Recent toxicological and epidemiological studies have identified living near major roadways as a risk factor for respiratory and cardiovascular problems and other health related issues. These very minute particles (consisting primarily of organic material, soot, and trace elements) have a different chemical composition than the larger PM fractions (PM_{2.5} and PM₁₀). Due to their small size, UFPs can penetrate deeply into the human respiratory tract, into the blood stream, and be transported to other critical organs such as the heart and brain. Furthermore, their large surface area may provide a mechanism for delivering potentially toxic adsorbed material into the lung and other organs.

UFPs are emitted from almost every fuel combustion process, including diesel, gasoline, and jet engines, as well as external combustion processes such as wood burning. Consequently, there is growing concern that people living in close proximity to highly trafficked roadways and other sources of combustion-related pollutants (e.g. airports and rail yards) may be exposed to significant levels of UFPs and other air toxics.

Over the last decade, substantial efforts have been made to better characterize the physical and chemical properties of UFPs and their potential impact on people living in close proximity to roadways and other emissions sources. Two areas of research have received particular attention:

- On-roadways, near-roadways, and in-vehicle measurements
- Effect of UFP reduction technologies

From a regulatory perspective, the U.S. focus has been on reducing the mass of PM emitted in the ambient air. However, UFPs contribute a very small portion of the overall atmospheric particle mass concentration. Thus, there has been growing interest over the last two decades to study, understand, and regulate the size and number of particles found in PM generated from diesel and other combustion engines. Partly because light-duty diesel vehicles are very common in European countries, the European Union has already adopted standards that phase in particle number limits for passenger car and light-duty vehicle emissions. However, there are still concerns related to the health impacts of non-solid organic UFP components that are not addressed by the European solid particle number standard.

Recently, CARB staff prepared a preliminary discussion paper on proposed amendments to California's Low-Emission Vehicle (LEV III) Regulations, to address UFP emissions from light-duty motor vehicles by promoting a solid particle number based PM compliance strategy (CARB, 2010)². CARB staff ultimately decided that the complexity of the issues warranted further study and understanding before proceeding. Although the District has limited authority to regulate mobile source pollution in the near-roadway environment,

² http://www.arb.ca.gov/msprog/levprog/leviii/meetings/051810/pm_disc_paper-v6.pdf

District staff has implemented a variety of measures to assess and reduce the health impacts of near-roadway emissions on local communities. The District continues to demonstrate and incentivize the deployment of zero/near-zero emission technology, has implemented numerous installations of high-efficiency air filtration in schools, and conducts outreach and education on near-roadway health impacts. Furthermore, on July 1, 2012 the District began the next Multiple Air Toxics Exposure Study (MATES IV) to characterize the carcinogenic risk from exposure to air toxics in the Basin. A new focus of MATES IV will be the inclusion of measurements of UFP and BC concentrations across the Basin, and near specific combustion sources (e.g. airports, freeways, rail yards, busy intersections, and warehouse operations) to evaluate the long- and short-term exposures to these pollutants.

Environmental impacts from implementing potential control, mitigation, and policy strategies for limiting exposures to ultrafine particles will be addressed in the Draft Program EIR for the 2012 AQMP under cumulative impacts.

1.9 Project Objectives

CEQA Guidelines §15124(b) requires an EIR to include a statement of objectives, which describes the underlying purpose of the proposed project. The purpose of the statement of objectives is to aid the lead agency in identifying alternatives and the decision-makers in preparing a statement of findings and a statement of overriding considerations, if necessary. The objectives of the proposed 2012 AQMP are summarized in the following bullet points. These objectives may be refined or modified as part of the Program EIR preparation process.

- Reduce PM2.5 nonattainment pollutants and their precursors on an expeditious implementation schedule;
- Demonstrate attainment of the 24-hour PM2.5 national ambient air quality standard by 2014;
- Continue making expeditious progress towards attaining the federal eight-hour standard and demonstrate attainment of the federal one-hour ozone standard (revoked) by 2022 – 2023 timeframe;
- Reduce population exposure to nonattainment pollutants (i.e., ozone and PM2.5 for the Basin) according to a prescribed schedule;
- Rank control measures by cost-effectiveness and implementation priority;
- Update planning assumptions and the best available information such as CARB's latest EMFAC2011 for the on-road mobile source emissions inventory, CARB's OFF-ROAD 2011 model;
- Update emission inventories using 2008 as the base year, which also incorporate measures adopted since adopting the 2007 AQMP; and
- Update any remaining control measures from the 2007 AQMP.

1.10 Project Alternatives

The Program EIR will discuss and compare alternatives to the proposed project as required by CEQA where there are potential significant adverse environmental impacts. Alternatives must include realistic measures for attaining the basic objectives of the proposed project and provide a means for evaluating the comparative merits of each alternative. In addition, the range of alternatives must be sufficient to permit a reasoned choice and it need not include every conceivable project alternative. The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation. A CEQA document need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative.

Alternatives in SCAQMD CEQA documents are typically developed based in part on the major components of the proposed project or different pollutant control strategies. The rationale for selecting alternatives rests on CEQA's requirement to present "realistic" alternatives; that is alternatives that can actually be implemented. CEQA also requires an evaluation of a "No Project Alternative." SCAQMD's policy document Environmental Justice Program Enhancements for fiscal year (FY) 2002-03, Enhancement II-1 recommends that all SCAQMD CEQA assessments include a feasible project alternative with the lowest air toxics emissions. In other words, for any major equipment or process type under the scope of the proposed project that creates a significant environmental impact, at least one alternative, where feasible, shall be considered from a "least harmful" perspective with regard to hazardous air emissions.

Alternatives to the 2012 AQMP are relatively limited because the AQMP currently identifies all feasible control measures. Further, the 2012 AQMP is required to demonstrate attainment of the PM_{2.5} national ambient air quality standard. Project alternatives to the 2012 AQMP currently being developed include the following:

- No Project, continued implementation of the 2007 AQMP);
- Localized PM control in the Mira Loma area (the project described in the June 27, 2012 NOP/IS);
- Greater NO_x control, e.g., accelerated penetration of: heavy-duty on-road vehicles to 2010 engine model or ZEV standards; off-road construction vehicles to Tier 4 standards; and
- A PM_{2.5} only AQMP.

The Governing Board may choose to adopt any portion or all of any alternative presented in the EA with appropriate findings as required by CEQA. The Governing Board is able to adopt any portion or all of any of the alternatives presented because the impacts of each alternative will be fully disclosed to the public and the public will have the opportunity to comment on the alternatives and impacts generated by each alternative.

Written suggestions on potential project alternatives received during the comment period for the Initial Study will be considered when preparing the Program EIR.

CHAPTER 2 - ENVIRONMENTAL CHECKLIST

Introduction

General Information

Potentially Significant Impact Areas

Determination

Environmental Checklist and Discussion

INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by the proposed project. Responses to checklist questions provide a sampling of control measures that may create significant adverse impacts to that environmental topic area and do not necessarily represent a comprehensive list of all control measures that could create impacts to that environmental topic area. Table A-1 in Appendix A provides a list of all 2012 AQMP stationary and on-road and off-road mobile source control measures and identifies each environmental topic area that could be adversely affected by those measures.

GENERAL INFORMATION

Project Title:	Proposed 2012 Air Quality Management Plan
Lead Agency Name:	South Coast Air Quality Management District
Lead Agency Address:	21865 Copley Drive, Diamond Bar, CA 91765
CEQA Contact Person:	Jeffrey J. Inabinet, (909) 396-2453
2012 AQMP Contact Person:	Mike Krause (909) 396-2706
Project Sponsor's Name:	South Coast Air Quality Management District
Project Sponsor's Address:	21865 Copley Drive, Diamond Bar, CA 91765
General Plan Designation:	Not applicable
Zoning:	Not applicable
Description of Project:	The 2012 AQMP identifies control measures to demonstrate that the region will attain the 24-hour federal standard for particulate matter less than 2.5 microns in diameter (PM2.5) by the applicable target dates and provides Clean Air Act §182(e)(5) proposed implementation measures to assist in achieving the 8-hour ozone standard. The Draft 2012 AQMP control measures consist of three components: 1) the SCAQMD's Stationary and Mobile Source Control Measures; 2) State and Federal Control Measures; and 3) Regional Transportation Strategy and Control Measures provided by SCAG. Overall, the Draft 2012 AQMP includes stationary and mobile source measures. The AQMP also includes the most current air quality setting, updated emissions inventories of stationary and mobile sources, updated growth projections, new modeling techniques, compliance with contingency requirements, and an implementation schedule for adoption of the proposed control measures.
Surrounding Land Uses and Setting:	Industrial, commercial, and potentially residential
Other Public Agencies Whose Approval is Required:	Not applicable

POTENTIALLY SIGNIFICANT IMPACT AREAS

The following environmental impact areas have been assessed to determine their potential to be affected by the proposed project. As indicated by the checklist on the following pages, environmental topics marked with a "✓" may be adversely affected by the proposed project. An explanation relative to the determination of impacts can be found following the checklist for each area.

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Aesthetics | <input type="checkbox"/> Geology and Soils | <input type="checkbox"/> Population and Housing |
| <input type="checkbox"/> Agriculture and Forestry Resources | <input checked="" type="checkbox"/> Hazards and Hazardous Materials | <input type="checkbox"/> Public Services |
| <input checked="" type="checkbox"/> Air Quality and Greenhouse Gas Emissions | <input checked="" type="checkbox"/> Hydrology and Water Quality | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Land Use and Planning | <input checked="" type="checkbox"/> Solid/Hazardous Waste |
| <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Mineral Resources | <input checked="" type="checkbox"/> Transportation/Traffic |
| <input checked="" type="checkbox"/> Energy | <input type="checkbox"/> Noise | <input checked="" type="checkbox"/> Mandatory Findings |

DETERMINATION

On the basis of this initial evaluation:

- I find that although the proposed project could have a significant effect on the environment, there will NOT be significant effects in this case because revisions in the project have been made by or agreed to by the project proponent. A NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will NOT be significant effects in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect(s) on the environment, and a PROGRAM ENVIRONMENTAL IMPACT REPORT will be prepared.
- I find that the proposed project MAY have a "potentially significant impact" on the environment, but at least one effect: 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects: (a) have been analyzed adequately in an earlier NEGATIVE DECLARATION or ENVIRONMENTAL IMPACT REPORT pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier NEGATIVE DECLARATION or ENVIRONMENTAL IMPACT REPORT, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Date: August 1, 2012

Signature: _____

Steve Smith

Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rules, and Area Sources

ENVIRONMENTAL CHECKLIST AND DISCUSSION

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential aesthetics resources impacts. Review of the 2012 AQMP control measures identified several control measures that have the potential to generate significant adverse aesthetics resources impacts. Table A-1 in Appendix A lists all 2012 AQMP control measures and shows those control measures that have the potential to generate significant adverse aesthetics resources impacts.

Significance Criteria

The proposed project impacts on aesthetics will be considered significant if:

- The project will block views from a scenic highway or corridor.
- The project will adversely affect the visual continuity of the surrounding area.
- The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

Discussion

I. a), b), & c): Most of the proposed control measures in the 2012 AQMP are not expected to adversely affect scenic vistas in the district; damage scenic resources, including but not limited to trees, rock outcroppings, or historic buildings within a scenic highway; or substantially degrade the visual character of a site or its surroundings. As described below, some control measures have the potential to create significant adverse aesthetics impacts, especially to scenic highways.

The reasons that most of the AQMP control measures would not generate significant adverse aesthetics impacts are explained as follows. Most AQMP control measures to be implemented by the SCAQMD typically affect industrial, institutional, or commercial facilities located in appropriately zoned areas (e.g., industrial and commercial areas) that are not usually associated with scenic resources. Construction activities are expected to be limited to industrial and commercial areas. Further, modifications typically occur inside the buildings at the affected facilities, or because of the nature of the business (e.g., commercial or industrial) can easily blend with the facilities with little or no noticeable effect on adjacent areas. Finally, because the purpose of implementing 2012 AQMP control measures is to reduce emissions and improve air quality to attain state and federal ambient air quality standards, improved air quality would provide benefits to scenic vistas and resources in the district.

Generally, control measures that are under the jurisdiction of CARB or the U.S. EPA would accelerate replacement of high emitting on-road and off-road mobile source vehicles with low emitting mobile source vehicles. Accelerating the penetration of low emitting mobile sources would also not be expected to adversely affect scenic resources because these strategies do not require construction or disturbance of any sort to such resources. Although IND-01 [formerly MOB-03 (Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources)] and some of the mobile control measures could result in control devices at port facilities to control ship emissions from ships at berth, these activities would be consistent with activities already being undertaken as part of the San Pedro Bay Ports Clean Air Action Plan 2010 update. Control devices may include hoods or bonnets on ship exhaust stacks to capture emissions and are expected to be as high as 80 feet (PLB, 2006). While these control devices would be visible to surrounding areas, they would be similar to other structures used within the heavily industrialized portions of the ports, which contain terminals, tanks, shiploading structures (including conveyors and cranes), and other similar structures.

Control measures ONRD-05, ADV-01, ADV-02, and ADV-03 have the potential to create significant adverse aesthetics impacts, especially to scenic highways for the following reasons. These control measures promote the use of zero emissions trucks powered by electricity. In addition to electricity stored in batteries or produced onboard through a fuel cell, these control measures contemplate as a source of electricity “wayside” electricity from outside sources such as overhead catenary power lines, as is currently used for transit buses and heavy mining trucks. Catenary lines would need to be constructed on major roadways where such lines do not currently exist, which has the potential to adversely affect scenic highways and vistas, resulting in the degradation of the visual character of affected areas.

I. d): The proposed 2012 AQMP is not expected to create additional demand for new lighting or exposed combustion sources (e.g., flares) that could create glare that could adversely affect day or nighttime views in any areas. Compliance with 2012 AQMP control measures may affect operations at industrial or commercial facilities, but they are not expected to affect hours of operation, that is, complying with 2012 AQMP control measures would not be expected to require changing operations from day time to night time. Further, many types of industrial or commercial facilities are already lighted at night for safety and security reasons. As noted in item I. a) – c) above, facilities affected by AQMP control measures typically make modifications in the interior of an affected facility so any new light sources would typically be inside a building or not noticeable because of the presence of existing outdoor light sources. Further, operators of commercial or industrial facilities who would make physical modifications to facilities and may

require additional lighting would be located in appropriately zoned areas that are not usually located next to residential areas, so new light sources, if any, in addition to existing light sources would not likely be noticeable to residents.

Conclusion

Based upon the above considerations, potentially significant adverse project-specific aesthetic impacts may occur due to implementation of 2012 AQMP control measures and, therefore, will be evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FOREST RESOURCES. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland mapping and Monitoring Program of the California Resources Agency, to non- agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104 (g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential agricultural and forest resources impacts. Evaluation of the 2012 AQMP control measures did not result in identifying any control measures that have the potential to generate significant adverse agricultural and forest resources impacts as explained in the following discussions.

Significance Criteria

Project-related impacts on agriculture and forest resources will be considered significant if any of the following conditions are met:

- The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
- The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
- The proposed project conflicts with existing zoning for, or causes rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined in Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code § 51104 (g)).
- The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

Discussion

II. a), b), c) & d) AQMP control measures typically affect existing commercial or industrial facilities, establish specifications for fuels or mobile source exhaust emissions, or accelerate the replacement of high-emitting mobile sources with low emitting mobile sources so they are not expected to generate any new construction of buildings or other structures that would require conversion of farmland to non-agricultural use or conflict with zoning for agricultural uses or a Williamson Act contract. Further, AQMP control measures typically affect existing facilities that are located in appropriately zoned areas. Any new facilities that may be affected by AQMP control measures would be constructed and operated for reasons other than complying with AQMP control measures. For these same reasons, it is not expected that implementing AQMP control measures will conflict with any forest land zoning codes or convert forest land to non-forest uses. No control measures were identified in the proposed 2012 AQMP that would affect or conflict with existing land use plans, policies, or regulations or require conversion of farmland to non-agricultural uses or forest land to non-forest uses.

One sub-control measure, MCS-04C – Further Ammonia Reductions from Livestock Waste in Mira Loma Region (formerly MCS-05) was identified that could affect agricultural operations. This control measure would call for applying an acidifier, sodium bisulfate, to control ammonia emissions from fresh manure at livestock operations. While this sub-control measure could increase costs, it is not expected that the sub-control measure would be designed in a way that would cause costs high enough to result in conversion of farmland to other uses. Further, this sub-control measure is one of three sub-control measures that would be implemented only in the Mira Loma area (approximately within a 10-mile radial) and would only be implemented if the 24-hour PM2.5 standard is exceeded in the Mira Loma area in 2014 (single year, 98th percentile).

Regardless, land use, including agriculture- and forest-related uses, and other planning considerations are determined by local governments and no agricultural land use or planning requirements will be altered by the proposed project, except as noted above. AQMP control measures, including control measures related to mobile sources, would have no direct or indirect effects on agricultural or forest land resources because these types of control measures typically involve reduction in combustion and fugitive VOC emissions, as well as establishing emission

exhaust requirements or increasing the penetration of low-emitting mobile sources. The 2012 AQMP could provide benefits to agricultural and forest land resources by improving air quality in the region, thus, reducing the adverse oxidation impacts of ozone on plants and animals.

Conclusion

Based upon the above considerations, significant adverse project-specific impacts to agricultural resources or forest land resources are not expected to occur due to implementation of the 2012 AQMP and, therefore, will not be further analyzed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
III. AIR QUALITY AND GREENHOUSE GAS EMISSIONS.				
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential air quality impacts. Review of the 2012 AQMP control measures identified several control measures that have the potential to generate significant adverse air quality impacts. Table A-1 in Appendix A lists all 2012 AQMP control measures and shows those control measures that have the potential to generate significant adverse air quality impacts.

Significance Criteria

To determine whether or not air quality impacts from the proposed project may be significant, impacts were evaluated and compared to the criteria in Table 2-1. If impacts exceed any of the criteria in Table 2-1, they will be considered further in the Draft EA. As necessary, all feasible mitigation measures will be identified in the Draft EA and implemented to reduce significant impacts to the maximum extent feasible.

**Table 2-1
SCAQMD Air Quality Significance Thresholds**

Mass Daily Thresholds ^a		
Pollutant	Construction ^b	Operation ^c
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO ₂ eq for industrial facilities	
NO₂ 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state)	
PM10 24-hour average annual average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^e & 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$	
PM2.5 24-hour average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^e & 2.5 $\mu\text{g}/\text{m}^3$ (operation)	
Sulfate 1-hour average	0.075 ppm (federal – 98 th percentile)	

**TABLE 2-1 (Concluded)
SCAQMD Air Quality Significance Thresholds**

Toxic Air Contaminants (TACs), Odor, and GHG Thresholds	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)
Lead Rolling 3-month average	0.15 µg/m ³ (federal)

^a Source: SCAQMD CEQA Handbook (SCAQMD, 1993)

^b Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).

^c For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

^d Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

^e Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million µg/m³ = microgram per cubic meter ≥ = greater than or equal to
MT/yr CO₂eq = metric tons per year of CO₂ equivalents

To determine whether or not greenhouse gas emissions from the proposed project may be significant, impacts will be evaluated and compared to the 10,000 metric tons of CO₂ equivalent per year (MT CO₂e/year) threshold for industrial sources.

Discussion

III. a) The SCAQMD is required by law to prepare a comprehensive district-wide AQMP which includes strategies (e.g., control measures) to reduce emission levels to achieve and maintain state and federal ambient air quality standards, to ensure that new sources of emissions are planned and operated to be consistent with the SCAQMD’s air quality goals, and to protect sensitive receptors and the public in general from the adverse effects of criteria pollutants which are known to have adverse human health effects. The AQMP’s air pollution reduction strategies include control measures that target stationary, mobile and indirect sources. These control measures are based on feasible methods of attaining ambient air quality standards. Pursuant to the provisions of both the state and federal Clean Air Acts, the SCAQMD is required to attain the state and federal ambient air quality standards for all criteria pollutants.

The proposed project would update the SCAQMD’s 2007 AQMP, as required pursuant to state law. By revising and updating emission inventories and control strategies, the SCAQMD is complying with state law, and furthering development of new AQMP control measures, which along with remaining 2007 AQMP control measures would be expected to reduce emissions and make progress towards attaining and maintaining all state and federal ambient air quality standards in the district. Updating the AQMP, as required by law is not considered to be an obstruction to the implementation of the local air quality plan. Therefore, this topic will not be further evaluated in the Draft Program EIR.

III. b) & d): The anticipated direct air quality effect of implementing the 2012 AQMP is obtaining further emissions reductions from existing emission sources or promoting the lowest achievable emission rates from new emissions sources, both stationary and mobile sources. Implementing some control measures has the potential of generating secondary air quality impacts in several ways as explained in the following paragraphs.

AQMP control measures that may involve retrofitting, replacing, or installing new air pollution control equipment, would likely require physical modifications at affected facilities. Physical modifications may involve the use of construction equipment for demolition, site preparation, site grading, and construction. Exhaust emissions from on-road and off-road equipment during construction phases may be substantial depending on the number, types, and activity levels of the construction equipment used. Similarly, if large areas need to be graded to install equipment foundations or construct buildings, fugitive dust emissions could be substantial. Consequently, construction air quality impacts will be analyzed in the Program EIR for the proposed project.

Implementing AQMP control measures often requires installing air pollution control equipment. Although the primary effect of installing air pollution control equipment is to reduce emissions of a particular pollutant, e.g., VOCs or NO_x, some types of control equipment have the potential to create secondary adverse air quality impacts. For example, combustion equipment, e.g., thermal oxidizers, could be used to control VOC emissions, but they have the potential to generate secondary NO_x emissions.

AQMP control measures that are intended to reduce NO_x emissions from stationary or mobile sources, e.g., CMB-01 – Further NO_x Reductions for RECLAIM; etc., may use ammonia as part of the control process (e.g., selective catalytic reduction). Ammonia use could result in increased ammonia emissions and, since ammonia is a precursor to particulate formation, increased particulate emissions. Similarly, in the event of an accidental release of ammonia, sensitive receptors in the vicinity of the release could be exposed to harmful concentrations of ammonia vapor.

Some control measures are expected to improve air quality overall, but there may be trade-offs. The increase in electrification of sources (e.g., ONRD-01, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles, ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles), etc., would result in the need for additional electricity and potentially result in the construction and operation of new electrical power plants and increased emissions from power plants.

Emissions of one or more pollutants may increase slightly in order to effectively reduce overall emissions and protect public health. Potentially significant air toxics impacts could occur due to reformulation of consumer products, including coatings, use of new fuel or alternative fuel additives, and use of new low VOC replacements for diesel engine lubricating oil additives. As a result, these potential air quality impacts will be evaluated in the Draft Program EIR.

Implementing other types of AQMP control measures, especially the CTS category of control measures, e.g., CTS-01 – Further VOC Reduction from Architectural Coatings; and CTS-02 – Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants; etc., may result in facility operators electing to reduce VOC emissions by replacing high-VOC solvent or coating materials with exempt solvents or other formulations that may contain toxic compounds, such as formaldehyde or glycol ethers, or compounds that have a higher flammability rating. As a result, material replacement or reformulation to reduce the use of high-VOC materials has the potential to result in health risks associated with exposure to both carcinogenic and non-carcinogenic toxic air contaminants. Both secondary air quality impacts

and health impacts from exposure to substantial pollutant concentrations will be analyzed in the Program EIR for the proposed project.

III. c): The intent of implementing AQMP control measures is to reduce criteria pollutants emissions to attain and maintain state and national ambient air quality standards and reduce toxic contaminants and greenhouse gases. However, secondary air quality impacts of some control measures may generate increased emissions. Because the proposed amendments may result in significant adverse secondary air quality effects, the project's incremental contribution to a cumulative effect may be cumulatively considerable. Cumulative air quality impacts from implementing the 2012 AQMP will be evaluated in the Draft Program EIR.

III. e) Implementing some AQMP control measures may require construction activities at affected facilities. Odors are sometimes associated with the exhaust from diesel-fueled equipment. However, odor impacts from construction equipment are not expected to be significant because most diesel-fueled equipment are mobile and do not remain in one location that could continuously affect offsite receptors. In addition, diesel exhaust is generally hot and, therefore, buoyant, which results in dilution of potential odor impacts as the exhaust rises into the atmosphere. As a result, odor impacts from construction activities to implement AQMP control measures are not expected to be significant and will not be further discussed in the Program EIR.

Past projects evaluating promulgation of AQMP control measures into rules or regulations, especially control measures that involve reformulated coatings or solvents, have included assessments of potential odor impacts. Although in some cases reformulated products have noticeable odors, it is typically the case that reformulated products have less noticeable odors than the products they are replacing. Reformulated products tend to have reduced VOC content and reduced emissions and, therefore, lower potential for creating odor impacts. As a result, significant adverse odor impacts have not been associated with reformulated products, especially those relying on water-based formulations, compared to conventional high VOC products. Modifications to industrial facilities to produce reformulated products (e.g., refineries) also have the potential to create odor impacts. However, owners/operators of industries affected by control measures in the proposed 2012 AQMP would still be subject to existing air quality rules and regulations, including SCAQMD's Rule 402 - Nuisance, which prohibits creating odor nuisances. For these reasons, implementing the 2012 AQMP is not expected to create significant adverse odor impacts and, therefore, will not be further addressed in the Draft Program EIR.

III. f): Promulgating AQMP control measures, such as control requirements for stationary sources, mobile sources, market incentive programs, etc., into rules or regulations typically serves to strengthen an existing rule or regulation, not weaken it. Similarly, an AQMP control measure may be promulgated as a new rule or regulation, which typically controls emissions from an unregulated or minimally regulated source. As a result, the proposed project would not diminish an existing air quality rule. This topic will not be further analyzed in the Draft Program EIR.

III. g): Although the 2007 AQMP did not contain control measures that specifically targeted greenhouse gas (GHG) emissions, it was estimated that by 2014 CO₂ emission reductions of 427,849 metric tons per year would be generated and by 2020 CO₂ emission reductions of 1,523,445 metric tons per year by 2020 would occur, primarily as a result of co-benefits from control measures that reduce criteria pollutant combustion emissions.

To specifically address GHG emissions the 2012 AQMP includes two new categories of control measures, incentive (INC) and education (EDU) programs. In addition to GHG reductions generated as co-benefits of implementing other AQMP control measures, INC and EDU measures are expected to reduce GHG primarily through increasing energy efficiency and conservation (INC-01, EDU-01). Improving energy efficiency can be accomplished layering smart grid systems onto the existing electricity distribution system. A smart grid is a digitally enabled electrical grid that gathers, distributes, and acts on information about the behavior of all participants (suppliers and consumers) in order to improve the efficiency, importance, reliability, economics, and sustainability of electricity services³. Establishing a smart grid system does not necessarily require constructing a new grid system; use of smart technologies allows the existing grid system to be used more efficiently.

Some 2012 control measures, however, have the potential to generate combustion emissions that could increase GHG emissions. For example, implementing BCM-01 – Emission Reductions from Under-fired Charbroilers, may result in increased combustion emissions through installation of afterburner technologies. Other control measures, e.g., ONRD-01 – Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles, ONRD-03 – Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles, etc., have the potential to increase demand for electricity resulting in increased combustion emissions, GHG emissions in particular, from increased electricity generation. Therefore, potential GHG emission impacts will be analyzed in the Program EIR.

III. h): The only GHG plans that may be affected by the 2012 AQMP are CARB’s Climate Change Scoping Plan and the Regional Transportation Plan and Sustainable Community Strategy (RTP/SCS), which was formally adopted by the Southern California Association of Governments (SCAG) on April 4, 2012. As noted in discussion III. g) above, new INC and EDU control measures in the 2012 AQMP rely primarily on energy efficiency and conservation, which is consistent with the Scoping Plan’s energy efficiency GHG reduction measures. Examples of energy efficiency measures in the Scoping Plan include: zero net energy buildings where a building produces more power over the course of year than it needs; more stringent building codes and appliance efficiency standards; going beyond green building targets mandated by existing codes; whole building retrofits for existing buildings; etc. Similarly, 2012 AQMP control measures that accelerate the penetration of hybrid and/or alternative-fueled vehicles also have the potential to provide GHG emission reduction impacts.

SCAG’s Draft 2012 RTP/SCS was released to the public in December 2011. The SCS in particular focuses GHG reduction efforts through modifying traditional land use development patterns to include more mixed use projects, which eliminates or substantially shortens commute trip lengths compared to traditional land use planning where residential land uses are separate from and potentially long distances from jobs and other commercial land uses. In general, neither SCAQMD nor CARB has authority over land use decisions, so implementing AQMP control measures would not affect land use decisions envisioned in the SCS. Further, because the transportation control measures (TCMs) SCAG provides to the SCAQMD for incorporation into the 2012 AQMP will likely be a subset of the TCMs in the 2012 RTP/SCS, it is not expected

³ http://en.wikipedia.org/wiki/Smart_grid, accessed December 16, 2011.

that the 2012 AQMP would conflict with the RTP/SCS. For these reasons it is not expected that the 2012 AQMP would conflict with the 2012 RTP/SCS.

As indicated in the above discussion, some types of control measures may increase the use of combustion technologies, such as thermal oxidizers, which could also generate GHG emissions. Depending on the magnitude of any GHG emissions generated from combustion devices, some 2012 AQMP control measures may have the potential to create conflicts with the Scoping Plan or the SCS. This topic will be analyzed further in the Program EIR.

Conclusion

The goal of the AQMP is to protect public health by achieving the state and federal ambient air quality standards. However, secondary adverse air quality impacts may occur from implementing the proposed revisions to the AQMP due to increases in criteria pollutant emissions from certain types of air pollution control equipment. Similarly, the 2012 AQMP has the potential to generate significant adverse cumulative air quality impacts, including GHG emission impacts. Therefore, potential adverse air quality impacts resulting from implementing the 2012 AQMP will be evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES.				
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by §404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential biological resources impacts. Evaluation of the 2012 AQMP control measures did not result in identifying any control measures that have the potential to generate significant adverse biological resources impacts as explained in the following discussions.

Significance Criteria

Impacts on biological resources will be considered significant if any of the following criteria apply:

- The project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies.
- The project interferes substantially with the movement of any resident or migratory wildlife species.
- The project adversely affects aquatic communities through construction or operation of the project.

Discussion

IV. a), b), & d) The effects of implementing AQMP control measures typically include reducing mobile source exhaust emissions; modifying fuel specifications; or modifications at existing commercial or industrial facilities to control or further control emissions, which may require some type of construction equipment and activities. Any affected existing commercial or industrial facilities are generally located in appropriately zoned commercial or industrial areas, which typically do not support candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. Typically, existing industrial or commercial facilities are already devoid of plant life or plant life supporting wildlife species for fire safety reasons. Any new industrial or commercial facilities that may be affected by AQMP control measures and that have the potential to adversely affect biological resources would be constructed and operated for reasons unrelated to complying with AQMP control measures.

Similarly, modifications at existing facilities would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with native or resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites because implementing AQMP control measures typically occurs within the boundaries of the affected facilities and, therefore, would not require disturbing wildlife habitat. For these same reasons, since the proposed 2012 AQMP primarily regulates stationary emission sources at existing commercial or industrial facilities, it does not directly or indirectly affect land use policy that may adversely affect riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations, or identified by the California Department of Fish and Game or U.S. Fish and Wildlife Service. It is expected that industrial or commercial facilities that may be affected by 2012 AQMP control measures are already located in appropriately zoned areas or would be located in appropriately zoned areas. AQMP control measures do not include any provisions that would allow affected facility operators to violate existing zoning ordinances or regional plans, policies, or regulations. Improving air quality is expected to provide health benefits to plant and animal species in the district. Similarly, the 2012 AQMP contains control measures that establish emission standards for mobile sources or accelerated penetration of low emission vehicles, which could result in additional control of emissions from mobile sources or revision to existing fuel specifications. As a result, the proposed project would not affect land use policies or designations. There are no control measures contained in the 2012 AQMP that would alter this determination.

IV. c): Implementing some AQMP control measures, e.g., coatings and solvent control measures could change or increase a facility's potential to generate waste water. Past SCAQMD staff experience with analyzing modifications at industrial or commercial facilities is that they are considered "point sources" and must release wastewater into publicly owned treatment works (POTWs), i.e., local sewer systems, and, therefore, are subject to National Pollutant Discharge Elimination System (NPDES) permit program administered by the Regional Water Quality Control Board (RWQCB). Direct discharge into federally protected wetlands as defined by §404 of the Clean Water Act would be prohibited under federal law (Clean Water Act) and state law (Porter-Cologne Act) and, therefore, is not expected to occur.

Some 2012 AQMP control measures have the potential to require air pollution controls at port facilities, which are located on the coast. Port facilities are considered to be heavy industrial facilities (point sources) and the installation of additional controls would be consistent with this

land use. Further, any facilities that release wastewater into California’s ocean waters are subject to water quality standards established in the California Ocean Plan and are also subject to NPDES requirements, enforced by the local RWQCBs. For all of the above reasons the proposed project will not adversely affect protected wetlands as defined by §404 of the Clean Water Act, including, but not limited to marshes, vernal pools, coastal wetlands, etc., through direct removal, filling, hydrological interruption or other means.

IV. e) & f) Implementing the proposed 2012 AQMP is not expected to affect land use plans, local policies or ordinances, or regulations protecting biological resources such as a tree preservation policy or ordinance for the reasons given in discussions above, i.e. control measures promulgated as rules or regulations primarily affect existing commercial and industrial facilities through installation of air pollution control equipment, which are typically located in appropriately zoned areas accelerating the penetration of low emission vehicles into the regional vehicle fleet. Land use and other planning considerations are determined by local governments and no land use or planning requirements will be altered by the proposed project. Neither SCAQMD nor CARB has legal authority over land use decisions except to impose certain air pollution control requirements, which do not drive the land use approval process, and, therefore, cannot alter or interfere with land use zoning ordinance or designations and cannot approve new land use projects or modifications to existing land use projects. Similarly, the proposed 2012 AQMP is not expected to affect in any way habitat conservation or natural community conservation plans, agricultural resources or operations, and would not create divisions in any existing communities for the reasons given in discussion IV. a), b) and d).

Conclusion

Based upon the above considerations, significant adverse project-specific biological resources impacts are not expect to occur due to implementation of the 2012 AQMP and, therefore, will not be further evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource, site, or feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
d) Disturb any human remains, including those interred outside formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential cultural resources impacts. Evaluation of the 2012 AQMP control measures did not result in identifying any control measures that have the potential to generate significant adverse cultural resources impacts as explained in the following discussions.

Significance Criteria

Impacts to cultural resources will be considered significant if:

- The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group.
- Unique paleontological resources are present that could be disturbed by construction of the proposed project.
- The project would disturb human remains.

Discussion

V. a), b), c), & d) All control measures in the 2012 AQMP were evaluated to identify those control measures with potential cultural resources impacts. No control measures were identified that could generate significant adverse cultural resources impacts. CEQA Guidelines §15064.5(a)(3) states in part, “Generally, a resource shall be considered ‘historically significant’ if the resource meets the criteria for listing in the California Register of Historical Resources including the following:

- A) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
- B) Is associated with the lives of persons important in our past;
- C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values;
- D) Has yielded or may be likely to yield information important in prehistory or history.”

The California Register eligibility criteria are modeled on those of the eligibility criteria of the National Register of Historic Places. Resources (buildings, structures, equipment) that are less than 50 years old are excluded from listing in the National Register of Historic Places unless they can be shown to be exceptionally important). Even resources that are 50 years or older, are not necessarily considered to be historically significant if they do not represent any of the above four criteria.

Implementing the proposed 2012 AQMP control measures is primarily expected to result in controlling stationary source emissions at existing commercial or industrial facilities or accelerate the penetration of low emission vehicles into the regional vehicle fleet. Affected facilities where physical modifications may occur are typically located in appropriately zoned commercial or industrial areas that have previously been disturbed and are not typically considered to be historically significant. It is unlikely that construction activities, including heavy construction activities, such as cut-and-fill activities or excavation, at potentially affected existing facilities would uncover cultural resources as these existing facilities are located in previously disturbed areas. Some affected facilities, e.g., refineries, may have equipment older than 50 years that may need to be modified to comply with 2012 AQMP control measures. However, such equipment does not typically meet the criteria identified in CEQA Guidelines §15064.5(3). Based these considerations, it is unlikely that implementing control measures in the proposed 2012 AQMP would: adversely affect historical or archaeological resources as defined in CEQA Guidelines §15064.5, destroy unique paleontological resources or unique geologic features, or disturb human remains interred outside formal cemeteries.

In spite of the fact that most facilities that would be affected by 2012 AQMP control measures are located on previously disturbed sites where there is little likelihood of any remaining identifiable artifacts, it is possible, that implementing control measures could result in construction activities to install pollution control equipment at affected existing facilities that uncover cultural or archaeological resources. Even if this circumstance were to occur, significant adverse cultural resources impacts are not anticipated because there are existing laws in place that are designed to protect and mitigate potential adverse impacts to cultural resources. As with any construction activity, should archaeological resources be found during construction that results from implementing the proposed AQMP control measures, the activity would cease until a thorough archaeological assessment is conducted as required by state or federal law.

Conclusion

Based upon the above considerations, significant adverse cultural resources impacts are not expect to occur due to implementation of the 2012 AQMP and, therefore, will not be further evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VI. ENERGY. Would the project:				
a) Conflict with adopted energy conservation plans?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the need for new or substantially altered power or natural gas utility systems?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) Create any significant effects on local or regional energy supplies and on requirements for additional energy?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Create any significant effects on peak and base period demands for electricity and other forms of energy?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Comply with existing energy standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential energy resources impacts. Review of the 2012 AQMP control measures identified several control measures that have the potential to generate significant adverse energy resources impacts. Table A-1 in Appendix A lists all 2012 AQMP control measures and shows those control measures that have the potential to generate significant adverse energy resources impacts.

Significance Criteria

Impacts to energy resources will be considered significant if any of the following criteria are met:

- The project conflicts with adopted energy conservation plans or standards.
- The project results in substantial depletion of existing energy resource supplies.
- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
- The project uses non-renewable resources in a wasteful and/or inefficient manner.

Discussion

VI. a) & e) To address energy and climate change issues, the 2012 AQMP includes a number of control measures that promote energy efficiency and conservation (INC-01, Economic Incentive Programs to Adopt Cleaner, More Efficient Combustion Equipment; and EDU-01, Further Criteria Pollutant Reductions from Education, Outreach and Incentives: Energy and Environmental Benefits), thereby providing potential energy conservation benefits. In general, implementing the proposed INC and EDU control measures, as well as other 2012 AQMP control measures is not anticipated to result in any conflicts with adopted energy conservation plans or violations of any energy conservation standards by affected facilities. It is expected that owners/operators of affected facilities would comply with any applicable energy conservation standards in effect at the time of installation. Based upon these considerations, however, the net effect of implementing the proposed 2012 AQMP is that it is not expected to conflict with any adopted energy conservation plans or energy efficiency standards. These topics, therefore, will not be further evaluated in the Draft Program EIR

VI. b), c), & d) Implementing a number of the proposed 2012 AQMP control measures could increase energy demand in the region at affected facilities that install control equipment powered

by electricity or natural gas. For example, CMB-01, Further NO_x Reductions from RECLAIM, CMB-03, Reductions from Commercial Space Heating, FUG-01, Further VOC Reductions from Vacuum Trucks etc., have the potential to increase demand for electricity to operate control equipment, such as thermal oxidizers; electricity to operate chillers refrigerated condensers, liquid scrubbers; water from liquid scrubbers.

Many of the mobile source control measures rely on accelerated penetration of electric vehicles, which have the potential to increase demand for electrical power, and alternative fuel vehicles, which have the potential to increase demand for natural gas. Although, increased use of alternative fuels would likely reduce demand for petroleum fuels, increased energy demand impacts could occur as described in the following sentences. Mobile source control measures that have the potential to increase energy demand in the region include: ONRD-01, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; OFFRD-04, Further Emission Reductions from Ocean-Going Marine Vessels While at Berth; ADV-01, Actions for the Development of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles; ADV-02, Actions for the Development of Zero- and Near-Zero Emission Locomotives; ADV-03, Actions for the Development of Zero- and Near-Zero Emission Cargo Handling Equipment, ADV-04, Actions for the Development of Cleaner Commercial Harborcraft; ADV-05, Actions for the Development of Cleaner Ocean-Going Marine Vessels; ADV-06, and Actions for the Development of Cleaner Off-Road Equipment). Similarly, some mobile source control measures may result in potentially significant adverse energy demand impacts from reduced fuel economy due to some engine designs or post combustion control equipment (OFFRD-02, Further Emission Reductions from Freight Locomotives; and OFFRD-03, Further Emission Reductions from Passenger Locomotives).

If the net effect of implementing AQMP control measures is an increase in regional energy demand in spite of implementing energy efficiency and energy conservation measures, the proposed 2012 AQMP has the potential to: result in the need for new or substantially altered power or natural gas utility systems; create significant effects on peak and base period demands for electricity and other forms of energy; and create significant effects on peak and base period demands for electricity and other forms of energy.

Conclusion

Based upon the above considerations, the potentially significant adverse impacts of the 2012 AQMP on energy resources will be further evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii. Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the California Building Code (1994) (formerly referred to as the Uniform Building Code), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential adverse geology and soils impacts. Evaluation of the 2012 AQMP control measures did not result in identifying any control measures that have the potential to generate significant adverse geology and soils impacts as explained in the following discussions.

Significance Criteria

Impacts on the geological environment will be considered significant if any of the following criteria apply:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.
- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

Discussion

VII. a), c) & d) The proposed 2012 AQMP control measures would not directly or indirectly expose people or structures to earthquake faults, seismic shaking, seismic-related ground failure including liquefaction, landslides, mudslides or substantial soil erosion for the following reasons. In general, AQMP control measures affecting mobile sources, such as those that would accelerate the penetration of zero or low emission vehicles into district fleets, would not affect geology or soils because for on-road vehicles, they would continue to operate on existing roadways (ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; etc.). Although some AQMP control measures would accelerate the penetration of zero or low emission off-road equipment, replacing one type of off-road engine with a lower emitting off-road engine would not be expected to affect construction activities. Further, construction activities occur for reasons other than complying with AQMP control measures.

When implemented as rules or regulations, AQMP control measures regulating stationary sources do not directly or indirectly promote new land use projects that could be located on earthquake faults, seismic zones, etc. Any seismic-related activities in areas where facilities that may be subject to AQMP control are located would be part of the existing setting. Some minor structural modifications, however, at existing affected facilities may occur as a result of installing control equipment or making process modifications. Such modifications would not likely require large heavy-duty construction equipment or substantial site modifications. In any event, existing affected facilities or modifications to existing facilities would be required to comply with relevant California Building Code (formerly referred to as the Uniform Building Code) requirements in effect at the time of initial construction or modification of a structure.

Southern California is an area of known seismic activity. Structures must be designed to comply with the California Building Code Zone 4 requirements if they are located in a seismically active area. The local city or county is responsible for ensuring that a proposed project complies with current California Building Code requirements as part of the issuance of the building permits and can conduct inspections to ensure compliance. The California Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage but with some non-structural damage; and 3) resist major earthquakes without collapse but with some structural and non-structural damage.

The California Building Code bases seismic design on minimum lateral seismic forces (“ground shaking”). The California Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the California Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site. Accordingly, buildings and equipment at existing affected facilities are likely to conform to the California Building Code and all other applicable state codes in effect at the time they were constructed.

Any potentially affected facilities that are located in areas where there has been historic occurrence of liquefaction, e.g., coastal zones, or existing conditions indicate a potential for liquefaction, including expansive or unconsolidated granular soils and a high water table, may have the potential for liquefaction-induced impacts at the project sites. The California Building Code requirements consider liquefaction potential and establish more stringent requirements for building foundations in areas potentially subject to liquefaction. Compliance with the California Building Code requirements is expected to minimize the potential impacts associated with liquefaction. The issuance of building permits from the local cities or counties will assure compliance with the California Building Code requirements. Finally, no AQMP control measures require the location of new, or relocation of existing facilities in areas prone to liquefaction. Land use decisions are under the authority of the local jurisdictions, typically cities or counties. Neither the SCAQMD nor CARB has authority over land use decisions except to impose specific air pollution control requirements, which do not drive the land use approval process, and CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws (CEQA Guidelines §15040(b)). Therefore, no significant impacts from liquefaction are expected and this potential impact will not be considered further.

Because facilities affected by any AQMP control measures are typically located in appropriately zoned areas such as industrial or commercial areas, which are not typically located near known geological hazards (e.g., landslide, mudflow, seiche, tsunami or volcanic hazards), no significant adverse geological impacts are expected. Even if potentially affected facilities are located near such geological hazards, the hazards are part of the existing setting and are not made worse by installing control equipment or other activities to comply with emission control rules and regulations. For example, tsunamis at the ports, i.e., Port of Los Angeles and Port of Long Beach, are not expected because the ports are surrounded by breakwaters that protect the area from wave action. In any event, AQMP control measures would not increase potential exposures to tsunamis. As a result, these topics will not be further evaluated in the Draft Program EIR.

VII. b) Although the proposed 2012 AQMP control measures may require minor modifications at existing industrial or commercial facilities, such modifications are not expected to require substantial grading or construction activities. Typically, existing facilities have already been graded and soil stabilization is already in place, e.g., through the placement of buildings, paving, or other soil stabilization measures currently required pursuant to SCAQMD Rule 403 – Fugitive Dust. In other cases, potentially affected areas may have already been graded or displaced in some way for other reasons, e.g., leveling the site, stabilization of slopes, etc. Accelerating the penetration of low emission vehicles into the regional vehicle fleet, (ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; etc.), does not require modifications requiring construction activities at existing facilities, as explained in discussion VII. a), c), and d). Therefore, significant adverse soil erosion impacts are not anticipated from implementing the 2012 AQMP and will not be further analyzed in the Draft Program EIR.

VII. e) Septic tanks or other similar alternative waste water disposal systems are typically associated with small residential projects in remote areas. The proposed 2012 AQMP does not contain any control measures that generate construction of residential or other types of land use projects in remote areas. As explained in discussion VII. a), c), and d), neither the SCAQMD nor CARB has land use approval authority. Consequently, construction of small residential land uses with septic systems would occur for reasons other than complying with AQMP control measures. Further, AQMP control measures typically affect existing industrial or commercial facilities that are already hooked up to appropriate sewerage facilities and are subject to wastewater control requirements, typically through NPDES permits. Based on these considerations, the use of septic tanks or other alternative waste water disposal systems will not be further evaluated in the Draft Program EIR.

Conclusion

Based upon the above considerations, significant adverse project-specific impacts to geology and soils are not expect to occur due to implementation of the 2012 AQMP and, therefore, will not be further evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, and disposal of hazardous materials?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset conditions involving the release of hazardous materials into the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Significantly increased fire hazard in areas with flammable materials?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures that have the potential to generate significant adverse hazards or hazardous materials impacts. Review of the 2012 AQMP control measures identified several control measures that have the

potential to generate significant adverse hazards or hazardous materials impacts. Table A-1 in Appendix A lists all 2012 AQMP control measures and shows those control measures that have the potential to generate significant adverse hazards or hazardous materials impacts.

Significance Criteria

Impacts associated with hazards will be considered significant if any of the following occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

Discussion

VIII. a), b), & c) The proposed 2012 AQMP has the potential to create direct or indirect hazard impacts in several ways. Some control measures that would regulate VOC emissions by establishing VOC content requirements for products such as coatings, solvents, consumer products, etc., may result in reformulating these products with materials that are low or exempt VOC materials. It is possible that such reformulated products could have hazardous physical or chemical properties (e.g., highly flammable or acutely hazardous), which could create hazard impacts through the routine transport or disposal of these materials or through upset conditions involving the accidental release of these materials into the environment. Some control measures may increase the use of SCR control equipment (CMB-01, Further NO_x Reductions from RECLAIM; OFFRD-02, Further Emission Reductions from Freight Locomotives; OFFRD-03, Further Emission Reductions from Passenger Locomotives; OFFRD-04, Further Emission Reductions from Ocean-Going Marine Vessels While at Berth; etc.), which could result in the increased use of ammonia in SCR units. Greater use of alternative clean fuels (ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; ADV-01, Actions for the Development of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles; ADV-02, Actions for the Development of Zero- and Near-Zero Emission Locomotives; ADV-03, Actions for the Development of Zero- and Near-Zero Emission Cargo Handling Equipment; ADV-04, Actions for the Development of Cleaner Commercial Harborcraft; ADV-05, Actions for the Development of Cleaner Ocean-Going Marine Vessels; ADV-06, Actions for the Development of Cleaner Off-Road Equipment; and ADV-07, Actions for the Development of Cleaner Aircraft Engines) could also create hazard impacts in the event of an accidental release of these materials into the environment. These potential hazard impacts will be further evaluated in the Draft Program EIR.

VIII. d) Government Code §65962.5 typically refers to a list of facilities that may be subject to Resource Conservation and Recovery Act (RCRA) permits or site cleanup activities. For any facilities affected by control measures that are on the list, it is anticipated that they would be required to continue to manage any and all hazardous materials in accordance with federal, state and local regulations. Implementing AQMP control measures is not expected to interfere with site cleanup activities or create additional site contamination. Therefore, this topic will not be further evaluated in the Draft Program EIR.

VIII. e) The proposed project is not expected to adversely affect any airport land use plan or result in any safety hazards for people residing or working in the district. Federal Aviation Administration, 14 CFR Part 77 – Safe, Efficient Use and Preservation of the Navigable Airspace⁴, provides information regarding the types of projects that may affect navigable airspace. Projects that involve construction or alteration of structures greater than 200 feet above ground level within a specified distance from the nearest runway; objects within 20,000 feet of an airport or seaplane base with at least one runway more than 3,200 feet in length and the object would exceed a slope of 100:1 horizontally (100 feet horizontally for each one foot vertically from the nearest point of the runway); etc., may adversely affect navigable airspace. Control measure ADV-03, Actions for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment, could result in installation electric gantry cranes at the Ports of Los Angeles and Long Beach, which can be as tall as 230 feet. However, control measure ADV-03 would likely result in replacing existing gantry cranes that are also as tall as 230 feet. Further, there are no airports within 20,000 feet (3.8 miles) of the San Pedro Bay Ports complex. The nearest airport, Zamperini Field Airport, is approximately nine miles (47,520 feet) from the Ports complex. Similarly, Long Beach Airport is approximately 13 miles (68,640 feet) and Los Angeles International Airport is approximately 20 miles (105,600 feet) from the Ports complex. As a result, all local airports well outside the maximum 20,000-foot navigable space boundaries. Another control measure (ADV-07, Action for the Development of Cleaner Aircraft Engines) would establish lower emission standards for airplane fleets serving the district, but are not expected to require construction of tall structures that could interfere with airport activities. No other control measures in the proposed 2012 AQMP were identified that could result in construction of tall structures, especially structures 200 feet tall, near airports so potential impacts to airport land use plans or safety hazards to people residing or working in the vicinity of local airports are not anticipated. This topic will not be further addressed in the Draft Program EIR.

VIII. d) Even if some affected facilities are designated pursuant to Government Code §65962.5 as a large quantity generator of hazardous waste, it is not anticipated that complying with AQMP control measures would alter in any way how operators of affected facilities manage their hazardous wastes and that they will continue to be managed in accordance with all applicable federal, state, and local rules and regulations. This topic will not be further addressed in the Draft Program EIR.

VIII. f) The proposed project will not impair implementation of, or physically interfere with any adopted emergency response plan or emergency evacuation plan. Operators of any existing commercial or industrial facilities affected by proposed 2012 AQMP control measures are already required to have approved emergency response plans for their facilities already in place. Emergency response plans are typically prepared in coordination with the local city or county emergency plans to ensure the safety of not only the public, but the facility employees as well.

Health and Safety Code §25506 specifically requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in the

⁴ DEPARTMENT OF TRANSPORTATION. Federal Aviation Administration, 14 CFR Part 77 [Docket No. FAA–2006–25002; Amendment No. 77–13] RIN 2120–AH31. *Safe, Efficient Use and Preservation of the Navigable Airspace*. 42296 Federal Register / Vol. 75, No. 139 / Wednesday, July 21, 2010 / Rules and Regulations. <http://www.gpo.gov/fdsys/pkg/FR-2010-07-21/pdf/2010-17767.pdf>.

emergency release or threatened release of a hazardous material. Business emergency response plans generally require the following:

- Identification of individuals who are responsible for various actions, including reporting, assisting emergency response personnel and establishing an emergency response team;
- Procedures to notify the administering agency, the appropriate local emergency rescue personnel, and the California Office of Emergency Services;
- Procedures to mitigate a release or threatened release to minimize any potential harm or damage to persons, property or the environment;
- Procedures to notify the necessary persons who can respond to an emergency within the facility;
- Details of evacuation plans and procedures;
- Descriptions of the emergency equipment available in the facility;
- Identification of local emergency medical assistance; and
- Training (initial and refresher) programs for employees in:
 - The safe handling of hazardous materials used by the business;
 - Methods of working with the local public emergency response agencies;
 - The use of emergency response resources under control of the handler;
 - Other procedures and resources that will increase public safety and prevent or mitigate a release of hazardous materials.

In general, every county or city and all facilities using a minimum amount of hazardous materials are required to formulate detailed contingency plans to eliminate, or at least minimize, the possibility and effect of fires, explosion, or spills. In conjunction with the California Office of Emergency Services, local jurisdictions have enacted ordinances that set standards for area and business emergency response plans. These requirements include immediate notification, mitigation of an actual or threatened release of a hazardous material, and evacuation of the emergency area.

Implementing certain control measures could result in the need for additional storage of hazardous materials (e.g., ammonia). Such modifications may require revisions to emergency response plans if new hazardous are introduced to a facility. However, these modifications would not be expected to interfere with emergency response procedures. Adopting the proposed 2012 AQMP is not expected to interfere with any emergency response procedures or evacuation plans and, therefore, will not be further evaluated in the Draft Program EIR.

VIII. g) The proposed 2012 AQMP would typically affect existing commercial or industrial facilities in appropriately zoned areas. Since commercial and industrial areas are not typically located near wildland or forested areas, implementing AQMP control measures has no potential to increase the risk of wildland fires. Further, for many industrial facilities, site preparation often includes removal of vegetation for fire safety reasons, so many affected industrial facilities

would be devoid of any plant life, especially undisturbed wildland areas. This topic will not be further evaluated in the Draft Program EIR.

In general, AQMP control measures affecting mobile sources, such as those that would accelerate the penetration zero or low emission vehicles into district fleets, would not promote wildfires because for on-road vehicles, they would continue to operate on existing roadways (e.g., ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; etc.). Although some AQMP control measures would accelerate the penetration of zero or low emission off-road equipment, replacing one type of off-road engine with a lower emitting off-road engine would not be expected to affect the location of construction activities. Construction activities occur for reasons other than complying with AQMP control measures. This topic will not be further evaluated in the Draft Program EIR.

VIII. h) The 2012 AQMP may contain some control measures that could result in increased transport, handling, or use of flammable materials, such as alternative clean fuels (ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; ADV-01, Actions for the Development of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles; ADV-02, Actions for the Development of Zero- and Near-Zero Emission Locomotives; and ADV-03, Actions for the Development of Zero- and Near-Zero Emission Cargo Handling Equipment) or coatings reformulated with potentially flammable materials that may increase potential fire hazards in areas with flammable materials (e.g., CTS-01, Further VOC Reductions from Architectural Coatings; CTS-02, Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants; CTS-03, Further VOC Reductions from Mold Release Products; and CTS-04, Further VOC Reductions from Consumer Products). The potential for increased probability of explosion, fire, or other hazards will be addressed in the Draft Program EIR. Impacts related to public exposure to toxic air contaminants will be addressed in the “Air Quality” section of the Draft Program EIR.

Conclusion

Based upon the above considerations, the potentially adverse significant hazard impacts due to the increased probability of explosion, fire, or other risk of upset occurrences associated with the 2012 AQMP will be addressed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards, waste discharge requirements, exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, or otherwise substantially degrade water quality?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in substantial erosion or siltation on- or off-site or flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Place housing or other structures within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
g) Require or result in the construction of new water or wastewater treatment facilities or new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential hydrology and water quality impacts. Review of the 2012 AQMP control measures identified several control measures that have the potential to generate significant adverse hydrology and water quality impacts. Table A-1 in Appendix A lists all 2012 AQMP control measures and shows those control measures that have the potential to generate significant adverse hydrology and water quality impacts.

Significance Criteria

Potential impacts on water resources will be considered significant if any of the following criteria apply:

Water Demand:

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.
- The project increases demand for total water by more than five million gallons per day.

Water Quality:

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.

- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

Discussion

IX. a), g) & i) The proposed 2012 AQMP control measures may require modifications at existing industrial or commercial facilities that could result in increased or altered wastewater streams. Control measures that may result in installing control technologies that generate wastewater, e.g., wet gas scrubbers or other types of liquid scrubbers (BCM-01, Emission Reductions from Under-Fired Charbroilers; FUG-01, Further VOC Reductions from Vacuum Trucks) could create water quality impacts.

Some proposed AQMP coatings and solvents control measures may involve reformulating coatings and solvents with low VOC or exempt solvents (e.g., CTS-01, Further VOC Reductions from Architectural Coatings; CTS-02, Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants; and CTS-03, Further VOC Reductions from Mold Release Products). It is not expected that there will be a substantial increase in the volume of wastewater generated by facilities affected by the coatings control measures, but there could be a slight change in the nature and toxicity of wastewater effluent. The stationary source measures may generate potentially significant adverse water quality impacts from add-on air pollution control equipment such as wet scrubbers, alternative transportation fuels and reformulated low-VOC consumer products, etc.

Mobile source control measures that require increasing the manufacture and use of alternative fuels (ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; ADV-01, Actions for the Development of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles; ADV-02, Actions for the Development of Zero- and Near-Zero Emission Locomotives; ADV-03, Actions for the Development of Zero- and Near-Zero Emission Cargo Handling Equipment; ADV-04, Actions for the Development of Cleaner Commercial Harborcraft; ADV-05, Actions for the Development of Cleaner Ocean-Going Marine Vessels; and ADV-06, Actions for the Development of Cleaner Off-Road Equipment may have the potential to create water quality or groundwater quality impacts in the event of accidental releases of alternative fuels during transport, storage, or handling.

Implementing 2012 AQMP control measures may result in the generation of increased volumes of wastewater that could adversely affect water quality standards or waste discharge requirements resulting in the need for new or increased wastewater treatment capacity. Therefore, these topics will be evaluated further in the Draft Program EIR.

IX. b) & h) Implementing some 2012 AQMP control measures also has the potential to increase demand for water used if wet scrubber technologies are installed at affected facilities (BCM-01, Emission Reductions from Under-Fired Charbroilers; FUG-01, Further VOC Reductions from

Vacuum Trucks). Thus, implementing the proposed project would require additional water, some of which could come from ground water supplies or require new or expansion of existing water supply facilities. This topic is potentially significant and will be evaluated further in the Draft Program EIR.

IX. c) & d) AQMP control measures would not be expected to generate construction of new structures that could alter existing drainage patterns by altering the course of a river or stream that would result in substantial erosion, siltation, or flooding on or offsite, increase the rate or amount of surface runoff that would exceed the capacity of existing or planned stormwater drainage systems, etc. Construction of new structures would occur for reasons other than complying with AQMP control. Although minor modifications might occur at commercial or industrial facilities affected by the proposed 2012 AQMP control measures, these facilities have, typically, already been graded and the areas surrounding them have likely already been paved over or landscaped. As a result, further minor modifications at affected facilities that may occur as a result of implementing the 2012 AQMP are not expected to alter in any way existing drainage patterns or stormwater runoff. Since this potential adverse impact is not considered to be significant, it will not be further evaluated in the Draft Program EIR.

In general, AQMP control measures affecting mobile sources, such as those that would accelerate the penetration of zero or low emission vehicles into district fleets, would not promote wildfires because for on-road vehicles, they would continue to operate on existing roadways (e.g., ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; etc.). Although some AQMP control measures would accelerate the penetration of zero or low emission off-road equipment, replacing one type of off-road engine with a lower emitting off-road engine would not be expected to affect the location of construction activities. Construction activities occur for reasons other than complying with AQMP control measures. Therefore, this topic will not be further evaluated in the Draft Program EIR.

IX. e) & f) The proposed project does not directly or indirectly include the construction of new or relocation of existing housing or other types of facilities and, as such, would not require the placement of housing or other structures within a 100-year flood hazard area. Construction of new structures would occur for reasons other than complying with AQMP control. (See also XIII “Population and Housing”). As a result, the proposed project would not be expected to create or substantially increase risks from flooding; expose people or structures to significant risk of loss, injury or death involving flooding; or increase existing risks, if any, of inundation by seiche, tsunami, or mudflow. Consequently, this topic will not be evaluated further in the Draft Program EIR.

Conclusion

Based upon the above considerations, implementing several of the proposed 2012 AQMP control measures could result in increased water demand and wastewater generation that could result in potentially significant adverse hydrology and water quality impacts. Consequently, these impacts will be addressed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING.				
Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential land use and planning impacts. Evaluation of the 2012 AQMP control measures did not result in identifying any control measures that have the potential to generate significant adverse land use and planning impacts as explained in the following discussions.

Significance Criteria

Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by local jurisdictions.

Discussion

X. a) The proposed 2012 AQMP contains control measures that may result in installing control equipment on stationary sources at existing commercial or institutional facilities and establishing emission exhaust specifications for mobile sources. Construction of new structures affecting land use planning would occur for reasons other than complying with AQMP control. Further, neither the SCAQMD nor CARB has land use approval authority except to impose air pollution control requirements, which do not drive the land use approval process; this authority lies within the jurisdiction of public agencies with general government authority such as cities or counties. As a result, the proposed 2012 AQMP does not require construction of structures or new land use developments in any areas of the district and, therefore, is not expected to physically divide any established communities within the district.

In general, AQMP control measures affecting mobile sources, such as those that would accelerate the penetration of zero or low emission vehicles into district fleets, would not create land use impacts because for on-road vehicles, they would continue to operate on existing roadways (e.g., ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; etc.) and, therefore, would not require construction of new

roadways that could physically divide communities. Although some AQMP control measures would accelerate the penetration of zero or low emission off-road equipment, replacing one type of off-road engine with a lower emitting off-road engine would not be expected to affect the location of construction activities. Construction activities that could result in physically dividing existing communities would occur for reasons other than complying with AQMP control measures. Therefore, this topic will not be further evaluated in the Draft Program EIR.

X. b) Any facilities affected by the proposed 2012 AQMP would still be expected to comply with, and not interfere with, any applicable land use plans, policies, or regulations of an agency with jurisdiction over the project (including, but not limited to the general plans, specific plans, local coastal programs or zoning ordinances). There are no provisions of the proposed project that would directly affect these plans, policies, or regulations. The SCAQMD is specifically excluded from infringing on existing city or county land use authority (California Health & Safety Code §40414). Land use and other planning considerations are determined by local governments and no present or planned land uses in the region or planning requirements will be altered by the proposed project in any way. There are existing links between population growth, land development, housing, traffic and air quality. SCAG’s 2012 RTP/SCS accounts for these links when designing ways to improve air quality, transportation systems, land use, compatibility and housing opportunities in the region. Land use planning is handled at the local level and contributes to development of the AQMP growth projections, for example. The AQMP does not affect local government land use planning decisions; instead it is revised to accommodate local land use planning decisions and population growth. The proposed 2012 AQMP complements SCAG’s Regional Comprehensive Plan.

Conclusion

Based upon the above considerations, significant adverse project-specific land use and planning impacts are not expect to occur due to implementation of the 2012 AQMP and, therefore, will not be further evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential mineral resources impacts. Evaluation of the 2012 AQMP control measures did not result in identifying any control measures that have the potential to generate significant adverse mineral resources impacts as explained in the following discussions.

Significance Criteria

Project-related impacts on mineral resources will be considered significant if any of the following conditions are met:

- The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Discussion

XI. a) & b) There are no provisions of the proposed 2012 AQMP that would directly result in the loss of availability of a known mineral resource of value to the region and the residents of the state, such as aggregate, coal, clay, shale, etc., or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Moreover, the 2012 AQMP is not expected to deplete non-renewable mineral resources in a wasteful manner. Therefore, significant adverse impacts to mineral resources are not anticipated.

Conclusion

Based upon the above considerations, significant adverse project-specific impacts to mineral resources are not expect to occur due to implementation of the 2012 AQMP and, therefore, will not be further evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XII. NOISE. Would the project result in:				
a) Exposure of persons to or generation of permanent noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
d) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential noise impacts. Evaluation of the 2012 AQMP control measures did not result in identifying any control measures that have the potential to generate significant adverse noise impacts as explained in the following discussions.

Significance Criteria

Impacts on noise will be considered significant if:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Discussion

XII. a), & b): The proposed project may require existing commercial or industrial owners/operators of affected facilities to install air pollution control equipment or modify their operations to reduce stationary source emissions. Potential modifications would occur at facilities typically located in appropriately zoned industrial or commercial areas. Installing air pollution control equipment could generate noise impacts, but virtually all of the control equipment would be installed within the industrial and commercial facilities. Similarly, it is assumed that operations in these areas near airports are subject to and in compliance with existing community noise ordinances and applicable OSHA or Cal/OSHA workplace noise reduction requirements.

Ambient noise levels in commercial and industrial areas are typically driven primarily by freeway and/or highway traffic in the area and any heavy-duty equipment used for materials manufacturing or processing at nearby facilities. It is not expected that any modifications to install air pollution control equipment would substantially increase ambient [operational] noise levels in the area, either permanently or intermittently, or expose people to excessive noise levels that would be noticeable above and beyond existing ambient levels because of high levels of

local ambient noise, the noise dampening effects of building walls, and attenuation of noise over distance. It is not expected that affected facilities would exceed noise standards established in local general plans, noise elements, or noise ordinances currently in effect. Affected facilities would be required to comply with local noise ordinances and elements, which may require construction of noise barriers or other noise control devices.

Some control measures would provide an incentive for the early retirement of older mobile sources and replacing them with zero emission electric vehicle technologies. With respect to electric vehicles, they generate much less noise than older engines, especially diesel engines, because the electric engines have substantially fewer moving parts than diesel or gasoline vehicles. Similarly, there are documented comments of reduced noise from alternative fuel vehicle customers, in particular for alternative fuel refuse trucks. Therefore, mobile source control measures that accelerated the penetration of electric vehicles into the regional fleet (e.g., ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; OFFRD-02, Further Emission Reductions from Freight Locomotives; OFFRD-04, Further Emission Reductions from Ocean-Going Marine Vessels While at Berth; OFFRD-05, Emission Reductions from Ocean-Going Marine Vessels; ADV-01, Actions for the Development of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles; ADV-02, Actions for the Development of Zero- and Near-Zero Emission Locomotives; ADV-03, Actions for the Development of Zero- and Near-Zero Emission Cargo Handling Equipment; ADV-04, Actions for the Development of Cleaner Commercial Harborcraft; ADV-05, Actions for the Development of Cleaner Ocean-Going Marine Vessels; ADV-06, and Actions for the Development of Cleaner Off-Road Equipment) could result in noise reductions in high vehicle miles traveled areas such as industrial/commercial facilities or along freeways/highways/streets or from marine vessels traveling into and out of the San Pedro Bay Ports complex.

It is also not anticipated that the proposed project would cause an increase in groundborne vibration levels because air pollution control equipment is not typically vibration intensive equipment. Further, as noted above, early penetration of zero emission electric vehicles would not generate groundborne vibration impacts because they have fewer moving parts that could generate vibrations compared to gasoline or diesel vehicles. Consequently, the 2012 AQMP will not directly or indirectly cause substantial noise or excessive groundborne vibration impacts. These topics, therefore, will not be further evaluated in the Draft Program EIR.

XII. c): Construction activities at industrial/commercial facilities could generate temporary or periodic noise impacts. However, most construction activities to comply with AQMP control measures are not expected to require heavy-duty construction equipment that would be necessary for site preparation as existing affected facilities have already been graded, paved and landscaped. Further, any affected facilities would also be required to comply with local noise ordinances, which establish acceptable noise levels during the day and generally prohibit construction during the nighttime, in order to minimize noise impacts. Compliance with the local noise ordinances is expected to minimize noise impacts associated with construction activities to less than significant.

XII. d): It is not expected that affected facilities located within an airport land use plan or, if airport land use plan has been adopted, within two miles of a public use airport or private airstrip for the same reasons identified in discussion items VII. a) and b) and VII. c).

Conclusion

Based upon the above considerations, significant adverse project-specific noise impacts are not expected to occur due to implementation of the 2012 AQMP and, therefore, will not be further evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING.				
Would the project:				
a) Induce substantial growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential population or housing impacts. Evaluation of the 2012 AQMP control measures did not result in identifying any control measures that have the potential to generate significant adverse population or housing impacts as explained in the following discussions.

Significance Criteria

Impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:

- The demand for temporary or permanent housing exceeds the existing supply.
- The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.

Discussion

XIII. a) According to SCAG⁵ (2012), current population in the SCAG region (which includes all of the district, the non-district portions of Los Angeles and San Bernardino counties, and all of Ventura and Imperial counties) is approximately 18 million people and is expected to increase by another four million people by 2035. The proposed 2012 AQMP generally affects existing commercial or industrial facilities located in predominantly industrial or commercial urbanized areas throughout the district and, as such, is not anticipated to generate any significant effects,

⁵ Southern California Association of Governments. 2012. Final 2012 Regional Transportation Plan. April. <http://rtpsc.scag.ca.gov/Documents/2012/final/f2012RTPSCS.pdf>.

either directly or indirectly, on the district's population or population distribution as explained in the following paragraphs.

Consistent with past experience, it is expected that the existing labor pool within the southern California area would accommodate the labor requirements for any modifications requiring construction at affected facilities. This is especially true in the current recession. For example, California has a seasonally adjusted unemployment rate of 10.9 percent⁶. Unemployment rates (not seasonally adjusted) in each of the four district counties are as follows: Los Angeles County, 11.5 percent; Orange County, 8.1; Riverside County, 12.8 percent, and San Bernardino County, 12.1 percent⁷.

It is expected that few or no new employees would need to be hired at affected facilities to operate and maintain new control equipment on site because air pollution control equipment is typically not labor intensive equipment. In the event that new employees are hired, it is expected that the existing local labor pool in the district can accommodate any increase in demand for workers that might occur as a result of adopting the proposed 2012 AQMP. Based on the above, it is not expected that the 2012 AQMP would induce population growth resulting in the need for new housing, roads or other infrastructure. As such, adopting the proposed 2012 AQMP is not expected to result in changes in population densities or induce significant growth in population.

In general, AQMP control measures affecting mobile sources, such as those that would accelerate the penetration of zero or low emission vehicles into district fleets (e.g., ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; etc.), would not induce population growth because there is a finite number of drivers in the region at any one time, so drivers who purchase low or zero emission vehicles would not be driving the old high emitting vehicles at the same time they are driving the new low emitting vehicles. Although projected increases in population in the region may result in the continued use of the replaced high emitting vehicles, as already noted, future population growth in the region would occur for reasons other than complying with AQMP control measures.

XIII. b) There are no provisions in any AQMP control measures that would cause displacement of substantial numbers of people or housing necessitating construction of replacement housing elsewhere. As noted in the discussions under "Land Use and Planning, the proposed 2012 AQMP contains control measures that may result in installing control equipment on stationary sources at existing commercial or institutional facilities and establishing emission exhaust specifications for mobile sources. Construction of new structures affecting land use planning would occur for reasons other than complying with AQMP control. As a result, the proposed 2012 AQMP would not be expected to affect the location of people or housing in any areas of the district.

Conclusion

Based upon the above considerations, significant adverse project-specific population and housing impacts are not expected to occur due to implementation of the 2012 AQMP and, therefore, will not be further evaluated in the Draft Program EIR.

⁶ California Employment Development Department. 2011. California Profile. November. <http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=1006>.

⁷ Ibid.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES. Would the proposal result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
a) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
b) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential public services impacts. Evaluation of the 2012 AQMP control measures did not result in identifying any control measures that have the potential to generate significant adverse public services impacts as explained in the following discussions.

Significance Criteria

Impacts on public services will be considered significant if the project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives.

Discussion

XIV. a), & b): There is little potential for significant adverse public service impacts as a result of adopting the proposed 2012 AQMP. The 2003 AQMP EIR analyzed potential adverse impacts to public services as a result of implementing AQMP control measures and concluded that existing resources at services such as fire departments, police departments and local governments would not be significantly adversely affected as a result of implementing AQMP control measures even if there are slight increases in potential flammability impacts from implementing AQMP control measures. Similarly, the 2007 NOP/IS concluded that implementing AQMP control measures would not significantly adversely affect fire departments,

police departments and local governments for the same reasons as identified in the 2003 Program EIR, which include the following considerations. Although implementing 2012 AQMP control measures may increase the use of alternative clean fuels, for example, there would be a commensurate reduction in currently used petroleum fuels. As first responders to emergency situations, police and fire departments may assist local hazmat teams with containing hazardous materials, putting out fires, and crowd control to reduce public exposures to hazardous materials releases. In many situations, implementing AQMP control measures may reduce hazardous materials use, e.g., formulating coatings with less hazardous aqueous formulations. Some AQMP control measures may increase the use of air pollution control equipment that uses hazardous materials. In spite of this, there are no components of any control measures that would result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times or other performance objectives. Further, most large industrial facilities have on-site security that controls public access to facilities so no increase in the need for police services are expected. Many large industrial facilities also have on-site fire protection personnel and/or have agreements for fire protection services with local fire departments. Even in the absence of onsite police or fire protection services, implementing AQMP control measures in no way hinders service ratios or response times and is not expected to require physical modifications to existing government facilities to a greater extent than is currently the case. Finally, pursuant to the Health and Safety Code, emergency or rescue vehicles operated by local, state, and federal law enforcement agencies, police and sheriff departments, fire department, hospital, medical or paramedic facility, and used for responding to situations where potential threats to life or property exist, including, but not limited to fire, ambulance calls, or life-saving calls are specifically exempt from regulations requiring alternative clean fueled vehicles. For these reasons, implementing the 2012 AQMP is not expected to require additional fire protection services to an extent that it would cause a need for construction of new facilities, which could cause potentially significant environmental impacts.

XIV. c) As noted in the discussions under topic “XIII. Population and Housing,” adopting the proposed 2012 AQMP is not expected to induce population growth. Thus, implementing the proposed control measures would not increase or otherwise alter the demand for schools in the district. No significant adverse impacts to schools, such as the need for new or physically altered facilities, are foreseen as a result of adopting the proposed 2012 AQMP.

XIV. d): As indicated in the discussions under item “XIII. Population and Housing,” the 2012 AQMP is not anticipated to affect population growth in the district, which would not be expected to adversely affect existing public services or facilities or physically alter or require new public service facilities. Anticipated development to accommodate future population growth would occur for reasons other than complying with AQMP control measures. To address future growth it is the responsibility of local land public agencies with general land use authority, typically cities or counties, over fire departments, police departments and other public services to address potential impacts to public services that may require new or physically altered facilities or affect service ratios, response times, or other performance objectives. Consequently, no significant adverse impacts to schools or parks are foreseen as a result of adopting the proposed 2012 AQMP.

Conclusion

Based upon the above considerations, significant adverse project-specific public services impacts are not expected to occur due to implementation of the 2012 AQMP and, therefore, will not be further evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XV. RECREATION.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment or recreational services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential impacts to recreation resources. Evaluation of the 2012 AQMP control measures did not result in identifying any control measures that have the potential to generate significant adverse impacts recreation resources as explained in the following discussions.

Significance Criteria

Impacts to recreation will be considered significant if:

- The project results in an increased demand for neighborhood or regional parks or other recreational facilities.
- The project adversely affects existing recreational opportunities.

Discussion

XV. a) & b) As discussed under “Land Use and Planning” and “Population and Housing” above, there are no provisions in the proposed 2012 AQMP that would affect land use plans, policies, ordinances, or regulations. Land use and other planning considerations are determined by local governments. No land use or planning requirements, including those related to recreational facilities, will be altered by the proposal. The proposed project does not have the potential to directly or indirectly induce population growth or redistribution that could adversely affect recreational resources. As a result, the proposed project would not increase the use of, or demand for existing neighborhood and/or regional parks or other recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Conclusion

Based upon the above considerations, no significant adverse project-specific impacts to population and housing are expected to occur due to implementation of the 2012 AQMP and, therefore, will not be further evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVI. SOLID/HAZARDOUS WASTE.				
Would the project:				
a) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Comply with federal, state, and local statutes and regulations related to solid and hazardous waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential solid or hazardous waste impacts. Review of the 2012 AQMP control measures identified several control measures that have the potential to generate significant adverse solid or hazard waste impacts. Table A-1 in Appendix A lists all 2012 AQMP control measures and shows those control measures that have the potential to generate significant adverse solid or hazardous waste impacts.

Significance Criteria

The proposed project impacts on solid/hazardous waste will be considered significant if the following occurs:

- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

Discussion

XVI. a) The proposed 2012 AQMP could require affected facility operators to install air pollution control equipment on stationary sources, such as carbon adsorption devices, particulate filters, catalytic incineration, selective catalytic reduction or other types of control equipment that could increase the amount of solid/hazardous wastes generated in the district (e.g., FUG-01, Further VOC Reductions from Vacuum Trucks; CMB-01, Further NOx Reductions from RECLAIM – Phase I and Phase II) due to the disposal of spent catalyst, filters or other mechanisms used in the control equipment. Solid waste impacts would be considered significant if the impacts resulted in a violation of local, state or federal solid waste standards. Also, solid waste impacts would be significant if the additional potential waste volume exceeded the existing capacity of district landfills.

Some mobile source control measures may result in potentially significant adverse solid and hazardous waste impacts from the use of particulate filters or SCR units (e.g., OFFRD-02, Further Emission Reductions from Freight Locomotives; OFFRD-03, Further Emission Reductions from Passenger Locomotives; OFFRD-04, Further Emission Reductions from Ocean-Going Marine Vessels While at Berth ADV-04, Actions for the Deployment of Cleaner Commercial Harborcraft; and ADV-05, Actions for the Deployment of Cleaner Ocean-Going Marine Vessels), early retirement of inefficient, older equipment (ONRD-02, Accelerated Retirement of Older Light- and Medium-Duty Vehicles), etc. The potential solid/hazardous waste impacts from implementing the proposed 2012 AQMP will be analyzed in the Draft Program EIR.

XVI. b): Adopting the proposed 2012 AQMP is not expected to interfere with affected facilities' abilities to comply with federal, state, or local statutes and regulations related to solid and hazardous waste handling or disposal. Health and Safety Code Section 40727 requires that prior to adopting or amending AQMP control measures into rules or regulations or when repealing rules, the AQMD Governing Board shall make certain findings. One of these findings is consistency, which requires that SCAQMD rules are in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or federal or state regulations. This specific topic will not be further evaluated in the Draft Program EIR.

Conclusion

Based upon the above considerations, the potential adverse solid/hazardous waste impacts from implementing the proposed 2012 AQMP will be analyzed in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION/TRAFFIC.				
Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b) Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Introduction

All control measures in the 2012 AQMP were evaluated to identify those control measures with potential transportation or traffic impacts. Evaluation of the 2012 AQMP control measures identified one control measure (ADV-01) that has the potential to generate significant adverse transportation or traffic impacts as explained in the following discussions.

Significance Criteria

Impacts on transportation/traffic will be considered significant if any of the following criteria apply:

- Peak period levels on major arterials are disrupted to a point where level of service (LOS) is reduced to D, E or F for more than one month.
- An intersection’s volume to capacity ratio increase by 0.02 (two percent) or more when the LOS is already D, E or F.
- A major roadway is closed to all through traffic, and no alternate route is available.
- The project conflicts with applicable policies, plans or programs establishing measures of effectiveness, thereby decreasing the performance or safety of any mode of transportation.

- There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- The demand for parking facilities is substantially increased.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.
- The need for more than 350 employees
- An increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round trips per day
- Increase customer traffic by more than 700 visits per day.

Discussion

XVII. a): Adopting the proposed 2012 AQMP is not expected to substantially increase vehicle trips or vehicle miles traveled in the district. The 2012 AQMP relies on transportation and related control measures developed by SCAG (SCAG, 2012) (see Appendix B). These transportation control measures include strategies to enhance mobility by reducing congestion through transportation infrastructure improvements, mass transit improvements, increasing telecommunications products and services, enhanced bicycle and pedestrian facilities, etc. Specific strategies that serve to reduce vehicle trips and vehicle miles traveled, such as strategies resulting in greater reliance on mass transit, ridesharing, telecommunications, etc., are expected to result in reducing traffic congestion. Although population in the district will continue to increase, implementing the transportation control measures, in conjunction with the 2012 Regional Transportation Plan, would ultimately result in greater percentages of the population using transportation modes other than single occupancy vehicles. As a result, relative to population growth, existing traffic loads and the level of service designation for intersections district-wide would not be expected to decline at current rates, but could possibly improve to a certain extent. Even if congestion in the region increases compared to the baseline, this would occur for reasons other than complying with 2012 AQMP control measures. Therefore, it is expected implementing the AQMP, including the transportation control measures could ultimately provide transportation improvements and congestion reduction benefits.

In general, AQMP control measures affecting mobile sources, such as those that would accelerate the penetration of zero or low emission vehicles into district fleets (e.g., ONRD-1, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; etc.), would not induce population growth because there is a finite number of drivers in the region at any one time, so drivers who purchase low or zero emission vehicles would not be driving the old high emitting vehicles at the same time they are driving the new low emitting vehicles. Although projected increases in population in the region may result in the continued use of the replaced high emitting vehicles, as already noted, future population growth in the region would occur for reasons other than complying with AQMP control measures.

The 2012 AQMP would revise the previous motor vehicle emissions budget with new emission calculations using the latest motor vehicle emission factors and planning assumptions. The U.S. EPA's Transportation Conformity Rule requires that transportation plans and projects must not exceed SIP motor vehicle emission budgets for attaining and maintaining health-based air quality standards or a conformity lapse would occur (preventing further funding of transportation projects). By avoiding a conformity lapse, the region would continue to receive federal funding

for future transportation projects, which would generally improve traffic flow, thus, providing a beneficial traffic impact.

XVII. b): Comments were received on the June 27, 2012 NOP/IS that potentially significant traffic impacts could occur as a result of implementing ADV-01 – §182(e) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles. The comment suggested that constructing the overhead electrical catenary lines could adversely affect traffic. Therefore, this potential impact will be evaluated in the Program EIR.

XVII. c): Neither air traffic nor air traffic patterns are expected to be directly or indirectly affected by adopting the proposed 2012 AQMP. As discussed in item VIII. e), the proposed project is not expected to adversely affect any airport land use plan or result in any safety hazards for people residing or working in the district because no AQMP control measures would result in construction or alteration of structures greater than 200 feet above ground level within the maximum 20,000-foot navigable space boundaries. In addition, it is not expected that implementing 2012 control measures would require transporting goods and materials by plane. Finally, although the 2012 AQMP includes control measure ADV-07, Actions for the Deployment of Cleaner Aircraft Engines, it is expected that this measure establish lower airplane exhaust emission standards, such standards would not result in a change in air traffic patterns, including either increases in traffic levels or changes in locations that result in substantial safety risks

XVII. d): It is not expected that adopting the proposed 2012 AQMP will directly or indirectly increase roadway design hazards or incompatible risks. Most AQMP control measures do not involve roadway construction or modifications. However, to the extent that implementing components of some of the transportation control measures and related measures to further develop roadway infrastructure to improve traffic flow may implicate construction, it is expected that there would ultimately be reductions in roadway hazards or incompatible risks as part of any roadway infrastructure improvements and reduced congestion.

XVII. e): Controlling emissions at existing commercial or industrial facilities and promoting accelerated penetration of low or zero emission vehicles into the regional fleet are not expected to affect in any way emergency access routes at any affected commercial or industrial facilities. The reason for this conclusion is that controlling emissions (from stationary sources in particular) is not expected to require major construction of any structures that might obstruct emergency access routes at any affected facilities. Similarly, control measures accelerating penetration of low or zero emission vehicles into the regional fleet would likely result in similar travel patterns on regional roadways compared to the baseline. Although some mobile source control measures may result in installing battery charging stations (e.g., ONRD-01, Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles; ONRD-03, Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles; ADV-01, Actions for the Development of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles; etc.), most jurisdictions have ordinances pertaining to maintaining at existing, or constructing adequate emergency access to many existing facilities and new land use projects.

XVII. f): Adopting the proposed 2012 AQMP will not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the

performance or safety of such facilities. Specifically the 2012 RTP/SCS states that the safety of people and goods is one of the most important considerations in developing, maintaining, and operating the region’s multimodal transportation system. While the RTP/SCS’s multimodal strategy aims to reduce per capita vehicle miles traveled (VMT) over the next 25 years, total demand to move people and goods will continue to grow due to the region’s population increase. A strategic expansion of the regional transportation system is needed in order to provide the region with the mobility it needs. The RTP/SCS targets this expansion around transportation systems that have room to grow, including transit, high-speed rail, active transportation, express/high occupancy transit lanes, and goods movement. The 2012 RTP/SCS calls for an impressive expansion of transit facilities and services over the next 25 years. The local county sales tax programs, most recently Measure R in Los Angeles County, are providing for most of this expansion in facilities and services. In fact, the transportation and related control measures would specifically encourage and provide incentives for implementing alternative transportation programs and strategies. See also response XVI. B) regarding consistency with other regulations.

Conclusion

Adopting the proposed 2012 AQMP is not expected to generate any significant adverse project-specific impacts to transportation or traffic systems, so this topic will not be further evaluated in the Draft Program EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

XVIII. a): Specifically with regard to the biological resources identified in this item, the proposed project is not expected to significantly adversely affect any biological resources including wildlife and the resources on which it relies (see the discussions under item “IV. Biological Resources). Overall improvements in air quality are, ultimately, expected to provide substantial benefits to local biological resources in the district. Therefore, this topic will not be evaluated further in the Draft Program EIR.

XVIII. b): Because the proposed project has the potential to generate significant adverse project-specific environmental impacts in several environmental areas, the proposed project also has the potential to create significant adverse cumulative impacts if project-specific impacts are also deemed to be cumulatively considerable. Significant adverse impacts will be further analyzed in the Draft Program EIR if impacts to any of the following project-specific environmental topic areas are deemed significant: aesthetics, air quality, energy, hazards and hazardous materials impacts, hydrology and water resources, and solid and hazardous waste.

The 2012 AQMP also includes TCMs from SCAG’s 2012 RTP/SCS. SCAG prepared the Final Program EIR for the 2012 RTP/SCS to analyze environmental impacts from the 2012 RTP/SCS. The Draft 2012 AQMP Program EIR will consider cumulative impacts from implementing the 2012 AQMP and the TCMs evaluated in SCAG’s Final Program EIR for the 2012 RTP/SCS for those project-specific topics analyzed in the Draft Program EIR.

XVIII. c): The proposed 2012 AQMP has the potential to create significant adverse impacts to human beings as a result of the possibility that it could create potentially significant adverse impacts in the following areas: air quality, energy, hazards and hazardous materials impacts, hydrology and water resources, and solid and hazardous waste. Significant adverse impacts to any of these areas have the potential to adversely affect public health. Potentially significant adverse environmental impacts that could cause substantial adverse effects on human beings, either directly or indirectly will be evaluated in the Draft Program EIR. If any impacts are concluded to be significant, any evaluation of feasible mitigation measures and alternatives to the project will be included in the Draft Program EIR.

**APPENDIX A (OF THE NOP/IS FOR THE PEIR FOR THE 2012
AQMP)**

2012 AQMP Control Measure Environmental Analysis

PROPOSED SHORT-TERM MEASURES – 24-HR PM 2.5 PLAN										
Control Measure Number	Title	Pollutant	Source of Impact		Potential Impact					
				Not Significant	Aesthetics	Air	Energy	Hazard	Water	Waste
PM SOURCES										
BCM-01 <i>(formerly MCS-04B)</i>	Further Reductions from Residential Wood Burning Devices	PM2.5	Control program would be to decrease the mandatory wood burning curtailment threshold from 35 µg/m ³ to 30 µg/m ³ , no impacts identified	1						
BCM-02	Further Reductions from Open Burning	PM2.5	Control program would be to decrease the mandatory wood burning curtailment threshold from 35 µg/m ³ to 30 µg/m ³ , no impacts identified	1						
BCM-03 <i>(formerly BCM-01 & BCM-05 in the 2007 AQMP)</i>	Emission Reductions from Under-Fired Charbroilers	PM2.5	Electricity to operate equipment; control options include ESPs, HEPA filters, wet scrubbers, and thermal oxidizers.			X	X		X	X
BCM-04 <i>(formerly MCS-04B)</i>	Further Ammonia Reductions from Livestock Waste in Mira Loma Region	Ammonia	Potential groundwater quality impacts from applying acidifier sodium bisulfate						X	

Control Measure Number	Title	Pollutant	Source of Impact	Not Significant	Potential Impact					
					Aesthetics	Air	Energy	Hazard	Water	Waste
COMBUSTION SOURCES										
CMB-01	Further NOx Reductions from RECLAIM – <i>Phase I and Phase II</i>	NOx	Construction; emissions from electricity to operate control equipment; exposure to ammonia vapors; potential increases in solid waste due to burner replacement & SCR catalyst disposal			X	X	X		X
CMB-02	NOx Reductions from Biogas Flares	NOx, VOCs	Construction air quality impacts; solid waste from replacing old with new flares			X				X
CMB-03	Reductions from Commercial Space Heating	NOx	Potential increase in electricity and natural gas demand for ventilation and hood systems; potential increases in solid waste due to burner replacement				X			X

Control Measure Number	Title	Pollutant	Source of Impact	Not Significant	Potential Impact					
					Aesthetics	Air	Energy	Hazard	Water	Waste
COATINGS AND SOLVENTS										
CTS-01	Further VOC Reductions from Architectural Coatings (R1113)	VOCs	Reformulate coatings with more toxic or flammable sovents; potential increased use of water based formulations			X		X	X	
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants	VOCs	Reformulate coatings with more toxic or flammable sovents; potential increased use of water based formulations			X		X	X	
CTS-03	Further VOC Reductions from Mold Release Products	VOCs	Reformulate coatings with more toxic or flammable sovents; potential increased use of water based formulations			X		X	X	
CTS-04	Further VOC Reductions from Consumer Products	VOCs	Reformulate consumer products with more toxic or flammable sovents; potential increased use of water based formulations			X		X	X	
PETROLEUM OPERATIONS AND FUGITIVE VOC										
FUG-01	Further VOC Reductions from Vacuum Trucks	VOCs	Emissions from thermal oxidizers; electricity to operate chillers refrigerated condensers, liquid scrubbers; water from liquid scrubbers			X	X		X	
FUG-02	Emission Reduction from LPG Transfer and Dispensing – <i>Phase II</i>	VOCs	Construciton emissions			X				

Control Measure Number	Title	Pollutant	Source of Impact		Potential Impact					
					Not Significant	Aesthetics	Air	Energy	Hazard	Water
FUG-03	Further VOC Reductions from Fugitive VOC Emissions	VOCs	None identified	2, 3						
MULTIPLE COMPONENT SOURCES										
MCS-01	Application of All Feasible Measures Assessment	All Pollutants	None identified	4						
MCS-02	Further Emission Reductions from Green Waste Processing (Chipping and Grinding Operations not associated with composting)	VOC	Construction; electricity to operate enclosures, biofilters, in-vessel treatment equipment			X	X			
MCS-03 <i>(formerly MCS-06 in the 2007 AQMP)</i>	Improved Start-up, Shutdown and Turnaround Procedures	All Pollutants	None identified	1, 2						
INDIRECT SOURCES										
IND -01 <i>(formerly MOB-03)</i>	Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources	NOx, SOx, PM2.5	No control technologies identified, relies on future development of compliance plan in the event existing emission reduction are not met							

Control Measure Number	Title	Pollutant	Source of Impact		Potential Impact					
					Not Significant	Aesthetics	Air	Energy	Hazard	Water
INCENTIVE PROGRAMS										
INC-01	Economic Incentive Programs to Adopt Cleaner, More Efficient Combustion Equipment	All Pollutants	Control technologies for funding include fuel cells, diesel particulate filters (DPF), NOx reduction catalysts, alternative electricity generation, such as wind and solar, battery electric, hybrid electric, and usage of low NOx and alternative fuels such as natural gas				X	X		X
INC-02	Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies	All Pollutants	None identified	5						
EDUCATIONAL PROGRAMS										
EDU-01 <i>(formerly MCS-02, MCS-03)</i>	Further Criteria Pollutant Reductions from Education, Outreach and Incentives	All Pollutants	None identified	5						

Control Measure Number	Title	Pollutant	Source of Impact	Not Significant	Potential Impact					
					Aesthetics	Air	Energy	Hazard	Water	Waste
8-HR OZONE MEASURES –ON-ROAD MOBILE SOURCES										
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles	VOCs, NOx, PM	“Clean Vehicle Rebate Project” (CVRP) incentives program through 2023; to purchase low-emitting vehicles; potential increase in electricity and natural gas demand; use of alternative fuels and fuel additives can result in hazard & water quality impacts; waste impacts from EV battery disposal no requirements for replaced vehicles			X	X	X	X	X
ONRD-02	Accelerated Retirement of Older Light- and Medium-Duty Vehicles	VOCs, NOx, PM	Would continue Enhanced Fleet Modernization Program (EFMP) through 2023, no requirements for replaced vehicles, but implements the voluntary vehicle scrap provisions of AB 118; air quality and energy from scrapping; water quality from vehicle liquids; solid waste from disposal of vehicle			X	X	X	X	X

Control Measure Number	Title	Pollutant	Source of Impact		Potential Impact					
					Not Significant	Aesthetics	Air	Energy	Hazard	Water
ONRD-03	Accelerated Penetration of Partial Zero Emission and Zero Emission Light-Heavy- and Medium-Heavy-Duty Vehicles	NOx, PM	Would continue the state hybrid truck and bus voucher incentive project (HVIP) through 2023; incentives to purchase low-emitting vehicles, no requirements for replaced vehicles; potential increase in electricity and natural gas demand; use of alternative fuels and fuel additives can result in hazard impacts; waste impacts from EV battery disposal			X	X	X	X	X
ONRD-04 <i>(includes former control measure MCS-04A)</i>	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles	NOx, PM	Incentives to purchase low-emitting vehicles; potential increase in electricity and other alternative clean fuels demand; solid waste from EV battery disposal; no requirements for replaced vehicles			X	X	X	X	X

Control Measure Number	Title	Pollutant	Source of Impact	Not Significant	Potential Impact					
					Aesthetics	Air	Energy	Hazard	Water	Waste
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards	NOx, PM	Accelerated use of hybrid electric or fuel cell trucks: aesthetics from overhead power lines; emissions from electricity generation; increased electricity demand; use of alternative fuels and fuel additives can result in hazard impacts; solid waste from EV battery disposal, etc.		X	X	X	X	X	X
8-HR OZONE MEASURES –OFF-ROAD MOBILE SOURCES										
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment	NOx	Extend SOON program from 2014 to 2023; increased energy demand; use of alternative fuels and fuel additives can result in hazard & water quality impacts; waste impacts from EV battery disposal				X	X	X	X

Control Measure Number	Title	Pollutant	Source of Impact	Not Significant	Potential Impact					
					Aesthetics	Air	Energy	Hazard	Water	Waste
OFFRD-02	Further Emission Reductions from Freight Locomotives	NOx, PM	Replace existing engines with tier 4 engines with control equipment, e.g., SCRs; potential increase in ammonia emissions/exposures; use of alternative fuels and fuel additives can result in hazard & water quality impacts; DPM filters and electric batteries producing solid waste; no requirements for replaced locomotives			X	X	X	X	X
OFFRD-03	Further Emission Reductions from Passenger Locomotives	NOx, PM	Repower existing engines with tier 4 engines with control equipment, e.g., SCRs; potential increase in ammonia emissions/exposures, DPM filters and electric batteries producing solid waste; alternative fuels creating hazard & water quality impacts; no requirements for replaced locomotives			X	X	X	X	X

Control Measure Number	Title	Pollutant	Source of Impact		Potential Impact					
					Aesthetics	Air	Energy	Hazard	Water	Waste
				Not Significant						
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels While at Berth	NOx, PM	Calls for increased percentage of ships at berth to cold iron; potential air quality impacts from energy generation; energy impacts; hazards, waste impacts from ships that dispose of catalysts at berth in the ports, etc.			X	X	X		X
OFFRD-05	Emission Reductions from Ocean-Going Marine Vessels	NOx	Would enhance Ports' existing financial incentive programs for early deployment of Tier 3 vessels calling at the Ports; no requirements for replaced vessels; hazards, waste impacts from ships that dispose of catalysts while in the ports, etc.	2				X		X

Control Measure Number	Title	Pollutant	Source of Impact		Potential Impact					
				Not Significant	Aesthetics	Air	Energy	Hazard	Water	Waste
EARLY ACTION TO DEPLOY ADVANCED CONTROL TECHNOLOGIES										
ADV-01	Actions for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles	NOx	Aesthetic impacts from construction of "wayside" electric or magnetic infrastructure; air quality from construction of battery charging or fueling infrastructure; increased energy demand; use of alternative fuels and fuel additives can result in hazard & water quality impacts; waste impacts from EV battery disposal. Traffic impacts have been added because of construction of catenary electricity lines potentially affecting traffic routes.		X	X	X	X	X	
ADV -02	Actions for the Deployment of Zero- and Near-Zero Emission Locomotives	NOx	Aesthetic impacts from construction of "wayside" electric or magnetic infrastructure; air quality from construction of battery charging or fueling infrastructure; increased energy demand; use of alternative fuels and fuel additives can result in hazard & water quality impacts; waste impacts from EV battery disposal		X	X	X	X	X	X

Control Measure Number	Title	Pollutant	Source of Impact	Not Significant	Potential Impact					
					Aesthetics	Air	Energy	Hazard	Water	Waste
ADV -03	Actions for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment	NOx	Aesthetic impacts from construction of electric gantry cranes; air quality from construction of battery charging or fueling infrastructure; increased energy demand; use of alternative fuels and fuel additives can result in hazard impacts; waste impacts from EV battery disposal.		X	X	X	X	X	X
ADV -04	Actions for the Deployment of Cleaner Commercial Harborcraft	NOx	Air quality from construction of battery charging or fueling infrastructure; ammonia emissions from SCR; increased energy demand; use of alternative fuels and fuel additives can result in hazard & water quality impacts; solid waste from SCR catalyst & EV battery disposal			X	X	X	X	X

Control Measure Number	Title	Pollutant	Source of Impact	Not Significant	Potential Impact					
					Aesthetics	Air	Energy	Hazard	Water	Waste
ADV -05	Actions for the Deployment of Cleaner Ocean-Going Marine Vessels	NOx	Increased use of aftertreatment control technologies: SCR, wet/dry scrubbers; air quality impacts from ammonia; energy & hazard impacts from alternative fuels; water impacts from wet scrubbers; solid waste from dry scrubbers catalyst disposal			X	X	X	X	X
ADV -06	Actions for the Deployment of Cleaner Off-Road Equipment	NOx	Air quality from construction of battery charging or fueling infrastructure; increased energy demand; use of alternative fuels and fuel additives can result in hazard & water quality impacts; waste impacts from EV battery disposal			X	X	X	X	X
ADV -07	Actions for the Deployment of Cleaner Aircraft Engines	NOx	Potential low emission aircraft technologies include alternative fuels, lean combustion burners, high rate turbo bypass, advanced turbo-compressor design, and engine weight reduction; increased energy demand; use of alternative fuels and fuel additives can result in hazard & water quality impacts			X	X	X	X	

- 1 Control strategies do not generate significant adverse impacts.
- 2 Changes in operating practices with no impact identified.
- 3 Changes in testing, inspection, or enforcement procedures with no impact identified.
- 4 Potential impacts are considered to be speculative because no control technologies identified or relies on development of future technologies.
- 5 No impacts identified for control measures promoting education & outreach, which do not require installation of control equipment.

**APPENDIX B (OF THE NOP/IS FOR THE PEIR FOR THE 2012
AQMP)**

2012 AQMP TCM PROJECTS (FROM 2012 RTP/SCS)

**TABLE B-1
2012 AQMP Transportation Control Measure (TCM) Projects**

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
LOS ANGELES COUNTY			
Baldwin Park	LAFA141	Baldwin Park Metrolink Transportation Center. Funded Thru STIP Augmentation Construction A Transportation Center And Parking Structure At The Baldwin Park Metrolink Station.	11/1/2014
Foothill Transit Zone	LA0B311	Park And Ride Facility Transit Oriented Neighborhood Program SAFETEA-LU # 341 (E-2006-Busp-092) (E-2006-Busp-173)	12/31/2013
Glendale	LA0G406	Fairmont Ave. Park-N-Ride Facility (83 Parking Spaces) To Serve Commuters Using Sr-134, I-5. The Location Of The Park-N-Ride Is Fairmont Avenue And San Fernando Rd.	12/30/2013
Los Angeles County	LAF1514	Emerald Necklace Bike Trail Project. Design And Construct 1.1 Miles Of Class I Bike Path To Connect Duarte Road To The San Gabriel River Bicycle Trail.	6/30/2013
Los Angeles County MTA	LA0G270	Expansion And Improvement To Existing Transit Center In The City Of Palmdale. E2009-Busp-137.	9/30/2013
Los Angeles County MTA	LA0F021	Exposition Light Rail Transit System Phase II – From Culver City To Santa Monica	12/31/2017
Los Angeles County MTA	LA29202W	Mid -City Transit Corridor: Wilshire Blvd. From Vermont To Santa Monica Downtown- Mid-City Wilshire Brt Incl. Div. Expansion And Bus Only Lane	12/31/2014
Los Angeles County MTA	LA0G194	Acquire Four (4) Alternate Fuel Buses For The City Of Artesia To Be Used For New Fixed Route Service Earmark Id #E2008-Busp-0694	10/31/2012
Los Angeles County MTA	LA0C10	Mid-City/Exposition Corridor Light Rail Transit Project Phase I To Venice-Robertson Station	12/31/2012
Los Angeles County MTA	LA0G431	Multi-Modal Transit Center At CSUN To Include Passenger Loading Areas And Bus Shelters	10/1/2012
Los Angeles	LA974165	Macarthur Park Station Improvements Include Design And Construction Of A Plaza To Accommodate Public Access (Pedestrian Entrances, Walkways,	12/30/2011

County MTA		Bicycle Facilities) PPNO# 3417	
Los Angeles, City Of	LA0G155	LACRD – Transit Signal Priority In The City Of Los Angeles.	02/28/2012
Pasadena	LAE3790	The Pasadena ITS Integrates 3 Components; Traffic Signal Communication And Control, Transit Vehicle Arrival Info And Public Parking Availability Info. SAFETEA-LU Prj #3790 And #399	6/30/2013
Pico Rivera (Previously Lead Agency Was SGVCOG)	LA0C57	Ace/Gateway Cities-Construct Grade Sep. At Passons Blvd In Pico Rivera (& Modify Profile Of Serapis Av,)(Part Of Alameda Corr East Proj.)SAFETEA-LU HPP # 1666 (TCRP #54.3)	12/31/2012
Rolling Hills Estate	LAF1529	Palos Verdes Drive North Bike Lanes. Construction Of Class Ii Bike Lane And Related Improvements On Palos Verdes Drive North	12/31/2013
Santa Clarita	LAF1424	McBean Regional Transit Center Park And Ride. Purchase Land, Design, And Construct A Regional Park-And-Ride Lot Adjacent To The Mc Bean Regional Transit Center In The City Of Santa Clarita.	10/1/2013
Whittier	LA0G257	Whittier Greenway Trailhead Park. Extension Of Whittier Greenway Trail From Mills Avenue To 300 Feet East Of Mills Avenue On City Owned Right-Of-Way In Conjunction With The Construction Of New Trailhead Park With A Park And Ride Parking Lot For Nearby Public Transit Stop. New 20 Space Parking Lot Would Be Constructed Of “Green” Permeable Pavement In Compliance With NPDES Requirements. Includes The Installation Of Park Amenities, Drinking Fountain For The Convenience Of Pedestrian And Bicycle Patrons Of The Whittier Greenway Trail. Construction Of New Sidewalks Along Mills Avenue To Provide Whittier Greenway Trail Crossing Connection At The Signalized Intersection Of Mills Avenue At Lambert Road.	9/30/2014
Artesia	LAF1607	South Street Pedestrian, Bikeway And Transit Improvement. Improve Pedestrian Environment And Transit Stop Locations With Landscaped Medians, Transit Shelters, Benches, Sidewalk Enhancements And Lighting. Close Existing Bike Lane Gap.	10/1/2014
Avalon	LAF1501	County Club Drive Bikeway Improvement Project. Construction Of A 4-Foot Wide Class Ii Bike Lane In Both Directions Along A One Mile Section Of Country Club Drive.	10/1/2013
Azusa	LAF3434	Azusa Intermodal Transit Center. Construct Regional Azusa Intermodal Transit Center To Accommodate Existing And Future Parking Demand And	6/30/2015

		Support Effective Transit Use.	
Baldwin Park	LAE0076	Construct Add'l Vehicle Parking (200 To 400 Spaces), Bicycle Parking Lot And Pedestrian Rest Area At The Transit Center	12/31/2014
Baldwin Park	LAF1654	Baldwin Park Metrolink Pedestrian Overcrossing. Construct A Pedestrian Overcrossing Over Bogart Ave And The Metrolink Line To Link The Station With Vital Bus Transfer Points And To Provide Access To Parking Overflow Areas.	10/1/2015
Burbank	LAF1502	San Fernando Bikeway. Implement A Class I Bikeway Along San Fernando Blvd, Victory Place And Burbank Western Channel To Complete The Burbank Leg Of A 12 Mile Bikeway.	6/30/2014
Caltrans	LA000358	Route 5: – From Route 134 To Route 170 HOV Lanes (8 To 10 Lanes) (CFP 346)(2001 CFP 8355). (Ea# 12180, 12181,12182,12183,12184, 13350 PPNO 0142f,151e,3985,3986,3987) SAFETEA-LU# 570. Construct Modified Ic @ I-5 Empire Ave, Aux Lns Nb & Sb Between Burb	12/31/2014
Caltrans	LA000548	Route 10: From Puente To Citrus HOV Lanes From 8 To 10 Lanes (C-ISTEA 77720) (Ea# 117080, PPNO# 0309n)	2/12/2016
Caltrans	LA0B875	Route 10: HOV Lanes From Citrus To Route 57/210 – (Ea# 11934, PPNO# 0310b)	3/15/2016
Caltrans	LA0D73	Route 5: La Mirada, Norwalk & Santa Fe Springs-Orange Co Line To Rte 605 Junction. Widen For HOV & Mixed Flow Lns, Reconstruct Valley View (Ea 2159a0, PPNO 2808). TCRP#42.2&42.1	12/1/2016
Caltrans	LA000357	Route 5: From Route 170 To Route 118 One HOV Lane In Each Direction (10 To 12 Lanes) Including The Reconstruction Of The I-5/Sr-170 Mixed Flow Connector And The Construction Of The I-5/Sr-170 HOV To HOV Connector (CFP 345) (2001 CFP 8339; CFP2197).	12/31/2013
Caltrans	LA01342	Route 10: Rt 10 From Rt 605 To Puente Ave HOV Lanes (8+0 To 8+2) (Ea# 117070, PPNO 0306h) PPNO 3333 3382 Ab 3090 Rep (TCRP #40)	10/28/2013
Caltrans	LA996134	Route 5: Rte. 5/14 Interchange & HOV Lns On Rte 14 – Construct 2 Elevated Lanes – HOV Connector (Direct Connectors) (Ea# 16800)(2001 CFP 8343) (PPNO 0168m)	5/24/2013
Claremont	LAF1510	Claremont Portion Of The Citrus Regional Bikeway. This Project Proposes The Implementation Of The Claremont Portion Of The Citrus Regional Bikeway Utilizing Bonita Avenue And First Street As Primary Class Ii Bike Routes.	10/1/2012

El Monte	LAF1504	El Monte: Transit Cycle Friendly. El Monte Proposes To Implement The 1st Phase Of The El Monte Bike-Transit Hub Component (Metro Bicycle Transportation Strategic Plan) A Countywide Effort To Improve Bike Facilities	10/1/2013
Long Beach	LAE1296	Long Beach Intelligent Transportation System	9/30/2012
Long Beach	LAF1530	Bicycle System Gap Closures & Improved La River Bike Path. Project Will Construct Priority Class I & Iii Bicycle System Gap Closures In Long Beach And Improve Connection To La River.	10/1/2014
Los Angeles County MTA	LA0D198	Crenshaw Transit Corridor	12/31/2018
Los Angeles County MTA	LA0G010	Regional Connector – Light Rail In Tunnel Allowing Through Movements Of Trains, Blue, Gold, Expo Lines. From Alameda / 1st Street To 7th Street/Metro Center	12/31/2019
Los Angeles County MTA	LA0G154	Lacrd – El Monte Transit Center Improvements And El Monte Busway Improvements, Including Bike Lockers, Ticket Vending Machines At El Monte Busway Stations And Up To 10 Bus Bays.	12/31/2012
Los Angeles County MTA	LA0G447	Metro Purple Line Westside Subway Extension Segment 1 – Wilshire/Western To Fairfax	12/31/2019
Los Angeles County MTA	LA0C8114	La City Rideshare Services; Provide Commute Info, Employer Assistance And Incentive Programs Through Core & Employer Rideshare Services & MTA Incentive Programs. PPNO 9003	12/30/2016
Los Angeles County MTA	LA963542	Acquisition Revenue Vehicles – 2,513 Clean Fuel Buses: Leased Veh, Fy02 (370) Fy03 (30 HC) + Fy04 (70 HC) + (200 Artics); Fy05-Fy10 Total Of 1000 Buses.	6/30/2014
Los Angeles County MTA	LAE0036	Wilshire/ Vermont Pedestrian Plaza Improvements And Intermodal Pedestrian Linkages	2012
Los Angeles County MTA	LAE0195	Design And Construct Improved Pedestrian Linkages Between Los Angeles Pierce College And MTA’S Rapid Bus Transit Stops To Include Passenger Amenities, 2007 CFP # F1658	10/1/2014
Los Angeles, City Of	LA0C8164	Exposition Blvd Right-Of-Way Bike Path-Westside Extension. Design And Construction Of 2.5 Miles Of Class 1 Bikeway, Lighting, Landscaping & Intersection Improvements. (PPNO# 3184)	2/2/2012

Los Angeles, City Of	LAF1704	Downtown L.A. Alternative Green Transit Modes Trial Program. Offer Shared Ride-Bicycle And Neighborhood Electric Vehicle Transit Services To La City Hall As An Alternative To Overcrowded Dash Service	6/27/2014
Los Angeles, City Of	LA002738	Bikeway/Pedestrian Bridge Over La River At Taylor Yard Class I (CFP 738, 2077) (PPNO# 3156)	7/31/2015
Los Angeles, City Of	LA0B7330	San Fernando Rd Row Bike Path Phase II – Construct 2.75 Miles Clas I Frm First St To Branford St,On MTA-Ownd Row Parlel To San Fernando Rd. Link Cyclsts To Numerous Bus Lne. PPNO 2868.	1/30/2014
Los Angeles, City Of	LAF1450	Encino Park-And-Ride Facility Renovation. Renovation Of The Encino Park-And-Ride Facility In Order To Address Physical And Structural Deficiencies And Add Capacity To This Heavily Utilized Facility. Includes 50 New Parking Spaces And Bike Lockers.	10/1/2013
Los Angeles, City Of	LAF1520	Imperial Highway Bike Lanes. This Project Involves The Modification Of The Median Island And The Widening Of Imperial Highway Along 1000 Ft East Of Pershing Drive To Accomodate Bike Lanes.	6/1/2014
Los Angeles, City Of	LAF1524	San Fernando Rd. Bike Path Ph. IIIA/IIIB – Construction. Recommend Phase IIIA-Construction Of A Class I Bike Path Within Metro Owned Rail Right-Of-Way Along San Fernando Rd. Between Branford St. And Tuxford St Incl Bridge.	10/1/2015
Los Angeles, City Of	LAF1615	Eastside Light Rail Pedestrian Linkage. Improve Linkages Within 1/4 Mile Of Metro’s Gold Line Lrt.	6/29/2012
Los Angeles, City Of	LAF1657	Los Angeles Valley College (LAVC) Bus Station Extension. Project Will Extend The Orange Line Station At The La Valley College By Providing A Direct Pedestrian Connection From The Station To A New Pedestrian Entrance To LAVC.	10/1/2013
Los Angeles, City Of	LAF1708	Hollywood Integrated Modal Information System. Installation Of Electronic, Direction And Parking Availability Signs With Internet Connectivity To Provide Advance And Real-Time Information Intended To Increase Transit Ridership	9/21/2015
Los Angeles, City Of	LAF3419	Sunset Junction Phase 2. Create A Multi-Modal Transit Plaza To Integrate Public Transportation, Pedestrian & Bicycle Improvements That Would Result In Regional & Local Benefits (CFP3844). Triangle Property On Sunset Blvd Bwt Manzanita And Santa Monica.	6/30/2017
Monrovia	LAE0039	Transit Village – Provide A Trans. Facility For Satellite Parking For Sierra	12/31/2012

		Madre Villa Gold Line Sta, P-N-R For Commuters, A Foothill Transit Store.	
Port Of Los Angeles	LAF3170	Port Truck Traffic Reduction Program: West Basin Railyard. Intermodal Railyard Connecting Port Of La With Alameda Corridor To Accommodate Increased Loading Of Trains At The Port, Thereby Reducing Truck Trips To Off-Dock Railyards.	12/1/2014
Rancho Palos Verdes	LAF1506	Bike Compatible Rdwy Safety And Linkage On Palos Verdes Dr. The Project Will Have A Class Ii Bike Lane On Both Sides Of Palos Verdes Drive South, With An Unpaved Shoulder For Emergency Use.	10/9/2014
Rancho Palos Verdes	LAF1605	Pedestrian Safe Bus Stop Linkage. Linking 11 Bus Stops Currently Inaccessible Because Of Lack Of Sidewalks On Both The East And West Side Of Hawthorne Blvd. From Crest Rd. To Palos Verdes Dr. South (About 13,000")	12/9/2013
San Dimas	LAF1503	Bikeway Improvements On Foothill Blvd. At San Dimas Wash. The Bwy Improvements On Foothill Blvd. At San Dimas Wash; Will Close The Gap On A Bridge & Connect The Existing Class Ii Bike Lanes To The East & West Of San Dimas Wash Crossing.	12/1/2013
San Gabriel Valley COG	LA990359	Grade Sep Xings Safety Impr; 35- Mi Freight Rail Corr. Thrhg San.Gab. Valley – East. L.A. To Pomona Along Upr Alhambra &L.A. Subdiv – Its 2318 SAFETEA #2178;1436 #1934 PPNO 2318	6/30/2018
Santa Fe Springs	LA0F096	Norwalk Santa Fe Springs Transportation Center Parking Expansion And Bikeway Improvements. Provide Additional 250 Parking Spaces For Transit Center Patrons And Improve Bicycles Access To The Transit Center	6/30/2012
Santa Monica	LAE0364	Construct Intermodal Park And Ride Facility At Santa Monica College Campus On South Bundy Drive Near Airport Avenue	12/31/2013
Torrance	LA0G358	South Bay Regional Intermodal Transit Center Project. The Land Is In The Process Of Being Purchased And Escrow Will Close On December 17, 2009. Presently, The Lot Is Vacant/Open Land With No Existing Structure Upon It. The Address Is 465 N. Crenshaw Blvd., Torrance, Ca 90503.	12/31/2015
Westlake Village	LA960142	Lindero Canyon Road From Agoura To Janlor Dr Construct Bike Path, Restripe Street, Intersection Widening, Signal Coordination	1/30/2013
ORANGE COUNTY			
Anaheim	ORA000100	Gene Autry Way West @ I-5 (I-5 HOV Transitway To Haster) Add Overcrossing On I-5 (S)/Manchester And Extend Gene Autry Way West From	11/16/2012

		I-5 To Haster (3 Lanes In Ea Dir.)	
Caltrans	ORA000193	HOV Connectors From Sr-22 To I-405, Between Seal Beach Blvd. (I-405 Pm 022.558) And Valley View St. (Sr-22 Pm R000.917), With A Second HOV Lane In Each Direction On I-405 Between The Two Direct Connectors.	2/1/2015
Caltrans	ORA000194	HOV Connectors From I-405 To I-605, Between Katella Ave. (I-605 Pm R001.104) And Seal Beach Blvd. (I-405 Pm 022.643), With A Second HOV Lane In Each Direction On I-405 Between The Two Direct Connections.	7/1/2015
Fullerton	ORA020113	Fullerton Train Station – Parking Structure, Phase I And Ii. Total Of 800 Spaces (PPNO 2026)	5/31/2012
Orange County Trans Authority (OCTA)	ORA041501	Purchase (71) Standard 30ft Expansion Buses – Alternative Fuel – (31) In Fy08-09, (9) In Fy09-10, (7) In Fy11-12, (6) In Fy12-13 And (18) In Fy13-14	6/30/2016
Orange County Trans Authority (OCTA)	ORA110633	Rideshare Vanpool Program – Capital Lease Costs	9/30/2012
Orange County Trans Authority (OCTA)	ORA65002	Rideshare Services Rideguide, Database, Customer Info, And Marketing (Orange County Portion).	6/30/2016
Orange County Trans Authority (OCTA)	ORA0826016	Purchase (72) Paratransit Expansion Vans – (21) In Fy09/10, (51) In Fy10/11.	6/30/2016
Orange County Trans Authority (OCTA)	ORA082618	Purchase Paratransit Vehicles Expansion (Mission Viejo) (11) In Fy09/10. On-Going Project.	6/30/2030
TCA	10254	SJHC, 15 Mi Toll Rd Between I-5 In San Juan Capistrano & Rte 73 In Irvine, Existing 3/M/F Ea.Dir.1 Add"L M/F Ea Dir, Plus Climbing & Aux Lns As Req, By 2020 Per SCAG/TCA MOU 4/5/01	12/31/2020
TCA	ORA050	Etc (Rte 241/261/133) (Rte 91 To I-5/Jamboree) Existing 2 M/F Ea.Dir, 2 Add"L M/F In Ea. Dir, Plus Climb And Aux Lns As Req, By 2020 Per SCAG/TCA MOU 4/05/01.	12/31/2020

TCA	ORA051	(FTC-N) (Oso Pkwy To Etc) (13mi) Existing 2 Mf In Ea. Dir, 2 Additional M/F Lanes, Pls Clmbng & Aux Lans As Req By 2020 Per SCAG/TCA MOU 4/05/01.	12/31/2020
TCA	ORA052	(FTC-S) (I-5 To Oso Pkwy) (15mi) 2 Mf Ea. Dir By 2013; And 1 Additional M/F Ea. Dir. Pls Clmbng & Aux Lanes As Req By 2030 Per SCAG/TCA MOU 4/05/01. #1988	6/15/2030
RIVERSIDE COUNTY			
Riverside County Trans Commission (RCTC)	RIV010212	On Sr91 – Adams To 60/215 IC: Add One HOV Ln In Each Direction, Restripe To Extend 4th Wb Mixed Flow Lane From 60/215 Ic To Central Off-Ramp, Restripe To Extend 5th Wb Mixed Flow Lane From 60/215 Ic To 14th St Off-Ramp, Aux Lns (Madison-Central), Bridge Widening & Replacements, Eb/Wb Braided Ramps, Ic Mod/Reconstruct + Sound/Retaining Walls	8/3/2015
Riverside County Trans Commission (RCTC)	RIV050555	On I-215 (N/O Eucalyptus Ave To N/O Box Springs Rd) & Sr60 (E/O Day St To Sr60/I-215 Jct): Reconstruct Jct To Provide 2 HOV Direct Connector Lns (Sr60 Pm: 12.21 To 13.6) And Minor Widening To Box Springs Rd From 2 To 4 Through Lanes Between Morton Rd And Box Springs Rd/Fair Isle Dr IC (Ea: 449311)	4/29/2013
Riverside County Trans Commission (RCTC)	RIV051201	In Corona – Continue The Implementation Of A 60 Space Park-And-Ride Lot (Via Annual Lease Agreement) At Living Truth Christian Fellowship At 1114 W. Ontario Ave.	6/30/2013
Riverside County Trans Commission (RCTC)	RIV070303	On Sr60 In Nw Riv Co: Continue The Implementation Of The Expanded Sr60 Freeway Service Patrol (FSP) (Beat #7 Patrol , 2 Trucks) Between Milliken Ave & Main St (Sr60 HOV Ln Change TCM Substitution Project)	On Going TCM Program In Riverside County
Riverside County Trans Commission (RCTC)	RIV070304	On I-215 In Sw Riv Co: Continue The Implementation Of I-215 Freeway Service Patrol (FSP) (Beat #19, 2 Trucks) Between Sr74/4th St And Alessandro Blvd (Sr60 HOV Lane Change TCM Substitution Project)	On-Going TCM Program In Riverside County
Riverside County Trans Commission (RCTC)	RIV070307	On Sr60 In Moreno Valley: Continue The Implementation Of Sr60 Freeway Service Patrol (FSP) (Beat #8, 2 Trucks) Between Day St And Redlands Blvd (Sr60 HOV Lane Change TCM Substitution Project)	On-Going TCM Program In Riverside County
Riverside County Trans	RIV520109	Reconstruct & Upgrade San Jacinto Branch Line For Rail Passenger Service	2014

Commission (RCTC)		(Riverside To Perris) (Perris Valley Line) (Fy 07 5307) (Uza: Riv-San)	
Riverside County Trans Commission (RCTC)	RIV520111	Regional Rideshare – Continuing Program.	On-Going TCM Program In Riverside County
Riverside Transit Agency	RIV041030	In The City Of Hemet – Construct New Hemet Transit Center (With Approximately 4 Bus Bays) At 700 Scaramella Cr., Hemet, Ca (5309c Fy 04 + 05 Earmarks).	6/30/2013
Riverside Transit Agency	RIV050553	In Temecula – Construct New Temecula Transit Center At 27199 Jefferson Ave. (SW Of Jefferson Ave & Se Of Cherry St) (04, 05, 06, 07, E-2006-091, E-2007-0131, & 2008-Busp-0131, SAFETEA-Lu).	12/30/2014
Riverside Transit Agency	RIV090609	In Western Riverside County For RTA: Install Advance Traveler Information Systems (ATIS) On Various Fixed Route Vehicles And Installation Of Electronic Message Signs At Approx. 60 Bus Stops (Fy „S 05, 07, 08, 09, And 10 – 5309).	12/30/2012
Temecula	RIV62029	At Hwy 79 So And La Paz St: Acquire Land, Design And Construct Park-And-Ride Lot – 250 Spaces (Fy 05 Hr4818 Earmark)	12/31/2015
SAN BERNARDINO COUNTY			
OmniTrans	981118	Bus System – Passenger Facilities: Design And Building Of Ontario Transcenter	5/31/2012
Rialto	200450	Rialto Metrolink Station – Increase Parking Spaces From 225-775	12/1/2012
SANBAG	200074	Lump Sum – Transportation Enhancement Activities Projects For San Bernardino County-Bike/Ped Projects (Projects Consistent W/40cfr Part 93.126,127,128, Exempt Table 2 & 3).	12/1/2015
SANBAG	20040827	Rideshare Program For South Coast Air District	12/1/2015
Various Agencies	713	I-215 Corridor North – In San Bernardino, On I-215 From Rte 10 To Rte 210 – Add 2 HOV & 2 Mixed Flow Lns (1 In Ea. Dir.) And Operational Imp Including Aux Lanes And Braided Ramp	9/1/2013

**APPENDIX B (OF THE FINAL PROGRAM EIR FOR THE 2012
AQMP)**

**COMMENTS AND RESPONSES TO COMMENTS ON THE
JUNE 28, 2012 NOTICE OF PREPARATION / INITIAL STUDY**

1-1

Initial Comments on Draft Program EIR for the 2012 AQMP - Message (HTML)

Message

Reply
 Reply to All
 Forward
 Delete
 Move to Folder
 Create Rule
 Other Actions
 Block Sender
 Not Junk
 Safe Lists
 Categorize
 Follow Up
 Mark as Unread
 Find
 Related
 Select
 Find

You forwarded this message on 7/19/2012 12:50 PM.

From: Joe Yost [JYost@cspa.org] Sent: Thu 7/19/2012 6:33 AM
 To: CEQA_Admin
 Cc: lmurchis@arb.ca.gov; kkarpero@arb.ca.gov; ctakemot@arb.ca.gov; nelson@randletnelsonmadden.com
 Subject: Initial Comments on Draft Program EIR for the 2012 AQMP

Message | CSPA Initial Comments on SCAQMD Draft Program EIR for 2012 AQMP.pdf

Dear Dr. Smith:

The Consumer Specialty Products Association (CSPA) appreciates the opportunity to offer initial comments on the South Coast Air Quality Management District's Draft Program Environmental Impact Report for the 2012 Air Quality Management Plan. CSPA will submit comments at a later date on the recently issued draft AQMP.

Respectfully submitted,

D. Douglas Fratz
 Vice President, Scientific & Technical Affairs

Joseph T. Yost
 Senior Director, Strategic Issues Advocacy

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July 19, 2012

via e-mail

Steve Smith, Ph.D.
Program Supervisor
Planning, Rules, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182
ceqa_admin@aqmd.gov

Subject: Initial Study for the Draft Program Environmental Impact Report for: 2012 Air Quality Management Plan (AQMP)

Dear Dr. Smith:

- 1-2 { The Consumer Specialty Products Association (CSPA)¹ appreciates the opportunity to offer initial comments on the South Coast Air Quality Management District's ("South Coast's" or "AQMD's") Draft Program Environmental Impact Report (Program EIR) for the 2012 Air Quality Management Plan (AQMP), which was issued for comment on June 28, 2012.² In these initial comments, CSPA will focus on the draft Program EIR, and related available documents, and the Stationary Source Control Measures for Coatings and Solvents numbered CTS-1, CTS-02, CTS-03, and CTS-04.³
- 1-3 { CSPA strongly objects to the inclusion of these measures in the AQMP, and urges that the measures not be included in the final 2012 AQMP. We will submit comments at a later date on the draft AQMP and its other components (these documents were issued to the public on July 17, 2012).⁴
- 1-4 { CSPA and the consumer products industry has worked cooperatively with the California Air Resources Board (ARB) for nearly 25 years to develop numerous regulations controlling the emissions of volatile organic compounds (VOCs) from the use of our products. These regulations to date have obtained more than 50% reductions in VOC emissions from our

¹ CSPA is a voluntary, non-profit national trade association representing approximately 240 companies engaged in the manufacture, formulation, distribution, and sale of products for household, institutional, commercial and industrial use. CSPA member companies' wide range of products includes home, lawn and garden pesticides, antimicrobial products, air care products, automotive specialty products, detergents and cleaning products, polishes and floor maintenance products, and various types of aerosol products. Through its product stewardship program Product Care[®], and scientific and business-to-business endeavors, CSPA provides its members a platform to effectively address issues regarding the health, safety, sustainability and environmental impacts of their products.

² The Initial Study for Draft Program Environmental Impact Report for 2012 Air Quality Management Plan is posted at: http://www.aqmd.gov/ceqa/documents/2012/aqmd/NOP-IS/2012_AQMP_NOP_IS.pdf

³ Draft Program EIR at p. I - 11.

⁴ The 2012 AQMP and related documents are posted on the South Coast website at: <http://www.aqmd.gov/aqmp/2012aqmp/>.

1667 K Street NW, Suite 300 | Washington, DC 20006 | www.cspa.org | 202-872-8110

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1-4
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products while maintaining the ability of our products to provide the significant environmental, public health and safety benefits that consumers require and expect. We believe that this is a very significant accomplishment for both our industry and the ARB, and continue in our commitment to assure that consumer products provide maximum benefits and minimal impacts in California and elsewhere.

However, CSPA is extremely concerned to see that South Coast is proposing to include further reductions in VOCs from consumer products in this AQMP that are neither necessary nor cost effective, as well as being technologically and commercially infeasible. There are significant scientific data showing that further VOC reductions for consumer products are not effective or necessary for ozone attainment in the South Coast Air Basin. It is especially unwarranted to include CTS-4 which targets Low Vapor Pressure compounds (LVPs), since scientific studies clearly show that the small percentage of these compounds that are even capable of being in the vapor phase have very limited atmospheric availability and primarily have other environmental fates that do not involve tropospheric photochemistry.

The four control measures potentially impacting consumer products are listed in Table 1-2 under Coatings and Solvents as follows:

- CTS-01 Further VOC Reductions from Architectural Coatings (R1113) [VOC]
- CTS-02 Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]
- CTS-03 Further VOC Reductions from Mold Release Products [VOC]
- CTS-04 Further VOC Reductions from Consumer Products [VOC]

In the following sections, we will describe the scientific, legal and policy reasons why these four VOC reduction measures cannot and should not be included in the AQMP or the California State Implementation Plan (SIP).

I. The Four CTS Measures Being Proposed Are Neither Effective Nor Necessary for Ozone Attainment.

CSPA strongly believes that the scientific and technical evidence clearly demonstrates that none of the four Coatings and Solvents control measures would be effective in reducing ozone formation and attaining ozone air quality standards.

1-5

A. The AQMD's Initial Attainment Modeling for the AQMP Clearly Shows that the South Coast Air Basin is NOx-Limited and Insensitive to Additional VOC Reductions.

At the June 14th meetings of the South Coast AQMP Advisory Group and Scientific, Technical & Modeling Peer Review Advisory Group, Joe Cassmassi provided updates on preliminary air quality modeling for the AQMP.⁵ These updates included numerous ozone isopleth graphs showing the combinations of nitrogen oxides (NOx) and VOC reductions needed to attain a

⁵ South Coast Scientific, Technical & Modeling Peer Review Advisory Group Meeting #8 for 2012 AQMP (June 14, 2012). See Agenda Item #3 "Update on Technical Analysis and 2008 Ozone Modeling Performance/Carrying Capacity" by Joe Cassmassi, and Sang Mi Lee. The document is posted on South Coast's website at: http://www.aqmd.gov/gb_comit/stmpradvgrp/2012AQMP/meetings/2012/jun14/Item3.pdf

CSPA Initial Comments on Draft Program EIR for the 2012 AQMP
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1-5
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even ozone standard overall and in various locations in the South Coast air basin. In every sector, the isopleths for attaining a 75 ppb ozone standard were “flatlined” and showed essentially the same NOx reduction being needed for attainment no matter what reductions were made in VOCs. The isopleths were especially consistent at VOC reduction levels between 0% and 50%. For lower ozone isopleths, the “flatline” extends all the way to 100% VOC reduction; in other words, no amount of VOC reductions will have any impact on ozone levels.

These modeling runs provide clear scientific evidence that the South Coast Air Basin is now largely NOx-limited, and is moving toward more completely NOx-limited conditions as NOx reductions allow lower and lower ozone levels to be attained. VOC reductions are therefore not an effective tool in seeking ozone attainment in the region.

We urge South Coast to include sensitivity modeling runs for all of the control measures (or groups thereof) proposed for inclusion in the AQMP. CSPA strongly believes that such runs will clearly demonstrate that many, if not all, of the VOC reduction strategies being proposed are ineffective and unnecessary.

B. Air Modeling from 2007 Also Clearly Show that Further Reductions in Consumer Products Are Not Needed.

Subsequent to the 1994 California SIP revision, CSPA and other consumer product industry associations conducted a study to assess the sensitivity of ozone in the South Coast and Sacramento Air Basins to consumer product VOC emissions. Our 1997 attainment remodeling study was conducted under 2010 attainment conditions that remained sensitive to overall VOC emissions. Therefore, the results of that 1997 study demonstrated that even under VOC-limited conditions where ozone formation was sensitive to overall VOC levels, ozone formation was *not* sensitive to consumer product VOC emissions.

1-6

The attainment demonstration modeling for the 2007 SIP and South Coast AQMP, on the other hand, was under atmospheric conditions that were far more NOx-limited, and far less sensitive to overall VOC emissions. We therefore had reason to expect that consumer product VOC emissions should have even less relative impact on ozone attainment in this 2023 attainment scenario than in our earlier study. To determine whether this was indeed the case, CSPA contracted in 2007 with Sierra Research and Environ to conduct a remodeling study, co-funded by CSPA and eight other national consumer product industry associations, to determine the ozone sensitivity of consumer product VOC emissions in the South Coast Air Basin in 2023, and determine what level of emission reductions might actually be necessary. The remodeling study was completed after the adoption of the 2007 AQMP, but prior to the adoption of the 2007 California SIP. The final report from the study, “Assessment of the Need for Long-Term Reduction in Consumer Product Emissions in the South Coast Air Basin”⁶ was submitted as part of the record for the 2007 SIP.

The results of the 2007 Sierra Research study clearly demonstrated that ozone attainment status in the South Coast Air Basin would not be impacted in 2023 if no further reductions in consumer product VOC emissions are made after 2014. The data show that the 50 tons per day of additional statewide consumer products VOC emissions reductions suggested in the South Coast

⁶ Sierra Research Report No. SR2007-09-03, September 12, 2007.

CSPA Initial Comments on Draft Program EIR for the 2012 AQMP
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- 1-6
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 Econ
- AQMP would have no impact on ozone attainment anywhere in the South Coast Air Basin. These VOC emission reductions would likely cost the consumer products industry more than \$1 billion just to determine their feasibility, despite not being necessary for ozone attainment. Clearly those control measures were neither effective nor cost-effective.
- CSPA continues to believe that the results of these types of source-sensitivity studies provide important information to support the development of effective ozone attainment strategies. It is important that the control measures in the SIP be focused primarily on those emissions sources that play a significant role in ozone non-attainment in the South Coast and other non-attainment districts.
- C. The Vision for Clear Air Modeling Provides Further Evidence that NOx Reduction Is the Key to Clean Air in California.
- 1-7
- Concurrent with the development of the proposed 2012 AQMP, South Coast has been working with the ARB and the San Joaquin Valley Unified Air Pollution Control District (San Joaquin Valley) on a long-term plan for air quality and climate management entitled, "Vision for Clean Air: a Framework for Air Quality and Climate Planning." A public review draft of that plan was released last month.⁷ This longer-term plan, extending to 2050 and beyond, uses a fundamentally different modeling tool based on the Argonne National Laboratory Vision 2011 Model, but clearly comes to the same conclusion: NOx reductions are key to California's Clean Air future for both the South Coast and San Joaquin Valley Air Basins. VOCs are not even mentioned in the 40-page document, and the only mention of "reactive organic gases" is to confirm that the modeling tool used is able to forecast both ROG and NOx. In contrast, the term "NOx" is mentioned a total of 72 times and the document includes extensive discussions about the reduction levels needed to achieve attainment with applicable state and federal ozone standards.⁸
- 1-8
- It is also important to note that the new transportation, fuel and energy sector technologies that the Vision for Clean Air projects as necessary for clean air and climate change mitigation would also result in significant reductions in VOCs as well as NOx from those sources. In general, these sources of VOCs have much higher photochemical reactivity than emissions from consumer products, and therefore will provide more than adequate VOC reductions as a side benefit to the NOx reductions needed for ozone and particulate matter standards attainment. These factors provide more evidence that further VOC reductions from consumer products are not necessary or cost-effective, and should not be included in the 2012 AQMP.
- 1-9
- D. Scientific Studies and Analyses Clearly Show that LVPs Have Minimal Impacts on VOC Emissions and Ozone Formation.
- The draft Program EIR description of CTS-04 states that, "Recent testing has shown that low vapor pressure (LVP) solvents readily evaporate and are available to contribute to ozone

⁷ "Vision for Clean Air: a Framework for Air Quality and Climate Planning," Public Review Draft (June 27, 2012). (Hereinafter referred to as "the Vision for Clean Air.") The full text of the document is posted on the ARB's website at: http://www.arb.ca.gov/planning/vision/docs/Vision_for_Clean_Air_Public_Review_Draft.pdf

⁸ The 53-page appendix to Visions for Clean Air has only one mention of VOCs in relation to diesel engine after-treatment systems, on page 31. The text of this document is posted on the ARB website at: http://www.arb.ca.gov/planning/vision/docs/Vision_for_Clean_Air_Appendix_Public_Review_Draft.pdf

CSPA Initial Comments on Draft Program EIR for the 2012 AQMP

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formation.”⁹ No further information is cited regarding what “recent testing” has occurred, but we believe that there has been substantial research over the past two decades to show that neither of these allegations is true.

LVP compounds are defined in the ARB Consumer Products Regulation as organic materials with vapor pressures less than 0.1 mm Hg at 20 degrees C.¹⁰ These materials range in volatility (ability to enter the vapor phase) from totally non-volatile (incapable of being in the vapor phase at ambient temperatures and pressures) to semi-volatile (capable of temporary existence in the vapor phase at ambient temperatures and pressures).¹¹ This does not mean, however, that even the most volatile LVPs should be considered to “readily evaporate” and certainly does not mean that they “are available to contribute to ozone formation.” Indeed, they are quite resistant to spending significant time in the vapor phase, and can be shown to have very limited availability to be involved in the photochemistry of stratospheric ozone formation.

CSPA and other government and academic partners first began to investigate the environmental fate and atmospheric availability of low volatility organics in 1999 within the Reactivity Research Working Group (RRWG) effort that was soon to be brought under the aegis of NARSTO.¹² The goal of the work was to see if reactivity scales (such as the Maximum Incremental Reactivity scale) and air quality modeling (such as the Urban Airshed Model) could be made to consider the limited vapor-phase availability and alternative environmental fates of organic materials that attenuate their ability to participate in the photochemical reactions that lead to ozone formation. Both the smog chambers where incremental reactivity is assessed, and the computer models used for ozone attainment planning, fail to consider the partitioning of materials between environmental compartments (air, water, soil, vegetation, sediment, etc.) and the various removal mechanisms for materials from the vapor phase (wet deposition, dry deposition, diffusion/adsorption, dissolution, etc.).

The early RRWG efforts culminated in a June 2000 Workshop on Combining Environmental Fate and Air Quality Modeling¹³ at the U.S. Environmental Protection Agency (EPA) in Research Triangle Park, NC, which focused on using fugacity modeling (also known as intermedia transport modeling) such as that recently developed by Dr. Mackay to determine the fate and availability of organic emissions. The work by various scientists demonstrated that standard smog chamber and computer modeling overestimated the ozone formation potential of many organic gases, especially those of low volatility or other factors showing high affinity for removal from the vapor phase.

As an example of that early work, fugacity modeling for 2-butoxyethanol (a water-soluble VOC solvent with vapor pressure between 0.1 mm and 1.0 mm, and therefore of low volatility but not

⁹ Draft Program EIR at p. I – 15.

¹⁰ 17 CCR § 94508(a)(98).

¹¹ At higher temperatures and/or lower pressures, of course, the ability of a given material to remain in the vapor phase increases. Ambient temperatures and pressures, however, are in a relatively very narrow range.

¹² RRWG participants included scientists from the U.S. Environmental Protection Agency, California Air Resources Board, various other state agencies, numerous academics from California and other major universities, and industry scientists from CSPA, the American Chemistry Council, and many other associations. RRWG was active from the late-1990s through the mid-2000s.

¹³ A Final Proceedings to the Workshop was released in January, 2001.

1-9
Cont.

CSPA Initial Comments on Draft Program EIR for the 2012 AQMP
 July 19, 2012
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1-9
 Cont. { an LVP) demonstrated that even for air emissions, only 30% remained in the ambient air long enough to participate in photochemistry; most was removed to other media (water and soil where it was readily biodegraded). If emitted to water not air, virtually none reached ambient air. For a highly volatile organic such as acetone, 96% stayed in ambient air. For the LVP compounds, the range was between 9% and 0% in these initial studies. It was indeed found that if availability were considered along with reactivity, LVPs and some of the lower-volatility VOCs have lower ozone formation potential than acetone, which is VOC exempted as negligibly reactive.

Continued efforts on fate and availability resulted in a 2004 study designed by various RRWG participants and funded by one participant, entitled "Integration of Air Quality and Environmental Multimedia Modeling Task 3.2" by SENES Consultants Limited (Richmond Hill, Ontario, Canada). The 96-page report on this significant study concludes that multimedia dispersion modeling could be used to estimate actual concentrations of emissions in ambient air, which is not done in current air quality modeling.

More recent discussions occurred a few years ago in the newer Reactivity Implementation Working Group (RIWG) have sought to continue work to provide easier mechanisms to take into account the vast differences in relative ozone impacts between various emissions in terms of photochemical reactivity, alternative environmental fates, atmospheric availability and other factors. While further work is needed in this area, it would clearly be unproductive to target LVP compounds for reductions in this AQMP when the use of those compounds serves to lower ozone impacts significantly when compared to high reactivity, high volatility, and high-atmospheric-availability alternatives.

1-10 { Under applicable California law, the state implementation plan for the air basin "...shall only include those provisions necessary to meet the requirements of the [federal] Clean Air Act (42 U.S.C. Sec. 7401 et seq.)."¹⁴ For reasons stated above, it is clear that Control Measure CTS-04, which is aimed at requiring ARB to remove the LVP exemption from the Consumer Products Regulation, is not necessary, and is indeed counterproductive for ozone attainment. Therefore, Control Measure CTS-04 must not be included in the final 2012 AQMP.

II. Summary and Conclusions

1-11 { CSPA appreciates the opportunity to comment on the Initial Study for the Draft Program Environmental Impact Report for: 2012 Air Quality Management Plan (AQMP). We support South Coast's goal to provide healthy air quality in California. However, the consumer product measures in this proposed AQMP that commit to further reductions of VOC emissions for consumer products are neither necessary nor feasible, and would harm the consumers and businesses in the state who rely on our products to help provide a clean and healthy environment in which to live and work.

1-12 { In these comments, we have shown that further VOC reductions from consumer products or other low-reactivity sources are not needed for ozone attainment. In addition, we have shown that reducing LVP materials in consumer products would have little or no impact in VOC emissions and ozone formation. The control measures impacting consumer products noted in the

¹⁴ Cal. Health & Safety Code § 40460(d).

CSPA Initial Comments on Draft Program EIR for the 2012 AQMP

July 19, 2012

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1-12
Cont.

draft EIR to the 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the final 2012 AQMP.

1-13

CSPA and the consumer products industry take seriously the environmental health and safety benefits of its products, and continuously seek to improve them. Thus, the consumer specialty products industry worked constructively and cooperatively with ARB staff for nearly 25 years to lower VOC content in consumer products in California. We plan to continue to work in a cooperative manner to improve air quality in California while maintaining our industry's ability to supply effective products that consumers can rely upon to contribute positively to their health, safety, and quality of life.

If you have any questions, please contact us at (202) 872-8110.

Respectfully submitted,



D. Douglas Fratz
Vice President, Scientific & Technical Affairs



Joseph T. Yost
Senior Director, Strategic Issues Advocacy

cc: Linda C. Murchison, Ph.D., Air Resources Board
Kurt Karperos, P.E., Air Resources Board
Carla D. Takemoto, Air Resources Board
CSPA Air Quality Special Committee and Task Forces
Laurie E. Nelson, Randlett Nelson Madden Associates

Responses to Comment Letter #1
Consumer Specialty Products Association (CSPA) – Joe Yost (7/19/12)

- 1-1 This comment notifies the SCAQMD that a comment letter is attached. No further response is necessary.
- 1-2 This comment notifies the SCAQMD that the comments contained in the letter pertain to the Initial Study for the Draft Program EIR for the 2012 AQMP. No further response is necessary.
- 1-3 This comment is a general comment opposing including control measure CTS-04 in the 2012. Given the proximity of the attainment dates with respect to both the federal PM 2.5 and 8-hour ozone standards, the inclusion of CTS-01, CTS-02, CTS-03 and CTS-04 in the 2012 AQMP represent a modest but very important commitment to ensure continuity in achieving reductions on all PM 2.5 precursors and the region's efforts towards achieving the 8-hour ozone standard, by minimizing ozone exposure and especially during the interim years, until a more comprehensive 8-hour ozone attainment strategy is developed. See also Response to comment 1-4 for a comprehensive response to this.
- 1-4 SCAQMD staff appreciate the efforts and partnership with CARB to date to reduce VOC emissions by 50 percent; however, SCAQMD staff is concerned that reformulation of products by substituting low vapor pressure volatile organic compounds (LVP-VOC) for other solvents considered to be VOCs may not achieve the ozone reduction benefits anticipated by the Consumer Products Regulation (CPR), considering the increasing use of LVP-VOCs used in formulations to comply with the CPR, as well as their relative evaporation under ambient conditions and Maximum Increment Reactivity (MIR) values that are much higher than ethane's MIR value.

SCAQMD staff research indicates that estimated cost effectiveness of the proposed control measures are within the range of acceptability for previously adopted SCAQMD VOC rules. Please note that the estimated cost effectiveness figures are conservative estimates and likely overstate the actual costs as the California Department of General Services' "Green Building Initiative" concludes that, "Environmentally preferred cleaners are generally competitively. This includes the purchase price of the product, the cost of meeting regulations for worker safety and environmental rules, and the costs of disposal for leftover product." As an example, the City of Santa Monica reported spending five percent less on its cleaning products costs when it switched from conventional cleaners to less toxic brands a decade ago.¹

CTS-01 and CTS-03 do not impact Consumer Products. Portions of CTS-02 (e.g., Adhesives and Sealants and Metalworking Fluids/Lubricants) may impact some products also regulated under the CPR to the extent they are utilized in a manufacturing or commercial setting?

¹ U.S. Environmental Protection Agency, Environmentally Preferable Purchasing Program, *The City of Santa Monica's Environmental Purchasing: A Case Study*, EPA742-R-98-001, March 1998; www.epa.gov/epp/pubs/case/santa.pdf.

CTS-02 is aimed at investigating and implementing as appropriate all feasible measures, which include control measure implemented by other air pollution control agencies, including state air pollution control districts and federal control techniques guidelines. Adoption and implementation by other agencies indicates that such measures have been evaluated for technological feasibility and cost-effectiveness, and the SCAQMD is obligated to investigate the applicability to the region. Further, this proposed control measure focuses on technological advancements in low-VOC products that are covered by a gamut of coatings and solvents rules, adhesives/sealants, as well as metalworking fluids/lubricant rules.

CTS-03 is aimed at investigating and implementing as appropriate lower VOC Mold Release Product alternatives. This control measure focuses on stationary sources that utilize mold release agents during manufacturing and some area sources.

CTS-04 represents potentially one of the largest VOC emission source categories. VOC emissions from consumer products are projected in 2020 to be the largest source of emissions in the district exceeding light duty passenger vehicles and dwarfing emissions from stationary sources such as coatings and petroleum marketing. As such, it is incumbent on the SCAQMD to investigate all areas for potential emission reductions, including evaluation of any existing regulatory exemptions or exclusions. {We could include the Top Ten Emitting Categories in the South Coast Air Basin In 2010 and 2020 from the CARB CPR staff report to illustrate }

Current emissions inventory and photochemical air quality models include speciation profiles that account for total organic gases (TOGs), including reactive compounds, unreactive and exempt compounds, as well as LVP-VOC compounds. Model results for ozone non-attainment areas have demonstrated that even compounds with low photochemical reactivity or LVP-VOCs contribute to photochemical ozone formation and not including these would compromise the ozone attainment demonstrations. Further, these models do not include “Atmospheric Availability” or “Environmental Fate” concepts. SCAQMD staff will continue to work with U.S. EPA and CARB staff on updating the ozone models, especially as additional peer-reviewed fugacity studies justify incorporation into these predictive models.

Because substitution of traditional VOC containing materials indicates an increased use of LVP-VOCs, a review of the specific and extent of LVP-VOCs utilized and the associated applications is required to ensure that VOC emission reductions and ozone reduction benefits are maintained as originally intended. Following an internal study that indicates that some LVP-VOCs can evaporate nearly as rapidly as other VOC materials, SCAQMD staff believes that additional review of specific materials and applications and the associated LVP-VOC qualification criteria may help identify air quality improvement opportunities.

The proposed control measure is intended to study the air quality improvement potential for replacing LVP-VOC containing compositions with alternative low VOC formulations. The SCAQMD, through the implementation of the Clean Air Cleaners Program and Rule 1143 – Consumer Paint Thinners and Multi-Purpose Solvents, has identified alternative low-VOC, cost-effective technologies that are currently commercially available and used that do not rely upon the LVP-VOC exemption. The proposed control measure may

- involve eliminating or amending the CARB LVP-VOC criteria based on scientific data, which may include MIR and similar photochemical reactivity parameters. Consultation with external stakeholders including technical experts as well as manufacturers, end users and other concerned interests is expected during the rule development process to ensure overall efforts are feasible, productive and cost-effective.
- 1-5 The overall control strategy for the 2012 AQMP is designed to meet applicable federal and state requirements. While the 2012 AQMP focuses on PM reductions to attain the federal 24-hour PM_{2.5} standard by 2014, the Plan also includes ozone reduction strategies to make expeditious progress in attaining the state one-hour and eight-hour standards and the federal eight-hour ozone standards. Although the ozone strategy focuses primarily on NO_x reductions, VOC emission reductions are also needed to reduce ozone exposure, especially in the western portions of the Basin. As shown in the NO_x/VOC isopleths in Appendix V of the Draft 2012 AQMP, VOC reductions help to achieve attainment of the ozone standards at all the air quality monitoring stations. As such, a nominal amount of VOC reductions are proposed in the Draft Plan. The proposed VOC control measures in the Draft 2012 AQMP are based on implementing all feasible control measures through the application of available technologies and management practices and to seek a fair share reduction from both mobile and stationary sources. As zero or near-zero technologies are implemented for mobile sources to reduce NO_x emissions, concurrent VOC reductions are expected, contributing to their fair share of reductions.
- 1-6 The Draft 2012 mobile source emissions inventory reflects the changes from CARB's 2010 rulemaking, which have resulted in a different baseline VOC/NO_x ratio. The resulting precursor mix has increased ozone forming potential, particularly near source areas. As briefly discussed in the response to comment 1-5, the Draft 2012 baseline emissions inventory indicates that the Basin VOC/NO_x ratio will increase steadily with time. Given the non-linearity of ozone formation, localized ozone concentrations will increase regionally before sharply decreasing as NO_x emissions are reduced. As stated in the comment, for projected future concentrations near the 2006 federal eight-hour ozone standard, the reduction of ozone is mainly driven by NO_x controls. However, the cross-over between ozone formation and loss is dependent upon both the magnitude of the ozone observed concentration and location along the transport path dependent. While the implementation of NO_x controls needed to attain the eight-hour standard are projected to begin in the early 2020's, additional VOC short-term controls implemented prior to 2020 will help lower ozone concentrations in and downwind of the metropolitan emissions source areas such as the San Gabriel Valley.
- 1-7 While the commenter correctly identifies NO_x reductions as the focus of the Vision document it is important to note that the proposed strategy discussed in the Vision document is targeting levels of ozone at and beyond the new federal eight-hour ozone standard attainment level of 75 ppb. As stated in the response to comments 1-5 and 1-6 limited VOC reductions will be beneficial to the reduction of ozone in the western portion of the Basin in the interim years before the full impact of the NO_x "heavy" strategy becomes effective.
- 1-8 The SCAQMD recognizes and accounts for the so-called side benefit of VOC reductions associated with enacting control measures that primarily focused on other pollutants such

as NOx. However, the 2012 AQMP takes into account reductions in all areas and from all measures and does not overweight VOC reductions from targeted VOC control measures. The AQMP analysis concludes that the collective VOC reductions from all measures are necessary in the SCAQMD's efforts to attain and maintain air quality standards. See also response to Comment #1-4.

- 1-9 The quoted text is a summary of the background description which states that "...Further testing indicated that many of the LVP-VOC solvent evaporate nearly as quickly as the traditional solvents they were meant to replace and have Maximum Incremental Reactivity (MIR) values well above the threshold considered to be non-reactive, currently based on ethane." The statement in the Proposed Method of Control section of the control measure has been updated to indicate that not all qualifying LVP-VOC solvents readily evaporate and are available to contribute to ozone formation. The testing is a result of an internal study over a six month period culminating in the presentation entitled "Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds" provided by SCAQMD staff at the 2012 Air and Waste Management Association conference earlier this year. While the study found widely used LVP-VOC solvents to evaporate in timeframes similar to traditional VOC solvents, it also notes that some LVP-VOC solvents do not readily volatilize in ambient conditions. In the near future, SCAQMD staff plans to publish a more detailed technical paper summarizing the evaporation study.

The SCAQMD's experience with Rule 1143 – Consumer Paint Thinners and Multi-Purpose Solvents has demonstrated that LVP-VOC solvents are not needed to meet lower VOC thresholds in the consumer products arena—in the case of Rule 1143, 25 grams per liter VOC. Under Rule 1143, compliant products that use soy, aqueous, and exempt solvents are already available and in use today. Furthermore, CARB does not list any specific LVP-VOCs that can be used for reformulation of paint thinners, and the LVP-VOC exemption was not specifically added to address the paint thinners or multi-purpose solvent categories. However, the LVP-VOC exemption allows manufacturers to relabel their products as General Purpose Degreasers and add up to 100% LVP-VOCs. Further, as a part of developing the Clean Air Cleaners Certification program, staff tested and determined that LVP-VOCs may add up to 50% on average VOCs in formulations of certain industrial and institutional cleaners. Of the 17 products tested, LVP-VOC solvents comprised more than two-thirds of the VOC contribution and five products had more than 80 percent LVP-VOC with the highest containing 98.8% LVP-VOC. Finally, as a result of AQMD's evaluation of semi-volatile materials, most notably the recent development of Rule 1144 – Metalworking Fluids and Direct-Contact Lubricants, it is clear that some of these LVP-VOC solvents do evaporate and therefore are available to react with oxides of nitrogen to form ozone.

The SCAQMD supports a reactivity-based approach to control ozone and in fact has committed staff to study the effects of a reactivity based approach by activity participating in the North American Research Strategy for Tropospheric Ozone (NARSTO) work related to reactivity. AQMD staff also participated in the Reactivity Industry Working Group to assess the toxicity, enforceability, fate and availability, and implementation committees

Current emissions inventory and photochemical air quality models include speciation profiles that account for total organic gases (TOGs), including reactive compounds, unreactive and exempt compounds, as well as LVP-VOC compounds. Model results for ozone non-attainment areas have demonstrated that even compounds with low photochemical reactivity or LVP-VOCs contribute to photochemical ozone formation and not including these would compromise the ozone attainment demonstrations. Further, these models do not include “Atmospheric Availability” or “Environmental Fate” concepts. SCAQMD staff will continue to work with USEPA and CARB staff on updating the ozone models, especially as additional peer-reviewed fugacity studies justify incorporation into these predictive models.

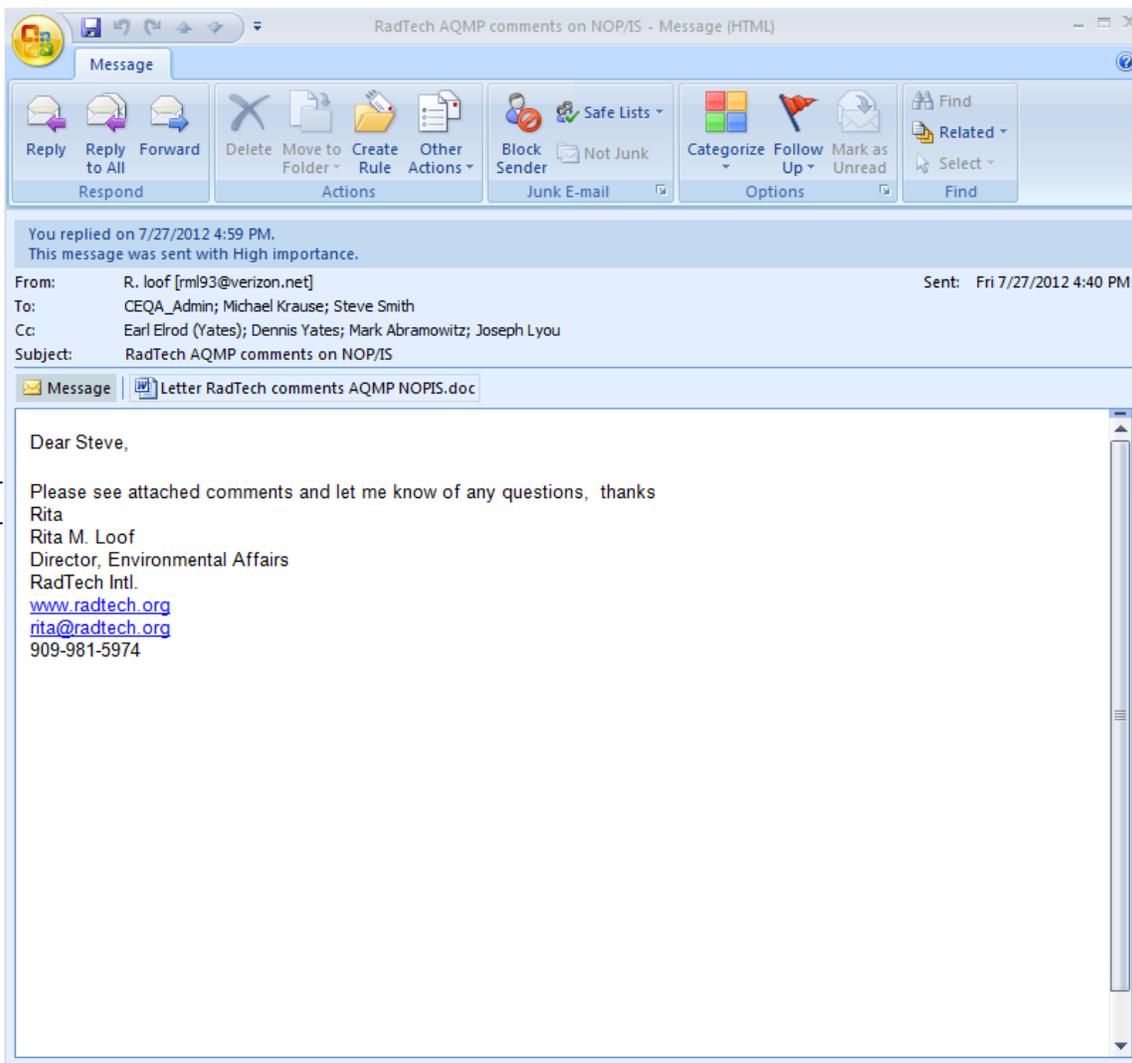
While the SCAQMD study indicates that some LVP solvents do not readily volatilize under tested conditions, the purpose of the proposed control measure is to focus on those specific LVP-VOCs that represent the highest potential contributor to ozone formation based on evaluated volatility, relative MIR value, and overall usage. Addressing CARB qualifying LVP-VOCs in this manner would ensure that only additional air quality improvement gains would be pursued rather than sacrificing any gains from substituting out of any previously used high reactivity, high volatility, and high-atmospheric-availability alternatives.

The SCAQMD looks forward to sharing and working with CSPA in the development of technically feasible and cost-effective strategies towards improving air quality. See also response to Comment # 1-4.

- 1-10 The comment correctly cites the Health and Safety Code provision stating that the SIP for the Basin shall “only include those measures necessary to meet the requirements of the [federal] Clean Air Act...” However, in order to attain either the (revoked) one-hour ozone standard or the 8-hour ozone standard, additional emission reductions of both VOC and NO_x must be obtained. At present, the SIP relies on additional reductions of both VOC and NO_x described in measures authorized under Section 182(e)(5), commonly called the “black box.” Control Measure CTS-04 is intended to obtain additional emission reductions of VOC and reduce reliance on the “black box.” SCAQMD staff disagrees with the conclusion that CTS-04 is not necessary.
- 1-11 Consumer products, despite the significant past emission reduction efforts, represent the largest source of VOC emissions in the South Coast Basin. As pointed out in the control measure, a significant fraction of the emission reductions from this sources category originate from the use of LVP products. Recent studies, however, set in question the efficiency of the LVP products in reducing ozone formation as was originally assumed during the adoption of these programs. While there are no emission reductions associated with this control measure, CTS-04 commits to evaluate the LVP issue and ensure that the emission reduction and ozone reduction benefits assumed in the already adopted consumer regulation do indeed occur. Further, experience with VOC-containing products and solvents used in industrial and commercial settings indicate that further reductions from this source category, without the use of LVPs, are feasible and cost effective. Moreover, VOC emissions remain as a precursor for both PM 2.5 and ozone. And, while the Draft 2012 AQMP, which includes the assumed ozone reduction benefit of the LVP products, identifies NO_x reductions as one of the most effective precursor reduction to rely on for attainment of the 8-hour ozone standard, further reductions on VOC can be

helpful by reducing ozone exposure, especially during the interim years and in certain VOC-limited regions of the South Coast Basin. Further, reductions in VOCs would provide some insurance for the attainment efforts during the outer years and can certainly support the one-hour ozone attainment demonstration efforts. Therefore, for all the reasons stated above, staff believes the inclusion of CTS-04 in the 2012 AQMP is very important.

- 1-12 The comment states that further VOC reductions from consumer products or low-reactivity sources are not needed for ozone attainment. Additionally, the comment states that reducing LVP materials in consumer products would have little or no impact in VOC emissions and ozone formation. Therefore, control measures impacting consumer products noted in the Draft EIR to the 2012 AQMP are not feasible, necessary or cost-effective, and should not be considered for inclusion in the Final 2012 AQMP. The responses provided to Comments 1-4 through 1-9 address the continued need for VOC emission reductions and the significant role the use of consumer products has in the generation of VOC emissions and ozone formation. The Clean Air Choices Cleaner program has nearly 50 different products that do not rely upon LVP-VOC solvents to meet VOC limits. During research conducted to determine to establish the program, staff determined that more than 90 percent of the environmentally preferable cleaning products already on the market meet current standards without relying on the LVP-VOC exemption. These products are cost competitive with those that do contain LVP-VOC solvents. One of the providers of certified cleaners testified before the CA State Assembly in 2008 that the prices of its “green” cleaners are equivalent to its conventional cleaning chemicals. For consumer paint thinners and multi-purpose solvents, compliant alternatives not containing LVP-VOC solvents were less expensive than their 100% LVP-VOC containing counterparts until recently. In the last year, there has been a significant increase in acetone cost and a decrease in LVP-VOC containing consumer paint thinner and multi-purpose solvent cost. Despite the changes in cost, the cost-effectiveness is less than \$2,300 per ton of VOC reduced – comparable to other adopted VOC regulations. Therefore a cost-effectiveness of less than \$10,000 per ton is included in the control measure, considering that some consumer products categories such as consumer paint thinners and multi-purpose solvents may be formulated with more LVP solvents than other categories that may include a smaller portion.
- 1-13 This comment concludes the letter. No further response is necessary.



2-1





July 27, 2012

Mr. Steve Smith Ph.D.
 South Coast Air Quality Management District
 21865 Copley Drive
 Diamond Bar, California 91765

Re: Public comments to Notice of Preparation of a Draft Environmental Impact Report for the 2012 Air Quality Management Plan

Dear Mr. Smith:

2-2

RadTech International is pleased to comment on the proposed Notice of Preparation and Initial Study for the 2012 AQMP. RadTech supports the district's efforts to improve air quality in the Basin without sacrificing a healthy business climate and believes that the implementation of UV/EB technology can help accomplish both goals.

As you know, I am also a member of the district's AQMP advisory committee and have been making comments during those meetings as well. I would like to encourage the district to consider UV/EB technology as one of the many alternatives to achieve clean air standards. The table below gives a picture of the categories where our technology can play a role. A notation is included to differentiate between areas where the technology is currently being used versus areas where the technology is under development but not necessarily commercially available.

2-3

- | | |
|-----------------------------|--|
| Rule 1103 | Pharmaceuticals and Cosmetics Manufacturing Operations CURRENT UV MARKET
<i>(Amended March 12, 1999)</i> |
| Rule 1104 | Wood Flat Stock Coating Operations CURRENT UV MARKET
<i>(Amended August 13, 1999)</i> |
| Rule 1106 | Marine Coating Operations Some UV and developing applications for UV
<i>(Amended January 13, 1995)</i> |
| Rule 1106.1 | Pleasure Craft Coating Operations Some UV and developing applications for UV
<i>(Amended February 12, 1999)</i> |
| Rule 1107 | Coating of Metal Parts and Products Current production using UV and new developing applications for UV
<i>(Amended January 6, 2006)</i> |
| Rule 1113 | Architectural Coatings Small amount of field applied coatings. Suppliers looking at long term solutions.
<i>(Amended June 3, 2011)</i> |

2-3
Cont.

- [Rule 1115](#) Motor Vehicle Assembly Line Coating Operations **Proven and some low intensity UV. Future bright for UV**
(Amended May 12, 1995)
- [Rule 1124](#) Aerospace Assembly and Component Manufacturing Operations **Some UV and developing applications for UV**
(Amended September 21, 2001)
- [Rule 1125](#) Metal Container, Closure, and Coil Coating Operations **Many UV lines and proven technology for 2 piece and 3 piece production lines**

(Amended March 7, 2008)
- [Rule 1126](#) Magnet Wire Coating Operations **Currently UV**
(Amended January 13, 1995)
- [Rule 1128](#) Paper, Fabric, and Film Coating Operations **Currently UV**

(Amended March 8, 1996)
- [Rule 1130](#) Graphic Arts **Currently UV**

(Amended October 8, 1999)
- [Rule 1130.1](#) Screen Printing Operations **Currently UV**
(Amended December 13, 1996)
- [Rule 1131](#) Food Product Manufacturing and Processing Operations **Some UV**
(Adopted June 6, 2003)
- [Rule 1132](#) Further Control of VOC Emissions from High-Emitting Spray Booth Facilities **UV depending on source category**
(Amended May 5, 2006)
- [Rule 1136](#) Wood Products Coatings **Currently UV**
(Amended June 14, 1996)
- [Rule 1142](#) Marine Tank Vessel Operations **No UV but some potential**
(Adopted July 19, 1991)
- [Rule 1145](#) Plastic, Rubber, and Glass Coatings **Currently UV**

(Amended December 4, 2009)
- [Rule 1151](#) Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations **Potential UV**
(Amended December 2, 2005)
- [Rule 1164](#) Semiconductor Manufacturing **Currently UV**

(Amended January 13, 1995)

2-3
Cont.

[Rule 1168](#) **Adhesive and Sealant Applications** **Currently UV**
(Amended January 7, 2005)

[Rule 1169](#) **Hexavalent Chromium - Chrome Plating and Chromic Acid Anodizing**
(Repealed October 9, 1998) **Some UV in the form of replacing the metal with a plastic coatings operation to resemble the look of chrome**

2-4

We commend district staff for proposing incentive programs such as INC-01 and INC-02 that encourage voluntary emission reductions. Unfortunately the current proposal does not make these programs available to stationary sources of VOCs. We urge the district to extend the incentives program to VOC stationary sources.

We have seen voluntary conversions to UV/EB technology, even without regulatory drivers. Typical UV/EB materials have VOC contents of less than 50 grams per liter. In contrast, the typical VOC limits in district rules are in the neighborhood of 300 grams per liter. The sources that have voluntarily converted and are achieving emission reductions above and beyond those required by district rules, get little if any, rewards for going the extra mile. Instead, we see incentive programs focusing on mobile sources while stationary sources are impacted by command and control approaches.

2-5

We appreciate your attention to these issues and look forward to a productive rulemaking effort.

Sincerely

Rita M. Loof
Director, Environmental Affairs

**Responses to Comment Letter #2
RadTech International North America – Rita Loof (7/27/12)**

- 2-1 The email informs the reader that the comments are included as an attachment and that the commenter is available to answer questions about the comment letter. No further response is necessary.
- 2-2 The comment states in the introductory paragraph of the letter that RadTech supports efforts to improve air quality and a healthy business climate and believes that ultraviolet (UV)/electron beam (EB) coating technology can assist with both goals. No further response is necessary.
- 2-3 The comment asks for UV/EB coating technology to be considered as one of the many alternatives to achieve clean air standards in SCAQMD rules including pharmaceutical and cosmetic, coating, adhesive and sealant, and chrome plating and chromic acid anodizing. SCAQMD staff appreciates work done by trade organizations to develop low emission technologies. SCAQMD is neutral on technologies as long as they comply with rule requirements.
- 2-4 The comment states that incentive programs such as control measures INC-01 and INC-02 are not available to stationary sources of VOCs. The comment asks for the incentive programs to be extended to stationary sources of VOCs.

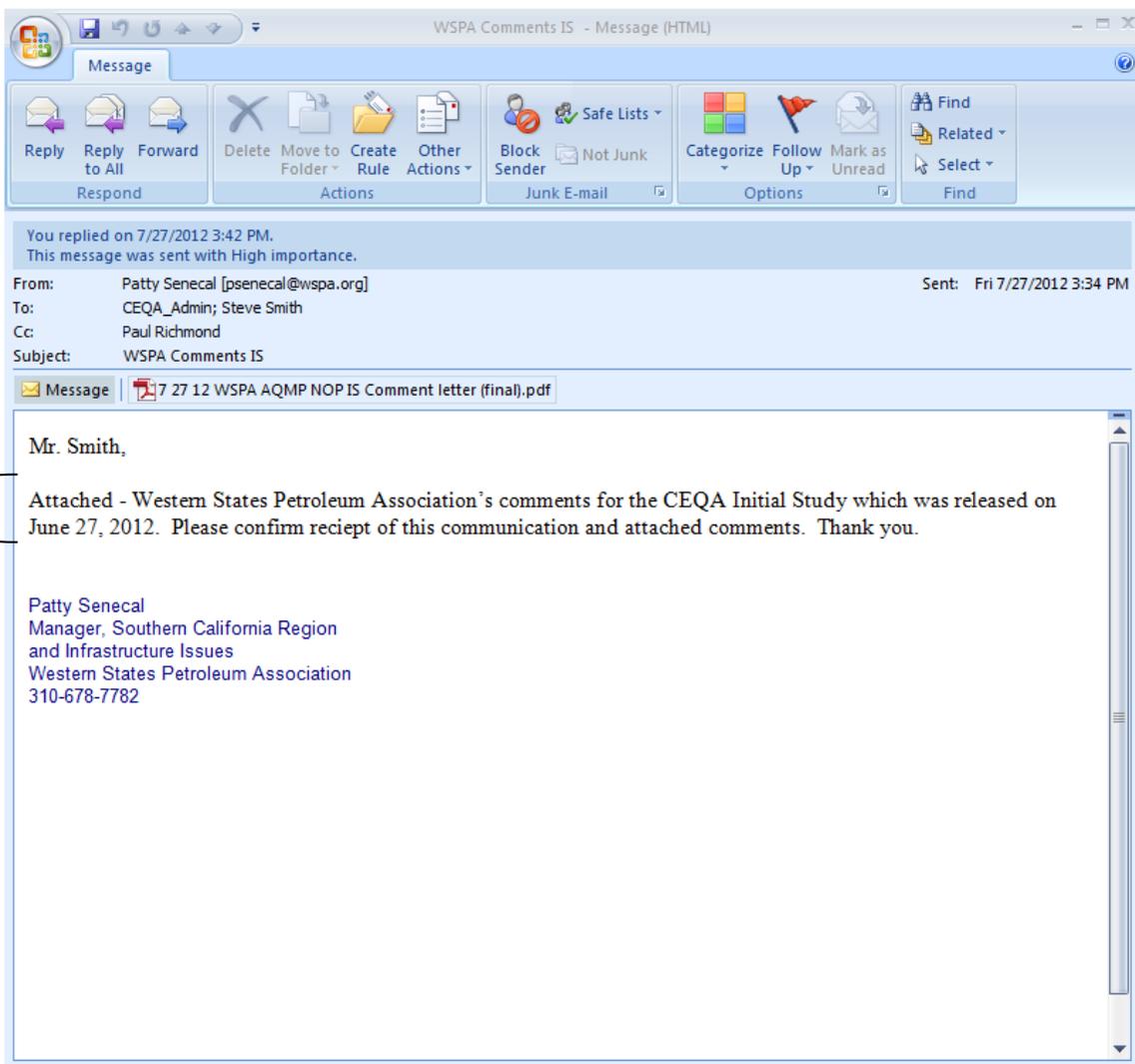
While the region has made great progress in reducing emissions from all sources of pollution, significant more reductions above and beyond to those that have already been achieved or anticipated to be achieved by 2023 are necessary in order for this region to meet the California and federal ambient air quality standards for PM 2.5 and ozone. To reach the percent pollutant reductions levels necessary for attainment, especially for NO_x, the region needs to redouble its pollution reduction efforts and explore avenues that complement its current regulatory efforts and accelerate and catalyze emission reductions in the Basin.

The Carl Moyer program, providing funding to accelerate the fleet turnover of mobile sources, has been extremely successful in reducing emissions above and beyond what is expected from the regulatory program. The purpose of INC-01 is to create a Carl Moyer type program for stationary sources, to accelerate their turnover to newer, less polluting equipment and resulting in greater emission reductions than those anticipated by the current regulatory structure that relies on natural fleet turnover rates. The control measure focuses on NO_x reductions because NO_x happens to be the key precursor of PM 2.5 and ozone that needs to be reduced to levels that far exceed those needed for other precursors. INC-02, on the other hand, seeks to provide incentives for the manufacture of zero and near-zero technologies (stationary or mobile) in our region and, hence, help the region's pollution reduction efforts and its economy through the creation of local manufacturing jobs.

Please note that incentives for the use of ultra-low emission products by stationary sources already exist through "Supercompliant" designation and the associated streamlined recordkeeping under Rule 109, reduced emission fees and flexibility in expanding production by remaining within the facility's permit limits.

- 2-5 No response required. This comment concludes remarks made in the letter and requests the SCAQMD to address the previous comments.

3-1





Western States Petroleum Association

Credible Solutions • Responsive Service • Since 1907

Patty Senecal
Manager, Southern California Region and Infrastructure Issues

VIA ELECTRONIC MAIL
Ceqa_admin@aqmd.gov

July 27, 2012

Steve Smith, Ph.D.
Program Supervisor, CEQA
South Coast Air Quality Management District - CEQA
21865 Copley Drive
Diamond Bar, CA 91765

Dear Dr. Smith:

INITIAL STUDY FOR THE DRAFT PROGRAM EIR FOR THE 2012 AQMP

3-2

Western States Petroleum Association (WSPA) is a non-profit trade association representing twenty- seven companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California, Arizona, Nevada, Oregon, Washington and Hawaii. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that will be impacted by the 2012 Air Quality Management Plan (AQMP) and the rule development that might stem from the final AQMP as adopted by the Governing Board.

3-3

WSPA appreciates the opportunity to submit these comments for the CEQA Initial Study (IS), as released on June 27, 2012. WSPA's comments fall into two general categories, 1) inconsistencies between the descriptions of the draft proposed control measures in the IS compared to the language of the draft control measures¹ themselves, and 2) potentially significant impact areas that have not been identified as candidate areas for study in the Draft Program EIR (DPEIR).

I. Descriptions of the Control Measures in the Initial Study

3-4

WSPA recognizes that the descriptions in the IS of the proposed AQMP control measures might only be intended to paraphrase the control measures themselves, but there are some discrepancies that need to be resolved prior to preparation of the DPEIR. The analysis in the DPEIR needs to be based on the actual language of the control measures. Following, are several examples of the discrepancies that are associated with control measures that are of particular interest to WSPA:

3-5

CMB-01. The IS states that the control measure would seek further reductions in RECLAIM NOx allocations "for the years 2015 through 2017" and "for the years 2017 through 2020" for Phases I and II, respectively. This contradicts the proposed timing in the actual control measure, which is 2014 and 2023 for

¹ Control measures in the Draft AQMP as released by the District on or about July 17, 2012.

- 3-5 Cont. { Phases I and II, respectively. In addition, the description in the IS refers to a BARCT review for Phase I when in fact the current control measure itself potentially involves a "shave" of NOx RTCs from the market but no BARCT review. A BARCT review is only being contemplated for Phase II.
- 3-6 { FUG-02. Whereas the description in the IS states that the purpose of the control measure is to reduce emissions "... by expanding rule applicability... to ... currently exempted facilities ...", the current draft control measure seems to suggest that the potential control measure will first evaluate the potential for further reductions if applicability of Rule 1177 were to be extended. In other words, the extension of Rule 1177 to currently exempt facilities should not necessarily be assumed to be the outcome evaluated in the EIR.
- 3-7 { FUG-03. "Smart" Leak Detection and Repair (Smart-LDAR) is mentioned as a possible option in the description of the control measure in the IS, but the current draft control measure suggests that Smart-LDAR will be an added requirement on top of at least some existing programs.
- { Further, the description in the IS includes consideration of vapor recovery systems whereas there is no such mention in the control measure itself. That is as it should be. LDAR programs and vapor recovery systems are completely separate and distinct topics, and they should not be linked in either a control measure or a future rule that might follow from the control measure.
- 3-8 { MCS-03. The description of the control measure in the IS states that the control measure "... would reduce emissions during equipment startup, shutdown and turnaround." But, the description goes on to say that "Opportunities for further reducing emissions ... potentially exist ..." In WSPA's view, the latter statement is clearly the more appropriate one. As a practical matter, the District believes that it does not have sufficient usable data regarding emissions attributable to startups, shutdowns, or turnarounds and those circumstances are the basis for Phase I of the control measure, which is a data gathering effort.
- 3-9 { **II. Additional Candidate Areas for Study in the Draft Program EIR**
- { WSPA's review of the proposed stationary source control measures in the draft AQMP has led us to the conclusion that there are potentially significant impact areas, which have not been identified in the IS, but that should be evaluated in the DPEIR.
- 3-10 { FUG-01. Further VOC Reductions from Vacuum Trucks. Among the potential methods of control listed in the control measure itself are carbon adsorption and liquid scrubbers. Both of these methods involve the generation of wastes that require proper disposal. Thus, there is a potential impact in the "Solid/Hazardous Waste" category, and that impact needs to be evaluated in the DPEIR.
- 3-11 { MCS-03. Improved Start-up, Shutdown and Turnaround Procedures. Although the control measure itself includes a broad, "catch-all" set of potential requirements, its clear focus is on modifications to refinery operational procedures. In fact, "procedures" are mentioned no less than six times, including the statement in the section titled "Implementing Agency" that, "The District has authority to regulate non-vehicular sources, including to establish procedures ..." (Emphasis added.)
- { The District has not demonstrated any linkage between any type of refinery procedures - operating procedures, shutdown/startup/turnaround procedures, or any other procedures - and emissions. Nor has the

- 3-11
Cont.
- District demonstrated that its Staff has the requisite experience and qualifications to prepare refinery procedures of any description. In direct contrast, existing refinery procedures have been developed by the individual refineries themselves based on their considerable expertise and total familiarity with their respective facilities. Existing refinery procedures are designed to accomplish various tasks while maintaining a strong focus on personnel and plant safety, operational reliability, and environmental considerations.
- If the District, during the course of subsequent rule development, and in spite of its lack of knowledge of refinery operations, were to seek to impose "procedures" of their invention on facilities, it is conceivable and even likely that any such procedures could adversely affect safety and reliability at the facilities, as well as have an adverse effect on the environment.
- WSPA notes that the IS has not recognized that there are any potential impacts whatsoever associated with MCS-03. Further, according to footnotes 1 and 2 of Appendix A (page A-11), the IS has discounted the possibility that operating procedures or practices - particularly those potentially imposed through regulatory action - can have significant adverse consequences. These are serious shortcomings. Therefore, multiple potentially significant impact areas will need to be evaluated in the DPEIR.
- 3-12
- CEQA established checklists of various environmental topics and requires that the potential impacts of a project in these areas be evaluated. WSPA has identified key issues below.
- 3-13
- **CEQA Topic III, Air Quality and Greenhouse Gas Emissions. Question "d".**
- If, as is proposed in the AQMP, a new and untested regulatory requirement were mandated upon a refinery or other complex operation, and that requirement was inconsistent or conflicted with standard refinery procedures, then situations could result with unintended adverse consequences, including but not limited to, substantially increased pollutant concentrations. This is especially the case because AQMD staff is unfamiliar with the complexities of refinery operations and could, inadvertently increase the risk of upsets, malfunctions, etc.
- 3-14
- **CEQA Topic VII, Hazards and Hazardous Materials. Questions "b" and "h".**
- As stated earlier, mandated changes to well-established safe and effective operating procedures could significantly affect refinery operations and result in upset conditions involving a release of hazardous materials into the environment, or an increased fire hazard. The IS should review this potential including an evaluation of all environmental and health risks that could be the unintentional consequence of new regulations or procedures.
- 3-15
- WSPA appreciates the opportunity to submit these comments and please contact me with any questions.

Sincerely,



Responses to Comment Letter #3
Western States Petroleum Association (WSPA) – Patty Senecal (7/27/12)

- 3-1 This comment notifies the SCAQMD that a comment letter is attached. No further response is necessary.
- 3-2 This comment provides background information describing the nature of the commenter's business and the types of industries represented by the commenter. No further response is necessary.
- 3-3 This comment notifies the SCAQMD that the comments contained in the letter pertain to the Initial Study for the Draft Program EIR for the 2012 AQMP. Regarding the individual discrepancies identified, see Responses to Comments 3-4 to 3-8.
- 3-4 This comment notifies the SCAQMD that there are discrepancies in the descriptions of the Control Measures in the Initial Study that need to be corrected in the Draft Program EIR. Examples of these discrepancies are identified and described in further detail in Comments 3-5 through 3-8. For individual responses to the issues raised, refer to Responses to Comments 3-5 through 3-8.
- 3-5 Subsequent to the submittal of this comment letter, the NOP/IS was recirculated on August 2, 2012 because changes were made to the 2012 AQMP project description subsequent to release of the original NOP/IS on June 27, 2012. The recirculated NOP/IS now correctly identifies the implementation dates of Control Measure CMB-01 as year 2014 for Phase I and year 2020 for Phase II. In addition, the NOP/IS has been corrected to reflect that periodic BARCT evaluation will be implemented during Phase II. The analysis in the Draft PEIR will also reflect these corrected descriptions of the control measure.
- 3-6 The suggestion made in the comment for the SCAQMD to not assume that all currently exempted facilities in Rule 1177 will lose their exempt status as a result of implementing Control Measure FUG-02 is inconsistent with the CEQA requirement to analyze reasonably foreseeable environmental impacts of the methods of compliance. Because the scope is still unknown, the analysis will evaluate a worst-case scenario for impacts. For control measure FUG-02 specifically, the analysis would need to consider the potential outcome and associated beneficial and adverse environmental impacts of requiring all of the facilities that were previously exempted to comply with the requirements in Rule 1177 by year 2017.
- 3-7 With regard to Control Measure FUG-03 and Smart LDAR, the recirculated NOP/IS and the Draft 2012 AQMP both state the following: *“This control measure would explore the opportunity of incorporating a recently developed advanced optical gas imaging technology to detect leaks (Smart LDAR) to more easily identify and repair leaks in a manner that is less time consuming and labor intensive.”* In other words, the requirement for Smart LDAR could potentially be a future requirement for improved leak detection.
- With regard to Control Measure FUG-03 and vapor recovery systems, the recirculated NOP/IS and the Draft 2012 AQMP both state the following: *“Additionally, vapor recovery systems are currently required to have a control efficiency of 95 percent. In an effort to further reduce VOC emissions from these types of operations, this control*

measure would explore opportunities and the feasibility of further improving the collection/control efficiency of existing control systems, resulting in additional VOC reductions.”

While both technologies, (e.g., Smart LDAR and vapor recovery systems) are mentioned in the same control measure, the description of vapor recovery systems is clearly separate and distinct from the description of Smart LDAR. The common link between the two is that they are technologies for controlling fugitive VOC emissions. As such, contrary to the comment, both technologies are appropriately included in Control Measure FUG-03.

- 3-8 With regard to Control Measure MCS-03, the recirculated NOP/IS and the Draft 2012 AQMP have been revised to state the following: *“This proposed control measure seeks to reduce emissions during equipment startup, shutdown, and turnaround. Opportunities for further reducing emissions from start-up, shut-down and turnaround activities potentially exist at refineries as well as other industries.”* SCAQMD staff believes this revised language addresses the concerns raised in the comment.
- 3-9 Because potentially significant environmental impacts were identified as a result of implementing the proposed 2012 AQMP, SCAQMD staff is preparing a Draft Program EIR in accordance with CEQA Guidelines §15168. These potentially significant impact areas will be evaluated in the Draft Program EIR. Regarding the comments suggesting additional areas that were not identified in the NOP/IS but that should be evaluated in the Draft Program EIR, see Responses to Comments 3-10 to 3-14.
- 3-10 With regard to potential solid/hazardous waste impacts from FUG-01, the solid/hazardous waste discussion in the recirculated NOP/IS has been revised to specifically acknowledge that there could be an increase in the amount of solid/hazardous wastes generated from installing air pollution control equipment such as “carbon adsorption devices, particulate filters, catalytic incineration, selective catalytic reduction or other types of control equipment.” While liquid scrubbers were not specifically mentioned in the solid/hazardous waste discussion in the recirculated NOP/IS, any potential solid/hazardous wastes from liquid scrubbers will also be evaluated as part of the “other types of control equipment” discussion in the Draft Program EIR.
- 3-11 The comment that Control Measure MCS-03 – Improved Start-Up, Shutdown and Turnaround Procedures, is a general “catch-all” designed specifically to modify operational requirements at refineries exclusively is inaccurate as MCS-03 could apply to other industries such as chemical plants, for example.

With regard to the remark alleging that the SCAQMD has not demonstrated a link between MCS-03 and emissions, the commenter is referred to two examples: SCAQMD Rule 1123 – Refinery Process Turnarounds and SCAQMD Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants. Rule 1123 was designed to minimize organic vapors from being released to the atmosphere during turnarounds. Rule 1173 also contains VOC control requirements that pertain to refineries and other industries during process unit turnarounds. Both of these rules have been effective at reducing VOC emissions, but they are not exhaustive. For this reason, MCS-03 was designed to explore additional emission reduction possibilities during startups, shutdowns and turnarounds.

With regard to the comment that MCS-03 would undermine safety, operational reliability, or other environmental issues, an example to the contrary, Rule 1123 currently contains specific exemptions in the rule language that address (and prevent) situations that could potentially damage equipment, cause the malfunction of pollution control or safety devices, or cause violations of safety regulations. As with all control measures and the rule development process, participation by the affected parties, including the refineries and their representatives, as well as other industries and their representatives, will be paramount in effectively and safely implementing MCS-03. Thus, it is not accurate to assume that the development and implementation of MCS-03 would ignore these issues. However, control measure MCS-03 will be re-evaluated in the Draft Program EIR to determine the potential for safety impacts.

To respond to the comment that SCAQMD staff does not have the expertise to work on refinery-based or other heavy industry-based projects, SCAQMD has been lead agency for a multitude of refinery projects since 1992 and has successfully implemented refinery-based control measures. For example, SCAQMD Rule 1105.1 – Reduction of PM10 and Ammonia Emissions From Fluid Catalytic Cracking Units, was a new rule adopted in November 2003 that was developed to implement Control Measure CMB-09 - Emission Reductions from Petroleum Fluid Catalytic Cracking Units to reduce PM10 and ammonia emissions from refineries. Another example, the November 2010 amendments to Regulation XX – Regional Clean Air Incentives Market (RECLAIM), also known as SOx RECLAIM, implemented Control Measure CMB-02 - Further SOx Reduction for RECLAIM (CM #2007CMB-02) to achieve additional SOx emission reductions from not only refineries but from other sources such as petroleum coke calciners, container glass melting furnace, sulfuric acid manufacturers, and other sources.

Further, the SCAQMD staff, supervisors and management who will be working to develop MCS-03 have strong technical and engineering backgrounds, especially in the disciplines of chemical, petroleum, and mechanical engineering, and are quite capable and qualified to work on refinery-based and other heavy industrial projects. However, if additional specific technical expertise is required, as was the case with the adoption of Rule 1105.1 and amendments to the SOx RECLAIM program (when SCAQMD in cooperation with the refineries and the other industries co-hired industry-specific consultants for technical assistance), then the option to bring in additional expertise during the development of MCS-03 could be available.

Finally, with regard to the comment that the NOP/IS has not identified any potential adverse environmental impacts that may be associated with the development and implementation of MCS-03, the commenter has also not provided any insight as to what the potential adverse environmental impacts may occur. In its current form, MCS-03 is in its early stages and is very broad. As such, to identify any impacts at this time without knowing the specific design features would be speculative. However, when implementation of MCS-03 begins, and if a proposed rule or rule amendment is developed as a result, the CEQA document for the proposed rule or rule amendment will identify and analyze the specific environmental impacts at that time.

- 3-12 This comment refers to the CEQA checklist in CEQA Guidelines, Appendix G and the 17 environmental topics addressed in the checklist. For responses to the issues raised relative to the specified environmental topics, see Responses to Comments 3-13 and 3-14.

- 3-13 The comment claims, without providing any supporting evidence, that unintended consequences such as increased pollutant concentrations may occur if new and untested regulatory requirements are imposed that are inconsistent or conflicting with standard refinery procedures. Any such evaluation would be speculative at this time. However, this issue will be evaluated during actual rule development. This issue was previously addressed in Response to Comment 3-11.
- 3-14 The comment claims, without providing any supporting evidence, that increased hazardous material emissions and fire hazards may occur if regulatory changes to refinery procedures are made. Any such evaluation would be speculative at this time. However, this issue will be evaluated during actual rule development. This issue was previously addressed in Response to Comment 3-11.
- 3-15 This comment concludes the letter. No further response is necessary.

ENCLOSURE

*Air Carrier and Air Taxi Operations by Aircraft/Engine Combinations
at John Wayne Airport, 2007-2009*

The screenshot shows an Outlook message window titled "Comment Letter Regarding the NOP/IS for the Proposed 2012 Air Quality Management Plan - Message (H...". The message is from Rainee Fend [rfend@gdandb.com] sent on Fri 7/27/2012 1:39 PM. The subject is "Comment Letter Regarding the NOP/IS for the Proposed 2012 Air Quality Management Plan". The message body contains the following text:

Mr. Smith,

Please see the attached letter containing the County of Orange's written comments on the Notice of Preparation and Initial Study for the proposed 2012 Air Quality Management Plan; these comments are being submitted on the County's behalf in its capacity as the owner and operator of John Wayne Airport. Please contact Ms. Ballance with any questions.

Thank you,

Rainee L. Fend
 Legal Assistant to Lori D. Ballance and Danielle K. Morone
 Gatzke Dillon & Ballance LLP
 (760) 431-9501
rfend@gdandb.com

CONFIDENTIALITY NOTICE: This communication and any accompanying document(s) are privileged and confidential, and are intended for the sole use of the addressee(s). If you have received this transmission in error, please be advised that any disclosure, copying or distribution is strictly prohibited. In addition, any disclosure of this transmission does not compromise or waive the attorney-client privilege or the attorney-work product doctrine. If you have received this communication in error, please delete it and contact me at rfend@gdandb.com or by telephone at (760) 431-9501.

 Please consider the environment before printing this e-mail.

The attachments listed are: "2012-7-27 LF JWA To SCAQMD Re AQMP NOP-IS (FINAL).pdf", "Enclosure Part 1 (Memo).docx", "Enclosure Part 2 (BTS Data).xlsx", "Enclosure Part 3 (JP Fleets Data).xlsx", and "Enclosure Part 4 (Combo Data).xlsx".

4-1

ENCLOSURE

*Air Carrier and Air Taxi Operations by Aircraft/Engine Combinations
at John Wayne Airport, 2007-2009*

GATZKE DILLON & BALLANCE LLP

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RETIRED

MICHAEL SCOTT GATZKE

July 27, 2012

Via E-Mail

Steve Smith, Ph.D. (c/o CEQA)
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4182
ceqa_admin@aqmd.gov

*Re: Notice of Preparation of a Draft Program Environmental Impact Report
and Initial Study for the 2012 Air Quality Management Plan*

Dear Mr. Smith:

4-2

This letter is submitted on behalf of the County of Orange ("County") in its capacity as the owner and operator of John Wayne Airport, Orange County ("JWA"). This letter contains the County's written comments on the Notice of Preparation and Initial Study ("NOP/IS") for the proposed 2012 Air Quality Management Plan ("2012 AQMP"), issued by the South Coast Air Quality Management District ("SCAQMD" or "District") on June 28, 2012.

4-3

The County's comments on the NOP/IS are intended to serve the two following principal objectives:

1. To express our appreciation for the opportunity to continue to work constructively and cooperatively with the SCAQMD in evaluating and developing realistic airport emission reduction strategies for the proposed 2012 AQMP and analyzing the potential environmental impacts of the proposed measures; and,
2. To express our concerns regarding the accuracy of the baseline emissions inventory, and offer other discrete comments on the NOP/IS.

4-4

As to the County's comments on the baseline emissions inventory assumptions utilized in the California Environmental Quality Act ("CEQA;" Pub. Resources Code, §21000 et seq.) analysis for the 2012 AQMP, in early May 2012, JWA staff (specifically Kari Rigoni) provided aircraft activity data specific to JWA for incorporation into the 2012 AQMP at the District's

ENCLOSURE

*Air Carrier and Air Taxi Operations by Aircraft/Engine Combinations
at John Wayne Airport, 2007-2009*

GATZKE DILLON & BALLANCE LLP

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July 27, 2012

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request. Ms. Rigoni coordinated with Zorik Pirveysian when providing the following information:

May 1, 2012: Ms. Rigoni provided aircraft activity data for JWA – averaged over 2007 through 2009¹ – and a list of the number and type of aircraft based at JWA, and confirmed that 100 percent of JWA’s gates are equipped with power and pre-conditioned air;

May 4, 2012: Ms. Rigoni provided the average combined taxi-in/taxi-out time that should be used for commercial air carriers at JWA and the average annual fuel consumption for general aviation aircraft at JWA. Ms. Rigoni also confirmed that the County is amenable to utilizing SCAG’s Regional Transportation Plan projections for purposes of forecasting future aircraft activity, subject to the caveat that such projections may change in connection with pending negotiations arising from the County’s settlement agreement with various parties concerning airport operations;² and,

May 10, 2012: Ms. Rigoni provided the disaggregated taxi-in and taxi-out times for commercial air carriers at JWA. Also, after Mr. Pirveysian advised Ms. Rigoni that he needed to finalize all data inputs for purposes of the 2012 AQMP’s baseline emissions inventory, such that there was no additional time for the County to submit JWA-specific data, Ms. Rigoni explained that JWA was continuing to collect engine type data and requested that such data ultimately be used in lieu of default data from another information source.

Since May 10, 2012, the County has completed its data gathering efforts relative to aircraft engine types that operate at JWA. The compiled data is enclosed with this letter.³ And, in order to ensure that the baseline emissions inventory accurately and reasonably reflects

¹ Ms. Rigoni explained that the aircraft activity data was based on a three-year average (2007, 2008, and 2009) because the County does not believe 2008 is a representative year for most airports in the South Coast Air Basin as it was the beginning of the economic downturn.

² For information regarding the currently applicable provisions of the Settlement Agreement, see <http://www.ocair.com/aboutjwa/settlementagreement.aspx>.

³ This letter is being provided to the District by e-mail, and the electronic transmittal includes four files in addition to this comment letter: one Word file and three Excel files. The Word and Excel files provide the additional enclosed data in a “raw” electronic format in order to allow District staff to more readily incorporate the data into the AQMP’s aircraft emissions modeling.

4-4
Cont.

ENCLOSURE

*Air Carrier and Air Taxi Operations by Aircraft/Engine Combinations
at John Wayne Airport, 2007-2009*

GATZKE DILLON & BALLANCE LLP

Mr. Steve Smith, Ph.D.

July 27, 2012

Page 3

- 4-4
Cont. { operating conditions at JWA in 2008, the County respectfully requests that the baseline emissions inventory be updated and modified to incorporate this new information.
- 4-5 { Having also reviewed the NOP/IS, the County first expresses its appreciation of the District's efforts to develop control measures intended to achieve compliance with the U.S. Environmental Protection Agency's ("USEPA") 24-hour, PM_{2.5} National Ambient Air Quality Standard ("NAAQS") and 8-hour, ozone NAAQS in the South Coast Air Basin. Second, based on our review, the following two Control Measures presently are of interest: MCS-03 (formerly MCS-06), Improved Start-Up, Shutdown and Turnaround Procedures [All Pollutants]; and, ADV-07, §182(e) Proposed Implementation Measures for the Deployment of Cleaner Aircraft Engines [NOx].
- 4-6 { Relative to Control Measure MCS-03, we find it difficult to assess the measure itself – and its environmental impacts – without further information on its proposed parameters. We suspect that such detail will be provided in the Draft 2012 AQMP, and look forward to better understanding the District's proposal relative to that control measure. That being said, in many instances, controlling emissions during start-up and shutdown is constrained by operational, technological, and economic limitations. Therefore, we encourage the District to be sensitive to and informed of such constraints when designing the measure's parameters and predicting associated emission reductions.
- 4-7 { Relative to Control Measure ADV-07, generally speaking, the NOP/IS recognizes that the USEPA is responsible for establishing emission standards for aircraft. (See, e.g., IS, p. 1-6.) Nonetheless, we ask that Table 1-3 and its related text, to the extent it is utilized again in the Draft 2012 AQMP of Draft Environmental Impact Report, be revised to expressly recognize that Control Measure ADV-07 is within the purview of the USEPA. The IS suggests that the "descriptions of individual control measures in Table 1-3" will indicate whether action is required from the USEPA; however, no such description is provided relative to Control Measure ADV-07. (See IS, pp. 1-19 to 1-20, and 1-25.) In order to clearly inform the public and decisionmakers of the District's lack of regulatory purview relative to aircraft emissions, such disclosure needs to be provided.
- 4-8 { The County also requests additional information on the District's decision to include information in the 2012 AQMP on "ultrafine particulates formation, transport, exposure, and health effects and potential control strategies." (IS, p. 1-10.) As acknowledged in the NOP/IS, "there are no ambient air quality standards specifically for ultrafine particulates" (*ibid.*); as such, the District has no authority to regulate such particulates. The County is concerned with the District's decision to include such information in a regulatory document (i.e., the 2012 AQMP), as its inclusion in such a type of document may misleadingly suggest to the public that ultrafine particulates are subject to regulation at a federal, state, regional, and/or local level.

ENCLOSURE

***Air Carrier and Air Taxi Operations by Aircraft/Engine Combinations
at John Wayne Airport, 2007-2009***

GATZKE DILLON & BALLANCE LLP

Mr. Steve Smith, Ph.D.

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4-9

In closing, the County thanks the District again for this opportunity to comment on the NOP/IS for the 2012 AQMP. We look forward to engaging in an open, thorough and responsive public process on the 2012 AQMP, and assisting the District with its efforts to improve air quality in the South Coast Air Basin. If you have any questions regarding the comments set forth in this letter, please do not hesitate to contact me at your convenience.

Very truly yours,



Lori D. Ballance
of
Gatzke Dillon & Ballance LLP

LDB:rjf

Enclosures

Four Files Titled: Enclosure Part 1 (Memo); Enclosure Part 2 (BTS Data); Enclosure Part 3 (JP Fleets Data); and, Enclosure Part 4 (Combo Data)

cc: Michael Krause, South Coast Air Quality Management District
Alan Murphy, Airport Director, John Wayne Airport
Loan Leblow, Assistant Airport Director, John Wayne Airport
Courtney Wiercioch, Deputy Director, Public Affairs, John Wayne Airport
Larry Serafini, Deputy Director, Facilities, John Wayne Airport

ENCLOSURE***Air Carrier and Air Taxi Operations by Aircraft/Engine Combinations
at John Wayne Airport, 2007-2009***

In response to the District's request for data pertaining to JWA's operations, the County retained Mestre Greve Associates, a Division of Landrum & Brown, to compile airport-specific data regarding Air Carrier and Air Taxi operations by aircraft/engine combinations for the years 2007 through 2009. The results are presented in these enclosed materials.

By way of explanation, the Summary Table (Annual LTO by EDMS Aircraft Type and Engine Model for John Wayne Airport) below directly corresponds to the data needed to estimate aircraft emissions using the FAA's Emissions and Dispersion Modeling Software (EDMS).¹ The sources of information used to generate the Summary Table are operational data from the Bureau of Transportation Statistics (BTS) and aircraft/engine data from JP Airline Fleets International 2008/2009 (JP Fleets). The BTS data was used to determine the number of operations at JWA by each unique air carrier/aircraft combination, and the JP Fleets data was used to determine the engine models used by each air carrier/aircraft combination.

The BTS data was downloaded from their online "Air Carrier Statistics (Form 41 Traffic) - All Carriers" database² and specifically the "T-100 Segment, All Carriers" database.³ This database contains a list of monthly aircraft operations by origin and destination airport for each airline and aircraft operation between those airports based on data provided to BTS by the air carriers. Annual data for 2007, 2008, and 2009 was downloaded from the BTS website and operations originating from or terminating at JWA were extracted. This data was processed to determine the annual number of arrivals and departures by airline and aircraft type, and summarized in the enclosed "BTS Data Summary.xls" workbook. The raw T-100 data files for each year can be provided on request (while the annual data files are only 13.6 MB each, the three files that include the Excel Pivot Tables used to extract data by carrier/aircraft combination are 121.1 MB each).

JP Fleets is a book published annually that lists detailed information for all aircraft in the fleets of all commercial aircraft operators worldwide. The fleet information for all commercial aircraft operators operating at JWA based on the BTS data was extracted from the JP Fleets book and copied into a Microsoft Excel workbook. The Pivot Table function was used to determine the number of aircraft in each airline's fleet with unique aircraft/engine combinations.

¹ The Summary Table shows that engine types could not be determined for four Air Taxi aircraft. This was because the BTS data listed operations for these aircraft, but JP Fleets did not include an aircraft of the type reported by BTS in the aircraft listings for three air taxi operators, Swift Air, LLC, Triair, and Avjet Corporation. However, these aircraft only represent an average of four annual LTO and, therefore, the specific engine assumption would not substantially affect the overall aircraft emissions estimate for JWA. The EDMS default engine type for these aircraft should be used to determine emissions.

² See

http://www.transtats.bts.gov/Tables.asp?DB_ID=111&DB_Name=Air%20Carrier%20Statistics%20%28Form%2041%20Traffic%29-%20All%20Carriers&DB_Short_Name=Air%20Carriers.

³ See

http://www.transtats.bts.gov/Tables.asp?DB_ID=111&DB_Name=Air%20Carrier%20Statistics%20%28Form%2041%20Traffic%29-%20All%20Carriers&DB_Short_Name=Air%20Carriers

ENCLOSURE***Air Carrier and Air Taxi Operations by Aircraft/Engine Combinations
at John Wayne Airport, 2007-2009***

The percentage of each aircraft/engine combination by EDMS aircraft type was then derived from this data. This data is presented in the enclosed “JP Fleets 2008 Extracted.xls” workbook. The 2008 version of JP Fleets was used to best represent the air carrier fleets during the 2007-2009 timeframe. The JP Fleets data includes the date that the aircraft was delivered to the airline, along with listings of aircraft that are “on order” and the anticipated delivery year. Aircraft shown to be delivered in 2008 were excluded from the 2007 data and aircraft expected to be delivered in 2009 were included in the 2009 data.⁴

The BTS and JP fleets data discussed above were combined in the “07-09 SNA Comm Ops By Aircraft & Engine Combo.xlsx” workbook. The “Analysis” worksheet presents the BTS and JP Fleets data and calculates the number of Landing-Take Off operations (LTO) by each aircraft/engine combination for each airline. The annual operations, arrivals, departures, and LTO, by airline and aircraft for 2007, 2008, and 2009 derived from the BTS data are listed along with the corresponding EDMS aircraft type and the percentage of engine model used on that type of aircraft in each airline’s fleet derived from the JP Fleets data.

The “Results” worksheet uses a Pivot Table to extract the number of LTO by aircraft/engine combination and used to generate the attached table. The annual LTO for each EDMS aircraft type and engine manufacturer and model is presented for each year along with the three-year average.

The results of the analysis were compared with average operational data by aircraft provided by JWA to confirm that the validity of the BTS. JWA provided annual average operations data by aircraft type for the three years being assessed. The “Type” column in the Summary Table shows how the data derived for this analysis was grouped to be compared to the data provided by JWA. The operations for each aircraft type were summed and are compared to the JWA data in Tables 1 and 2. Table 1 shows excellent agreement for the most part with some considerable differences in the A3XX family of aircraft and in the B737X family of aircraft. Table 2 shows that, when grouped together, the annual average LTO’s from this analysis and the JWA data agree excellently. This confirms that the BTS data is consistent with the JWA-provided data.

4-10
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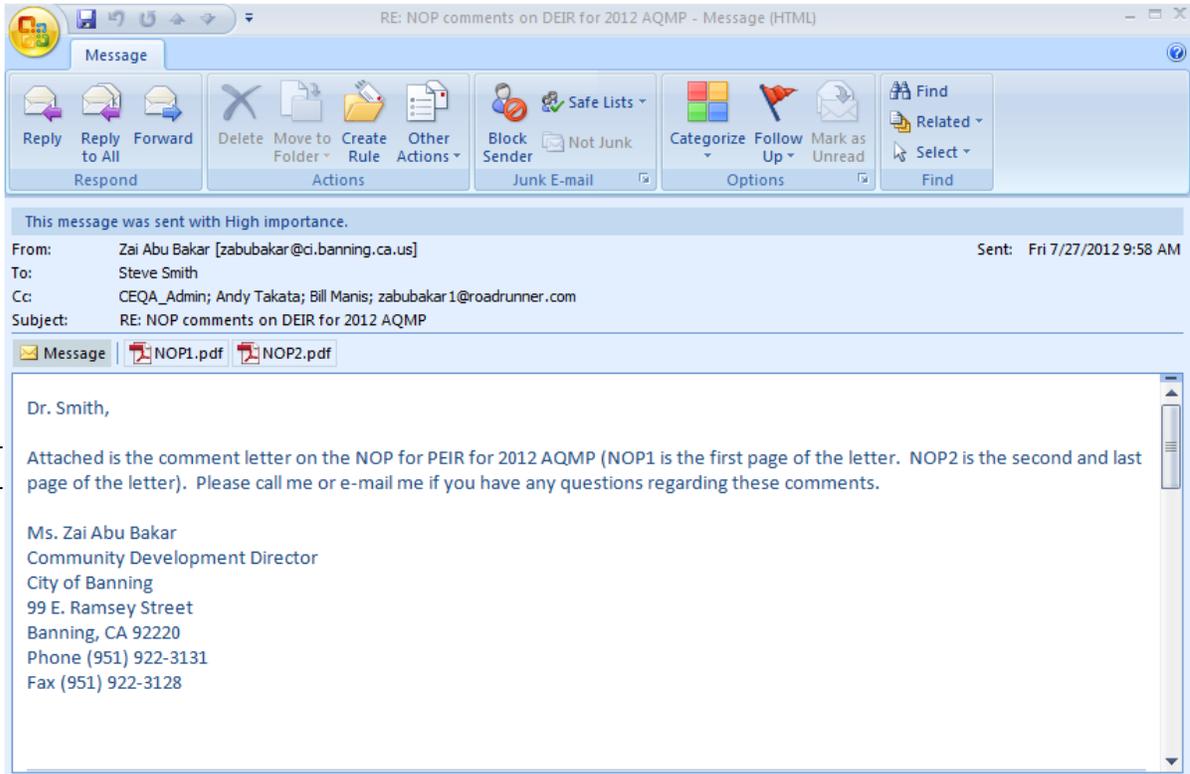
⁴ America West Airlines merged with US Air in 2005 and JP Fleets did not include America West Airlines in the 2008 edition. The airline was included in the 2007 edition and the aircraft/engine combinations for America West were taken from this edition.

Responses to Comment Letter #4
Gatzke Dillon & Balance Representing Orange County – Lori Balance (7/27/12)

- 4-1 This comment, submitted on behalf of Orange County as the operator of John Wayne Airport (JWA), notifies the SCAQMD that a comment letter pertaining to the Initial Study for the Draft Program EIR for the 2012 AQMP is attached. No further response is necessary.
- 4-2 This comment, submitted on behalf of Orange County as the operator of JWA, notifies the SCAQMD that the comment letter pertaining to the Initial Study for the Draft Program EIR for the 2012 AQMP follow. No further response is necessary.
- 4-3 With regard to inventory information on the planes accessing the JWA, please refer to Responses 4-4 and 4-7.
- 4-4 John Wayne Airport staff had supplied updated emissions inventory information that was included in the Draft 2012 AQMP. SCAQMD Staff will now consider the request to include additional updated emissions inventory information in the Final 2012 AQMP and determine the magnitude of the change from the information provided in the Draft 2012 AQMP.
- 4-5 This comment states that the JWA operators appreciate the SCAQMD's efforts to attain the federal 24-hour ozone standard. Further, the comment indicates that JWA is interested in 2012 AQMP control measures MCS-06 and ADV-07. With regard to control measure MCS-03, please refer to Response 4-6. With regard to control measure ADV-07, please refer to Response 4-7.
- 4-6 Please note that this control measure will be implemented in two phases. The first phase will focus on procedures to better quantify emission impacts from start-up, shutdown and turnarounds. Once the first phase is completed and emission impacts found to be significant, staff intends to continue with Phase II of the control measure and explore improved operating procedures that minimize emission from such processes through the use of best management practices and/or installation of additional hardware. Operational, technological and economic variables will be among the key variables to be considering during this phase of implementation.
- 4-7 The comment suggests that the CEQA document should "clearly inform the public and decisionmakers of the SCAQMD's lack of regulatory purview relative to aircraft emissions." As a legal matter, this statement is overbroad. The Clean Air Act expressly preempts state and local agencies from adopting or enforcing "any standard respecting emissions of any air pollutant from any aircraft or engine thereof unless such standard is identical to a standard [adopted by EPA and FAA] applicable to aircraft under this part." 42 U.S.C. §7573. However, the term "standard" as used in Title II of the CAA (relative to mobile sources) does not include in-use or operational requirements. *Engine Manufacturers' Association v. EPA*, 88 F. 3d 1075 (D.C. Cir. 1996). Whether any individual measure, which does not constitute a "standard" preempted under the CAA, would be preempted by any other law would need to be decided on the facts of each case.
- 4-8 The comment correctly notes that there are at present no ambient air quality standards specifically for ultrafine particulates, but then incorrectly concludes that as a result, the

SCAQMD has no authority to regulate such particulates. In the first place, such particulates are already regulated as a subset of PM_{2.5}, although not separately from the remainder of PM_{2.5}. Moreover, the lack of a NAAQS for ultrafine particulates does not mean that the SCAQMD has no authority to regulate them. Under California law, the district has primary authority to regulate “air pollution from all sources, other than emissions from motor vehicles” which are the primary responsibility of CARB. Health & Safety Code §40000. The term “air pollutant” is broadly defined to include “any discharge, release, or other propagation into the atmosphere and includes, but is not limited to, smoke, charred paper, dust, soot, grime, carbon, fumes, gases, odors, particulate matter, acids, or any combination thereof.” Health & Safety Code §39013. This definition is broad enough to encompass ultrafine particles. The district regulates a whole host of substances for which there are no NAAQS, including its air toxics regulations found in Rules 1401, 1402, etc, as well as its regulation of odors under Rule 401. The 2012 AQMP does not imply that ultrafine particles are subject to regulation as a criteria pollutant separately from their status as a subset of PM_{2.5}. The 2012 AQMP does not contain any control measures specific to ultrafine particles apart from their status as a subset of PM_{2.5}.

- 4-9 This comment concludes the letter. No further response is necessary.
- 4-10 There are several attachments to this comment letter. The attachment entitled *Enclosure - Air Carrier and Air Taxi Operations by Aircraft/Engine Combinations at John Wayne Airport, 2007-2009*, describes the sources and methodologies used to compile airport-specific data regarding Air Carrier and Air Taxi operations by aircraft/engine combinations for the years 2007 through 2009. The results of the evaluation are presented in three Excel spreadsheets, also attached to the comment letter. According to the commenter, the data were provided upon request by the SCAQMD. Further, it is assumed that the commenter is providing the aircraft data to incorporate into the baseline for the 2012 AQMP. These data have been forwarded to SCAQMD AQMP inventory staff. No further response to this comment is necessary or the attached spreadsheets is necessary.



5-1





City of Banning

99 E. Ramsey Street · P.O. Box 998 · Banning, CA 92220-0998 · (951) 922-3125 · Fax (951) 922-312

COMMUNITY DEVELOPMENT DEPARTMENT

July 27, 2012

sent via email

Steve Smith, Ph.D.
Program Supervisor
Planning, Rules, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182

Subject: Notice of Preparation (NOP) for the Draft Environmental Impact Report for 2012
Air Quality Management Plan (AQMP)

Dear Mr. Smith:

5-2

This letter is to provide comments on the NOP. The City is concerned that there are a number of regulations that are proposed in the 2012 AQMP that have direct impact on cities' operations resulting in negative fiscal impacts. These regulations must be off-set with incentives to ensure that there is a win-win situation between protecting the environment and maintaining a healthy fiscal environment so that cities can continue to provide services to their residents. Additionally, all aspects of the system that support a particular measure shall be analyzed to ensure that not only the measure contributes to clean-air but also provides sound fiscal investment and improves the current economy.

5-3

Measure ONRD-01 seeks acceleration of commercial deployment of partial zero-emission and zero emission vehicle penetration into the market. This measure proposes to continue the Clean Vehicle Rebate Project (CVRP) through 2023 which would provide incentives to a minimum of 1000 vehicles per year.

Although this measure proposes to provide incentives for the development, the incentives should also be provided for the systems that support the successful deployment of the vehicles in the future. This includes infrastructure, trained technicians, and technology that support the maintenance aspects of the vehicles. AQMD, State, and Federal EPA should partner with local colleges to provide hands on training for new technology. This could be done through the junior colleges and universities. The City of Banning has Mt. San Jacinto Junior College, which provides curriculums that tailored to the needs of the communities and future job markets. The College currently has a satellite campus which will eventually be built out and accommodate approximately 5000 students. This Junior College could be

5-3
Cont

a training ground for deployment of new technologies. In addition to the infrastructure and systems, the regulating agencies such as SCAQMD, State and Federal EPA should work closely with the association of building officials to ensure that permitting processes are addressed and incorporated into the building codes for ease of implementation and success in the deployment of partial zero-emission or zero emission vehicles.

5-4

Measure ONRD-02 seeks accelerated retirement of older light-duty and medium duty vehicles that are gasoline and diesel-powered up to 8,500 pounds gross vehicle weight (GVW). The measure proposes incentives up to \$2,500, which include a replacement voucher. The vehicles that are included are passenger cars, sport utility vehicles, vans, and light-duty pick-up trucks. This measure gives first priority to those vehicles identified as high emitters that are off-cycle to California Smog Check Program and Pre-1992 model year vehicles. This measure does not describe as to whether the incentive is available to individual consumers or fleet. It is recommended that incentives also be provided to fleet vehicles for public and private sectors.

5-5

These are also measures in the AQMP that would affect existing businesses and land development and construction industries which lead to increase costs that would eventually be passed on to consumers or drives businesses out of the State of California. These include the following measures:

1. BCM-01 - Emission Reduction from Under-Fired Charbroilers
2. CTS-01 - Further VOC reduction from architectural coatings
3. CTS-02 - Further Reduction from Miscellaneous Coatings, Adhesives, Solvent, and Lubricant
4. CTS-03 - Further VOC Reductions from Mold Release Products
5. MCS-02 - Further Emission Reductions from Green Water Processing (Chipping and Grinding Not Associated with Composting).

These measures do not appear to have incentives. The concern is that these measures (regulations) will drive businesses out of the region and the State of California. Please analyze not only the positive impacts to the environment but also the fiscal impacts to the businesses and consumers if these measures are adopted.

5-6

If you have any questions regarding these comments, please call me at (951) 822-3131 or e-mail me at zabubakar@ci.banning.ca.us.

Sincerely,



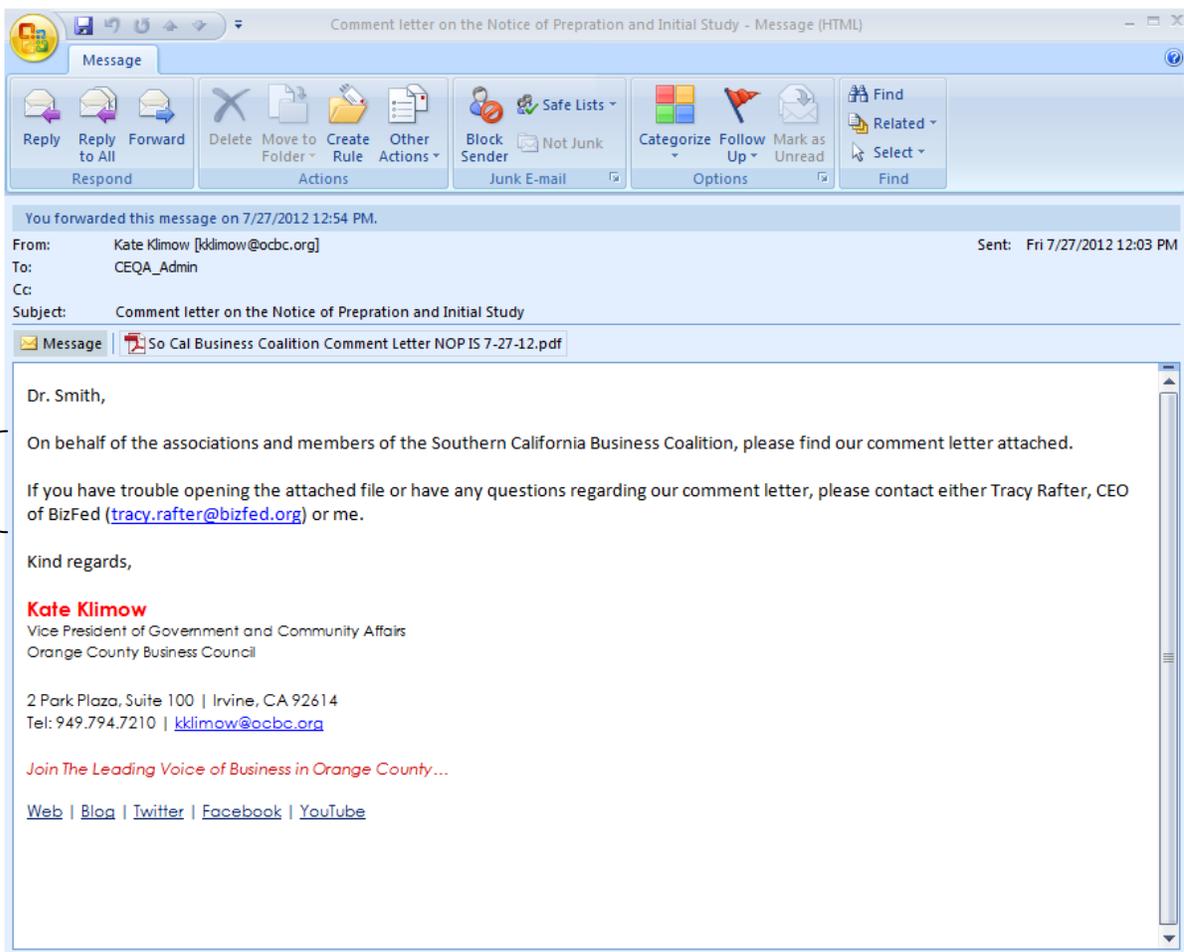
Zai Abu Bakar
Community Development Director

cc: Andrew J. Takata, City Manager
Bill Manis, Economic Development Director

Responses to Comment Letter #5
City of Banning – Zai Abu Bakar (7/27/12)

- 5-1 This comment notifies the SCAQMD that a comment letter pertaining to the Initial Study for the Draft Program EIR for the 2012 AQMP is attached. No further response is necessary.
- 5-2 There are two stationary source control measures specifically aimed at offering different incentives for companies that either manufacture or employ zero and near-zero emission technologies in the Basin (refer to Appendix IV-A: INC-01, and INC-02). The incentive programs will be designed to promote voluntary introduction of new technologies on an accelerated schedule. These measures provide manufacturers with incentives for production and commercialization of the cleaner, more advanced technologies while encouraging economic growth by creating local manufacturing jobs and populating the market with lower cost equipment. However, as with any limited public funding, any financial incentives will be allocated towards programs or projects that demonstrate emission reductions in the areas most critical to the achievement and maintenance of the Basin's air quality goals.
- 5-3 The funding programs identified in control measure ONRD-01 are available only for purchasing zero emission vehicles. There are separate funding programs for infrastructure that are not included. However, given that the deployment of infrastructure enables the deployment of the advanced technology vehicles, the emission reductions associated with the vehicle deployment will be accounted for in ONRD-01. The SCAQMD has been working with local community colleges to offer training for new technologies. The commenter is welcome to contact the SCAQMD staff for more information.
- 5-4 The voluntary vehicle retirement program has focused primarily on private individual consumers. Typically a vehicle operated by a public agency or fleet licensed and registered pursuant to Health and Safety Code sections 44019 and 44020 is deemed ineligible under a vehicle retirement or replacement program. However, cities and other municipalities have access to AB2766 funds to help offset incremental cost differences for cleaner advanced technology vehicles. Private fleets have typically taken advantage of Carl Moyer and Mobile Source Review Reductions Committee (MSRRC) programs.
- 5-5 As incentive funding becomes available, it may be directed at specific source categories to aid compliance. See Response to Comment 5-2. For all control measures, during the rulemaking process, and as additional information on new technologies and/or control equipments becomes more well-defined, a detailed assessment of their socioeconomic and environmental impacts will be conducted including the costs to businesses and the effects on the economy and environment. The economic impacts are included in the socioeconomic analysis for the AQMP to the extent that they can be analyzed at this point.
- 5-6 This comment concludes the letter. No further response is necessary.

6-1





July 27, 2012

Steve Smith, Ph.D.
 South Coast Air Quality Management District - CEQA Section
 21865 Copley Drive
 Diamond Bar, CA 91765

RE: INITIAL STUDY FOR THE DRAFT EIR FOR THE 2012 AQMP

Dear Dr. Smith:

6-2

The Southern California Business Coalition is comprised of the leaders of some of California's largest regional business entities and associations. The final 2012 Air Quality Management Plan, and the rule making that will eventually stem from it, will directly affect many of these business interests.

In our ongoing effort to work with SCAQMD to develop a well-balanced strategy that addresses federal requirements through economically feasible compliance, we appreciate the opportunity to provide these comments on the Initial Study (IS) for the Draft Program Environmental Impact Report (DPEIR) for the AQMP.

6-3

1. The draft proposed control measures are not accurately described in the IS.

Although the District released an initial version of the draft proposed AQMP control measures on or about June 12th, the descriptions of those control measures in the IS, which is dated June 28th, conflict with the actual measures themselves. To further confuse the process, the Draft AQMP, including the proposed control measures, which was released by the District on or about July 17th, had, in some cases, the requirements of the proposed control measures changed again.

6-3
Cont.

The evaluations conducted for the DPEIR will need to be based on the requirements of the draft proposed control measures as they currently exist - not as they are described in the IS.

2. Discrepancies associated with changes to the control measures have effectively shortened the comment period for the IS from thirty days to approximately ten days.

The several sets of proposed control measures and the resultant inaccurate descriptions of the control measures in the IS have made it more challenging for stakeholders to review the IS for appropriateness. Noting that the latest revisions to the proposed control measures were released in the draft AQMP on or about July 17th, as a practical matter, stakeholders have actually had only ten days to analyze the IS and prepare comments.

6-4

Considering that the AQMP serves as the "project description" for the ensuing environmental documents, the delay in the release of the draft AQMP necessitated a revised determination the impacts of the project.

We must also note that four of the five public workshops/CEQA scoping meetings ~~were~~ held prior to the release of the project description (i.e., the Draft AQMP). Thus it was nearly impossible to provide quality information on the scope of the environmental analysis of the proposed project.

While we wanted to note the challenges we faced in reviewing the IS, we also wanted to raise this concern now so that the District will avoid these sorts of timing problems for the upcoming 2015 AQMP update.

3. Comments on specific proposed control measures.

6-5

Although our ability to assess the potential adverse environmental impacts resulting from the AQMP was severely hampered, we offer the following brief comments on some specific control measures and as examples of additional areas of study that need to be considered for the DPEIR. We would also note that there may be additional study areas that have been overlooked due to the limited review time and the conflicting documents:

6-6

- CMB-03. The discussion in Appendix A refers to ventilation hood systems; however there is no mention of such systems in the description of the measure in the IS (page 1-14) or in the current version of the control measure itself.

6-7

- CTS-01, CTS-02, CTS-03, CTS-04, FUG-01, and MCS-02. These proposed control measures may have waste issues associated with them for various reasons; however the IS does not recognize this possibility.

6-8

- INC-01. Incentive programs such as INC-01 depend upon the availability of funding. If funding is potentially taken from existing programs, there could be an adverse air quality impact that is not acknowledged in the IS.

6-9

- MCS-03. The potential imposition of District-developed operating or maintenance procedures on a facility is not without potential adverse impacts. Adverse impacts could be the result of upsets or malfunctions which, in turn, are consequences of being required to follow arbitrary or inappropriate procedures.

6-10 **4. Proposed alternative to the project as currently defined (i.e., the draft AQMP)**
 We respectfully request that the CEQA analysis of alternatives to the current project consider a case comprised of only the eight short-term PM2.5 control measures, an alternative that would not include the Section 182(e)(5) implementation measures for ozone for either stationary sources or mobile sources. Considering this alternative in the CEQA analysis would allow the Governing Board to consider this option for attaining the PM2.5 standards at a cost that is considerably less than that of the dull draft AQMP, and which places less reliance on actions by other agencies (e.g., the ARB).

6-11 We can appreciate that the District is operating under a tight schedule with respect to this 2012 AQMP update; however, the compressed timeline is concerning to the business community as it impacts our ability to provide meaningful input. Without reasonable review time, the EIR become susceptible to more vigorous challenges on its completeness.

6-12 Please know the business community remains committed to assisting SCAQMD in producing a balanced and workable AQMP document that provides for both environmental and economic success. If there are questions regarding these comments, please contact either Tracy Rafter, CEO of BizFed (tracy.rafter@bizfed.org) or Kate Klimow, Vice President of Government Affairs for Orange County Business Council (kklimow@ocbc.org).

Sincerely,

Southern California Business Coalition - AQMP Stakeholders Working Group

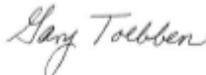
Comprised of members of the following associations:



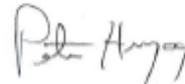
Tracy Rafter
 BizFed, Los Angeles County Business Federation



Kate Klimow
 Orange County Business Council



Gary Toebben
 Los Angeles Chamber of Commerce



Peter Herzog
 NAIOP SoCal Chapter



Rob Evans
 NAIOP Inland Empire Chapter



Steven Schuyler
 BIA of Southern California, Inc.



Joeann Valle
Harbor City/Harbor Gateway Chamber of Commerce



Michael D. Shaw
California Trucking Association



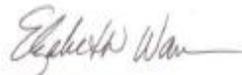
Jay McKeeman
CA Service Station & Auto Repair Association
CA Independent Oil Marketers Association



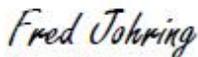
Gary W. Hambly
CalCIMA



Clayton Miller
Construction Industry Air Quality Coalition



Elizabeth Warren
FuturePorts



Fred Johring
Harbor Trucking Association

CC: Dr. Barry Wallerstein, Executive Officer
Members of the SCAQMD Governing Board

Responses to Comment Letter #6
Southern California Business Coalition – Kate Klimow (7/27/12)

- 6-1 No further response is necessary. The email informs the reader that the comments are included as an attachment and that the commenter is available to answer questions about the comment letter.
- 6-2 The introductory paragraphs provide background on the Southern California Business Coalition and state their appreciation at the opportunity to comment on the IS for the Draft AQMP. No further response is necessary.
- 6-3 The comment states that the proposed control measures in the IS for the Draft AQMP conflict with the draft control measures provided to the public on June 12, 2012 and July 17, 2012. Please see Response to Comment 3-4.
- 6-4 The comment states that the discrepancies between the draft control measures in the IS and those provided on July 17, 2012 have caused difficulties in their review of the IS and did not provide sufficient time for them to thoroughly review the IS and revised proposed control measures. The comment also states since four of the five public workshops/CEQA scoping meetings were held prior to the release of the Draft AQMP, quality information on the scope of the environmental analysis of the proposed project was lacking.

On June 27, 2012, the CEQA NOP/IS for the 2012 AQMP was released for a 30-day public review period. Subsequent to release of the NOP/IS, some changes were made to the control strategy in the Draft 2012 AQMP. Specifically, the following changes were made to the Draft 2012 AQMP measures: control measure MCS-04a was folded into control measure ONRD-04; control measure MCS-04b is now control measure BCM-01; control measure MCS-04c is now control measure BCM-04. With the exception of BCM-04, these control measures would now apply to the entire Basin instead of just the Mira Loma area; and new control BCM-02 – Further Reductions from Open Burning, has been added to the Draft 2012 AQMP and applies to the entire Basin. These changes are not considered to be substantive changes for the following reasons.

Control measure BCM-01 (formerly MCS-04b) would prohibit using wood burning fireplaces when PM_{2.5} concentrations exceed 30 ug/m³ at the design monitoring station in Mira Loma. No control equipment or other emission reduction technologies are required to be installed. Based on past monitoring data, this prohibition would occur approximately 15 – 20 times per year. Regardless, whether or not the control measure applies only to Mira Loma or to the entire Basin, it would not generate any impacts.

New control measure BCM-02 would also not generate any impacts for the same reasons as BCM-01, that is, open burning would be prohibited when PM_{2.5} concentrations exceed 30 ug/m³ at the design monitoring station in Mira Loma, which is expected to occur about 15 – 20 times per year. No other actions would be necessary.

The effects of control Measure BCM-04 (formerly MCS-04c) would not change as is still only applies to the Mira Loma area.

Merging control measure MCS-04a into control measure ONRD-04 has no practical effect because ONRD-04, which applies to the entire Basin, seeks accelerated retirement

of heavy-duty vehicles and replacement with new year 2010 vehicle models or later. This would essentially be the same effect as reducing emissions from heavy-duty vehicles serving warehouses in Mira Loma.

Because the changes to the 2012 AQMP are not considered to be substantive changes to the project, there is no requirement to recirculate the NOP/IS. Minor changes to projects often occur after circulation of an NOP/IS and before and during circulation of the draft CEQA document. However, in response to public comment, SCAQMD staff has updated the control measures and analysis in the IS and recirculated it for a 30-day public review and comment period on August 2, 2012. The SCAQMD will accept comments on the recirculated NOP/IS up to close of business August 31, 2012, and responses to those comments will be included in the Draft Program EIR.

It should be noted that the 2012 AQMP itself is not the “project description,” it is the project. Detailed project descriptions were included in both the June 28 NOP/IS and the August 2, 2012 NOP/IS.

The public workshops were intended to introduce the elements of the Draft 2012 AQMP before its release and provide an overview of the contents of the NOP/IS, which was released two weeks earlier. The workshops allowed for comments on ideas for the 2012 AQMP and the content of the CEQA document. While comments on the 2012 AQMP can be submitted up until the Governing Board hearing, it is strongly recommended, however, for comments to be submitted by August 31, 2012 in order to provide time for the response to be addressed and included in the Final 2012 AQMP.

Finally, regional hearings on the 2012 AQMP are scheduled from September 11, 2012 to September 13, 2012 in the four-county region to provide for more opportunity for public comment. The revision and recirculation of the IS with the associated 30-day public review and comment period, and regional hearings should address the concerns raised in the comments.

- 6-5 The comment states that specific control measures were provided despite complications they had because of changes to the proposed control measures after the release of the first IS. Responses to comments on the specific control measures are provided in Response to Comments 6-6 through 6-8 below. As stated in Response to Comment 6-4, the IS has been updated with the current proposed control measures and associated analysis. The revised IS and new NOP were released on August 2, 2012 for a 30-day public review and comment period. Finally, regional hearings on the 2012 AQMP are scheduled from September 11-13 in the four-county regional to provide for more opportunity for public comment. The revision and recirculation of the IS with the associated 30-day public review and comment period, and regional hearings should address the concerns raised in the comment. It should be noted that the 2012 AQMP itself is not the “project description,” it is the project. Detailed project descriptions were included in both the June 28 NOP/IS and the August 2, 2012 NOP/IS.
- 6-6 The comment states that ventilation hood systems are referred to in Appendix A of the IS, but there is no mention of such systems in the description of the measure in the IS or in the control measure itself. The sources of impacts in Appendix A were developed from the description of the control measures. The IS and Draft Program EIR examine impacts from secondary effects that may not be directly stated in the control measure. Therefore,

the IS and Draft Program EIR may provide more detail than is provided in the control measure to address these secondary effects.

6-7 The comment states that control measures CTS-01, CTS-02, CTS-03, CTS-04, FUG-01 and MSC-02 may have associated waste issues that were not identified in the IS. The comment does not describe or identify waste issues that they believe may be associated with control measures CTS-01, CTS-02, CTS-03, CTS-04, FUG-01 and MSC-02. SCAQMD staff will address any waste issues identified in the more thorough analysis in the Draft Program EIR for the 2012 AQMP.

6-8 The comment states that if funding is taken from existing programs to implement INC-02, there could be an adverse air quality impact. Funding for INC-02 will not be taken from existing programs and resources. Rather, staff intend to work with the stakeholders to identify a new funding source to implement INC-02, separate and different than the funding for existing programs. Therefore, no air quality impacts are expected from the funding of INC-02, since funds will not be taken from existing programs.

6-9 The comment states that imposition of SCAQMD-developed operating or maintenance procedures on a facility is not without potential impacts. The comment states that adverse impacts could result from upsets or malfunctions caused by arbitrary or inappropriate procedures required by the control measure MSC-03.

Operating or maintenance procedures required by SCAQMD control measures, rules or regulations are to ensure that equipment and associated control and/or monitoring equipment are operating correctly and within manufacturer specifications and comply with applicable rules. No evidence is presented of any arbitrary or inappropriate procedures. Any procedures that industry or the public believes to be arbitrary or inappropriate should be identified during the public review period of the AQMP or rules or regulations. SCAQMD staff addresses all such concerns and works to prevent any procedures that are not appropriate. Therefore, since no arbitrary or inappropriate procedures are expected, there would not be any adverse impacts to control measure MSC-03 or associated rules and regulations developed from MSC-03.

6-10 The comment requested the Draft Program EIR for the AQMP to include an alternative comprised only of the “eight short-term PM_{2.5} control measures, an alternative that would not include the Section 182(e)(5) implementation measures for ozone for either stationary or mobile sources” because the cost of such an alternative would place less reliance on actions by other agencies and be considerable less than the proposed project. AQMP controls should not be placed solely on sources under SCAQMD’s authority. Eighty to 90 percent of NO_x emissions are from mobile sources. Therefore, the District has to rely on CARB/EPA to reduce their fair share of reductions. Not including ozone measures in the proposed project would be less costly, but these costs are not avoided, just deferred.

The Draft Program EIR includes an alternative comprised only of PM_{2.5} control measures. Please see Alternative 4 in Chapter 6 of the Draft Program EIR.

6-11 The comment states that the “compressed” timeline for the adoption of the 2012 AQMP is concerning to them and impacts their ability to provide meaningful input. As stated in Response to Comment 6-4, the IS has been updated with the current proposed control

measures and associated analysis. The revised IS and new NOP were released on August 2, 2012 for a 30-day public review and comment period. The additional public review period should address the concerns raised in the comment. When released, the Program EIR will be available for a 45-day review period, as required by law. Therefore, it will not be subject to a “compressed” review period.

- 6-12 The concluding paragraph states the business community’s commitment to the AQMP process and provides information on Southern California Business Coalition contacts. No further response is necessary.

7-1

The screenshot shows an Outlook window titled "Port of Los Angeles Comments on the NOP for the Proposed 2012 AQMP - Message (HTML)". The interface includes a ribbon with "Message" selected, and various action buttons like Reply, Forward, Delete, Move to Folder, Create Rule, Other Actions, Block Sender, Not Junk, Categorize, Follow Up, Mark as Unread, Find, Related, and Select. Below the ribbon, a status bar indicates "You forwarded this message on 7/26/2012 4:37 PM." The email header shows: "From: Green Rebstock, Jan [JGreenRebstock@portla.org] Sent: Thu 7/26/2012 2:31 PM"; "To: CEQA_Admin"; "Cc: Ochsner, Lisa; Patton, Christopher; Cannon, Chris; Maggay, Kevin"; "Subject: Port of Los Angeles Comments on the NOP for the Proposed 2012 AQMP". The main body of the email contains the following text: "Hi - Please find our comment letter on the NOP for the proposed 2012 AQMP. A hard copy version by mail will follow. Please let us know if you have any questions." followed by "Thanks," and "Jan". Below this is a separator line of asterisks and a contact block for "Jan Green Rebstock", Environmental Project Manager at the Port of Los Angeles, with phone number 310.732.3949 and email jgreenrebstock@portla.org. The contact block includes two logos: "THE PORT OF LOS ANGELES" and "LA Waterfront". At the bottom, there is a "Confidentiality Notice" stating that the message contains confidential information from the Port of Los Angeles and that disclosure, copying, distribution, or use of the content is prohibited.



**THE PORT
OF LOS ANGELES**
Antonio R. Villaralgaosa
Board of Harbor
Commissioners
Geraldine Knatz, Ph.D.

425 S. Palos Verdes Street Post Office Box 151 San Pedro, CA 90733-0151 TEL/IDD 310 SEA-PORT www.portoflosangeles.org

Mayor, City of Los Angeles
Cindy Miscikowski President
David Arlan Vice President
Robin M. Kramer
Douglas F. Krause
Sung Won Sohn, Ph.D.
Executive Director

July 26, 2012

Steve Smith, Ph.D.
Program Supervisor, CEQA
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
(via email to ceqa_admin@aqmd.gov)

Dear Mr. Smith:

SUBJECT: COMMENTS ON THE NOTICE OF PREPARATION FOR THE PROPOSED 2012 AIR QUALITY MANAGEMENT PLAN PROGRAM ENVIRONMENTAL IMPACT REPORT

7-2

The City of Los Angeles Harbor Department (Harbor Department) appreciates the opportunity to comment on the Notice of Preparation (NOP) for a Draft Program Environmental Impact Report (EIR) for the 2012 Air Quality Management Plan (AQMP). Regarding the Draft 2012 AQMP, the Harbor Department submitted initial comments on July 10, 2012 related to the proposed backstop measure for indirect sources of emissions from ports and port-related sources. For your reference, a copy of the letter is enclosed. Regarding the preparation of the Draft Program EIR, we offer the following scoping comments for the South Coast Air Quality Management District (SCAQMD) to consider during its environmental review process under the California Environmental Quality Act (CEQA):

7-3

Schedule
The Program EIR schedule is very aggressive, with the scoping period ending on July 27, 2012, the release of the Draft Program EIR scheduled for August 2012, and final approval planned for October 5, 2012. There does not appear to be adequate time allocated to allow for meaningful input on the scope and content of the Draft Program EIR or the AQMP. In fact, the schedule would suggest that the Draft Program EIR may be well underway without the benefit of this scoping process. Hopefully, the SCAQMD will conduct the scoping process in a manner that allows for the integration of new information or analysis into the Draft Program EIR based on public comments received.



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Mr. Smith
South Coast Air Quality Management District

Page 2

- 7-4 *Aesthetics*
The Initial Study identifies potential significant impacts on aesthetics due to: 1) control devices at port facilities to control ship emissions from ships at berth, such as hoods or bonnets on ship exhaust stacks that could be as high as 80 feet; and 2) the use of overhead catenary power lines as a potential control measure to promote the use of zero emissions trucks powered by electricity. The Draft Program EIR should analyze potential aesthetic impacts to scenic corridors. Specifically, Harbor Boulevard and John S. Gibson Boulevard are identified in local plans as major scenic highways, thereby making views from these roadways highly sensitive. Like container cranes, any structures should be evaluated that impact views from Harbor Boulevard and John S. Gibson Boulevard or obstruct views of the Vincent Thomas Bridge, a local landmark that is eligible for listing in the National Register of Historic Places.
- 7-5 *Energy*
The Draft Program EIR should analyze how the mobile source control measures related to the electrification of on-road and off-road heavy-duty vehicles, marine vessels, locomotives, cargo handling equipment, and harborcraft will impact regional energy demand, the need for new electrical power or natural gas utility systems, and peak demand periods.
- 7-6 *Hazards and Hazardous Materials*
As noted on page 2-27 of the Initial Study, some control measures, such as OFFRD-04, Further Emission Reductions from Ocean-Going Marine Vessels while at Berth, could result in the increased use of ammonia in SCR units and the need for local ammonia storage. Additional hazardous waste generation and disposal for filtration systems applied to large vessels could also occur. Greater use of alternative fuels could also create hazard impacts in the event of an accidental release of these materials. The Draft Program EIR should evaluate the hazard impacts related to ammonia and LNG storage and fueling stations among port facilities, along with the potential for increased hazardous waste generation and disposal.
- 7-7 *Transportation/Traffic*
The NOP/IS states that the Draft 2012 AQMP is not expected to generate any significant adverse project-specific impacts to transportation or traffic systems and that no further evaluation will be conducted in the Draft Program EIR. However, the SCQAMD has not addressed impacts to traffic circulation on major freeways due to construction and operation of potential control measures related to on-road heavy-duty vehicles, such as the use of overhead catenary power lines. Traffic impacts due to the increased need for battery charging stations or LNG fueling stations are also not addressed. We would like to see these potential impacts analyzed in the Draft Program EIR.

Mr. Smith
South Coast Air Quality Management District

Page 3

7-8

Socioeconomics

While not required under CEQA, the Draft 2012 AQMP should include a thorough socioeconomic impact analysis for each proposed control measure, most notably the proposed backstop measure. This could be accomplished with an expanded discussion under the cost effectiveness section of each control measure summary in the Draft AQMP.

7-9

We look forward to reviewing both the Draft Program EIR and the Draft 2012 AQMP and working with the SCAQMD throughout the environmental review process.

Sincerely,



CHRISTOPHER CANNON
Director of Environmental Management

CC:LO:JG:mx

Enclosure



July 10, 2012

Barry Wallerstein, D. Env.
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

FILE COPY
7/11/12 (22)

Re: Initial Comments on the Proposed 2012 Air Quality Management Plan,
Control Measure IND-01

Dear Dr. Wallerstein:

7-10

The Port of Long Beach and Port of Los Angeles (Ports) appreciate the opportunity to participate in the South Coast Air Quality Management District's (AQMD) 2012 Air Quality Management Plan (AQMP) Advisory Committee. We support the AQMD's clean air goals and have worked aggressively with the port industry to reduce our fair share of air quality impacts to the region from port-related operations, as outlined in the San Pedro Bay Ports Clean Air Action Plan (CAAP) and the associated San Pedro Bay Standards. As a result, between 2005 and 2010, emissions from port-related sources were reduced by 70 percent for diesel particulate matter and by 49 percent for nitrogen oxides. Emissions inventory work currently underway indicates additional, continued emission reductions in 2011.

7-11

While we continue to remain a committed partner in the effort to improve air quality in the region, we disagree with AQMD's proposed control strategy for port-related sources in the Draft 2012 AQMP. The inclusion of proposed measure IND-01, "Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources," is unnecessary and counter-productive.

The two Ports have a proven track record of developing and implementing appropriate and effective emission reduction strategies. These efforts have been entered into voluntarily, working cooperatively with operators in the port area and the air quality regulatory agencies (i.e. Environmental Protection Agency, California Air Resources Board and AQMD). Since the Ports initially implemented the CAAP, many of the port-related control strategies have been or will be superseded by state or international requirements, such as the rules for replacing drayage trucks, switching to cleaner marine fuels, and using shore power while at berth. The Ports' emissions inventories in 2010 show reductions that are meeting or are in excess of the emission reductions that the Ports committed to in the San Pedro Bay Standards. However, it is important to note that in order to remain on track to meet the Standards, a collaborative and concerted effort with our agency partners is essential, with the understanding that while the Ports can achieve significant emission

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425 S. Palos Verdes Street • San Pedro • CA 90731 • 310-732-3675

Port of Long Beach • Environmental Planning
925 Harbor Plaza • Long Beach • CA 90802 • 562-590-4160

The San Pedro Bay Ports Clean Air Action Plan was developed with the participation and cooperation of the staff of the US Environmental Protection Agency, California Air Resources Board and the South Coast Air Quality Management District.

Dr. Wallerstein
 July 10, 2012
 Page -2-

7-11
 Cont.

reductions, no single entity can accomplish this task. The previous State Implementation Plan identified several regulatory strategies that have not yet materialized into regulations for various reasons. Moving forward, the Ports will need agency assistance, particularly on the development and deployment of zero-emission technologies and at-berth controls for non-regulated vessels, as well as on the preferential deployment of cleaner vessels to the basin.

The Ports are sustaining and growing long-standing successful CAAP programs, such as the Vessel Speed Reduction Incentive Program and, on July 1, 2012, the Ports implemented new, groundbreaking incentive programs to encourage cleaner ocean-going vessels to call at the Ports. With programs such as these, along with the above-referenced regulatory rules becoming effective and ensuring significant additional emission reductions by 2014, there is no identified need for implementing a backstop measure. The AQMD's proposed backstop measure will not result in any additional benefit for the region beyond what is currently being achieved and expected to be achieved in the near future, and is therefore unnecessary.

7-12

It is inappropriate for the AQMD to attempt to regulate the Ports, which are the Harbor Departments of the cities of Long Beach and Los Angeles, in an attempt to control emissions from equipment within our boundaries, but which we do not own or operate. Further, the proposed backstop measure identifies that the "...requirements will be triggered if the reported emissions for 2014 for port-related sources exceed the 2014 target milestone, or the Basin fails to meet the 24-hour PM_{2.5} standard as demonstrated in the 2012 AQMP and basin-wide reductions are needed, in which case a new reduction target for each pollutant will be established." (emphasis added). While clarification has been provided by AQMD staff that any effort to make up for a basin-wide shortfall will be the responsibility of all sectors, not just the Ports, this statement still implies that if the port industry meets their targeted emission reductions, but other sectors fail to meet their fair share obligations, then the AQMD will mandate additional reductions from the Ports. This is counter to the cooperative relationship that our agencies have established since we began working together on the CAAP in 2006, and ignores the tremendous air quality benefits that have been gained from voluntary actions.

7-13

Lastly, based on the preliminary calculations by AQMD, the majority of the region is expected to be in attainment for PM_{2.5} by the target year of 2014, with the remainder anticipated to be in attainment by the expected extension date of 2019. The inclusion of IND-01 is therefore unnecessary for the region to reach attainment. If these emission reductions are needed in the baseline emissions calculation, there is precedent for mechanisms other than control measures to be used for this purpose, and we would like to discuss those options with your staff.

7-14

We strongly believe that the voluntary and cooperative CAAP process established by the Ports remains the most appropriate forum for the Ports and the air regulatory agencies to discuss technical and policy issues related to reducing emissions from port-related sources. As stated above, we remain committed to achieving our fair share of clean air goals identified in the CAAP and working with port industry and the air regulatory agencies on implementation of appropriate strategies.

For your reference, attached is a comment letter dated May 4, 2010, in which the Ports initially expressed concerns regarding backstop rules. The letter was submitted as a public comment on the proposed Rules 4010 and 4020, which were proposed backstop rules for health risk and criteria pollutant emissions.

Dr. Wallerstein
July 10, 2012
Page -3-

7-15

We look forward to working with AQMD on resolving our concerns related to the proposed backstop measure in the Draft 2012 AQMP.

Sincerely,



CHRIS LYTLE
Executive Director
Port of Long Beach



MICHAEL R. CHRISTENSEN
Deputy Executive Director, Development
Port of Los Angeles

HAT:s

cc: Peter Greenwald, South Coast Air Quality Management District
Elaine Chang, South Coast Air Quality Management District
Henry Hogo, South Coast Air Quality Management District
Susan Nakamura, South Coast Air Quality Management District
Cynthia Marvin, California Air Resources Board
Roxanne Johnson, Environmental Protection Agency, Region 9
Robert Kanter, Port of Long Beach
Rick Cameron, Port of Long Beach
Dominic Holzhaus, Deputy City Attorney, City of Long Beach
Chris Cannon, Port of Los Angeles
Joy Crose, Assistant General Counsel, City of Los Angeles

**Responses to Comment Letter #7
Port of Los Angeles – Christopher Cannon (7/26/12)**

- 7-1 This comment notifies the SCAQMD that a comment letter is attached. No further response is necessary.
- 7-2 This comment notifies the SCAQMD that the comments contained in the letter pertain to the Initial Study for the Draft Program EIR for the 2012 AQMP. This comment also refers to a separate comment letter submitted on July 10, 2012 that is attached to this comment letter (see Responses to Comments 7-10 through 7-15). No further response is necessary.
- 7-3 Subsequent to the submittal of this comment letter, the NOP/IS was recirculated for an additional 30-day public comment period on August 2, 2012 because changes were made to the 2012 AQMP project description subsequent to release of the original NOP/IS on June 27, 2012. The comment period for the recirculated NOP/IS closes on August 31, 2012. Two additional public workshops/CEQA scoping meetings have also been scheduled for August 9, 2012 and August 23, 2012 to seek additional input regarding the scope and content of the Draft Program EIR. To accommodate the timing needed to recirculate the NOP/IS, the public hearing date has been moved from October 5, 2012 to November 2, 2012 (subject to change). See also Response to Comment 6-11. All comments received during the scoping process will be considered when preparing the Program EIR.
- 7-4 Consistent with the suggestion in the comment, the recirculated NOP/IS acknowledges that there may be potentially significant adverse project-specific aesthetics impacts to scenic corridors. These impacts will be analyzed in the Draft Program EIR.
- 7-5 Consistent with the suggestion in the comment, the recirculated NOP/IS acknowledges that there may be potentially significant adverse energy demand impacts from various mobile source control measures related to the electrification of on-road and off-road heavy-duty vehicles, marine vessels, locomotives, cargo handling equipment, and harborcraft. These impacts will be analyzed in the Draft Program EIR.
- 7-6 Consistent with the suggestion in the comment, the recirculated NOP/IS acknowledges that there may be potentially significant adverse hazards and hazardous materials impacts from: 1) hazardous waste generation and disposal associated with filtration systems applied to large vessels related to ammonia storage and use; and, 2) the potential for accidental release of alternative fuels, such as LNG, as the use of these alternative fuels increases as a result of implementing various control measures, including but not limited to Control Measure OFFRD-04. These impacts will be analyzed in the Draft Program EIR.
- 7-7 Consistent with the suggestion in the comment, the recirculated NOP/IS acknowledges that potentially significant adverse traffic impacts could occur as a result of implementing ADV-01 – §182(e) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles, due to constructing overhead electrical catenary lines. Therefore, this potential impact will be evaluated in the Draft Program EIR

- 7-8 The SCAQMD is currently conducting a socioeconomic analysis of the 2012 AQMP, which would include costs of control measures, benefits of clean air, job impacts, and other socioeconomic impacts. The analysis will be presented in a stand-alone report. To date, the SCAQMD has released the cost of each measure. The proposed backstop measure would be triggered if the reported emissions for port-related sources are more than the 2014 target milestone, if the Basin fails to meet the PM_{2.5} standard as prescribed in the 2012 AQMP, or if there is a change in the Basinwide carrying capacity. If any one of those conditions is met, the cost of the measure will be assessed. It is too speculative to predict whether the backstop measure would be triggered, the level of emission exceedance, and the requisite control technology at this time. It is also speculative to forecast future changes in carrying capacity or whether the 2012 AQMP would fall short of compliance.
- 7-9 This comment concludes the letter. No further response is necessary.
- 7-10 This comment begins the attached referenced letter mentioned in Comment 7-2. This comment notifies the SCAQMD that the comments contained in the letter pertain to commenter's participation in the 2012 AQMP Advisory Committee. This comment also remarks on the commenter's past and present emission reduction efforts. No further response is necessary.
- 7-11 The SCAQMD staff acknowledges the Ports' efforts in reducing emissions from port related sources. The SCAQMD staff will continue to be an active participant on zero-emission technology development and demonstration projects. The SCAQMD staff also supports the Port's Clean Air Action Plan (CAAP) Technology Action Plan (TAP) which calls for current and future efforts to demonstrate technology with a high potential to further reduce emissions from port-related sources.

Control Measure IND-01 – Backstop Measure for Indirect Sources of Emissions from Ports and Port-related Facilities was included in the Draft 2012 AQMP in order to provide an “insurance policy” to ensure that the assumed emission reductions from port-related sources are met. This control measure is based on emission targets from port-related sources, and “backstops” those emissions expected from existing air quality rules, regulations, and commitments by 2014.

It should be noted that the PM_{2.5} attainment strategy contained in the Draft 2012 AQMP does not rely on additional reductions from port-related sources, beyond what is projected for the future baseline emissions inventory.

SCAQMD staff considers this control measure to be necessary to ensure that the Basin achieves the federal 24-hour PM_{2.5} ambient air quality standard by 2014. Reductions will occur and be enforceable, so that the additional emission benefits from port-related sources are possible. For instance, there are other control strategies that could be put in place that the Ports are not currently implementing and are not otherwise required by state and federal law. These include accelerating the use of lower emitting locomotives operated by Class I Railroads, and zero- and near-zero emission reduction technologies.

- 7-12 The comment states that “it is inappropriate for the SCAQMD to attempt to regulate the Ports, which are the Harbor Departments in the cities of Long Beach and Los Angeles, in an attempt to control emissions from equipment within our boundaries, but which we do

not own or operate.” The SCAQMD may regulate Ports sources under its existing authority. As stated in control Measure IND-01, the SCAQMD has the authority to adopt rules to control emissions from “indirect sources” under existing law. The Clean Air Act defines an indirect source as a “facility, building, structure, installation, real property, road or highway which attracts, or may attract, mobile sources of pollution,” 42 U.S.C. § 7410(a)(5)(C); CAA § 110(a)(5)(C). Under this definition, the Ports are an indirect source. As provided in the California Health & Safety Code, districts are further authorized to adopt rules to “reduce or mitigate emissions from indirect sources” of pollution. (Health & Safety Code § 40716(a)(1)). The SCAQMD is also required to adopt indirect source rules for areas where there are “high-level, localized concentrations of pollutants or with respect to any new source that will have a significant impact on air quality in the South Coast Air Basin.” (Health & Safety Code § 40440(b)(3))

The Ports are also concerned that if the port industry meets their targeted reductions, but other sectors fail to meet their fair share obligations, then the SCAQMD will mandate additional reductions from the Ports. As the control measure explains, if the current situation where the original basin-wide carrying capacity is lowered in the future, the SCAQMD will seek additional reductions from all available sources, including port-related sources. Under this scenario, all sources will have a new “fair share” reduction target, including port-related sources.

- 7-13 The comment regarding attainment dates is correct based on current inventories and projections, and no additional emission reductions from port-related sources are needed to demonstrate attainment for the federal 24-hr PM_{2.5} ambient air quality standard by 2014. However, as discussed in Response to Comments 7-11 and 7-12, Control Measure IND-01 is necessary to ensure that if additional emission reductions are needed to demonstrate attainment of the federal 24-hr PM_{2.5} ambient air quality standard due to changes in the basin-wide carrying capacity, a mechanism for further emission reductions from port-related sources is included as a control measure in the AQMP.
- 7-14 The SCAQMD staff remains committed to working with both Ports in a collaborative manner to reduce emissions and develop and demonstrate promising zero- and near-zero-emission technologies for port-related sources. We believe this shouldn’t be limited to the CAAP process, and can be done either within the framework of the CAAP or other public and private partnerships. The inclusion of Control Measure IND-01 should not adversely affect this process in anyway.
- 7-15 This comment concludes the letter. No further response is necessary.

2012 Air Quality Management Plan-South Coast Air Quality District- Initial Study/Notice of Preparation Comments - Message (HTML)

Message

Reply Reply Forward Delete Move to Create Other Block Safe Lists Categorize Follow Mark as Junk Sender Not Junk Junk E-mail Options Find

From: Yanez, Jarrett [JYANEZ@dpw.lacounty.gov] Sent: Thu 7/26/2012 5:55 PM
 To: Steve Smith; Joe Cassmassi
 Cc: Duong, Toan; Cruz, Ruben; Ibrahim, Amir
 Subject: 2012 Air Quality Management Plan- South Coast Air Quality District- Initial Study/Notice of Preparation Comments

Dear Dr. Steve Smith:

**Initial Study/Notice of Preparation
 2012 Air Quality Management Plan
 South Coast Air Quality District**

8-1 Thank you for the opportunity to review the Initial Study/Notice of Preparation for the 2012 Air Quality Management Plan (AQMP). The 2012 AQMP identifies control measures to demonstrate that the region will attain the federal standard for particulate matter less than 2.5 microns in diameter (PM2.5) by the applicable target dates and provides Clean Air Act §182(e)(5) proposed implementation measures to assist in achieving the 8-hour ozone standard.

The following comments are for your consideration and relate to the environmental document only.

8-2 **Hazards-Environmental Safety**
 Initial Study of the 2012 AQMP
 Section MCS-02: Further Emission Reductions from Green Waste Processing (page 1-16)

It is recommended that a timeline be specified as to when 1) the existing database would be reviewed to refine green waste material inventory, and 2) a rule would potentially be developed to incorporate technically feasible and cost-effective BMPs or controls.

If you have any questions regarding the environmental safety comment, please contact Mr. Corey Mane at (626) 458-3524 or cmayne@dpw.lacounty.gov.

8-3 **Services-Traffic/Access**
 Road Maintenance Division is currently seeing operational impacts as a result of current requirements for alternative fueled vehicle use in lieu of clean-diesel technology. Many of the proposed regulations seem to build on the current ones which are causing negative impacts. Specifically, Counties typically maintain and respond to rural areas far from urban centers. This is as opposed to most cities which are fairly compact and do not require staff to respond beyond several miles of their City facilities. Counties such as Los Angeles may literally respond dozens of miles from their de-centralized facility, in rural/mountain terrain, far from urbanized areas. Therefore, infrastructure for fueling of alternative fueled vehicles is not present. Note that many areas do not even have natural gas lines to make CNG even a possibility. Also, because of the distances, current technology has not provided a means to allow a vehicle to operate in the remote areas for a full 12-hour shift in order to provide road clearing, snow plowing, debris removal, tree trimming, etc. Note that operationally, staff and equipment in Road Maintenance Division provide mutual Support during and subsequent to major storms and other natural disasters. We caution implementing rules requiring technology which would not allow equipment/vehicles to be used for at least 12 hours, in remote areas, 60 miles or more from their facility or origin, without special infrastructure (charging stations, CNG fueling). Finally, cost of purchase, maintenance, and additional infrastructure to maintain alt. fuel vehicles causes already strained and reduced transportation related revenues to be

(charging stations, CNG fueling). Finally, cost of purchase, maintenance, and additional infrastructure to maintain alt. fuel vehicles causes already strained and reduced transportation related revenues to be utilized on items other than the roadway infrastructure itself.

We would request that a process be implemented to take these unique circumstances into consideration as the rules are implemented in order to not adversely impact public safety. Again, this affect Los Angeles County more than individual Cities due to the more rural nature of our facilities and the Mutual Aid provided following storms and other Natural disasters.

8-4 Section XIV PUBLIC SERVICES has been checked off that there are no Impacts to other public facilities. We believe that actually there could be Potentially significant impacts in rural, County Unincorporated areas and mountain roads because of the issues presented above. There would likely be physical impacts to our facilities if alternate fuels/methods are required. Additionally, construction of costly fueling sites would be required where there are no public fueling sites available, or the sole public site was not constructed with on-road, heavy duty trucks in mind and therefore it is unable to be utilized. Most of our decentralized facilities are not physically able to be utilized for public/private fueling. Several do not have necessary infrastructure available. Therefore, response times would be adversely affected and performance goals impacted due to inability of alternate fueled vehicles to operate an entire shift in remote, unincorporated areas. In addition, mutual aid within the Department would be adversely impacted by inability to respond to remote areas or areas served in the Antelope Valley AQMD by our staff and vehicles assigned to a facility in SCAQMD.

8-5 In the discussion, Section XIV a) and b), page 2-43 it states that per Health and Safety Code, emergency or rescue vehicles operated by law enforcement, fire, medical, paramedic are specifically exempt from requirements of alternate fueled vehicles. That was likely the basis for determination of no adverse impact. Unfortunately, that code does not take into account that Public Works, specifically those involved in roadway maintenance, are not considered in that same code. However, roadway maintenance is the first to be called by those responders in order to maintain public roadways in an open and safe condition in order for those mentioned in the code to respond themselves. Also, in the restoration efforts, emergency responders by that code are largely not involved, while Public Works staff continue to work towards restoring access on public roadways for every extended periods of time. Typically in remote areas.

8-6 If you have any questions regarding the traffic/access comments, please contact Mr. Mark Caddick at (661) 947-7173 or mcaddick@dpw.lacounty.gov.

If you have any other questions or require additional information, please contact:

Toan Duong
 (626) 458-4915
 Land Development Division
 Los Angeles County Department of Public Works

Responses to Comment Letter #8
Los Angeles County Department of Public Works – Toan Duong (7/26/12)

8-1 No response necessary. The email informs the reader that the comments are included are provided on the environmental document only.

8-2 This comment requests that a timeline be provided noting when the existing green waste material inventory would be reviewed and that a rule be developed to incorporate technically feasible and cost effective BMPs or controls under MCS-02.

The proposed control measure MCS-02 Further Emission Reductions from Greenwaste Processing will consist of two phases. The first phase would cover developing emission factors from greenwaste chipping and grinding activities, refinement of the greenwaste material throughput by sector (e.g., landfill, landscapers, composters, etc.), and if needed, a survey of greenwaste generation and utilization to contribute to the development of a comprehensive material throughput and emissions inventory. During Phase 1, SCAQMD staff will conduct regular meetings of the Rule 1133 series working group to review and seek input on the data from Phase 1 as it is developed. Phase 1 is expected to be completed by late 2013 or 2014. Phase 2 rule development would commence as Phase 1 ends and is tentatively scheduled to be completed by 2015 with implementation of this proposed control measure one to two years after that. However, the exact timing and execution of Phase I, Phase II, rule adoption, and rule implementation will depend heavily upon the results of each preceding activity; therefore, no specific timelines are available at this time.

8-3 This comment cautions against the implementation of rules that require technology which would not allow equipment/vehicles to be used for at least 12 hours in remote areas, 60 miles or more from their facility or origin without special infrastructure. If fleet vehicle rules are amended in the future, the needs of affected fleets will be considered at that time.

The comment states that the cost of purchase, maintenance and additional infrastructure to maintain alternative fueled vehicles causes “strained and reduced” transportation related revenues to be used on items other than roadway infrastructure itself.

As already noted, any future fleet vehicle rules would consider needs such as fleets located in remote locations for example. Mobile alternative refuelers are available. Through the use of these mobile alternative fuel refuelers, the county would be able to extend the service distance available to alternative-fueled vehicles in the county fleet. The mobile alternative fuel refuelers can be rotated around the county based on need. Therefore, mobile alternative fuel refuelers would be less expensive to implement than building new infrastructure in areas that are not frequently accessed.

8-4 The comment states that there would be potentially significant impacts in rural, County Unincorporated areas and mountain road caused by alternative-fuel requirements in control measures, rules and regulations. The comment states there would be physical impacts to facilities from construction of refueling sites. Response times and performance goals may be impacted due to the inability of alternative fueled vehicles to operate an entire shift in remote, unincorporated areas.

Alternative fueled vehicles have become the preferred fuel for several types of fleets who are accustomed to either gasoline or diesel use. At a cost between \$1.50 - \$2.00 less a gallon, alternative fuels have become the preferred fuels in the refuse and transit bus industries. As stated in Response to Comment 8-3, mobile refuelers may be used in areas that are remote locations from alternative fueled stations and thereby allow the county to meet response times and performance goals, while reducing cost and air pollution. Should this option not be feasible for an individual circumstance, exemptions from any future alternative fuel requirements could be developed, similar to the SCAQMD's existing fleet Rule 1196. If fleet vehicle rules are amended in the future, the needs of affected fleets will be considered at that time. As already noted, any future fleet vehicle rules would consider needs such as fleets located in remote locations for example. Also, exemptions and exceptions can be carried out during rule development to address issues of infeasibility.

- 8-5 The comment states that Public Works vehicles, specifically road maintenance vehicles, are not considered in the exemption from requirements of alternative fueled vehicles under the Health and Safety Code. The comment also states that roadway maintenance is called first by emergency responders to maintain public roadways open and in a safe condition.

Roadway maintenance vehicles are not defined as emergency vehicles in accordance with the California Vehicle Code. Alternative-fueled maintenance vehicles can be supported by alternative fueled mobile refuelers. This would allow public roadways to remain open and in a safe condition while emergency vehicles that are exempt under the Health and Safety code respond to emergencies.

- 8-6 No response is required. The concluding paragraph provides contact information for the Los Angeles County Department of Public Works.

Comments to 2012 Draft AQMP due 7.27.2012 5PM - Message (HTML)

Message

Reply Reply Forward
Respond to All

Delete Move to Folder Create Rule Other Actions
Actions

Block Sender Not Junk
Junk E-mail

Safe Lists

Categorize Follow Up Mark as Unread
Options

Find Related Select
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You forwarded this message on 7/27/2012 4:52 PM.

From: Joyce Dillard [dillardjoyce@yahoo.com] Sent: Fri 7/27/2012 4:27 PM
To: Jeffrey Inabinet
Cc:
Subject: Comments to 2012 Draft AQMP due 7.27.2012 5PM

Message City Light Pollution Affects Air Pollution.pdf

9-1 "Vision" may be your operative word and "imaginary" may be one left out.

9-2 Do you know all your sources of pollutions.

9-3 Take, for instance, the Midway Yard in Los Angeles used as Metrolink's Central Maintenance Facility. There has never been a Full environmental Impact Report for that use and only interim use is mentioned in:

Pasadena-Los Angeles Rail Transit Project
State Clearinghouse No. 88042713

Burbank-Glendale-Los Angeles Rail Transit Project
State Clearinghouse No. 93051016

9-4 Being in the center of downtown Los Angeles, near freeways and industry, what are the pollutant loads? There can be NO proper assessment and data for SCAG or other agencies to do proper planning. Obviously, without an EIR there is no monitoring.

9-5 There are no Scenarios created to address the problem.

9-6 You can also affect Impaired Water Bodies such as the LA River and increase the Greenhouse Gas effect.

9-7 There is (City of Los Angeles) reference to a three-party Settlement Agreement was signed by the City of Los Angeles, the Los Angeles County Transportation Commission (LACTC), and the Southern California Regional Rail Authority in 1992. The Agreement was developed to avert legal action by the City of Los Angeles regarding the LACTC's and SCRRRA's conformity with California Environmental Quality Act (CEQA) requirements in building the commuter rail maintenance facility (CMF)Taylor Yard.

That Settlement Agreement cannot be found, to date, and does not reduce emissions.

9-8 You do not take into effect emissions from methane and other gases discharging from the geology because of its oil content and soil contamination-or even because of fracking. Failed Methane Monitoring Systems can add to air pollution. Some activists have rented cameras to film the dangerous discharges.

9-9 What municipalities have supplied data on their Methane Monitoring systems?

9-10 Monitoring stations need to be identified in this report. The push to bicycles may just be a method of reducing emission around monitoring stations and, because of the minority of population buy-in, not a sustainable solution. Is there a consistent system amongst governing agencies?

9-11 Same with Transit Oriented Districts. The data given by Brian Taylor from UCLA shows a less affluent user of transit. Would that method really be replacing automobiles? SCAG has created scenarios as if TOD would be replacement methods. We believe this to be false.

9-12 Considering the state of the economy and high unemployment in the Los Angeles area, will new technology in cars be considered reliable in the projections? In other words, can the public afford the new vehicles that would reduce emissions?

9-13 Have you looked at density and idling in traffic?

9-14 Have you looked at density in the increased usage of landfills and their emissions? Is there a consistent system amongst governing agencies in their reporting and monitoring?

9-15 Have you looked at major projects such as the Los Angeles Convention and Event Center (NFL Stadium) and the concentration of automobiles to a single location and the number of days effected? Have you analyzed those transportation patterns within the SCAQMD to events at the stadium?

9-16 Have you looked at Digital Signage, Light Pollution and the impacts on Ozone (City Light Pollution Affects Air Pollution-Harald Stark-NOAA)?

9-17 What differentials have occurred since the 2001 Baseline Air Emissions Inventory used in reports?

9-18 This plan is TOO concentrated on vehicle and truck emissions, and attainment has not been achieved to date.

Joyce Dillard
P.O. Box 31377
Los Angeles, CA 90031

Attachment:
City Light Pollution Affects Air Pollution

9-19



City Light Pollution Affects Air Pollution



Poster # A21C-0117
 Location: Moscone South
 Tuesday, December 14th
 8am-12pm

Harald Stark*, S.S. Brown, W.P. Dubé, N. Wagner, T.B. Ryerson, I.B. Pollack, C.D. Elvidge, D. Ziskin, D.D. Parrish

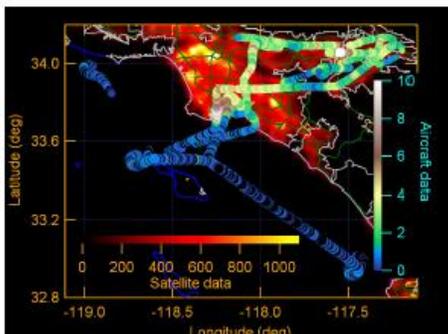
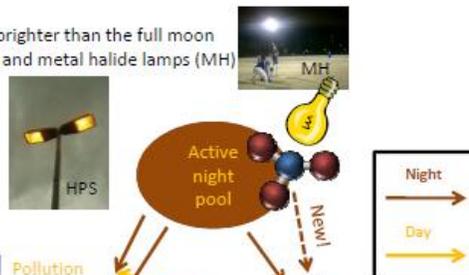
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National Oceanic and Atmospheric Administration, Earth System Research Laboratory, 325 Broadway, Boulder, CO 80305, USA

* Also associated with Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO 80309, USA

First airborne measurements of city lights intensities

- o City lights over Los Angeles are 10,000 times dimmer than sun light but 25 times brighter than the full moon
- o Two street light types identified by color fingerprints: high-pressure sodium (HPS) and metal halide lamps (MH)
- o Light intensities were converted into chemical destruction strength
- o Satellite data can be used to estimate light intensities over other cities
- o City lights can
 - Destroy nighttime cleansing chemicals
 - Slow down night time cleansing of pollution
 - Lead to more starting chemicals for the next day
 - Affect ozone levels after sunrise



Aircraft data calibrates satellite



Los Angeles at night: City lights and chemistry, viewed from the air

Disclaimer: This presentation was prepared by the Cooperative Institute for Research in Environmental Sciences (CIRES) with support in part from the National Oceanic and Atmospheric Administration, U.S. Department of Commerce, under cooperative agreement NA17RJ1229 and other grants. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the National Oceanic and Atmospheric Administration or the Department of Commerce. The NOAA * emblem is a registered trademark of the U.S. Department of Commerce, used with permission.

Responses to Comment Letter #9
Ms. Joyce Dillard (7/27/12)

- 9-1 The correct title of the document it is assumed that the commenter is referring to is *Vision for Clean Air: A Framework for Air Quality and Climate Planning*. This document is a collaborative effort by the SCAQMD, CARB and the San Joaquin Valley Air Pollution Control District that examines how strategies developed for air quality and climate change planning should be coordinated to make the most efficient use of limited resources and the time needed to develop cleaner technologies. The Vision document can be found at: <http://www.aqmd.gov/aqmp/2012aqmp/VisionDocument/index.htm>.
- 9-2 The comment asks if the SCAQMD knows all sources of pollution within its jurisdiction. The 2012 AQMP, like previous AQMPs prepared by the SCAQMD, includes a comprehensive emissions inventory that includes the best available information about emissions in the Basin. The SCAQMD, CARB, and SCAG, make every effort to identify and quantify all sources of pollution. For example, the emissions inventory contains emissions data on a wide range of stationary sources such as boilers, heaters, and other stationary emissions sources located at a wide variety of types of facilities, including refineries, utilities, dry cleaners, gas stations, etc. Emissions inventory data on consumer products including paints, lacquers, cleaning solvents, etc, are also included in the 2012 AQMP emissions inventory. Similarly, CARB provides a comprehensive inventory of emissions from mobile sources, both on-road mobile such as passenger vehicles; light-duty, medium-duty, and heavy-duty trucks; off-road mobile sources such as construction equipment, marine vessels, etc. Each emissions inventory includes improvements and refinements compared to emissions inventories prepared for past AQMPs. The SCAQMD, CARB, and SCAG, make every effort to identify and quantify all sources of pollution. For additional information on the emission inventory in the 2012 AQMP, the commenter is referred to 2012 AQMP Appendix III - Base and Future Year Emission Inventory at <http://www.aqmd.gov/aqmp/2012aqmp/draft/Appendices/AppIII.pdf>.
- 9-3 The comment states that there has never been a full EIR conducted for the Midway Yard in Los Angeles which is used as Metrolink's Central Maintenance Facility, and only interim use of this facility is mentioned in the following two documents:
- Pasadena-Los Angeles Rail Transit Project
State Clearinghouse No. 88042713
 - Burbank-Glendale-Los Angeles Rail Transit Project
State Clearinghouse No. 93051016
- The two projects cited are not part of the 2012 AQMP. In addition, as a single purpose agency regulating air quality, the SCAQMD has little discretionary approval authority over the two rail projects mentioned. Although these projects may include some stationary sources such as backup electricity generators, the more appropriate lead agencies under CEQA would be agencies with general land use authority, such as a city or county, or transit agencies. No further response is necessary.
- 9-4 The comment asks about the pollutant loads in downtown Los Angeles. The comment also states that there is no proper data for SCAG or other agencies to conduct proper planning and without an EIR, there can be no monitoring. The SCAQMD operates 35

permanent, multi-pollutant monitoring stations, and 5 Lead (Pb) air monitoring sites in the South Coast Air Basin and a portion of the Salton Sea Air Basin in Coachella Valley. This area includes Orange County and the non-desert portions of Los Angeles (including downtown Los Angeles), Riverside, and San Bernardino Counties. Each year, the SCAQMD prepares an Annual Air Quality Monitoring Network Plan that includes a review of actions taken during the previous fiscal year, and outlines plans for action in the year ahead. Federal regulations require that the air quality monitoring network be reviewed annually to identify any need for additions, relocations, or terminations of monitoring sites or instrumentation. After a 30-day comment period, the Plan is submitted to the U.S. EPA by July 1 of each year. The Final 2012 Annual Air Quality Monitoring Network Plan can be found on SCAQMD's website at: <http://www.aqmd.gov/tao/AQ-Reports/AQMonitoringNetworkPlan/AQnetworkplan.htm>.

9-5 The comment states that there are no scenarios created to address the problem. The SCAQMD is committed to undertaking all necessary steps to protect public health from air pollution, with sensitivity to the impacts of its actions on the community and businesses. This is accomplished through a comprehensive program of planning, regulation, compliance assistance, enforcement, monitoring, technology advancement, and public education. The SCAQMD develops and adopts an AQMP, which serves as the blueprint to bring this area into compliance with federal and state clean air standards. Rules are adopted to reduce emissions from various sources, including specific types of equipment, industrial processes, paints and solvents, even consumer products. Permits are issued to many businesses and industries to ensure compliance with air quality rules. SCAQMD staff conducts periodic inspections to ensure compliance with these requirements. The test of whether these efforts are working is the quality of the air we breathe. The SCAQMD continuously monitors air quality at 38 locations throughout the four-county area. This also allows the SCAQMD to notify the public whenever air quality is unhealthful.

9-6 The comment states that SCAQMD actions can also affect impaired water bodies such as the Los Angeles River and increase the greenhouse gas effect. All control measures in the 2012 AQMP were evaluated to identify those control measures with potential hydrology and water quality impacts. Review of the 2012 AQMP control measures identified several control measures that have the potential to generate significant adverse hydrology and water quality impacts. Table A-1 in Appendix A of the NOP/IS document lists all 2012 AQMP control measures and shows those control measures that have the potential to generate significant adverse hydrology and water quality impacts. These control measures will be further evaluated in the Program EIR that is being prepared for the 2012 AQMP.

While the 2012 AQMP is not designed to specifically regulate GHG emissions, the 2012 AQMP includes two new categories of control measures, incentive (INC) and education (EDU) programs. In addition to GHG reductions generated as co-benefits of implementing other AQMP control measures, INC and EDU measures are expected to reduce GHG emissions primarily through increasing energy efficiency and conservation (INC-01, EDU-01). Improving energy efficiency can be accomplished by layering smart grid systems onto the existing electricity distribution system. A smart grid is a digitally enabled electrical grid that gathers, distributes, and acts on information about the

behavior of all participants (suppliers and consumers) in order to improve the efficiency, importance, reliability, economics, and sustainability of electricity services². Establishing a smart grid system does not necessarily require constructing a new grid system; use of smart technologies allows the existing grid system to be used more efficiently.

Some 2012 control measures, however, have the potential to generate combustion emissions that could increase GHG emissions. For example, implementing BCM-01 – Emission Reductions from Under-fired Charbroilers, may result in increased combustion emissions through installation of afterburner technologies. Other control measures, e.g., ONRD-01 – Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles, ONRD-03 – Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium-Heavy-Duty Vehicles, etc., have the potential to increase demand for electricity resulting in increased combustion emissions, GHG emissions in particular, from increased electricity generation. Therefore, potential GHG emission impacts will be analyzed in the Program EIR.

9-7 The comment refers to a three-party settlement agreement that was signed by the City of Los Angeles, the Los Angeles County Transportation Commission (LACTC) and the Southern California Regional Rail Authority in 1992 regarding LACTC's and SCRRA's conformity with CEQA requirements in building the commuter rail maintenance facility (CMF) Taylor Yard. The comment also states that the settlement agreement cannot be found and does not reduce emissions. While the 2012 AQMP contains three measures related to future rail activities, it is not directly related to the specific project or settlement agreement that is referred to in the comment.

9-8 The comment states that the SCAQMD does not take into effect emissions from methane and other gases discharging from the geology because of its oil content and soil contamination or because of fracking. The SCAQMD currently does not regulate fracking operations and the 2012 AQMP does not contain any control measures related to fracking operations. In California, the Division of Oil, Gas and Geothermal Resources (DOGGR) has authority to regulate all phases of oil and gas development and has the statutory authority to regulate fracking (see California Pub. Res. Code §3106). However, the Division does not track, regulate or monitor any aspect of hydraulic fracturing and it does not require reporting to track the different methods or the fluids injected into the ground. While the agency requires drilling permits and enforces groundwater protections, once those permits are acquired, drillers are allowed to employ techniques such as fracking to get the oil/gas out of the ground without additional reporting.

For the first time, EPA will regulate air emissions from natural gas wells that are hydraulically fractured, as well as other emission sources associated with exploration, production, processing, and transportation of oil and natural gas. On April 17, 2012, EPA issued a set of regulatory standards for the oil and gas industry under the Clean Air Act, requiring the reduction of emissions of VOCs, air toxics and methane from sources in the industry, including the hydraulic fracturing of horizontal natural gas wells drilled or hydraulically re-fractured after August 23, 2011.

² http://en.wikipedia.org/wiki/Smart_grid, accessed December 16, 2011.

- 9-9 The comment questions what municipalities have supplied data on their methane monitoring systems. Municipalities reporting their VOC emissions and methane (CH₄) emissions are estimated from CARB's VOC speciation profile. The SCAQMD provides CARB the VOC emissions inventory from the sources in our jurisdiction obtained from the Annual Emissions Reporting (AER) Program every year. In turn, CARB generates the CH₄ emissions from their speciation profile.
- 9-10 The comment states that monitoring stations need to be identified in this report and incentives for a transition to bicycles may just be a method of reducing emission around monitoring stations. Please refer to the Response to Comment 9-4 for a discussion of the SCAQMD's network of monitoring stations.
- SCAG's 2012 – 2035 RTP/SCS endeavors to encourage bicycling and other forms of active transportation. These efforts, however, are not tied in any way to SCAQMD's monitoring stations.
- 9-11 The comment states that SCAG has created scenarios as if transit oriented districts would be replacement methods for automobiles. The commenter believes this to be a false notion, but does not provide any evidence to support this opinion. It should be noted that the 2012-2035 RTP/SCS includes consideration of transit oriented development, which is included as part of the baseline for the 2012 AQMP.
- 9-12 The comment questions, considering the state of the economy and high unemployment in the Los Angeles area, whether new technology in cars be considered reliable in the projections (i.e., whether the public can afford to purchase new vehicles that would reduce emissions). New advanced technology vehicles are typically more expensive than conventional gasoline fueled vehicles, at least initially. Historically, there has been a steady increase in sales of hybrid vehicles. SCAQMD staff believes that this trend will be similar for the next generation of advanced technology vehicles. As the sales volume increase, the cost of the vehicle goes down. This has been the trend with the current generation hybrid vehicles. In addition, consumers operating the advanced technology vehicles realize a fuel savings, which help offset the additional upfront cost of the vehicle.
- 9-13 The comment asks if traffic density and idling were analyzed. There are no control measures in the 2012 AQMP that are directly related to idling. All control measures were evaluated to identify those control measures with potential transportation or traffic impacts. Adopting the proposed 2012 AQMP is not expected to substantially increase vehicle trips or vehicle miles traveled in the district. The 2012 AQMP relies on transportation and related control measures developed by SCAG (SCAG, 2012) (see Appendix B of the NOP/IS). These transportation control measures include strategies to enhance mobility by reducing congestion through transportation infrastructure improvements, mass transit improvements, increasing telecommunications products and services, enhanced bicycle and pedestrian facilities, etc. Specific strategies that serve to reduce vehicle trips and vehicle miles traveled, such as strategies resulting in greater reliance on mass transit, ridesharing, telecommunications, etc., are expected to result in reducing traffic congestion. Although population in the district will continue to increase, implementing the transportation control measures, in conjunction with the 2012 Regional Transportation Plan, would ultimately result in greater percentages of the population

using transportation modes other than single occupancy vehicles. As a result, relative to population growth, existing traffic loads and the level of service designation for intersections district-wide would not be expected to decline at current rates, but could possibly improve to a certain extent. Even if congestion in the region increases compared to the baseline, this would occur for reasons other than complying with 2012 AQMP control measures. Therefore, it is expected that implementing the AQMP, including the transportation control measures could ultimately provide transportation improvements and congestion reduction benefits.

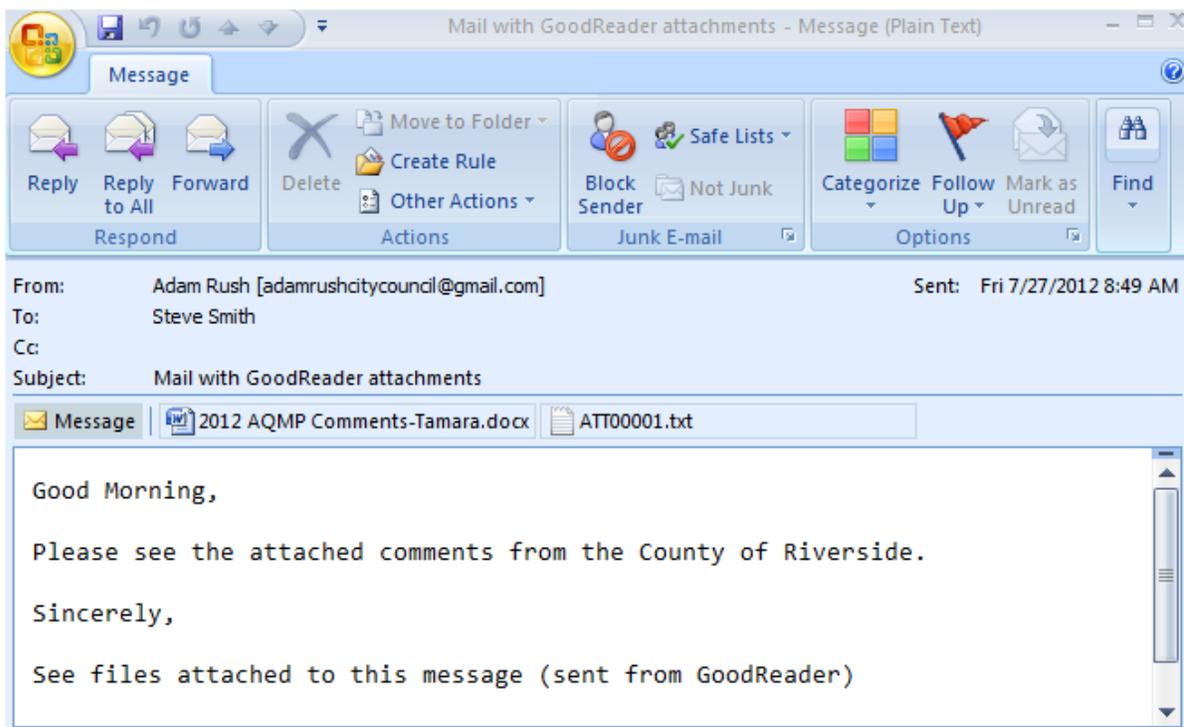
However, comments were received on the June 27, 2012 NOP/IS that potentially significant traffic impacts could occur as a result of implementing ADV-01 – §182(e) Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles. The comment suggested that constructing the overhead electrical catenary lines could adversely affect traffic. Therefore, this potential impact will be evaluated in the Program EIR.

- 9-14 The comment asks if the SCAQMD has evaluated increased usage of landfills and their emissions. The comment also questions if there is a consistent system amongst governing agencies in their reporting and monitoring. All control measures in the 2012 AQMP were evaluated to identify those control measures with potential solid or hazardous waste impacts. The proposed 2012 AQMP could require affected facility operators to install air pollution control equipment on stationary sources, such as carbon adsorption devices, particulate filters, catalytic incineration, selective catalytic reduction or other types of control equipment that could increase the amount of solid/hazardous wastes generated in the district (e.g., FUG-01, Further VOC Reductions from Vacuum Trucks; CMB-01, Further NO_x Reductions from RECLAIM – Phase I and Phase II) due to the disposal of spent catalyst, filters or other mechanisms used in the control equipment. Solid waste impacts would be considered significant if the impacts resulted in a violation of local, state or federal solid waste standards. Also, solid waste impacts would be significant if the additional potential waste volume exceeded the existing capacity of district landfills.

Some mobile source control measures may result in potentially significant adverse solid and hazardous waste impacts from the use of particulate filters or SCR units (e.g., OFFRD-02, Further Emission Reductions from Freight Locomotives; OFFRD-03, Further Emission Reductions from Passenger Locomotives; OFFRD-04, Further Emission Reductions from Ocean-Going Marine Vessels While at Berth ADV-04, Actions for the Deployment of Cleaner Commercial Harborcraft; and ADV-05, Actions for the Deployment of Cleaner Ocean-Going Marine Vessels), early retirement of inefficient, older equipment (ONRD-02, Accelerated Retirement of Older Light- and Medium-Duty Vehicles), etc. The potential solid/hazardous waste impacts from implementing the proposed 2012 AQMP will be analyzed in the Draft Program EIR.

All municipal solid waste facilities are subject to existing SCAQMD rules which contain reporting requirements. For example, Rule 1150.1- Control of Gaseous Emissions from Municipal Solid Waste Landfills, is applicable to any owner or operator of an active or inactive municipal solid waste landfill. This rule requires gas collection and control systems with specified destruction efficiency rates, integrated sampling protocols, and active monitoring and reporting requirements.

- 9-15 The comment asks if the SCAQMD has looked at major projects such as the Los Angeles Convention and Event Center (NFL Stadium) and the concentration of automobiles to a single location and the number of days effected. The comment also asks if the SCAQMD has analyzed those transportation patterns within the SCAQMD to events at the stadium. The lead agency for the NFL stadium project is the City of Los Angeles. The City of Los Angeles prepared a CEQA document for this project and the SCAQMD submitted a comment letter on the CEQA document. The SCAQMD comment letter for the NFL stadium project can be found at:
<http://www.aqmd.gov/ceqa/igr/2012/May/DEIRconvention.pdf>
- 9-16 The comment questions if the SCAQMD has evaluated digital signage, light pollution and the impacts on ozone. Night lighting of public areas, including roadways, sidewalks, and other open spaces, is often done by local jurisdictions for public safety purposes. The SCAQMD does not regulate lighting or signage and the 2012 AQMP does not contain any control measures related to lighting or signage.
- 9-17 The comment questions what differentials have occurred since the 2001 Baseline Air Emissions Inventory used in reports. Year 2002 is the base year in the 2007 AQMP. As stated and illustrated in the Draft Appendix III to the Draft 2012 AQMP, emissions decreased between 2002 to 2008 for all pollutants. The changes are due to (a) the effect of additional regulations; (b) the improved methodologies or models to calculate the emissions; and (c) the recessionary impacts. Please refer to “Inventory Sources Categories” section from Page III 1-5 to 1-24 in the Draft Appendix III for further details.
- 9-18 The comment states that the 2012 AQMP is too concentrated on vehicle and truck emissions. Approximately 25 percent of this area's ozone-forming air pollution comes from stationary sources, both businesses and residences. The other 75 percent comes from mobile sources consisting mainly of cars, trucks and buses, but also construction equipment, ships, trains and airplanes. Therefore, it is important to implement control measures for mobile sources in order to continue to reduce air pollution in the basin.
- 9-19 This attachment is an article summarizing how light may affect air pollution, therefore, see Response to Comment 9-16.



10-1

10-2 **1).** As the environmental checklist discusses, implementation of some of the proposed control measures may have the potential to generate secondary air quality impacts for various reasons including impacts related short-term construction, etc. In the case of those control measures where construction is necessary to reduce emissions at existing commercial or industrial facilities the following should be considered:

10-3

a) Incentives and/or regulations should be used to reduce the use of those building materials that generate excessive pollutants.

10-4

b) Particulate matter from construction, demolition and debris hauling should be reduced to the greatest extent possible.

10-5

c) The encouragement of stricter state and federal legislation on bias belted tires, smoking vehicles and vehicles that spill debris on streets and highways, to better control particulate matter.

10-6

d) Encourage the use of building materials which reduce emissions.

Responses to Comment Letter #10
County of Riverside – Adam Rush (7/27/12)

- 10-1 This comment notifies the SCAQMD that a comment letter is attached. No further response is necessary.
- 10-2 This comment contains several suggestions pertaining to potential impacts related to construction activities necessary to reduce emissions at existing commercial or industrial facilities. Responses to the specific suggestions are described in Responses to Comments 10-3 through 10-6.
- 10-3 There are two stationary source control measures specifically aimed at offering different incentives for companies that either manufacture or employ zero and near-zero emission technologies in the Basin (refer to Appendix IV-A: INC-01, and INC-02). The incentive programs will be designed to promote voluntary introduction of new technologies on an accelerated schedule. These measures provide manufacturers with incentives for production and commercialization of the cleaner, more advanced technologies while encouraging economic growth by creating local manufacturing jobs and populating the market with lower cost equipment. In addition, there is an educational control measure (EDU-01) designed to provide outreach and incentives for consumers to contribute to clean air efforts, such as the use of energy efficient products, new lighting technology, “super compliant” coatings, tree planting, and use of lighter colored roofing and paving materials, which reduce energy usage by lowering the ambient temperature and, ultimately, lowers emissions from less need for energy generation.
- 10-4 PM emissions from construction, demolition and debris hauling will be analyzed in the Draft Program EIR. It is important to note the PM emissions during construction activities are regulated by SCAQMD Rule 403 – Fugitive Dust, which is designed to minimize PM emissions to the greatest extent possible.
- 10-5 The comment requests that the SCAQMD encourage stricter state and federal legislation on bias belted tires, smoking vehicles, and vehicles that spill debris on roadways. With regard to vehicle tires, belted tires are already regulated by the Secretary of Transportation pursuant to the TREAD Act, §10, Endurance and Resistance Standards for Tires. Further, 49 Code of Federal Regulations (CFR) 571.109 and 49 CFR 571 119 provides authority for the Secretary of Transportation to conduct rulemaking to revise and update the tire standards. Similarly, The National Highway Traffic Safety Administration has a legislative mandate under Title 49 of the United States Code, Chapter 301, Motor Vehicle Safety, to issue Federal Motor Vehicle Safety Standards (FMVSS) and Regulations to which manufacturers of motor vehicle and equipment items must conform and certify compliance. The current tire standards are primarily included in the following FMVSSs: FMVSS No. 109, New pneumatic tires; FMVSS No. 110, Tire selection and rims; FMVSS No. 119, New pneumatic tires for vehicles other than passenger cars; and FMVSS No. 120; Tire selection and rims for vehicles other than passenger cars.
- State law currently addresses smoking vehicles under Motor Vehicle Code §27153. Operators of equipment may be cited for excessive visible smoke by any uniformed law officer. State law also addresses dumping and littering from off-road vehicles under

Motor Vehicle Code §38320. Construction sites and operators use various measures to comply with §38320 including: 1) rubble plates or gravel strips to remove dirt and small rocks from tires before exiting a job site to public roads; and 2) tarps to cover debris which may spill onto roadways. Most heavy duty off-road construction equipment is currently regulated under the CARB In-Use Off-Road Diesel-Fueled Fleets rule in the California Code of Regulations Title 13, Article 4.8, Chapter 9, §2449. Depending on fleet size and total horsepower rating, this regulation requires turnover of equipment to newer lower emitting equipment and includes labeling and reporting requirements. Contractors who remediate hazardous or contaminated sites will be encouraged to require Tier 3 or cleaner construction equipment to minimize gaseous (NO_x and HC) emissions and diesel particulate (PM) emissions and to implement best practice on prevention of fugitive emissions on and near the remediation construction sites.

- 10-6 This comment repeats the suggestion made in Comment 10-3. See Response to Comment 10-3.

925 Harbor Plaza, Long Beach, CA 90802 Tel 562.437.0041 Fax 562.901.1725



July 27, 2012

Steve Smith, Ph.D.
Program Supervisor, CEQA
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Sent via email to ceqa_admin@aqmd.gov

RE: Comments on the Notice of Preparation for the Proposed 2012 Air Quality Management Plan Program Environmental Impact Report

Dear Dr. Smith:

11-1 { The Port of Long Beach has reviewed the Notice of Preparation of a Draft Program Environmental Impact Report (EIR) for the Proposed 2012 Air Quality Management Plan Program and appreciates the opportunity to comment. Regarding preparation of the Draft Program EIR, we offer the following scoping comments for use by your agency during its environmental review process under the California Environmental Quality Act (CEQA):

Schedule

11-2 { The EIR schedule is very aggressive, with the scoping period ending on July 27, 2012, followed immediately by the release of the Draft EIR scheduled for August 2012, and final approval planned for October 5, 2012. There does not appear to be sufficient time allowed for meaningful input on the proposed scope and content of the Draft Program EIR by the public. Further, the Port is concerned that, given the quick turnaround between closure of the scoping period and the scheduled release of the Draft Program EIR, insufficient time will be allowed for thorough review of the scoping comments and inclusion of said comments in the Draft Program EIR.

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- 11-3 *Aesthetics*
The Initial Study identifies potential significant impacts on aesthetics due to the implementation of control devices such as hoods or bonnets on ship exhaust stacks. The Port agrees with the SCAQMD that such control devices and equipment would be similar in structure and design to existing features within the Port environment and would not constitute a significant aesthetic impact. Further, control measure ADV-03, which may include the construction of electric gantry cranes within the Port, should not be considered aesthetically significant as gantry cranes are an existing feature within the Port environment.
- 11-4 *Energy*
The Draft Program EIR should analyze how the mobile source control measures related to the electrification of vehicles will impact regional energy demand. Additionally, the need for new electrical power or natural gas utilities should be analyzed, including analysis of times of peak energy demand.
- 11-5 *Land Use*
The Draft Program EIR should analyze whether the implementation of specific control measures could physically divide established communities. Control measure ONRD-05 states that this control could be "implemented with the development of zero-emission fixed-guideway systems" and that to the extent feasible this would be extended beyond "near-dock application." The construction and operation of such structures may impact established communities.
- 11-6 *Noise*
The Port requests that the Draft Program EIR evaluate potential noise impacts related to the construction and implementation control measures in support of the AQMP. Section XII fails to account for noise impacts resulting from the construction and operation of control measure ONRD-05, which may include fixed-guideway systems near sensitive receptors.
- 11-7 *Transportation/Traffic*
Section XVII of the Initial Study concludes that adoption of the proposed 2012 AQMP is not expected to generate any significant adverse project-specific impacts to transportation or traffic systems, and that no further evaluation will be conducted in the Draft Program EIR.

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11-7
Cont.

However, impacts on major freeways or other transportation corridors as a result of construction and operation of potential zero emission control measures related to on-road heavy-duty vehicles, such as the use of overhead catenary power lines, which will potentially affect lane choice by trucks and traffic flow patterns on major traffic corridors, has not been fully analyzed. The Port requests that these potential impacts be analyzed in the Draft Program EIR.

11-8

Socioeconomics

While not required under CEQA, the Draft 2012 AQMP should include a thorough socioeconomic impact analysis for each proposed control measure, most notably the proposed backstop measure and the measures related to zero emission technologies. This could be accomplished with an expanded discussion under the cost effectiveness section of each control measure summary in the Draft AQMP.

11-9

The Port of Long Beach appreciates the opportunity to comment on the NOP/IS for the Draft 2012 AQMP and reviewing both the Draft Program EIR and the Draft 2012 AQMP. We look forward to working with the SCAQMD throughout the environmental review process.

Sincerely,



Richard D. Cameron
Director of Environmental Planning

DP:hat

Responses to Comment Letter #11
Port of Long Beach – Richard D. Cameron (7/27/12)

- 11-1 This comment notifies the SCAQMD that the comments contained in the letter pertain to the Notice of Preparation of the Draft Program EIR for the 2012 AQMP. No further response is necessary.
- 11-2 Regarding the comment about the schedule for the Program EIR and the SCAQMD's ability to integrate new information and analysis into the Draft Program EIR in response to public comments, see Responses to Comments 6-11 and 7-3.
- 11-3 While the comment indicates that implementation of control devices such as hoods or bonnets on ship exhaust stacks would not constitute a significant aesthetic impact, the SCAQMD received a separate comment requesting that the Draft Program EIR analyze potentially adverse aesthetics impacts from these devices. In addition, while the comment indicates that the construction of gantry cranes as part of implementing control measure ADV-03 should not be considered aesthetically significant, the SCAQMD received a separate comment suggesting that container (gantry) cranes may obstruct views. For these reasons, the Draft Program EIR will consider both this comment and the other comments received when analyzing the potentially adverse aesthetics impacts in the Draft Program EIR. See also Response to Comment 7-4.
- 11-4 Regarding the comment about energy demand and electrification of vehicles, see Response to Comment 7-5.
- 11-5 In response to the suggestion in the comment that implementation of Control Measure ONRD-05 may physically divide or impact established communities, the Draft Program EIR will analyze these potential land use impacts.
- 11-6 In response to the suggestion in the comment that implementation of Control Measure ONRD-05 may create noise impacts near sensitive receptors, the Draft Program EIR will analyze these potential noise impacts.
- 11-7 Regarding the comment that the Draft Program EIR should contain transportation/traffic impacts analysis that addresses the potential for constructing overhead electrical catenary lines, see Response to Comment 7-7.
- 11-8 Regarding the suggestion that a socioeconomic impact analysis should be conducted for each proposed control measure in the 2012 AQMP, see Response to Comment 7-8.
- 11-9 This comment concludes the letter. No further response is necessary.

**APPENDIX C (OF THE FINAL PROGRAM EIR FOR THE 2012
AQMP)**

**COMMENTS AND RESPONSES TO COMMENTS ON THE
AUGUST 2, 2012 RECIRCULATED NOTICE OF PREPARATION
/ INITIAL STUDY**

There were no comment letters received for the NOP/IS that was recirculated on August 2, 2012.

**APPENDIX D (OF THE FINAL PROGRAM EIR FOR THE 2012
AQMP)**

**SCOPING MEETING COMMENTS AND RESPONSES TO
COMMENTS**

SCOPING MEETING COMMENTS AND RESPONSES TO COMMENTS

July 10, 2012 Scoping Meeting in Buena Park, Orange County

No CEQA comments were made.

July 11, 2012 Scoping Meeting in Jurupa Valley, Riverside County

Steve Smith: San Bernardino Area Governments

Comment: What areas of controversy were identified as part of the preparation the Program Environmental Impact Report (EIR) analysis for the 2012 AQMP?

Response: No areas of controversy with regard to the environmental analysis were identified by SCAQMD staff. Further, no areas of controversy regarding the environmental analysis were submitted in response to the 6/28/12 Notice of Preparation/Initial Study (NOP/IS) comment period or the 8/2/12 NOP/IS comment period.

July 10, 2012 Scoping Meeting in San Bernardino, San Bernardino County

No CEQA comments were made.

July 12, 2012 Scoping Meeting in San Pedro, Los Angeles County

No CEQA comments were made.

July 24, 2012 Scoping Meeting in Diamond Bar, Los Angeles County

Philip Lo: Los Angeles County Sanitation District

Comment: As part of the analysis of the coating control measures, will SCAQMD staff consider the state Paint Stewardship Program (PSP)?

Response: The analysis of potential environmental impacts from 2012 AQMP control measures, including the control measures affecting coatings, includes an evaluation of potentially significant adverse impacts that could be generated using a worst-case assumption. The analysis of the coating control measures identified potential human health and water quality issues, but these impacts were concluded to be less than significant. However, when promulgating the control measures as new rules or rule amendments, staff will consider the principles in the PSP to ensure that leftover paint is properly managed in a manner that is sustainably funded.

Comment: Have you considered potential environmental impacts from accidental releases of ammonia associated with the 2012 AQMP?

Response: The analysis of potential environmental impacts from 2012 AQMP control measures, includes an analysis of potential human health, water quality, and hazard impacts associated with an accidental release of ammonia from onsite storage and during transport. The analysis concluded that an accidental release of ammonia could generate potentially significant adverse hazard impacts. Mitigation measures were identified that could reduce these impacts to less than significant. As a result, human health, water quality, and hazards impacts from an accidental release of ammonia were concluded to be less than significant.

August 9, 2012 Scoping Meeting in Palm Desert, Riverside County

No CEQA comments were made.

August 23, 2012 Scoping Meeting in Diamond Bar, Los Angeles County

Lee Wallace: Southern California Gas Company

Comment: The scope of the project alternatives appears somewhat narrow. Can you explain them in more detail?

Response: The project alternatives were developed by modifying the pollutant reduction strategies and include: a PM_{2.5} control strategy that includes localized episodic PM_{2.5} control measures that would apply only to the Mira Loma area; a NO_x heavy control strategy that would not only achieve PM_{2.5} emission reductions, but additional NO_x and VOC emission reductions (from mobile sources) that would also help make expeditious progress in attaining the federal one-hour and eight-hour ozone standards; and, at the request of the public, a PM_{2.5} only alternative, which would also continue implementing the ozone portion of the 2007 AQMP. Alternatives were developed in a way that clearly shows the differences in environmental impacts so the benefits and impacts are clear to the public and the SCAQMD's decisionmakers.

**APPENDIX E (OF THE FINAL PROGRAM EIR FOR THE
2012 AQMP)**

2012 AQMP TCM PROJECTS (FROM 2012 RTP/SCS)

TABLE E-1

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
LOS ANGELES COUNTY			
Baldwin Park	LAFA141	Baldwin Park Metrolink Transportation Center. Funded Thru STIP Augmentation Construction A Transportation Center And Parking Structure At The Baldwin Park Metrolink Station.	11/1/2014
Foothill Transit Zone	LA0B311	Park And Ride Facility Transit Oriented Neighborhood Program SAFETEA-LU # 341 (E-2006-Busp-092) (E-2006-Busp-173)	12/31/2013
Glendale	LA0G406	Fairmont Ave. Park-N-Ride Facility (83 Parking Spaces) To Serve Commuters Using Sr-134, I-5. The Location Of The Park-N-Ride Is Fairmont Avenue And San Fernando Rd.	12/30/2013
Los Angeles County	LAF1514	Emerald Necklace Bike Trail Project. Design And Construct 1.1 Miles Of Class I Bike Path To Connect Duarte Road To The San Gabriel River Bicycle Trail.	6/30/2013
Los Angeles County MTA	LA0G270	Expansion And Improvement To Existing Transit Center In The City Of Palmdale. E2009-Busp-137.	9/30/2013
Los Angeles County MTA	LA0F021	Exposition Light Rail Transit System Phase Ii – From Culver City To Santa Monica	12/31/2017
Los Angeles County MTA	LA29202W	Mid -City Transit Corridor: Wilshire Blvd. From Vermont To Santa Monica Downtown- Mid-City Wilshire Brt Incl. Div. Expansion And Bus Only Lane	12/31/2014
Los Angeles County MTA	LA0G194	Acquire Four (4) Alternate Fuel Buses For The City Of Artesia To Be Used For New Fixed Route Service Earmark Id #E2008-Busp-0694	10/31/2012

TABLE E-1 (CONTINUED)

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Los Angeles County MTA	LA0C10	Mid-City/Exposition Corridor Light Rail Transit Project Phase I To Venice-Robertson Station	12/31/2012
Los Angeles County MTA	LA0G431	Multi-Modal Transit Center At CSUN To Include Passenger Loading Areas And Bus Shelters	10/1/2012
Los Angeles County MTA	LA974165	Macarthur Park Station Improvements Include Design And Construction Of A Plaza To Accommodate Public Access (Pedestrian Entrances, Walkways, Bicycle Facilities) PPNO# 3417	12/30/2011
Los Angeles, City Of	LA0G155	LACRD – Transit Signal Priority In The City Of Los Angeles.	02/28/2012
Pasadena	LAE3790	The Pasadena ITS Integrates 3 Components; Traffic Signal Communication And Control, Transit Vehicle Arrival Info And Public Parking Availability Info. SAFETEA-LU Prj #3790 And #399	6/30/2013
Pico Rivera (Previously Lead Agency Was SGVCOG)	LA0C57	Ace/Gateway Cities-Construct Grade Sep. At Passons Blvd In Pico Rivera (& Modify Profile Of Serapis Av.)(Part Of Alameda Corr East Proj.)SAFETEA-LU HPP # 1666 (TCRP #54.3)	12/31/2012
Rolling Hills Estate	LAF1529	Palos Verdes Drive North Bike Lanes. Construction Of Class Ii Bike Lane And Related Improvements On Palos Verdes Drive North	12/31/2013
Santa Clarita	LAF1424	McBean Regional Transit Center Park And Ride. Purchase Land, Design, And Construct A Regional Park-And-Ride Lot Adjacent To The Mc Bean Regional Transit Center In The City Of Santa Clarita.	10/1/2013

TABLE E-1 (CONTINUED)

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Whittier	LA0G257	Whittier Greenway Trailhead Park. Extension Of Whittier Greenway Trail From Mills Avenue To 300 Feet East Of Mills Avenue On City Owned Right-Of-Way In Conjunction With The Construction Of New Trailhead Park With A Park And Ride Parking Lot For Nearby Public Transit Stop. New 20 Space Parking Lot Would Be Constructed Of “Green” Permeable Pavement In Compliance With NPDES Requirements. Includes The Installation Of Park Amenities, Drinking Fountain For The Convenience Of Pedestrian And Bicycle Patrons Of The Whittier Greenway Trail. Construction Of New Sidewalks Along Mills Avenue To Provide Whittier Greenway Trail Crossing Connection At The Signalized Intersection Of Mills Avenue At Lambert Road.	9/30/2014
Artesia	LAF1607	South Street Pedestrian, Bikeway And Transit Improvement. Improve Pedestrian Environment And Transit Stop Locations With Landscaped Medians, Transit Shelters, Benches, Sidewalk Enhancements And Lighting. Close Existing Bike Lane Gap.	10/1/2014
Avalon	LAF1501	County Club Drive Bikeway Improvement Project. Construction Of A 4-Foot Wide Class II Bike Lane In Both Directions Along A One Mile Section Of Country Club Drive.	10/1/2013
Azusa	LAF3434	Azusa Intermodal Transit Center. Construct Regional Azusa Intermodal Transit Center To Accommodate Existing And Future Parking Demand And Support Effective Transit Use.	6/30/2015
Baldwin Park	LAE0076	Construct Add'l Vehicle Parking (200 To 400 Spaces), Bicycle Parking Lot And Pedestrian Rest Area At The Transit Center	12/31/2014
Baldwin Park	LAF1654	Baldwin Park Metrolink Pedestrian Overcrossing. Construct A Pedestrian Overcrossing Over Bogart Ave And The Metrolink Line To Link The Station With Vital Bus Transfer Points And To Provide Access To Parking Overflow Areas.	10/1/2015

TABLE E-1 (CONTINUED)

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Burbank	LAF1502	San Fernando Bikeway. Implement A Class I Bikeway Along San Fernando Blvd, Victory Place And Burbank Western Channel To Complete The Burbank Leg Of A 12 Mile Bikeway.	6/30/2014
Caltrans	LA000358	Route 5: – From Route 134 To Route 170 HOV Lanes (8 To 10 Lanes) (CFP 346)(2001 CFP 8355). (Ea# 12180, 12181,12182,12183,12184, 13350 PPNO 0142f,151e,3985,3986,3987) SAFETEA-LU# 570. Construct Modified Ic @ I-5 Empire Ave, Aux Lns Nb & Sb Between Burb	12/31/2014
Caltrans	LA000548	Route 10: From Puente To Citrus HOV Lanes From 8 To 10 Lanes (C-ISTEA 77720) (Ea# 117080, PPNO# 0309n)	2/12/2016
Caltrans	LA0B875	Route 10: HOV Lanes From Citrus To Route 57/210 – (Ea# 11934, PPNO# 0310b)	3/15/2016
Caltrans	LA0D73	Route 5: La Mirada, Norwalk & Santa Fe Springs-Orange Co Line To Rte 605 Junction. Widen For HOV & Mixed Flow Lns, Reconstruct Valley View (Ea 2159a0, PPNO 2808). TCRP#42.2&42.1	12/1/2016
Caltrans	LA000357	Route 5: From Route 170 To Route 118 One HOV Lane In Each Direction (10 To 12 Lanes) Including The Reconstruction Of The I-5/Sr-170 Mixed Flow Connector And The Construction Of The I-5/Sr-170 HOV To HOV Connector (CFP 345) (2001 CFP 8339; CFP2197).	12/31/2013
Caltrans	LA01342	Route 10: Rt 10 From Rt 605 To Puente Ave HOV Lanes (8+0 To 8+2) (Ea# 117070, PPNO 0306h) PPNO 3333 3382 Ab 3090 Rep (TCRP #40)	10/28/2013
Caltrans	LA996134	Route 5: Rte. 5/14 Interchange & HOV Lns On Rte 14 – Construct 2 Elevated Lanes – HOV Connector (Direct Connectors) (Ea# 16800)(2001 CFP 8343) (PPNO 0168m)	5/24/2013

TABLE E-1 (CONTINUED)

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Claremont	LAF1510	Claremont Portion Of The Citrus Regional Bikeway. This Project Proposes The Implementation Of The Claremont Portion Of The Citrus Regional Bikeway Utilizing Bonita Avenue And First Street As Primary Class Ii Bike Routes.	10/1/2012
El Monte	LAF1504	El Monte: Transit Cycle Friendly. El Monte Proposes To Implement The 1st Phase Of The El Monte Bike-Transit Hub Component (Metro Bicycle Transportation Strategic Plan) A Countywide Effort To Improve Bike Facilities	10/1/2013
Long Beach	LAE1296	Long Beach Intelligent Transportation System	9/30/2012
Long Beach	LAF1530	Bicycle System Gap Closures & Improved La River Bike Path. Project Will Construct Priority Class I & Iii Bicycle System Gap Closures In Long Beach And Improve Connection To La River.	10/1/2014
Los Angeles County MTA	LA0D198	Crenshaw Transit Corridor	12/31/2018
Los Angeles County MTA	LA0G010	Regional Connector – Light Rail In Tunnel Allowing Through Movements Of Trains, Blue, Gold, Expo Lines. From Alameda / 1st Street To 7th Street/Metro Center	12/31/2019
Los Angeles County MTA	LA0G154	Lacrd – El Monte Transit Center Improvements And El Monte Busway Improvements, Including Bike Lockers, Ticket Vending Machines At El Monte Busway Stations And Up To 10 Bus Bays.	12/31/2012
Los Angeles County MTA	LA0G447	Metro Purple Line Westside Subway Extension Segment 1 – Wilshire/Western To Fairfax	12/31/2019
Los Angeles County MTA	LA0C8114	La City Rideshare Services; Provide Commute Info, Employer Assistance And Incentive Programs Through Core & Employer Rideshare Services & MTA Incentive Programs. PPNO 9003	12/30/2016

TABLE E-1 (CONTINUED)

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Los Angeles County MTA	LA963542	Acquisition Revenue Vehicles – 2,513 Clean Fuel Buses: Leased Veh, Fy02 (370) Fy03 (30 HC) + Fy04 (70 HC) + (200 Artics); Fy05-Fy10 Total Of 1000 Buses.	6/30/2014
Los Angeles County MTA	LAE0036	Wilshire/ Vermont Pedestrian Plaza Improvements And Intermodal Pedestrian Linkages	2012
Los Angeles County MTA	LAE0195	Design And Construct Improved Pedestrian Linkages Between Los Angeles Pierce College And MTA’S Rapid Bus Transit Stops To Include Passenger Amenities, 2007 CFP # F1658	10/1/2014
Los Angeles, City Of	LA0C8164	Exposition Blvd Right-Of-Way Bike Path-Westside Extension. Design And Construction Of 2.5 Miles Of Class 1 Bikeway, Lighting, Landscaping & Intersection Improvements. (PPNO# 3184)	2/2/2012
Los Angeles, City Of	LAF1704	Downtown L.A. Alternative Green Transit Modes Trial Program. Offer Shared Ride-Bicycle And Neighborhood Electric Vehicle Transit Services To La City Hall As An Alternative To Overcrowded Dash Service	6/27/2014
Los Angeles, City Of	LA002738	Bikeway/Pedestrian Bridge Over La River At Taylor Yard Class I (CFP 738, 2077) (PPNO# 3156)	7/31/2015
Los Angeles, City Of	LA0B7330	San Fernando Rd Row Bike Path Phase II – Construct 2.75 Miles Clas I Frm First St To Branford St,On MTA-Ownd Row Parlel To San Fernando Rd. Link Cyclsts To Numerous Bus Lne. PPNO 2868.	1/30/2014
Los Angeles, City Of	LAF1450	Encino Park-And-Ride Facility Renovation. Renovation Of The Encino Park-And-Ride Facility In Order To Address Physical And Structural Deficiencies And Add Capacity To This Heavily Utilized Facility. Includes 50 New Parking Spaces And Bike Lockers.	10/1/2013

TABLE E-1 (CONTINUED)

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Los Angeles, City Of	LAF1520	Imperial Highway Bike Lanes. This Project Involves The Modification Of The Median Island And The Widening Of Imperial Highway Along 1000 Ft East Of Pershing Drive To Accommodate Bike Lanes.	6/1/2014
Los Angeles, City Of	LAF1524	San Fernando Rd. Bike Path Ph. IIIA/IIIB – Construction. Recommend Phase IIIA- Construction Of A Class I Bike Path Within Metro Owned Rail Right-Of-Way Along San Fernando Rd. Between Branford St. And Tuxford St Incl Bridge.	10/1/2015
Los Angeles, City Of	LAF1615	Eastside Light Rail Pedestrian Linkage. Improve Linkages Within 1/4 Mile Of Metro’s Gold Line Lrt.	6/29/2012
Los Angeles, City Of	LAF1657	Los Angeles Valley College (LAVC) Bus Station Extension. Project Will Extend The Orange Line Station At The La Valley College By Providing A Direct Pedestrian Connection From The Station To A New Pedestrian Entrance To LAVC.	10/1/2013
Los Angeles, City Of	LAF1708	Hollywood Integrated Modal Information System. Installation Of Electronic, Direction And Parking Availability Signs With Internet Connectivity To Provide Advance And Real-Time Information Intended To Increase Transit Ridership	9/21/2015
Los Angeles, City Of	LAF3419	Sunset Junction Phase 2. Create A Multi-Modal Transit Plaza To Integrate Public Transportation, Pedestrian & Bicycle Improvements That Would Result In Regional & Local Benefits (CFP3844). Triangle Property On Sunset Blvd Bwt Manzanita And Santa Monica.	6/30/2017
Monrovia	LAE0039	Transit Village – Provide A Trans. Facility For Satellite Parking For Sierra Madre Villa Gold Line Sta, P-N-R For Commuters, A Foothill Transit Store.	12/31/2012
Port Of Los Angeles	LAF3170	Port Truck Traffic Reduction Program: West Basin Railyard. Intermodal Railyard Connecting Port Of La With Alameda Corridor To Accommodate Increased Loading Of Trains At The Port, Thereby Reducing Truck Trips To Off-Dock Railyards.	12/1/2014

TABLE E-1 (CONTINUED)

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Rancho Palos Verdes	LAF1506	Bike Compatible Rdwy Safety And Linkage On Palos Verdes Dr. The Project Will Have A Class Ii Bike Lane On Both Sides Of Palos Verdes Drive South, With An Unpaved Shoulder For Emergency Use.	10/9/2014
Rancho Palos Verdes	LAF1605	Pedestrian Safe Bus Stop Linkage. Linking 11 Bus Stops Currently Inaccessible Because Of Lack Of Sidewalks On Both The East And West Side Of Hawthorne Blvd. From Crest Rd. To Palos Verdes Dr. South (About 13,000")	12/9/2013
San Dimas	LAF1503	Bikeway Improvements On Foothill Blvd. At San Dimas Wash. The Bwy Improvements On Foothill Blvd. At San Dimas Wash; Will Close The Gap On A Bridge & Connect The Existing Class Ii Bike Lanes To The East & West Of San Dimas Wash Crossing.	12/1/2013
San Gabriel Valley COG	LA990359	Grade Sep Xings Safety Impr; 35- Mi Freight Rail Corr. Thrh San.Gab. Valley – East. L.A. To Pomona Along Upr Alhambra &L.A. Subdiv – Its 2318 SAFETEA #2178;1436 #1934 PPNO 2318	6/30/2018
Santa Fe Springs	LA0F096	Norwalk Santa Fe Springs Transportation Center Parking Expansion And Bikeway Improvements. Provide Additional 250 Parking Spaces For Transit Center Patrons And Improve Bicycles Access To The Transit Center	6/30/2012
Santa Monica	LAE0364	Construct Intermodal Park And Ride Facility At Santa Monica College Campus On South Bundy Drive Near Airport Avenue	12/31/2013
Torrance	LA0G358	South Bay Regional Intermodal Transit Center Project. The Land Is In The Process Of Being Purchased And Escrow Will Close On December 17, 2009. Presently, The Lot Is Vacant/Open Land With No Existing Structure Upon It. The Address Is 465 N. Crenshaw Blvd., Torrance, Ca 90503.	12/31/2015

TABLE E-1 (CONTINUED)

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Westlake Village	LA960142	Lindero Canyon Road From Agoura To Janlor Dr Construct Bike Path, Restripe Street, Intersection Widening, Signal Coordination	1/30/2013
ORANGE COUNTY			
Anaheim	ORA000100	Gene Autry Way West @ I-5 (I-5 HOV Transitway To Haster) Add Overcrossing On I-5 (S)/Manchester And Extend Gene Autry Way West From I-5 To Haster (3 Lanes In Ea Dir.)	11/16/2012
Caltrans	ORA000193	HOV Connectors From Sr-22 To I-405, Between Seal Beach Blvd. (I-405 Pm 022.558) And Valley View St. (Sr-22 Pm R000.917), With A Second HOV Lane In Each Direction On I-405 Between The Two Direct Connectors.	2/1/2015
Caltrans	ORA000194	HOV Connectors From I-405 To I-605, Between Katella Ave. (I-605 Pm R001.104) And Seal Beach Blvd. (I-405 Pm 022.643), With A Second HOV Lane In Each Direction On I-405 Between The Two Direct Connections.	7/1/2015
Fullerton	ORA020113	Fullerton Train Station – Parking Structure, Phase I And Ii. Total Of 800 Spaces (PPNO 2026)	5/31/2012
Orange County Trans Authority (OCTA)	ORA041501	Purchase (71) Standard 30ft Expansion Buses – Alternative Fuel – (31) In Fy08-09, (9) In Fy09-10, (7) In Fy11-12, (6) In Fy12-13 And (18) In Fy13-14	6/30/2016
Orange County Trans Authority (OCTA)	ORA110633	Rideshare Vanpool Program – Capital Lease Costs	9/30/2012
Orange County Trans Authority (OCTA)	ORA65002	Rideshare Services Rideguide, Database, Customer Info, And Marketing (Orange County Portion).	6/30/2016

TABLE E-1 (CONTINUED)

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Orange County Trans Authority (OCTA)	ORA0826016	Purchase (72) Paratransit Expansion Vans – (21) In Fy09/10, (51) In Fy10/11.	6/30/2016
Orange County Trans Authority (OCTA)	ORA082618	Purchase Paratransit Vehicles Expansion (Mission Viejo) (11) In Fy09/10. On-Going Project.	6/30/2030
TCA	10254	SJHC, 15 Mi Toll Rd Between I-5 In San Juan Capistrano & Rte 73 In Irvine, Existing 3/M/F Ea.Dir.1 Add*L M/F Ea Dir, Plus Climbing & Aux Lns As Req, By 2020 Per SCAG/TCA MOU 4/5/01	12/31/2020
TCA	ORA050	Etc (Rte 241/261/133) (Rte 91 To I-5/Jamboree) Existing 2 M/F Ea.Dir, 2 Add*L M/F In Ea. Dir, Plus Climb And Aux Lns As Req, By 2020 Per SCAG/TCA MOU 4/05/01.	12/31/2020
TCA	ORA051	(FTC-N) (Oso Pkwy To Etc) (13mi) Existing 2 Mf In Ea. Dir, 2 Additional M/F Lanes, Pls Clmbng & Aux Lns As Req By 2020 Per SCAG/TCA MOU 4/05/01.	12/31/2020
TCA	ORA052	(FTC-S) (I-5 To Oso Pkwy) (15mi) 2 Mf Ea. Dir By 2013; And 1 Additional M/F Ea. Dir. Pls Clmbng & Aux Lanes As Req By 2030 Per SCAG/TCA MOU 4/05/01. #1988	6/15/2030
RIVERSIDE COUNTY			
Riverside County Trans Commission (RCTC)	RIV010212	On Sr91 – Adams To 60/215 IC: Add One HOV Ln In Each Direction, Restripe To Extend 4th Wb Mixed Flow Lane From 60/215 Ic To Central Off-Ramp, Restripe To Extend 5th Wb Mixed Flow Lane From 60/215 Ic To 14th St Off-Ramp, Aux Lns (Madison-Central), Bridge Widening & Replacements, Eb/Wb Braided Ramps, Ic Mod/Reconstruct + Sound/Retaining Walls	8/3/2015

TABLE E-1 (CONTINUED)

2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Riverside County Trans Commission (RCTC)	RIV050555	On I-215 (N/O Eucalyptus Ave To N/O Box Springs Rd) & Sr60 (E/O Day St To Sr60/I-215 Jct): Reconstruct Jct To Provide 2 HOV Direct Connector Lns (Sr60 Pm: 12.21 To 13.6) And Minor Widening To Box Springs Rd From 2 To 4 Through Lanes Between Morton Rd And Box Springs Rd/Fair Isle Dr IC (Ea: 449311)	4/29/2013
Riverside County Trans Commission (RCTC)	RIV051201	In Corona – Continue The Implementation Of A 60 Space Park-And-Ride Lot (Via Annual Lease Agreement) At Living Truth Christian Fellowship At 1114 W. Ontario Ave.	6/30/2013
Riverside County Trans Commission (RCTC)	RIV070303	On Sr60 In Nw Riv Co: Continue The Implementation Of The Expanded Sr60 Freeway Service Patrol (FSP) (Beat #7 Patrol , 2 Trucks) Between Milliken Ave & Main St (Sr60 HOV Ln Change TCM Substitution Project)	On Going TCM Program In Riverside County
Riverside County Trans Commission (RCTC)	RIV070304	On I-215 In Sw Riv Co: Continue The Implementation Of I-215 Freeway Service Patrol (FSP) (Beat #19, 2 Trucks) Between Sr74/4th St And Alessandro Blvd (Sr60 HOV Lane Change TCM Substitution Project)	On-Going TCM Program In Riverside County
Riverside County Trans Commission (RCTC)	RIV070307	On Sr60 In Moreno Valley: Continue The Implementation Of Sr60 Freeway Service Patrol (FSP) (Beat #8, 2 Trucks) Between Day St And Redlands Blvd (Sr60 HOV Lane Change TCM Substitution Project)	On-Going TCM Program In Riverside County
Riverside County Trans Commission (RCTC)	RIV520109	Reconstruct & Upgrade San Jacinto Branch Line For Rail Passenger Service (Riverside To Perris) (Perris Valley Line) (Fy 07 5307) (Uza: Riv-San)	2014
Riverside County Trans Commission (RCTC)	RIV520111	Regional Rideshare – Continuing Program.	On-Going TCM Program In Riverside County

TABLE E-1 (CONCLUDED)
2012 AQMP Transportation Control Measure (TCM) Projects

Lead Agency	PROJECT ID	PROJECT DESCRIPTION	COMPLETION DATE
Riverside Transit Agency	RIV041030	In The City Of Hemet – Construct New Hemet Transit Center (With Approximately 4 Bus Bays) At 700 Scaramella Cr., Hemet, Ca (5309c Fy 04 + 05 Earmarks).	6/30/2013
Riverside Transit Agency	RIV050553	In Temecula – Construct New Temecula Transit Center At 27199 Jefferson Ave. (SW Of Jefferson Ave & Se Of Cherry St) (04, 05, 06, 07, E-2006-091, E-2007-0131, & 2008-Busp-0131, SAFETEA-Lu).	12/30/2014
Riverside Transit Agency	RIV090609	In Western Riverside County For RTA: Install Advance Traveler Information Systems (ATIS) On Various Fixed Route Vehicles And Installation Of Electronic Message Signs At Approx. 60 Bus Stops (Fy „S 05, 07, 08, 09, And 10 – 5309).	12/30/2012
Temecula	RIV62029	At Hwy 79 So And La Paz St: Acquire Land, Design And Construct Park-And-Ride Lot – 250 Spaces (Fy 05 Hr4818 Earmark)	12/31/2015
SAN BERNARDINO COUNTY			
OmniTrans	981118	Bus System – Passenger Facilities: Design And Building Of Ontario Transcenter	5/31/2012
Rialto	200450	Rialto Metrolink Station – Increase Parking Spaces From 225-775	12/1/2012
SANBAG	200074	Lump Sum – Transportation Enhancement Activities Projects For San Bernardino County-Bike/Ped Projects (Projects Consistent W/40cfr Part 93.126,127,128, Exempt Table 2 & 3).	12/1/2015
SANBAG	20040827	Rideshare Program For South Coast Air District	12/1/2015
Various Agencies	713	I-215 Corridor North – In San Bernardino, On I-215 From Rte 10 To Rte 210 – Add 2 HOV & 2 Mixed Flow Lns (1 In Ea. Dir.) And Operational Imp Including Aux Lanes And Braided Ramp	9/1/2013

APPENDIX F

EXAMPLES OF MEASURES THAT COULD REDUCE IMPACTS FROM PLANNING, DEVELOPMENT AND TRANSPORTATION PROJECTS

EXAMPLES OF MEASURES THAT COULD REDUCE IMPACTS FROM PLANNING, DEVELOPMENT AND TRANSPORTATION PROJECTS

The following list of example measures is intended to function as a resource for lead agencies to consider in identifying mitigation measures to reduce impacts anticipated to result from future projects, as deemed applicable and feasible by such agencies. Some example measures are oriented to planning projects, while some measures are oriented to development and/or transportation projects. Some example measures are oriented to all types of projects. The list is non-exclusive and will not be used by SCAG in any way in reviewing regionally significant projects or project EIRs as part of SCAG’s intergovernmental review (IGR) process. Nor are the example measures intended to serve as any kind of checklist to be used on a project-specific basis. Since every project and project setting is different, project specific analysis is needed to identify applicable and feasible mitigation. The following measures may be too generic to be applied on a project-by-project basis and therefore they are presented as examples of measures rather than templates to be followed.

Some of the example mitigation measures include legal requirements that may overlap with federal, state, and/or local regulation. Such legal requirements that incorporate or reference existing regulations are mandatory and any mitigation imposed as a result of a project-specific CEQA process cannot supersede these existing regulations. Nevertheless, SCAG has included these regulations for informational purposes only and to help the reader understand the existing regulatory framework that would assist in mitigating potential environmental impacts.

In addition, the inclusion of these measures that may overlap with existing regulation is not intended to supplant current law. While potential impacts are normally assessed assuming implementation of applicable legal requirements, here, many of the legal requirements are flexible and may require further interpretation or consultation with resource agencies. As such, the resulting reduction in impacts may be difficult to quantify. Thus, in the interest of providing information to the public, SCAG has included these measures containing legal requirements among the example measures.

As part of the CEQA process for each planning, development or transportation project, the Lead Agency is required to identify significant and potentially significant impacts and then mitigate them to the extent feasible. All mitigation measures below are phrased as “may” to allow for tailoring to project and agency-specific conditions as may be applicable and feasible. Use of the word “may” in measures that include legal requirements, or requirements that are otherwise committed, should not be construed to mean that compliance with legal requirements and existing commitments is optional. Furthermore, the text boxes below set forth additional details for the example measures which may apply should agencies choose to implement those measures.

AESTHETICS

AV1: Prior to the issuance of permits, project sponsors may construct noise barriers of materials whose color and texture complements the

surrounding landscape and development. Noise barriers may be graffiti resistant and landscaped with plants that screen the barrier, preferably with either native vegetation or landscaping that complements the dominant landscaping of surrounding areas. Natural landscaping may be used to minimize contrasts between the project and surrounding areas. Wherever possible, interchanges and transit lines at the grade of the surrounding land may limit view blockage.

- AV2:** Project sponsors may use natural landscaping to minimize contrasts between the project and surrounding areas. Wherever possible, structures may be designed to limit view blockage. Edges of major cut-and-fill slopes may be contoured to provide a more natural looking finished profile. Project sponsors may replace and renew landscaping along corridors with road widenings, interchange projects, and related improvements. New corridor landscaping may be designed to respect existing natural and man-made features and to complement the dominant landscaping of surrounding areas.
- AV3:** Prior to project approval, project sponsors may implement design guidelines, local policies, and programs aimed at protecting views of scenic corridors and avoiding visual intrusions. Projects may be designed to minimize contrasts in scale and massing between the project and surrounding natural forms and developments. Avoid, if possible, large cuts and fills when the visual environment (natural or urban) would be substantially disrupted. Site or design of projects may minimize their intrusion into important viewsheds and use contour grading to better match surrounding terrain.
- AV4:** Project sponsors may construct sound walls of materials whose color and texture complements the surrounding landscape and development and use color, texture, and alternating facades to “break up” large facades and provide visual interest. Where there is room, project sponsors may landscape the sound walls with plants that screen the sound wall, preferably with either native vegetation or landscaping that complements the dominant landscaping of surrounding areas.
- AV5:** Project sponsors may avoid construction of transportation facilities in state and locally designated scenic highways and/or vista points. When avoidance is not possible, project sponsors may minimize visual quality intrusions to the maximum extent feasible.
- AV6:** For projects in designated or eligible Scenic Highway corridors, prior to project approval, project sponsors may complete design studies and develop site-specific mitigation measures to minimize impacts on the quality of the views or visual experience that originally qualified the highway for scenic designation.

AV7: If projects are constructed in state- and locally-designated scenic highways and/or vista points, design, construction, and operation of the transportation facility may be consistent with applicable guidelines and regulations for the preservation of scenic resources along the designated scenic highway.

AV8: Project sponsors may design projects to minimize contrasts in scale and massing between the project and surrounding natural forms and development. Project sponsors may design projects to minimize their intrusion into important viewsheds and use contour grading to better match surrounding terrain. To the maximum extent feasible, landscaping along highway corridors may be designed to add significant natural elements and visual interest to soften the hard-edged, linear travel experience that would otherwise occur.

AV9: Project sponsors may develop design guidelines projects that make elements of proposed buildings/facilities visually compatible with surrounding areas. Visual design guidelines may, at a minimum, include setback buffers, landscaping, color, texture, signage, and lighting criteria. The following methods may be employed whenever possible:

- Transportation systems may be developed to be compatible with the surrounding environment (i.e., colors and materials of construction material).
- Vegetation used as screening and landscaping may blend in and complement the natural landscape.
- Trees bordering highways may remain or be replaced so that clear-cutting is not evident.
- Grading may blend with the adjacent landforms and topography.

- AV10:** In visually sensitive areas and prior to project approval, local land use agencies may apply development standards and guidelines to maintain compatibility with surrounding natural areas, including site coverage, building height and massing, building materials and color, landscaping, site grading, etc.
- AV11:** Project sponsors may ensure that sites may be kept in a blight/nuisance-free condition. Any existing blight or nuisance may be abated within 60-90 days of approval, unless an earlier date is specified elsewhere.
- AV12:** Project sponsors may ensure that proposed lighting fixtures are adequately shielded to a point below the light bulb and reflector and that prevent unnecessary glare onto adjacent properties. Plans may be submitted to the Lead Agency (or other government agency as appropriate) for review and approval. All lighting may be architecturally integrated into the site.

AIR QUALITY

- AQ1:** Transportation Control Measures (TCMs) may be implemented by local agencies and project sponsors as appropriate. TCMs included in the Plan are identified in the Transportation Conformity Appendix to the 2012-2035 RTP/SCS (starting on page 26). CAA Section 108(f)(1)(A) lists sixteen measures as illustrative of TCMs.
- AQ2:** Local air districts, local jurisdictions and project sponsors may implement measures adopted by ARB designed to attain federal air quality standards for PM_{2.5} and 8-hour ozone. ARB's strategy includes the following elements:
- Set technology forcing new engine standards;
 - Reduce emissions from the in-use fleet;
 - Require clean fuels, and reduce petroleum dependency;
 - Work with USEPA to reduce emissions from federal and state sources; and
 - Pursue long-term advanced technology measures.
 - Proposed new transportation-related SIP measures include:
 - On-road and off-road Sources
 - Improvements and Enhancements to California's Smog Check Program
 - Expanded Passenger Vehicle Retirement
 - Modifications to Reformulated Gasoline Program
 - Cleaner In-Use Heavy-Duty Trucks
 - Ship Auxiliary Engine Cold Ironing and Other Clean Technology

- Cleaner Ship Main Engines and Fuel
- Port Truck Modernization
- Clean Up Existing Commercial Harbor Craft
- Cleaner Construction and Other Equipment
- Cleaner In-Use Off-Road Equipment
- Agricultural Equipment Fleet Modernization
- New Emission Standards for Recreational Boats
- Off-Road Recreational Vehicle Expanded Emission Standards

AQ3: Project sponsors may ensure that water or “toxic free” dust suppressants are applied to exposed earth surfaces to control emissions as necessary to control dust and comply with applicable regulations.

AQ4: Project sponsors may ensure that all excavating and grading activities cease during second stage smog alerts and periods of high winds.

AQ5: Project sponsors may ensure that all trucks hauling dirt, sand, soil, or other loose materials off-site be covered or wetted or maintain at least two feet of freeboard (i.e., minimum vertical distance between the top of the load and the top of the trailer).

AQ6: Project sponsors may ensure that all construction roads that have high traffic volumes, be surfaced with base material or decomposed granite, or be paved or otherwise be stabilized.

AQ7: Project sponsors may ensure that public streets be cleaned, swept or scraped at frequent intervals or at least three times a week if visible soil material has been carried onto adjacent public roads.

AQ8: Project sponsors may ensure that construction equipment be visually inspected prior to leaving the site and loose dirt be washed off with wheel washers as necessary.

AQ9: Project sponsors may ensure that water, hydroseed, or non-toxic soil stabilizers are applied to inactive construction areas as needed to reduce off-site transport of fugitive dust.

AQ10: Project sponsors may ensure that traffic speeds on all unpaved surfaces may not exceed 25 mph.

AQ11: Project sponsors may ensure that all construction diesel engines with a rating of 50 horsepower or higher meet, at a minimum, the USEPA Tier 3 standards for non-road engines. From January 1, 2015 onward, project sponsors may ensure that all construction equipment meets or exceeds equivalent emissions performance to that of USEPA Tier 4 standards for

non-road engines. In the event that Tier 3 or 4 engines are not available for any off-road equipment larger than 100 hp, that equipment be equipped with a Tier 2 engine, or an engine that is equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides and diesel particulate matter to no more than Tier 2 levels unless certified by engine manufacturers or the on-site air quality construction mitigation manager that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is “not practical” for the following, as well as other, reasons.

1. There is no available retrofit control device that has been verified by either the ARB or USEPA to control the engine in question to Tier 2 equivalent emission levels and the highest level of available control using retrofit or Tier 1 engines is being used for the engine in question; or
2. The construction equipment is intended to be on site for five days or less.
3. Relief may be granted from this requirement if a good faith effort has been made to comply with this requirement and that compliance is not practical.

The use of a retrofit control device may be terminated immediately, provided that a replacement for the equipment item in question meeting the required controls occurs within ten days of termination of the use, if the equipment would be needed to continue working at this site for more than 15 days after the use of the retrofit control device is terminated, if one of the following conditions exists:

1. The use of the retrofit control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.
2. The retrofit control device is causing or is reasonably expected to cause engine damage.
3. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public.
4. Any other seriously detrimental cause which has the approval of the project manager prior to implementation of the termination.

AQ12: Project sponsors may ensure that deliveries related to construction activities that affect traffic flow may be scheduled during off-peak hours (e.g., 10:00 a.m. and 3:00 p.m.) and coordinated to achieve consolidated truck trips, where feasible. When the movement of construction materials and/or equipment impacts traffic flow, temporary traffic control may be provided to improve traffic flow (e.g., flag person).

- AQ13:** Project sponsors may ensure that to the extent possible, that construction activities utilize electricity from power poles rather than temporary diesel power generators and/or gasoline power generators.
- AQ14:** Local jurisdictions or agencies may, as practical and feasible, revegetate exposed earth surfaces following construction. Application of xeriscape principles, including such techniques and materials as native or low water use plants and low precipitation sprinklers heads, bubblers, drip irrigation systems and timing devices, may also be considered.
- AQ15:** Local jurisdictions may set, and enforce, specific limits on idling time for commercial vehicles, including delivery and construction vehicles, which prohibit vehicle and engine idling in excess of five minutes, where conditions allow.
- AQ16:** Project sponsors may ensure that sandbags or other erosion control measures are installed to prevent silt runoff to public roadways as needed.
- AQ17:** Project sponsors may designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties may include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons may be provided to the local air district prior to the start of construction as well as posted on-site over the duration of construction.
- AQ18:** Project sponsors may ensure that appropriate wind-breaks are installed at the construction site to minimize windblown dust.
- AQ19:** In order to address the California Air Resources Board Air Quality and Land Use Handbook (June 2005) and achieve an acceptable interior air quality level for sensitive receptors, project sponsors may identify appropriate measures, to be incorporated into project building design for residential, school and other sensitive uses located within 500 feet of freeways, heavily travelled arterials, railways and other sources of Diesel Particulate Matter and other known carcinogens. The appropriate measures may include one or more of the following methods as may be appropriate:
1. The project sponsor may retain a qualified air quality consultant to prepare a health risk assessment (HRA) in accordance with the California Air Resources Board and the Office of Environmental Health and Hazard Assessment requirements to determine the exposure of project residents/occupants/users to stationary and mobile (e.g., cars and trucks) sources of air pollution prior to issuance of a demolition, grading, or building permit. The HRA may be submitted to the Lead Agency for review and approval. The sponsor may implement the approved HRA recommendations, if any. If the HRA concludes that the air quality risks

from nearby sources are at or below acceptable levels, then additional measures are not required.

2. The project sponsor may implement the following features that have been found to reduce the air quality risk to sensitive receptors and may be included in the project construction plans. These may be submitted to the appropriate agency for review and approval prior to the issuance of a demolition, grading, or building permit and ongoing.
 - a. Do not locate sensitive receptors near distribution center's entry and exit points.
 - b. Do not locate sensitive receptors in the same building as a perchloroethylene dry cleaning facility.
 - c. Maintain a 50-foot buffer from a typical gas dispensing facility (under 3.6 million gallons of gas per year).
 - d. Install, operate and maintain in good working order a central heating and ventilation (HV) system or other air take system in the building, or in each individual residential unit, that meets the efficiency standard of the MERV 13. The HV system may include the following features: Installation of a high efficiency filter and/or carbon filter-to-filter particulates and other chemical matter from entering the building. Either HEPA filters or ASHRAE 85% supply filters may be used.
 - e. Retain a qualified HV consultant or HERS rater during the design phase of the project to locate the HV system based on exposure modeling from the mobile and/or stationary pollutant sources.
 - f. Maintain positive pressure within the building.
 - g. Achieve a performance standard of at least one air exchange per hour of fresh outside filtered air.
 - h. Achieve a performance standard of at least 4 air exchanges per hour of recirculation
 - i. Achieve a performance standard of .25 air exchanges per hour of unfiltered infiltration if the building is not positively pressurized.

3. Project sponsor may maintain, repair and/or replace HV system or prepare an Operation and Maintenance Manual for the HV system and the filter. The manual may include the operating instructions and maintenance and replacement schedule. This manual may be included in the CC&R's for residential projects and distributed to the building maintenance staff. In addition, the sponsor may prepare a separate Homeowners Manual. The manual may contain the operating instructions and maintenance and replacement schedule for the HV system and the filters. It may also include a disclosure to the buyers of the air quality analysis findings.

AQ20: To the maximum extent practicable the Lead Agency may ensure that private (individual and common) exterior open space, including playgrounds, patios, and decks, may either be shielded from sources of air pollution by buildings or otherwise buffered to further reduce air pollution for project occupants.

AQ21: As applicable and feasible, local jurisdictions may investigate (using for example procedures and guidelines for PM hotspot analysis consistent with USEPA (2010) PM guidance) the relationship between 1) any increases in PM10 and PM2.5 within 500 feet of freeways in their jurisdiction, and 2) existing sensitive receptors in that area that do not have adequate air filtration to reduce such impacts to a less than significant level. To the extent that existing sensitive receptors are identified that do not have adequate air filtration, local jurisdictions may establish a program by which project sponsors can mitigate significant increases in PM10 and PM2.5 (e.g., by providing a retrofit program for older higher emitting vehicles, anti-idling requirements or policies, controlling fugitive dust, routing traffic away from populated zones, replacing older buses with cleaner buses, and paying in to a fund established to retrofit sensitive receptors with HEPA filters when sensitive receptors are located within 500 feet of freeways and high-traffic volume roadways that generate substantial diesel particulate emissions).

AQ22: As applicable and feasible, project sponsors may plant appropriate vegetation to reduce PM10/PM2.5 when constructing a sensitive receptor within 500 feet of freeways and high-traffic volume roadways generating substantial diesel particulate emissions.

AQ23: As applicable and feasible, for major transportation projects (especially those that generate substantial diesel particulate emissions) in the region, if health risks are shown to increase significantly at sensitive receptors within 500 feet of a transportation facility, project sponsors are required under CEQA to consider applicable mitigation. Examples include planting appropriate vegetation and retrofitting existing sensitive uses with air filtration to reduce potential health risk impacts to a less than significant level.

BIOLOGICAL RESOURCES AND OPEN SPACE

Ecosystems in the SCAG Region

- BIO/OS1:** Project sponsors may assess displacement of habitat due to removal of native vegetation during route planning/project location planning. Routes/project sites may be planned in coordination with state and local resources agencies and may consider inventories of natural resources, such as CDFG and CNDDDB. Routes may be planned in order to avoid and/or minimize removal of native vegetation, by comparing proposed infrastructure with state and local conservation plans and by creating maps of resource habitat overlaid with the transportation network. Projects located in or adjacent to habitat areas may incorporate buffers to minimize lighting, noise, and other project impacts that can severely disrupt wildlife. Vegetation buffers may be appropriate to the adjacent vegetation association and protect the genetic integrity of the adjacent habitat. If avoidance is not possible, agencies/project sponsors may consult with the appropriate resource agencies to develop mitigation activities.
- BIO/OS2:** When avoidance of native vegetation removal is not possible, project sponsors may replant disturbed areas with commensurate native vegetation of high habitat value adjacent to the project that will result in a net environmental benefit (i.e., as opposed to ornamental vegetation with relatively less habitat value). When possible, habitat rehabilitation may use recycled material from rehabilitated infrastructure.
- BIO/OS3:** Project sponsors may include on-site habitat enhancement as a first priority and offsite habitat enhancement or restoration to compensate for unavoidable habitat losses from each project site as appropriate and necessary.

Special Status Species and Natural Communities

- BIO/OS4:** Pre-construction special status species surveys may be conducted by a qualified biologist to verify presence or absence of species at risk. For rare plants, surveys may be conducted when: 1) natural vegetation occurs on the site; 2) it is unknown if rare, threatened, or endangered plants or habitats occur on the site; and 3) the project has the potential for direct or indirect effects on vegetation. Species surveys may occur during the portion of the species' life cycle where the species is most likely to be identified within the appropriate habitat. In all cases, impacts on special status species and/or their habitat may be avoided during construction to the maximum extent feasible.
- BIO/OS5:** For projects located in sensitive habitat areas, project sponsors may develop and implement a Worker Awareness Program (environmental

education) to inform project workers of their responsibilities in regards to avoiding and minimizing impacts on sensitive biological resources.

BIO/OS6: Project sponsors may appoint an Environmental Inspector to serve as a contact for issues that may arise concerning implementation of mitigation measures, and to document and report on adherence to these measures.

BIO/OS7: Project sponsors may schedule construction activities to avoid sensitive times for biological resources (e.g., steelhead spawning periods during the winter and spring) and to avoid the rainy season when erosion and sediment transport is increased.

BIO/OS8: Project sponsors may schedule projects to avoid construction during critical life stages or sensitive seasons (e.g., the nesting season; see Mitigation Measures **BIO/OS25**, and **BIO/OS15** through **BIO/OS35**).

BIO/OS9: Project sponsors may precede construction, as appropriate, by pre-construction monitoring to ensure no sensitive species' habitat would be unnecessarily destroyed (also see Mitigation Measures **BIO/OS4** through **BIO/OS13**). All discovered sensitive species habitat may be avoided where feasible, or disturbance may be minimized.

BIO/OS10: Project sponsors may fence and/or mark sensitive habitat to prevent unnecessary machinery or foot traffic during construction activities.

BIO/OS11: Project sponsors may ensure that sensitive habitats (native vegetative communities identified as rare and/or sensitive by the CDFG) and special-status plant species (including vernal pools) impacted by projects may be restored and augmented. Project sponsors may consult with CDFG, as applicable, to ensure that significant impacts are avoided, mitigated, and/or minimized to the extent feasible. The Lead Agency may require other activity as described below.

- If impacts are temporary, mitigation may be at a 1:1 ratio (compensation acres to impacted acres). Permanent impacts may be compensated for by creating or restoring habitats at a 3:1 ratio as close as possible to the site of the impact. The CDFG may recommend mitigation ratios that vary on a project-by-project basis.

BIO/OS12: When work is conducted in or adjacent to identified sensitive habitat areas, and/or areas of intact native vegetation, construction protocols may require the salvage of perennial plants and the salvage and stockpile of topsoil (the surface material from 6 to 12 inches deep) and may be used in restoring native vegetation to all areas of temporary disturbance within the project area.

BIO/OS13: When removal and/or damage to sensitive species habitat are unavoidable during construction, project sponsors may ensure that any disturbed

natural areas are replanted with appropriate native vegetation following the completion of construction activities. In the case of permanent losses to sensitive species habitat, mitigation may follow the offsite habitat compensation guidance.

- BIO/OS14:** A qualified wetland scientist may review construction drawings as part of each project-specific environmental analysis to determine whether wetlands will be impacted, and if necessary, perform a formal wetland delineation. Appropriate state and federal permits may be obtained, and each project EIR may contain language clearly stating the provisions of such permits, including avoidance measures, restoration procedures, and in the case of permanent impacts compensatory creation or enhancement measures to ensure a no net loss of wetland extent or function and values.
- BIO/OS15:** Suitable habitat for listed vernal pool crustaceans may be avoided to the extent feasible. If infeasible, impacts may be mitigated in accordance with the Programmatic Biological Opinion (PBO) for vernal pool invertebrates, issued by the USFWS Sacramento Field Office in 1995. Surveys may be conducted, with USFWS approval, in accordance with the 1996 *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods*, to establish whether or not listed invertebrates are present.
- BIO/OS16:** Project sponsors may avoid removal of wetland or riparian vegetation. Specific vegetation that is not to be removed may be so marked during construction. Wetland and riparian vegetation removal may be minimized as much as possible.
- BIO/OS17:** Project sponsors may replace any disturbed wetland, riparian or aquatic habitat, either on-site or at a suitable off-site location at ratios to ensure no net loss. See Mitigation Measures **BIO/OS1** through **BIO/OS14**.
- BIO/OS18:** Project sponsors may ensure that when individual projects include unavoidable losses of riparian or aquatic habitat, adjacent or nearby riparian or aquatic habitat be enhanced (e.g., through removal of non-native invasive wetland species and replacement with more ecologically valuable native species).
- BIO/OS19:** For projects near water resources project sponsors may implement Best Management Practices (BMPs) at construction sites to minimize erosion and sediment transport from the area. BMPs include encouraging growth of vegetation in disturbed areas, using straw bales or other silt-catching devices, and using settling basins to minimize soil transport. (See also Water Resources Mitigation Measures.)
- BIO/OS20:** If specific project area trees are designated as “Landmark Trees” or “Heritage Trees”, then approval for removals may be obtained through the

appropriate entity, and appropriate mitigation measures may be developed at that time, to ensure that the trees are replaced. Mitigation trees may be locally-collected native species.

BIO/OS21: Project sponsors may prioritize retention of trees on-site consistent with local regulations. For example, the Lead Agency may require additional protection during the construction period for any trees that are to remain standing, including the actions described below.

1. Before the start of any clearing, excavation, construction or other work on the site, every protected tree deemed to be potentially endangered by said site work, may be securely fenced off. Such fences may remain in place for duration of all such work. All trees to be removed may be clearly marked. A scheme may be established for the removal and disposal of logs, brush, earth and other debris that will avoid injury to any protected tree.
2. Where proposed development or other site work could encroach upon the protected perimeter of any protected tree, special measures can habitat for listed vernal pool crustaceans may be avoided to the extent feasible. If infeasible, impacts may be mitigated in accordance with the Programmatic Biological Opinion (PBO) for vernal pool invertebrates, issued by the USFWS Sacramento Field Office in 1995. Surveys may be conducted, with USFWS approval, in accordance with the 1996 Interim and may be incorporated to allow the roots to breathe and obtain water and nutrients. Any excavation, cutting, filing, or compaction of the existing ground surface within the protected perimeter may be minimized. No change in existing ground level may occur from the base of any protected tree at any time. No burning or use of equipment with an open flame may occur near or within the protected perimeter of any protected tree.
3. No storage or dumping of oil, gas, chemicals, or other substances that may be harmful to trees may occur from the base of any protected trees, or any other location on the site from which such substances may enter the protected perimeter. No heavy construction equipment or construction materials may be operated or stored within a distance from the base of any protected trees. Wires, ropes, or other devices may not be attached to any protected tree, except as needed for support of the tree. No sign, other than a tag showing the botanical classification, may be attached to any protected tree.
4. Periodically during construction, the leaves of protected trees may be thoroughly sprayed with water to prevent buildup of dust and other pollution that would inhibit leaf transpiration.
5. If any damage to a protected tree occurs during or as a result of work on the site, the project sponsor may immediately notify the appropriate local agency of such damage. If, such tree cannot be preserved in a healthy

state, the local agency may require replacement of any tree removed with another tree or trees on the same site deemed adequate by the local agency to compensate for the loss of the tree that is removed.

6. All debris created as a result of any tree removal work may be removed by the project sponsor from the property within two weeks of debris creation, and such debris may be properly disposed of by the project sponsor in accordance with all applicable laws, ordinances, and regulations.

BIO/OS22: Project sponsors with projects within the range and within suitable habitat for species listed as threatened or endangered under California Endangered Species Act (such as the Mohave ground squirrel) or the Federal Endangered Species Act (such as the Arroyo toad) may conduct surveys, with CDFG and/or USFWS approval, in accordance with established and approved survey methods appropriate for the species of interest, such as the 1999 USFWS *Survey Protocol for the Arroyo Toad*, to establish whether or not the species is present. If species is determined present, project sponsors may consult with the USFWS and/or CDFG, as applicable, to ensure that significant impacts are avoided, mitigated, and/or minimized to the extent feasible. Project sponsors should obtain an Incidental Take Permit under Section 2081 of the Fish and Game Code before proceeding with authorization of any project subject to CESA. Additional authorization may be required by the USFWS for take of federal-listed species or their occupied habitat. The Lead Agency may require other activity as described below.

- A pre-construction survey may be conducted by a qualified biologist at each site to identify suitable habitat for the species of interest and to determine what avoidance measures, including relocation, fencing installation, and avoidance of breeding season may be required.
- Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG).
- Project sponsors must obtain an Incidental Take Permit under Section 2081 of the Fish and Game Code before proceeding with authorization of any project subject to CESA. Additional authorization may be required by the USFWS for take of federal-listed species or their occupied habitat.

BIO/OS23: Project sponsors with projects within the range and within suitable habitat for the blunt-nosed leopard lizard may conduct surveys, with USFWS approval, in accordance with the 2004 CDFG *Approved Survey Methodology for the Blunt-Nosed Leopard Lizard*, to establish whether or not the species is present. If species is determined present project sponsors should consult with the USFWS and/or CDFG, as applicable, to

ensure that significant impacts are avoided, mitigated, and/or minimized to the extent feasible. As part of the consultation, the Lead Agency may require other activity as described below.

- Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG). No direct taking of the blunt-nosed leopard lizard may occur as this is a CDFG fully protected species with no regulatory mechanism to authorize direct taking (killing) of individuals.

BIO/OS24: Project sponsors with projects within the range and within suitable habitat for the California red-legged frog may implement the measures detailed in the Programmatic Biological Opinion (PBO) for construction impacts to the red-legged frog that was issued by the USFWS (Federal Register 1999) to the USACE. The measures listed below are taken largely from the PBO and, if applied to the western pond turtle as well as the frog, would be adequate as standard mitigation for both species. A similar level of effort for survey protocol can also be applied to the Mountain yellow-legged frog, with adjustments to its climate, habitat, and breeding requirements.

- The name and credentials of a biologist qualified to act as a construction monitor may be submitted to USFWS for approval at least 15 days prior to commencement of work;
- The USFWS-approved biologist may survey the site two weeks prior to the onset of work activities and immediately prior to commencing work. If red-legged frog adults, tadpoles, or eggs are found, the approved biologist may contact USFWS to determine whether relocating any life stages is appropriate;
- The USFWS-approved biologist may ensure that the introduction or spread of invasive exotic plant species is avoided to the maximum extent possible, by removing weeds from areas of exposed bare soil within the construction zone where construction occurs in riparian vegetation.
- The number and size of access routes, staging areas, and total area of activity may be limited to the minimum necessary to achieve the project goal;
- If work sites require dewatering, the intakes may be screened with a maximum mesh sizes of 5 millimeters;
- The USFWS-approved biologist may permanently remove and destroy from within the project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent practicable.

BIO/OS25: Project sponsors with projects within the range and within suitable habitat for the Coachella Valley fringe-toed lizard may conduct surveys, with USFWS/CDFG approval, in accordance with the CDFG *Protocol for Determining Coachella Valley Fringe-Toed Lizard (CVFTL) Presence*, to establish whether or not the species is present. If species is determined present, project sponsors should consult with the USFWS and/or CDFG, as applicable, to ensure that significant impacts are avoided, mitigated, and/or minimized to the extent feasible. As part of the consultation, the Lead Agency may require other activity as described below.

- Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG).

BIO/OS26: Project sponsors with projects within the range and within suitable habitat for the desert tortoise may conduct surveys, with USFWS approval, in accordance with the 1992 USFWS *Field Survey Protocol For Any Federal Action That may Occur Within The Range Of The Desert Tortoise*, to establish whether or not the species is present. If the species is determined present, project sponsors should consult with the USFWS and/or CDFG, as applicable, to ensure that significant impacts are avoided, mitigated, and/or minimized to the extent feasible. As part of the consultation, the Lead Agency may require other activity as described below.

- Upon approval by the USFWS, preconstruction surveys of project impact areas may be required to salvage and relocate individual desert tortoise out of harm's way. Following removal of individuals, construction areas may be fenced with temporary exclusionary silt fencing.
- Mitigation for occupied habitat impacted is likely to be compensatory acquisition of mitigation credits or off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG).

BIO/OS27: California species of special concern (CSC), such as the two-striped garter snake and several bat species are considered special-status species that meet the definition of rare, threatened or endangered species for the purposes of CEQA. Projects within the range and within suitable habitat for California species of special concern may conduct surveys in accordance with the best professional judgment of a qualified biologist. : Project sponsors should consult with the USFWS and/or CDFG, as applicable, to ensure that significant impacts are avoided, mitigated, and/or minimized to the extent feasible. As part of the consultation, the Lead Agency may require other activity as described below.

- Preconstruction surveys of project impact areas may be required to salvage and relocate individual two-striped garter snakes out of harm's

way. Following removal of individuals, construction areas may be fenced with temporary exclusionary silt fencing.

- Similarly appropriate survey, salvage, and mitigation measures may be taken with regard to other CSC classified species. If avoidance of impacts to species is not feasible, on site and/or off site protection of appropriate mitigation lands in perpetuity may be secured for these species.
- Mitigation for occupied habitat is likely to be compensatory acquisition of mitigation credits or off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG. The two-striped garter snake is not formally listed but considered a special-status species worthy of measures to avoid and minimize impacts to the extent feasible.

BIO/OS28: Project sponsors may ensure avoiding disrupting nesting Swainson's hawks, by conducting construction activities at known nesting locations between September and March, outside the nesting season (nesting typically occurs from March 1 through September 15). Alternatively, if construction activities take place during the nesting season, a qualified biologist may conduct a pre-construction survey. Pre-construction surveys may commence in January utilizing approved protocol methods in consultation with CDFG and before the start of construction for any given milepost. If pre-construction surveys locate a nest site within one-half mile of any project (assuming available authorized access) a Swainson's hawk Monitoring and Mitigation Plan may be prepared in consultation with CDFG. Plans may be prepared by a qualified biologist approved by the CDFG. Plans may include detailed measures to avoid and minimize impacts to Swainson's hawks in and near the construction areas. The Lead Agency may require other activity as described below.

1. If a nest site is found, design the project to allow sufficient foraging and fledging area to maintain the nest site.
2. During the nesting season, ensure no new disturbances, habitat conversions, or other project-related activities that may cause nest abandonment or forced fledging occur within one-half mile of an active nest between March 1 and September 15. Buffer zones may be adjusted in consultation with CDFG and the Lead Agency.
3. Do not remove Swainson's hawk nest trees unless avoidance measures are determined to be infeasible. Removal of such trees may occur only during the timeframe of October 1 and the last day in February.

BIO/OS29: Project sponsors may ensure that no more than two weeks before construction in any given milepost, a survey for burrows and burrowing owls may be conducted by a qualified biologist within 500 feet of the

project (assuming available authorized access). The Lead Agency may require subsequent mitigation to be performed in conformance with applicable guidelines as described below.

The survey may conform to the protocol described by the California Burrowing Owl Consortium's 1993 Burrowing Owl Protocol and Mitigation Guideline which includes up to four surveys on different dates if there are suitable burrows present as well as the CDFG's 1995 Staff Report on Burrowing Owl Mitigation. Both mitigation guidelines also recommend habitat land acquisition and protection in perpetuity for project-related loss of occupied wintering and breeding habitat for burrowing owls. If occupied burrowing owl dens are found within the survey area, a determination may be made by a qualified biologist in consultation with CDFG whether or not project work will impact the occupied burrows or disrupt reproductive behavior.

- If it is determined that construction will not impact occupied burrows or disrupt breeding behavior, construction may proceed without any restriction or mitigation measures.
- If it is determined that construction will impact occupied burrows during August through February, the subject owls may be passively relocated from the occupied burrow(s) using one-way doors. There may be at least two unoccupied burrows suitable for burrowing owls within 300 feet of the occupied burrow before one-way doors are installed. Artificial burrows may be in place at least one-week before one-way doors are installed on occupied burrows. One-way doors will be in place for a minimum of 48 hours before burrows are excavated.
- If it is determined that construction will physically impact occupied burrows or disrupt reproductive behavior during the nesting season (March through July) then avoidance is the only mitigation available. Construction may be delayed within 300 feet of occupied burrows until it is determined that the subject owls are not nesting or until a qualified biologist determines that juvenile owls are self-sufficient or are no longer reliant on the natal burrow as their primary source of shelter and survival.
- Mitigation for occupied habitat is likely to be compensatory acquisition of mitigation credits or off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG.

BIO/OS30: Project sponsors may ensure that when working within 100 feet of salt or brackish marshland presence for the California black rail, California clapper rail, and Yuma clapper rail may be assumed for either species during the period February 1- August 31 and construction may be scheduled to begin no earlier than September 1 and end no later than January 31 to avoid potential impact on reproduction. The Department of

Fish and Game and United States Fish and Wildlife Service may be consulted when projects identify occupied habitat or habitat capable of supporting California clapper rail, light-footed clapper rail, and Yuma clapper rail.

BIO/OS31: Project sponsors with projects within the range and within suitable habitat for the coastal California gnatcatcher may conduct surveys, with USFWS approval, in accordance with the 1997 USFWS *Coastal California Gnatcatcher Presence/Absence Survey Guidelines*, to establish whether or not the species is present. If the species is determined to be present, project sponsors should consult with the USFWS and/or CDFG, as applicable, to ensure that significant impacts are avoided, mitigated, and/or minimized to the extent feasible. As part of the consultation, the Lead Agency may require other activity as described below.

- To avoid disrupting nesting coastal California gnatcatchers, construction activities at known nesting locations may occur between September and March outside the nesting season (nesting typically occurs from March 1 through September 1). Alternatively, if construction activities take place during the nesting season, a qualified biologist may conduct a pre-construction survey no more than two weeks before the start of construction for any given milepost and report whether or not there are nesting coastal California gnatcatchers within 500 feet of any project (assuming available authorized access). If there are nesting coastal California gnatcatchers present within the 500-foot buffer areas, construction may be delayed until the USFWS and/or CDFG has been consulted to determine suitable avoidance measures. A potential avoidance measure may include delaying all construction activity within 500 feet of an active coastal California gnatcatchers nest until the adults and/or young of the year are no longer reliant on the nest site for survival as determined by a qualified biologist.
- Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG).

BIO/OS32: Project sponsors with projects within the range and within suitable habitat for the least Bell's vireo may conduct surveys, with USFWS approval, in accordance with the 2001 USFWS *Least Bell's Vireo Survey Guidelines*, to establish whether or not the species is present. If the species is determined to be present, project sponsors should consult with the USFWS and/or CDFG, as applicable, to ensure that significant impacts are avoided, mitigated, and/or minimized to the extent feasible. As part of the consultation, the Lead Agency may require other activity as described below.

- To avoid disrupting nesting least Bell's vireo, construction activities at known nesting locations may occur between September and March outside the nesting season (nesting typically occurs from March 1 through September 1). Alternatively, if construction activities take place during the nesting season, a qualified biologist may conduct a pre-construction survey no more than two weeks before the start of construction for any given milepost and report whether or not there are nesting least Bell's vireo within 500 feet of any project (assuming available authorized access). If there are nesting least Bell's vireo present within the 500-foot buffer areas, construction may be delayed until the CDFG has been consulted to determine suitable avoidance measures. A potential avoidance measure may include delaying all construction activity within 500 feet of an active least Bell's vireo nest until the adults and/or young of the year are no longer reliant on the nest site for survival as determined by a qualified biologist.
- Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted or other similar ratio with the approval of the USFWS and/or CDFG).

BIO/OS33: Project sponsors with projects within the range and within suitable habitat for the southwestern willow flycatcher may conduct surveys, with USFWS approval, in accordance with the 2000 USFWS *Southwestern Willow Flycatcher Protocol Survey Guidelines (Revision 2000)*, to establish whether or not the species is present. Project sponsors should consult with the USFWS and/or CDFG, as applicable, to ensure that significant impacts are avoided, mitigated, and/or minimized to the extent feasible. As part of the consultation, the Lead Agency may require other activity as described below.

- To avoid disrupting nesting southwestern willow flycatcher, construction activities at known nesting locations may occur between September and March outside the nesting season (nesting typically occurs from March 1 through September 15). Alternatively, if construction activities take place during the nesting season, a qualified biologist may conduct a pre-construction survey no more than two weeks before the start of construction for any given milepost and report whether or not there are nesting southwestern willow flycatcher within 500 feet of any project (assuming available authorized access). If there are nesting southwestern willow flycatchers present within the 500-foot buffer areas, construction may be delayed until the CDFG has been consulted to determine suitable avoidance measures. A potential avoidance measure may include delaying all construction activity within 500 feet of an active southwestern willow flycatcher nest until the adults and/or young of the year are no longer reliant on the nest site for survival as determined by a qualified biologist.

- Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG).

BIO/OS34: Project sponsors may ensure that suitable nesting sites for migratory nongame native bird species protected under the Federal Migratory Bird Treaty Act and/or trees with unoccupied raptor nests (large stick nests or cavities) may only be removed prior to February 1, or following the nesting season.

A survey to identify active raptor and other migratory nongame bird nests may be conducted by a qualified biologist at least two weeks before the start of construction at project sites from February 1st through August 31st. Any active non-raptor nests identified within the project area or within 300 feet of the project area may be marked with a 300-foot buffer, and the buffer area may need to be avoided by construction activities until a qualified biologist determines that the chicks have fledged. Active raptor nests within the project area or within 500 feet of the project area may be marked with a 500-foot buffer and the buffer avoided until a qualified biologist determines that the chicks have fledged. If the 300-foot buffer for non-raptor nests or 500-foot buffer for raptor nests cannot be avoided during construction of the project, the project sponsor may retain a qualified biologist to monitor the nests on a daily basis during construction to ensure that the nests do not fail as the result of noise generated by the construction. The biological monitor may be authorized to halt construction if the construction activities cause negative effects, such as the adults abandoning the nest or chicks falling from the nest.

- Beginning thirty days prior to the disturbance of suitable nesting habitat, the project sponsor may arrange for weekly bird surveys conducted by a qualified biologist with experience in conducting breeding bird surveys to detect protected native birds occurring in the habitat that is to be removed and any other such habitat within 300 feet of the construction work area (within 500 feet for raptors) as access to adjacent areas allows. The last survey may be conducted no more than 3 days prior to the initiation of clearance/construction work.
- If an active raptor nest is found within 500 feet of the project or nesting habitat for a protected native bird is found within 300 feet of the project a determination may be made by a qualified biologist in consultation with CDFG whether or not project construction work will impact the active nest or disrupt reproductive behavior.
- If it is determined that construction will not impact an active nest or disrupt breeding behavior, construction will proceed without any restriction or mitigation measure. If it is determined that construction will impact an active raptor nest or disrupt reproductive behavior then avoidance is the only mitigation available. Construction may be

delayed within 300 feet of such a nest (within 500 feet for raptor nests), until August 31 or as determined by CDFG, until the adults and/or young of the year are no longer reliant on the nest site for survival and when there is no evidence of a second attempt at nesting as determined by a qualified biologist. Limits of construction to avoid a nest may be established in the field with flagging and stakes or construction fencing marking the protected area 300 feet (or 500 feet) from the nest. Construction personnel may be instructed on the sensitivity of the area.

- Documentation to record compliance with applicable State and Federal laws pertaining to the protection of native birds may be recorded.

Natural Lands

BIO/OS35: Project sponsors may conduct site-specific analyses of opportunities to preserve or improve habitat linkages with areas on- and off-site before project construction begins. Habitat linkages/wildlife movement corridors may be analyzed on a broader and cumulative impact analysis scale to avoid adverse impacts from linear projects that have potential for impacts on a broader scale or critical narrow choke points that could reduce function of recognized movement corridors on a larger scale. Before construction, a qualified biologist may review construction drawings and habitat connectivity mapping provided by the CDFG or CNDDDB may be used to determine the risk of habitat fragmentation. Mitigation banking to preserve habitat linkages and corridors (opportunities to purchase, maintain, and/or restore off-site habitat) is one opportunity that project sponsor and local jurisdictions may pursue.

BIO/OS36: Project sponsors may evaluate the potential for overpasses, underpasses, and culverts in cases where a roadway or other transportation project may interrupt the flow of species through their habitat. Wildlife crossings/access may be provided in accordance with proven standards, such as FHWA's Critter Crossings or Ventura County Mitigation Guidelines and the Wildlife Crossings Assessment & Mitigation Manual (Meese, et al., 2007.), and in consultation with wildlife corridor authorities with sufficient knowledge of both regional and local wildlife corridors, and at locations useful and appropriate for the species of concern.

BIO/OS37: Project sponsors may include analysis of wildlife corridors during project planning, in order to minimize or avoid impacts to these corridors. In addition, project sponsors may include analysis to identify where additional linkages and/or culverts/under crossings would be needed that do not exist.

BIO/OS38: Project sponsors may use wildlife fencing where appropriate to minimize the probability of wildlife injury due to direct interaction between wildlife and roads. Wildlife fencing used may be based on proven designs for impacted species and developed in conjunction with wildlife corridor

authorities with sufficient knowledge of both regional and local wildlife corridors. Project sponsors may take advantage of natural environmental buffers (i.e., streams or fields) to protect wildlife habitat from nearby transportation infrastructure. Inclusion of this mitigation measure may be considered on a case-by-case basis, as use of wildlife fencing could further increase the effects of habitat fragmentation and isolation for many species. Also see **BIO/OS1** through **BIO/OS21**.

BIO/OS39: Project sponsors may avoid siting new 2012-2035 RTP/SCS transportation facilities within areas not presently exposed to impacts from transportation facilities. If avoidance is infeasible, the project may minimize vehicular accessibility to areas beyond the actual transportation surface. This can be accomplished through fencing and signage. Additionally, the area of native habitats to be lost to proximity to a transportation facility may be assessed and habitat at a quality of equal or superior value may be secured and protected in perpetuity.

Threats to Biological Resources in the SCAG Region

BIO/OS40: Project sponsors may establish litter control programs in appropriate areas, such as receptacles at road turnouts, rest stops, and viewpoints. All refuse containers may be provided with mechanisms which prevent scavenging animals from gaining access to the contents of such containers.

BIO/OS41: Project sponsors may use road noise minimization methods, such as brush and tree planting, at heavy noise-producing transportation areas that may affect wildlife. Native vegetation may be used.

BIO/OS42: Project sponsors may avoid and/or minimize construction activities that have the potential to expose species to noise, smoke, or other disturbances. Pre-construction surveys may be conducted as appropriate to determine the presence of any species that would need to be protected from such an impact.

Protection of Biological Resources in the SCAG Region

BIO/OS43: Any Conservation opportunity areas identified by SCAG or others may be used by local jurisdictions and project sponsors as priority areas for mitigating impacts to open space resources. SCAG's forthcoming regional conservation planning policy will include additional information on conservation opportunity areas.

BIO/OS44: Project sponsors may ensure that transportation systems proposed in the 2012-2035 RTP/SCS avoid or mitigate significant impacts to natural lands, community open space and important farmland, including cumulative impacts and open space impacts from the growth associated with transportation projects and improvements.

- BIO/OS45:** Individual projects may either avoid significant impacts to regionally significant open space resources or mitigate the significant impacts. All projects submitted for IGR review may demonstrate consideration of alternatives that would avoid or reduce impacts to open space.
- BIO/OS46:** Project sponsors may include into project design, to the maximum extent practicable, mitigation measures and recommended best practices aimed at minimizing or avoiding impacts to natural lands, including, but not limited to FHWA's Critter Crossings, Ventura County Mitigation Guidelines, CDFG's Wildlife Action Plan and any applicable conservation plans.
- BIO/OS47:** For projects adjacent to natural watercourses, project sponsors may submit a vegetation management plan for review and approval by the Lead Agency that includes, as deemed appropriate, the following measures:
- Identify and do not disturb a buffer distance (to be determined as appropriate on a case-by-case basis) from the top of the natural watercourse. If the top of bank cannot be identified, leave a 50-foot buffer from the centerline of the watercourse or as wide a buffer as possible between the watercourse centerline and the proposed site development.
 - Identify and leave "islands" of vegetation in order to prevent erosion and landslides and protect nesting habitat.
 - Leave at least 6 inches of vegetation on the site.
 - Trim tree branches from the ground up (limbing up) and leave tree canopy intact.
 - Leave stumps and roots from cut down trees to prevent erosion.
 - Plant fire-appropriate, drought-tolerant, preferably native vegetation.
 - Err on the side of caution; if a plant, tree or area is sensitive, obtain a second opinion before cutting.
 - Provide erosion and sediment control protection if cutting vegetation on a steep slope.
 - Leave tall shrubbery at least 3-feet high.
 - Fence off sensitive plant habitats and creek areas to protect from animal grazing as appropriate and necessary.
 - Do not clear-cut vegetation. This can lead to erosion and severe water quality problems and destroy important habitat.
 - Do not remove vegetation within 20-feet of the top of bank. If the top of bank cannot be identified, do not cut within 50-feet of the centerline of the natural watercourse or as wide a buffer as possible between the natural watercourse centerline and the proposed site development.

- Do not trim/prune branches that are larger than 4 inches in diameter.
- Do not remove tree canopy.
- Do not dump cut vegetation in a creek.
- Do not cut tall shrubbery to less than 3-feet high.
- Do not cut of short vegetation (grasses, ground-cover) to less than 6-inches high.

BIO/OS48: As appropriate conduct a biological assessment for any site/corridor where there is the potential for impacts to significant biological resources including threatened or endangered species, sensitive habitats/species and/or protected trees.

BIO/OS49: Shade Tree Planting: Local jurisdictions or agencies may promote the planting of shade trees and establish shade tree guidelines and specifications, including:

- Recommendations for tree planting based on the land use (residential, commercial, parking lots, etc.);
- Recommendations for tree types based on species size, branching patterns, whether deciduous or evergreen, whether roots are invasive, etc.;
- Recommendations for placement, including distance from structures, density of planting, and orientation relative to structures and the sun.

BIO/OS50: Urban Forestry Management: Local jurisdictions or agencies may develop an Urban Forestry Program to consolidate policies and ordinances regarding tree planting, maintenance, and removal, including:

- Establish a tree-planting target and schedule to support the goals of the California Climate Action Team to plant 5 million trees in urban areas by 2020;
- Establish guidelines for tree planting, including criteria for selecting deciduous or evergreen trees low-VOC-producing trees, and emphasizing the use of drought-tolerant native trees and vegetation.

BIO/OS51: Local jurisdictions or agencies may establish policies and programs to restore, protect, manage and preserve conservation areas, including forested areas, agricultural lands, wildlife habitat and corridors, wetlands, watersheds, and groundwater recharge areas, that remove and sequester carbon from the atmosphere.

BIO/OS52: Conservation Area Development: Local jurisdictions or agencies may consider establishing programs and funding mechanisms to create protected conservation areas For example, local jurisdictions may:

- Impose mitigation fees for development on lands that would otherwise be conservation areas, and use the funds generated to protect other areas from development;
- Consider proposals for voters to approve a small tax increment (e.g., a quarter cent sales tax, perhaps for a finite time period that could be renewed) to fund the purchase of development rights in conservation areas, or purchase of the land outright.

BIO/OS53: Conservation Area Preservation: Local jurisdictions or agencies may establish policies to preserve existing conservation areas, and to discourage development in those areas.

BIO/OS54: Local jurisdictions or agencies may manage its stock of vegetation to reduce GHG emissions.

BIO/OS55: Local jurisdictions may conduct a comprehensive inventory and analysis of the urban forest, and coordinate tree maintenance responsibilities with all responsible departments, consistent with best management practices.

BIO/OS56: Local jurisdictions or agencies may evaluate existing landscaping and options to convert reflective and impervious surfaces to landscaping, and install or replace vegetation with drought-tolerant, low-maintenance native species or edible landscaping that can also provide shade and reduce heat-island effects.

CULTURAL RESOURCES

- CUL1:** As part of the appropriate project/environmental review of individual projects, project sponsors may identify potential impacts to historic resources. A record search at the appropriate Information Center may be conducted to determine whether the project area has been previously surveyed and whether historic resources were identified.
- CUL2:** If indicated as necessary by a records search, prior to construction activities, project sponsors may obtain a qualified architectural historian to conduct historic architectural surveys as recommended by the Information Center. In the event the records indicate that no previous survey has been conducted, the Information Center may make a recommendation on whether a survey is warranted based on the sensitivity of the project area for historical resources within 1,000 feet of the project.
- CUL3:** Project sponsors may comply with Section 106 of the National Historic Preservation Act (NHPA) including, but not limited to, projects for which federal funding or approval is required for the individual project. This law requires federal agencies to evaluate the impact of their actions on resources included in or eligible for listing in the National Register. Federal agencies must coordinate with the State Historic Preservation Officer in evaluating impacts and developing mitigation. These mitigation measures may include, but are not limited to the following:
- Where appropriate, project sponsors may employ design measures to avoid historical resources and undertake adaptive reuse where appropriate and feasible. If resources are to be preserved, as feasible, project sponsors may carry out the maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction in a manner consistent with the Secretary of the Interior’s Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. If resources would be impacted, impacts may be minimized to the extent feasible.
 - Where feasible, noise buffers/walls and/or visual buffers/landscaping may be constructed to preserve the contextual setting of significant built resources.
- CUL4:** Project sponsors may secure a qualified environmental agency and/or architectural historian, or other such qualified person to document any significant historical resource(s), by way of historic narrative, photographs, and architectural drawings, as mitigation for the effects of demolition of a resource. However, such documentation will not mitigate the effects to less than significant.
- CUL5:** As part of the appropriate project/environmental review of individual projects, project sponsors may consult with the Native American Heritage

Commission (NAHC) to determine whether known sacred sites are in the project area, and identify the Native American(s) to contact to obtain information about the project site. Federal, State, counties, and cities lead agencies may require that a check of the NAHC sacred lands files be undertaken by all projects and that the Native American tribes or individuals identified by the NAHC be contacted by the project proponent for further information and consultation on the project.

CUL6: Prior to construction activities, project sponsors may obtain a qualified archaeologist to conduct a record search at the appropriate Information Center of the California Archaeological Inventory to determine whether the project area has been previously surveyed and whether resources were identified. Federal, State, counties, and cities lead agencies may require a qualified archeologist conduct a record search at the appropriate Information Center on the project.

CUL7: Prior to construction activities, project sponsors may obtain a qualified archaeologist or architectural historian (depending on applicability) to conduct archaeological and/or historic architectural surveys as recommended by the Information Center. In the event the records indicate that no previous survey has been conducted, the Information Center may make a recommendation on whether a survey is warranted based on the sensitivity of the project area for archaeological resources. Federal, State, counties, and cities lead agencies may conduct a phase I archeological or historic architectural survey for all project that have not been previously surveyed or have not been surveyed in the past ten years.

CUL8: If the record search indicates that the project is located in an area rich with cultural materials, project sponsors may retain a qualified archaeologist to monitor any subsurface operations, including but not limited to grading, excavation, trenching, or removal of existing features of the subject property. Federal, State, counties, and cities lead agencies require that a Native American monitor be employed by the project proponent or tribe to monitor the subsurface operations or any earth movement in all projects. It is also strongly recommended that a pre-excavation agreement be implemented with culturally affiliated tribes.

CUL9: Construction activities and excavation may be conducted to avoid cultural resources (if identified). If avoidance is not feasible, further work may be needed to determine the importance of a resource. Project sponsors may obtain a qualified archaeologist familiar with the local archaeology, and/or as appropriate, an architectural historian who may make recommendations regarding the work necessary to determine importance. If the cultural resource is determined to be important under state or federal guidelines, impacts on the cultural resource may need to be mitigated. Avoidance is the preferred alternative. If avoidance is not feasible, Federal, State, counties, and cities lead agencies may require that the project sponsor

consult with culturally affiliated Native American Tribes in the determination of importance of the resource.

CUL10: Project sponsors may stop construction activities and excavation in the area where cultural resources are found until a qualified archaeologist can determine the importance of these resources. Federal, State, counties, and cities lead agencies may require that the project sponsor consult with culturally affiliated Native American Tribes in the determination of importance of the resource.

CUL11: As part of the appropriate project/environmental review of individual projects, project sponsors may obtain a qualified paleontologist to identify and evaluate paleontological resources where potential impacts are considered high; the paleontologist may also conduct a field survey in these areas.

CUL12: Project sponsors may ensure that construction activities avoid known paleontological resources, if feasible, especially if the resources in a particular lithic unit formation have been determined through detailed investigation to be unique.

CUL13: Project sponsors may ensure that when a construction activity could significantly disturb soils or geologic formations in areas identified as having a moderate to high potential to support paleontological resources, a qualified researcher must be stationed on-site to observe during excavation operations and recover scientifically valuable specimens. As part of this mitigation, the following actions may be taken:

- A certified paleontologist may be retained (or required to be retained) by the project sponsor prior to construction to establish procedures for surveillance and the preconstruction salvage of exposed resources if fossil-bearing sediments have the potential to be impacted.
- The paleontologist may provide preconstruction coordination with contractors, oversee original cutting in previously undisturbed areas of sensitive formations, halt or redirect construction activities as appropriate to allow recovery of newly discovered fossil remains, and oversee fossil salvage operations and reporting.
- This measure may be placed as a condition on all plans where excavation and earthmoving activity is proposed in a geologic unit having a moderate or high potential for containing fossils.
- Excavations of paleontological resources may be overseen by the qualified paleontologist and the paleontological resources given to a local agency, or other applicable institution, where they could be displayed or used for research.

- CUL14:** Where practicable, project sponsors may avoid routes and project designs that would permanently alter unique features with archaeological and/or paleontological significance.
- CUL15:** As part of project oversight of individual projects, project sponsors may, in the event of discovery or recognition of any human remains during construction or excavation activities associated with the project, in any location other than a dedicated cemetery, may cease further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the coroner of the county in which the remains are discovered has been informed and has determined that no investigation of the cause of death is required.
- CUL16:** If any discovered remains are of Native American origin:
- The coroner may contact the Native American Heritage Commission in order to ascertain the proper descendants from the deceased individual. The coroner may make a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods. This may include obtaining a qualified archaeologist or team of archaeologists to properly excavate the human remains; or
 - If the Native American Heritage Commission is unable to identify a descendant, or the descendant failed to make a recommendation within 24 hours after being notified by the commission, the landowner or their authorized representative may obtain a Native American monitor, and an archaeologist, if recommended by the Native American monitor, and rebury the Native American human remains and any associated grave goods, with appropriate dignity, on the property and in a location that is not subject to further subsurface disturbance where the following conditions occur:
 - The Native American Heritage Commission is unable to identify a descendent;
 - The descendant identified fails to make a recommendation; or
 - The landowner or their authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

GEOLOGY, SOILS AND MINERAL RESOURCES

GEO1:Project sponsors may ensure that projects located within or across Alquist-Priolo Zones comply with design requirements provided in Special Publication 117, published by the California Geological Survey, as well as relevant local, regional, State, and federal design criteria for construction in seismic areas.

- GEO2:** Project sponsors may ensure that projects are designed in accordance with county and city code requirements for seismic ground shaking. The design of projects may consider seismicity of the site, soil response at the site, and dynamic characteristics of the structure, in compliance with the appropriate California Building Code and State of California design standards for construction in or near fault zones, as well as all standard design, grading, and construction practices in order to avoid or reduce geologic hazards.
- GEO3:** Project sponsors may ensure that site-specific geotechnical investigations conducted by a qualified geotechnical expert may be required prior to preparation of project designs. These investigations would identify areas of potential failure and recommend remedial geotechnical measures to eliminate any problems.
- GEO4:** Project sponsors may ensure that site-specific geotechnical investigations conducted by a qualified geotechnical expert are conducted to ascertain soil types and local faulting prior to preparation of project designs. These investigations would identify areas of potential failure and recommend remedial geotechnical measures to eliminate any problems.
- GEO5:** Project sponsors may ensure that project designs provide adequate slope drainage and appropriate landscaping to minimize the occurrence of slope instability and erosion. Design features may include measures to reduce erosion caused by stormwater. Road cuts may be designed to maximize the potential for revegetation.
- GEO6:** Project sponsors may ensure that, prior to preparing project designs, new and abandoned wells are identified within construction areas to ensure the stability of nearby soils.
- GEO7:** Project sponsors may ensure that projects avoid geologic units or soils that are unstable, expansive soils and soils prone to lateral spreading, subsidence, liquefaction, or collapse wherever feasible.
- GEO8:** Project sponsors may ensure that projects avoid landslide areas and potentially unstable slopes wherever feasible.
- GEO9:** Project sponsors may ensure that site-specific geotechnical investigations conducted by a qualified geotechnical expert may be required prior to preparation of project designs to identify the potential for subsidence and expansive soils. These investigations would identify areas of potential failure and recommend remedial geotechnical measures to eliminate any problems. Recommended corrective measures, such as structural reinforcement and replacing soil with engineered fill, may be implemented in project designs.

GEO10: Local jurisdictions may review availability of aggregate and mineral resources in their jurisdiction and may develop a long-range plan to meet demand.

GREENHOUSE GAS EMISSIONS

GHG1: SCAG member cities and the county governments may adopt and implement Climate Actions Plans (CAPS, also known as Plans for the Reduction of Greenhouse Gas Emissions as described in CEQA Guidelines Section 15183.5 Tiering and Streamlining the Analysis of Greenhouse Gas Emissions)

Climate Action Plans generally follow the steps and contain components described below.

1. Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within their respective jurisdictions;
2. Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable;
3. Identify and analyze the GHG emissions resulting for specific actions or categories of actions anticipated within their respective jurisdictions;
4. Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
5. Establish a mechanism to monitor the plan's progress toward achieving that level and to require amendment if the plan is not achieving specified levels; and
6. Be adopted in a public process following environmental review.

CAPs may, when appropriate, incorporate planning and land use measures from the California Attorney General's latest list of example policies to address climate change at both the plan and project level. Specifically, at the plan level, land use plans may, when appropriate, incorporate planning and land use measures from the California Attorney General's latest list of example policies to address climate change (http://ag.ca.gov/globalwarming/pdf/GP_policies.pdf), including, but not limited to policies from that web page such as:

- Smart growth, jobs/housing balance, transit-oriented development, and infill development through land use designations, incentives and fees, zoning, and public-private partnerships

- Create transit, bicycle, and pedestrian connections through planning, funding, development requirements, incentives and regional cooperation, and create disincentives for auto use
- Energy and water-efficient buildings and landscaping through ordinances, development fees, incentives, project timing, prioritization, and other implementing tools

In addition, member cities and the county governments may incorporate, as appropriate, policies to encourage implementation of the Attorney General’s list of project specific mitigation measures available at the following web site: http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf, including, but not limited to measures from the web page such as:

- Adopt a comprehensive parking policy that discourages private vehicle use and encourages the use of alternative transportation
- Build or fund a major transit stop within or near development
- Provide public transit incentives such as free or low-cost monthly transit passes to employees, or free ride areas to residents and customers
- Incorporate bicycle lanes, routes and facilities into street systems, new subdivisions, and large developments
- Require amenities for non-motorized transportation, such as secure and convenient bicycle parking.

They may also incorporate, when appropriate, planning and land use measures from additional resources listed by the California Attorney General at the following webpage:

<http://ag.ca.gov/globalwarming/ceqa/resources.php>

In addition, CAPs may also incorporate analysis of climate change adaptation, in recognition of the likely and potential effects of climate change in the future regardless of the level of mitigation and in conjunction with Executive Order S-13-08, which seeks to enhance the State’s management of climate impacts including sea level rise, increased temperatures, shifting precipitation, and extreme weather events by facilitating the development of State’s first climate adaptation strategy.

GHG2: Project sponsors may require Best Available Control Technology (BACT) during construction and operation of projects, including:

1. Solicit bids that include use of energy and fuel efficient fleets;
2. Solicit preference construction bids that use BACT, particularly those seeking to deploy zero- and/or near zero emission technologies;
3. Employ use of alternative fueled vehicles;

4. Use lighting systems that are energy efficient, such as LED technology;
5. Use CEQA Guidelines Appendix F, Energy Conservation, to create an energy conservation plan;
6. Streamline permitting process to infill, redevelopment, and energy-efficient projects;
7. Use an adopted emissions calculator to estimate construction-related emissions;
8. Use the minimum feasible amount of GHG-emitting construction materials that is feasible;
9. Use of cement blended with the maximum feasible amount of flash or other materials that reduce GHG emissions from cement production;
10. Use of lighter-colored pavement where feasible;
11. Recycle construction debris to maximum extent feasible; and
12. Plant shade trees in or near construction projects where feasible.

GHG3: Local jurisdictions may establish a coordinated, creative public outreach activities, including publicizing the importance of reducing GHG emissions and steps community members may take to reduce their individual impacts.

GHG4: Pedestrian and Bicycle Promotion: Local jurisdictions may work with local community groups and business associations to organize and publicize walking tours and bicycle events, and to encourage pedestrian and bicycle modes of transportation.

GHG5: Waste Reduction: Local jurisdictions may organize workshops on waste reduction activities for the home or business, such as backyard composting, or office paper recycling, and may schedule recycling drop-off events and neighborhood chipping/mulching days.

GHG6: Water Conservation: Local jurisdictions may support and/or sponsor workshops on water conservation activities, such as selecting and planting drought tolerant, native plants in landscaping, and installing advanced irrigation systems.

GHG7: Energy Efficiency: Local jurisdictions may organize workshops on steps to increase energy efficiency in the home or business, such as weatherizing the home or building envelope, installing smart lighting systems, and how to conduct a self-audit for energy use and efficiency.

GHG8: Schools Programs: Local jurisdictions may develop and implement a program to present information to school children about climate change and ways to reduce GHG emissions, and may support school-based

programs for GHG reduction, such as school based trip reduction and the importance of recycling.

HAZARDOUS MATERIALS

HM1: Project sponsors may comply with all applicable laws, regulations, and health and safety standards set forth by federal, state, and local authorities that regulate the proper handling of such materials and their containers to the routine transport, use, and disposal of hazardous materials does not create a significant hazard to the public or the environment.

HM2: Project sponsors may consider any known or planned school locations when determining the alignment of new transportation projects and modifications to existing transportation facilities as well as any industrial or other use that could pose a hazard to students.

HM3: Project sponsors may ensure that Best Management Practices (BMPs) are implemented as part of construction to minimize the potential negative effects to groundwater and soils. These may include the following:

- Follow manufacturer’s recommendations on use, storage, and disposal of chemical products used in construction;
- Avoid overtopping construction equipment fuel gas tanks;
- During routine maintenance of construction equipment, properly contain and remove grease and oils;
- Properly dispose of discarded containers of fuels and other chemicals;
- Ensure that construction would not have a significant impact on the environment or pose a substantial health risk to construction workers and the occupants of the proposed development. Soil sampling and chemical analyses of samples may be performed to determine the extent of potential contamination beneath all UST’s, elevator shafts, clarifiers, and subsurface hydraulic lifts when on-site demolition, or construction activities would potentially affect a particular development or building; and
- If soil, groundwater or other environmental medium with suspected contamination is encountered unexpectedly during construction activities (e.g., identified by odor or visual staining, or if any underground storage tanks, abandoned drums or other hazardous materials or wastes are encountered), the project sponsor may cease work in the vicinity of the suspect material, the area may be secured as necessary, and the project sponsor may take all appropriate measures to protect human health and the environment. Appropriate measures may include notification of regulatory agency(ies) and implementation of actions as necessary, to identify the nature and extent of contamination. Work may not resume in the area(s) affected until the

measures have been implemented under the oversight of the City or regulatory agency, as appropriate.

HM4: As appropriate, project sponsors may submit documentation to determine whether radon or vapor intrusion from the groundwater and soil is located on-site as part of the Phase I documents. The Phase I analysis may be submitted to the appropriate government agency for review and approval, along with a Phase II report if warranted by the Phase I report for the project site. The reports may make recommendations for remedial action, if appropriate, and may be signed by a Registered Environmental Assessor, Professional Geologist, or Professional Engineer. The project sponsor may implement the approved recommendations.

HM5: As appropriate each project sponsor may submit a Hazardous Materials Business/Operations Plan for review and approval by the appropriate local agency. Once approved, this plan will then be kept on file with the Lead Agency (or other appropriate government agency) and may be updated as applicable. The purpose of the Hazardous Materials Business/Operations Plan is to ensure that employees are adequately trained to handle the materials and provides information to the local fire protection agency may emergency response be required. The Hazardous Materials Business/Operations Plan may include the following:

- The types of hazardous materials or chemicals stored and/or used on-site, such as petroleum fuel products, lubricants, solvents, and cleaning fluids
- The location of such hazardous materials
- An emergency response plan including employee training information
- A plan that describes the manner in which these materials are handled, transported and disposed

HM6: Project sponsors may implement all of the following Best Management Practices (BMPs) regarding potential soil and groundwater hazards.

- Soil generated by construction activities may be stockpiled on-site in a secure and safe manner. All contaminated soils determined to be hazardous or non-hazardous waste must be adequately profiled (sampled) prior to acceptable reuse or disposal at an appropriate off-site facility. Specific sampling and handling and transport procedures for reuse or disposal may be in accordance with applicable local, State and federal agencies laws.
- Groundwater pumped from the subsurface may be contained onsite in a secure and safe manner, prior to treatment and disposal, to ensure environmental and health issues are resolved pursuant to applicable laws and policies. Engineering controls may be utilized, which

include impermeable barriers to prohibit groundwater and vapor intrusion into the building.

- Prior to issuance of any demolition, grading, or building permit, the sponsor may submit for review and approval by the Lead Agency (or other appropriate government agency), written verification that the appropriate federal, State and/or local oversight authorities, including, but not limited to the Regional Water Quality Control Board (RWQCB), have granted all required clearances and confirmed that the all applicable standards, regulations and conditions for all previous contamination at the site.

HM7: Project sponsors may consult all known databases of contaminated sites and undertake a standard Phase I Environmental Site Assessment in the process of planning, environmental clearance, and construction for projects included in the 2012-2035 RTP/SCS, including development projects.

HM8: Where contaminated sites are identified, project sponsors may develop appropriate mitigation measures to assure that worker and public exposure is minimized to an acceptable level and to prevent any further environmental contamination as a result of construction.

HM9: If asbestos-containing materials (ACM) are found to be present in building materials to be removed project sponsors may submit specifications signed by a certified asbestos consultant for the removal, encapsulation, or enclosure of the identified ACM in accordance with all applicable laws and regulations, including but not necessarily limited to: California Code of Regulations, Title 8; Business and Professions Code; Division 3; California Health & Safety Code Section 25915-25919.7; and other local regulations as applicable.

HM10: Prior to issuance of demolition, grading, or building permits, project sponsors may submit to the appropriate agency responsible for hazardous materials/wastes oversight, a Phase II Environmental Site Assessment report if warranted by a Phase I report for the project site. The reports may make recommendations for remedial action, if appropriate, and may be signed by a Registered Environmental Assessor, Professional Geologist, or Professional Engineer.

HM11: Project sponsors may submit a comprehensive assessment report to the appropriate agency, signed by a qualified environmental professional, documenting the presence or lack thereof of ACM, lead-based paint, and any other building materials or stored materials classified as hazardous waste by State or federal law.

HM12: If a Phase II Environmental Site Assessment report recommends remedial action, the project sponsor may:

- Consult with the appropriate local, State, and federal environmental regulatory agencies to ensure sufficient minimization of risk to human health and environmental resources, both during and after construction, posed by soil contamination, groundwater contamination, or other surface hazards including, but not limited to, underground storage tanks, fuel distribution lines, waste pits and sumps;
- Obtain and submit written evidence of approval for any remedial action if required by a local, State, or federal environmental regulatory agency; and
- Submit a copy of all applicable documentation required by local, State, and federal environmental regulatory agencies, including but not limited to: permit applications, Phase I and II environmental site assessments, human health and ecological risk assessments, remedial action plans, risk management plans, soil management plans, and groundwater management plans.

HM13: If lead-based paint is present, project sponsors may submit specifications to the appropriate agency, signed by a certified Lead Supervisor, Project Monitor, or Project Designer for the stabilization and/or removal of the identified lead paint in accordance with all applicable laws and regulations, including but not necessarily limited to: California Occupational Safety and Health Administration's (Cal OSHA's) Construction Lead Standard, Title 8 California Code of Regulations (CCR) Section 1532.1 and Department of Health Services (DHS) Regulation 17 CCR Sections 35001-36100, as may be amended. If other materials classified as hazardous waste by State or federal law are present, the project sponsor may submit written confirmation to the appropriate local agency that all State and federal laws and regulations may be followed when profiling, handling, treating, transporting and/or disposing of such materials.

HM14: If materials classified as hazardous waste by State or federal law are present, project sponsors may submit written confirmation to appropriate local agency that all State and federal laws and regulations may be followed when profiling, handling, treating, transporting and/or disposing of such materials.

LAND USE AND AGRICULTURAL RESOURCES

LU1: Local jurisdictions may provide for new housing consistent with the regional Housing Needs Assessment (RHNA) to accommodate their share of the forecasted regional growth.

LU2: Significant adverse impacts to community cohesion resulting from the displacement of residences or businesses may be mitigated with specific relocation measures as dictated by local, state or federal requirements on a

project-by project basis. Such measures include assistance in finding a new location, assistance with moving, or compensation for losses. Where it has been determined that displacement is necessary and displaced individuals are eligible, a relocation assistance program consistent with the State Uniform Location Assistance and Real Properties Acquisition Policies Act provides compensation and assistance in finding new residence for displaced individuals.

- LU3:** Project sponsors may design new transportation facilities that consider access to existing community facilities. During the design phase of the project, community amenities and facilities may be identified and considered in the design of the project.
- LU4:** Project sponsors may design roadway improvements that minimize barriers to pedestrians and bicyclists. During the design phase, pedestrian and bicycle routes may be determined that permit connections to nearby community facilities.
- LU5:** For projects that require approval or funding by the USDOT, project sponsors may comply with Section 4(f) U.S. Department of Transportation Act of 1966 (USDOT Act).
- LU6:** Project sponsors may ensure that at least one acre of unprotected open space is permanently conserved for each acre of open space developed as a result of transportation projects/improvements.
- LU7:** Local jurisdictions may seek funding to prepare specific plans and related environmental documents to facilitate mixed-use development at selected sites, and to allow these areas to serve as receiver sites for transfer of development rights away from environmentally sensitive lands and rural areas outside established urban growth boundaries.
- LU8:** Local jurisdictions may preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.
- LU9:** Project sponsors may consider corridor realignment, buffer zones and setbacks, and berms and fencing where feasible, to avoid agricultural lands and to reduce conflicts between transportation uses and agricultural lands.
- LU10:** Prior to final approval of each project and when feasible and prudent, the project sponsor may establish conservation easement programs to mitigate impacts to prime farmland.
- LU11:** Prior to final approval of each project, the project sponsor may to the extent practical and feasible, avoid impacts to prime farmlands or farmlands that support crops considered valuable to the local or regional economy.

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- LU12:** Local jurisdictions may establish programs to direct growth to less agriculturally valuable lands and ensure, where possible, the continued protection of the most agriculturally valuable land within each county. The following are offered as examples of programs:
- The development or participation in transfer of development rights programs to encourage the preservation of agricultural lands.
 - Tools for the preservation of agricultural lands such as eliminating estates and ranchettes and clustering to retain productive agricultural land.
 - Easing restrictions on farmer's markets and encourage cooperative farming initiatives to increase the availability of locally grown food.
 - Considering partnering with school districts to develop farm-to-school programs.
- LU13:** Local jurisdictions may avoid the premature conversion of farmlands by promoting infill development and the continuation of agricultural uses until urban development is imminent; if development of agricultural lands is necessary, growth may be directed to those lands on which the continued viability of agricultural production has been compromised by surrounding urban development on the loss of local markets.
- LU14:** Local jurisdictions may encourage patterns of urban development and land use, which reduce costs on infrastructure and make better use of existing facilities. Strategies that local jurisdictions may pursue include:
- Increasing the accessibility to natural areas lands for outdoor recreation.
 - Promoting infill development and redevelopment to revitalize existing communities
 - Utilizing "green" development techniques
 - Promoting water-efficient land use and development.
- LU15:** Project sponsors and local jurisdictions may promote infill development and redevelopment to encourage the efficient use of land and minimize the development of agricultural and open space lands.
- LU16:** Local jurisdictions may consider the following land use principles that use resources efficiently, and to the extent practical and feasible minimize pollution and reduce waste generation:
- Mixed-use residential and commercial development that is connected with public transportation and utilizes existing infrastructure.
 - Land use and planning strategies to increase biking and walking trips.

- LU17:** Individual projects must be consistent with federal, state, and local policies that preserve agricultural lands and support the economic viability of agricultural activities, as well as policies that provide compensation for property owners if preservation is not feasible.
- LU18:** For projects in agricultural areas, project sponsors may contact the California Department of Conservation and each county’s Agricultural Commissioner’s office to identify the location of prime farmlands and lands that support crops considered valuable to the local or regional economy. Impacts to such lands may be evaluated in project-specific environmental documents. The analysis may use the land evaluation and site assessment (LESA) analysis method (CEQA Guidelines §21095), as appropriate. The project sponsors or local jurisdictions may be responsible for ensuring adherence to the mitigation measures prior to construction. Mitigation measures may include conservation easements or the payment of in-lieu fees.
- LU19:** For those projects that require federal funding, the federal agency evaluates the effects of the action to agricultural resources using the criteria set forth in the Farmland Protection Policy Act (FPPA). The FPPA is administered by the NRCS, which determines impacts to farmland that could occur due to the proposed project. The determination is made through coordination between the federal agency proposing or supporting the project and NRCS. The assessment of potential impacts to farmland from corridor type projects, which is typical of transportation projects analyzed in this Program EIR, may require completion of Form NRCS-CPA-106, Farmland Conservation Impact Rating for Corridor Type Projects. NRCS may make a determination, using set thresholds, as to whether additional project specific mitigation would be required.
- LU20:** Prior to final approval of each project, the project sponsor may encourage enrollments of agricultural lands for counties that have Williamson Act programs, where applicable.
- LU21:** Project sponsors and local jurisdictions may submit for IGR review projects with potentially significant impacts to important farmlands.
- LU22:** Local jurisdictions may consider policies to preserve forested areas, agricultural lands, wildlife habitat and corridors, wetlands, watersheds, groundwater recharge areas and other open space that provide carbon sequestration benefits.
- LU23:** Local jurisdictions may require best management practices in agriculture and animal operations to reduce emissions, conserve energy and water, and utilize alternative energy sources, including biogas, wind and solar.

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- LU24:** Local jurisdictions may encourage patterns of urban development and land use, which reduce costs on infrastructure and make better use of existing facilities.
- LU25:** Local jurisdictions may adopt and implement General Plan Housing Elements that accommodate the housing need identified through the RHNA process. Affordable housing may be provided consistent with the RHNA income category distribution adopted for each jurisdiction.
- LU26:** Local jurisdictions may consider shared regional priorities, as outlined in the Compass Blueprint, 2012-2035 RTP/SCS and other ongoing regional planning efforts, in determining their own development goals and drafting local plans.
- LU27:** Local jurisdictions and subregional organizations may encourage the cleanup and redevelopment of brownfield sites.
- LU28:** Local jurisdictions or agencies may consider adopting and implement a development pattern that utilizes existing infrastructure; reduces the need for new roads, utilities and other public works in new growth areas; and enhances non-automobile transportation.
- LU29:** Local jurisdictions or agencies may consider ordinances or programs to limit suburban sprawl; with measures that streamline entitlement processes for projects that are not considered sprawl.
- LU30:** Urban development may occur only where urban public facilities and services exist or can be reasonably made available.
- LU31:** The improvement and expansion of one urban public facility or service may not stimulate development that significantly precedes the local jurisdiction's ability to provide all other necessary urban public facilities and services at adequate levels.
- LU32:** Local jurisdictions may redirect new growth into existing city/urban reserve areas.
- LU33:** Local jurisdictions may maintain a one dwelling unit per 10-acre minimum lot size or lower density in areas outside designated urban service lines.
- LU34:** Local jurisdictions may consider encouraging high-density, mixed-use, infill development and creative reuse of brownfield, under-utilized and/or defunct properties within the urban core.
- LU35:** Local jurisdictions may consider increasing densities in urban core areas to support public transit.

- LU36:** Local jurisdictions may remove barriers to the development of accessory dwelling units in existing residential neighborhoods as appropriate
- LU37:** Local jurisdictions may reduce required road width standards wherever feasible to calm traffic and encourage alternative modes of transportation.
- LU38:** Local jurisdictions may reduce parking space requirements, unbundle parking from rents and charge for parking in new developments.
- LU39:** Local jurisdictions may add bicycle facilities to streets and public spaces.
- LU40:** Local jurisdictions may plan for and create incentives for mixed-use development.
- LU41:** Local jurisdictions may identify sites suitable for mixed-use development and establish appropriate site-specific standards to accommodate the mixed uses. Site-specific standards could include:
- Increasing allowable building height or allowing height limit bonuses;
 - Allowing flexibility in applying development standards (such as FAR2 and lot coverage) based on the location, type, and size of the units, and the design of the development;
 - Allowing the residential component to be additive rather than within the established FAR for that zone, and eliminating maximum density requirements for residential uses in mixed use zones;
 - Allowing reduced and shared parking based on the use mix, and establishing parking maximums where sites are located within 0.25 miles of a public transit stop;
 - Allowing for tandem parking, shared parking and off-site parking leases;
 - Requiring all property owners in mixed-use areas to unbundle parking from commercial and residential leases;
 - Creating parking benefit districts, which invest meter revenues in pedestrian infrastructure and other public amenities;
 - Establishing performance pricing of street parking, so that it is expensive enough to promote frequent turnover and keep 15 percent of spaces empty at all times.
- LU42:** Local jurisdictions may enable prototype mixed-use structures for use in neighborhood center zones that can be adapted to new uses over time with minimal internal remodeling.
- LU43:** Local jurisdictions may identify and facilitate the inclusion of complementary land uses not already present in local zoning districts, such

as supermarkets, parks and recreational fields, schools in neighborhoods, and residential uses in business districts, to reduce the vehicle miles traveled and promote bicycling and walking to these uses.

- LU44:** Local jurisdictions may work with employers developing larger projects to ensure local housing opportunities for their employees, and engage employers to find ways to provide housing assistance as part of their employee benefits packages; major projects in mixed-use areas may include work-force housing where feasible.
- LU45:** Local jurisdictions may revise zoning ordinance(s) to allow local-serving businesses, such as childcare centers, restaurants, banks, family medical offices, drug stores, and other similar services near employment centers to minimize midday vehicle use.
- LU46:** Local jurisdictions may develop form-based community design standards to be applied to development projects and land use plans, using a comprehensive community outreach, for areas designated mixed-use.
- LU47:** Local jurisdictions may mix affordable housing units with market rate units as opposed to building segregated affordable housing developments.
- LU48:** Where practical and feasible, local jurisdictions may develop programs that enable the reuse of underutilized commercial, office and/or industrial properties for housing or mixed-use housing.
- LU49:** Local jurisdictions may consider consistency with “smart growth” principles – mixed-use, infill, and higher density projects that provide alternatives to individual vehicle travel and promote the efficient delivery of services and goods.
- LU50:** Local jurisdictions may meet recognized “smart growth” benchmarks.
- LU51:** Project sponsors may incorporate public transit into the project’s design.
- LU52:** Project sponsors may include pedestrian and bicycle facilities within projects and ensure that existing non-motorized routes are maintained and enhanced.
- LU53:** Local jurisdictions may encourage residential development in High Quality Transit Areas (HQTAs). Such development may include a generally walkable transit village that has a minimum density of 20 dwelling units per acre and is within a ½ mile of a well-serviced transit stop, and includes transit corridors with minimum 15-minute or less service frequency during peak commute hours.
- LU54:** Local jurisdictions may promote greater linkage between land uses and transit, as well as other modes of transportation.

- LU55:** Local jurisdictions may ensure new development is designed to make public transit a viable choice for residents, including:
- Locating medium-high density development near activity centers that can be served efficiently by public transit and alternative transportation modes;
 - Locating medium-high density development near streets served by public transit whenever feasible;
 - Linking neighborhoods to bus stops by continuous sidewalks or pedestrian paths.
- LU56:** Local jurisdictions may establish city-centered corridors, directing development to existing transportation corridors.
- LU57:** Local jurisdictions may develop form-based community design standards to be applied to development projects and land use plans, using a comprehensive community outreach program, for areas designated mixed-use
- LU58:** Local jurisdictions may locate affordable housing in transit-oriented development whenever feasible
- LU59:** Local jurisdictions may consider jobs/housing balance, to the extent practical and feasible, and encourage the development of communities where people live closer to work, bike, walk, and take transit as a substitute for personal auto travel.
- LU60:** Project sponsors may consider community cohesion in designing projects through communities. Transit facilities may be designed to integrate with the community and encourage walking and bicycling as well as park and ride. New or widened roadways (and freeways) may be designed to minimize impacts to the extent feasible through landscaping, pedestrian furniture as appropriate. New roadways or freeways may consider feasible innovative designs such as cap parks that maintain community cohesion.
- LU61:** Local jurisdictions may promote development and preservation of neighborhood characteristics that encourage walking and bicycle riding in lieu of automobile-based travel.
- LU62:** Local jurisdictions may create and preserve distinct, identifiable neighborhoods whose characteristics support pedestrian travel, especially within, but not limited to, mixed-use and transit-oriented development areas, including:
- Designing or maintaining neighborhoods where the neighborhood center can be reached in approximately five minutes of walking;

- Increasing housing densities from the perimeter to the center of the neighborhood;
- Directing retail, commercial, and office space to the center of the neighborhood;
- Encouraging pedestrian-only streets and/or plazas within developments, and destinations that may be reached conveniently by public transportation, walking, or bicycling;
- Allowing flexible parking strategies in neighborhood activity centers to foster a pedestrian-oriented streetscape;
- Providing continuous sidewalks with shade trees and landscape strips to separate pedestrians from traffic;
- Encouraging neighborhood parks and recreational centers near concentrations of residential areas (preferably within one quarter mile) and include pedestrian walkways and bicycle paths that encourage non-motorized travel.

LU63: Local jurisdictions may ensure pedestrian access to activities and services, especially within, but not limited to, mixed-use and transit-oriented development areas, including:

- Ensuring new development that provides pedestrian connections in as many locations as possible to adjacent development, arterial streets, thoroughfares;
- Ensuring a balanced mix of housing, workplaces, shopping, recreational opportunities, and institutional uses, including mixed-use structures;
- Locating schools in neighborhoods, within safe and easy walking distances of residences served;
- For new development, primary entrances may be pedestrian entrances, with automobile entrances and parking located to the rear;
- Support development where automobile access to buildings does not impede pedestrian access, by consolidating driveways between buildings or developing alley access;
- Street parking provided may be utilized as a buffer between sidewalk pedestrian traffic and the automobile portion of the roadway;
- Establish pedestrian and bicycle connectivity standards for new development, with block sizes between 1 and 2 acres;
- For existing areas that do not meet established connectivity standards, prioritize the physical development of pedestrian connectors;

- Prioritizing grade-separated bicycle / pedestrian crossings where appropriate to enhance connectivity or overcome barriers such as freeways, railways and waterways.

LU64: Local jurisdictions may review fee structures and other opportunities to provide financial and administrative incentives to support desired land uses, development patterns, and alternative modes of transportation.

LU65: Local jurisdictions may promote desired land uses by considering criteria for scaled developer fees. Examples include:

- Increasing or reducing fees proportionally with distance from the city center or preferred transit sites;
- Increasing or reducing fees based on the degree to which mixed uses are incorporated into the project;
- Reducing fees for creative re-use of brownfield sites;
- Increasing fees for the use of greenfield sites.

LU66: Local jurisdictions may consider providing fast-track permitting and reductions in processing fees for desired projects. Local jurisdictions may research and implement a program of incentives for development projects that are fully consistent with the 2012-2035 RTP/SCS.

LU67: Local jurisdictions may consider providing incentive funding and/or infrastructure loans to support desired projects.

LU68: Local jurisdictions may give preference for infrastructure improvements that support or enhance desired land uses and projects.

LU69: Local jurisdictions may reduce heat gain from pavement and other hardscaping, including:

- Reduce street rights-of-way and pavement widths to pre-World War II widths (typically 22 to 34 feet for local streets, and 30 to 35 feet for collector streets, curb to curb), unless landscape medians or parkway strips are allowed in the center of roadways;
- Reinstate the use of parkway strips to allow shading of streets by trees;
- Include shade trees on south- and west-facing sides of structures;
- Include low-water landscaping in place of hardscaping around transportation infrastructure and in parking areas;
- Install cool roofs, green roofs, and use cool paving for pathways, parking, and other roadway surfaces;
- Establish standards that provide for pervious pavement options;
- Remove obstacles to xeriscaping, edible landscaping and low-water landscaping.

NOISE

NO1: To reduce noise impacts due to construction, project sponsors may require construction contractors to implement a site-specific noise reduction program, subject to the Lead Agency (or other appropriate government agency) review and approval, which includes the following measures:

- Equipment and trucks used for project construction may utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).
- Except as may be exempted by the Lead Agency (or other appropriate government agency), impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction may be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust may be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves may be used, if such jackets are commercially available and this could achieve a reduction of 5 dBA. Quieter procedures may be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.
- Stationary noise sources may be located as far from adjacent sensitive receptors as possible and they may be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the Lead Agency (or other appropriate government agency) to provide equivalent noise reduction.

NO2: Prior to the issuance of a building permit, along with the submission of construction documents, each project sponsor may submit to the Lead Agency (or other government agency as appropriate) a list of measures to respond to and track complaints pertaining to construction noise. These measures may include:

- A procedure and phone numbers for notifying the Lead Agency staff and local Police Department; (during regular construction hours and off-hours);
- A sign posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign may also include a listing of both the Lead Agency and construction contractor's telephone numbers (during regular construction hours and off-hours);
- The designation of an on-site construction complaint and enforcement manager for the project;

- Notification of neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity; and
- A preconstruction meeting may be held with the job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

NO3: Project sponsor may implement use of portable barriers in the vicinity of sensitive receptors during construction including construction of subsurface barriers, debris basins, and storm water drainage facilities.

NO4: For projects that require pile driving or other construction noise above 90 dBA in proximity to sensitive receptors, to further reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90dBA, a set of site-specific noise attenuation measures may be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures may be submitted for review and approval by the Lead Agency (or other appropriate government agency) to ensure that maximum feasible noise attenuation is achieved. This plan may be based on the final design of the project. A third-party peer review, paid for by the project sponsor, may be required to assist the Lead Agency in evaluating the feasibility and effectiveness of the noise reduction plan submitted by the project sponsor. The criterion for approving the plan may be a determination that maximum feasible noise attenuation is achieved. The noise reduction plan may include, but not be limited to, an evaluation of implementing the following measures. These attenuation measures may include as many of the following control strategies as applicable to the site and construction activity:

- Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings;
- Implement “quiet” pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;
- Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site;
- Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example and implement such measure if such measures are feasible and would noticeably reduce noise impacts; and

- Monitor the effectiveness of noise attenuation measures by taking noise measurements.

- NO5:** Noise generated from any rock-crushing or screening operations performed within 3,000 feet of any occupied residence may be mitigated by the project sponsor by strategic placement of material stockpiles between the operation and the affected dwelling or by other means approved by the local jurisdiction.
- NO6:** Where feasible, pile holes may be pre-drilled to reduce potential noise and vibration impacts.
- NO7:** As necessary, each project sponsor may retain a structural engineer or other appropriate professional to determine threshold levels of vibration and cracking that could damage any adjacent historic or other structure subject to damage, and design means and construction methods to not exceed the thresholds.
- NO8:** Project sponsors may comply with all local sound control and noise level rules, regulations, and ordinances.
- NO9:** As part of the appropriate environmental review of each project, a project specific noise evaluation may be conducted and appropriate mitigation identified and implemented.
- NO10:** Project sponsors may employ, where their jurisdictional authority permits, land use planning measures, such as zoning, restrictions on development, site design, and use of buffers to ensure that future development is compatible with adjacent transportation facilities.
- NO11:** As a last resort, project sponsors may eliminate noise-sensitive receptors by acquiring freeway and rail rights-of-way. This would ensure the effective operation of all transportation modes.
- NO12:** Project sponsors may, to the extent feasible and practicable, maximize the distance between noise-sensitive land uses and new roadway lanes, roadways, rail lines, transit centers, park-and-ride lots, and other new noise-generating facilities.
- NO13:** Project sponsors may construct sound reducing barriers between noise sources and noise-sensitive land uses. Sound barriers can be in the form of earth-berms or soundwalls. Constructing roadways so as appropriate and feasible that they are depressed below-grade of the existing sensitive land uses also creates an effective barrier between the roadway and sensitive receptors.

- NO14:** Project sponsors may, to the extent feasible and practicable, improve the acoustical insulation of dwelling units where setbacks and sound barriers do not sufficiently reduce noise.
- NO15:** The project sponsors may implement, to the extent feasible and practicable, speed limits and limits on hours of operation of rail and transit systems, where such limits may reduce noise impacts.
- NO16:** As applicable and feasible, project sponsors may reduce noise impacts, by maximizing distance between sensitive receptors and new transportation projects. *Above measure is clarified and simplified.*
- NO17:** Transit-related passenger stations, central maintenance facilities, decentralized maintenance facilities, and electric substations may be located away from sensitive receptors to the maximum extent feasible.
- NO18:** Local jurisdictions or agencies may, as practical and feasible, adhere to published local, state and federal guidelines concerning groundborne vibration impacts.

POPULATION, HOUSING, AND EMPLOYMENT

- POP1:** For projects with the potential to displace homes and/or businesses, project sponsors may evaluate alternate route alignments and transportation facilities that minimize the displacement of homes and businesses. An iterative design and impact analysis would help where impacts to homes or businesses are involved in order to minimize impacts to the extent feasible. This may include use of existing rights-of-way.
- POP2:** Project sponsors may develop a construction schedule that minimizes potential neighborhood deterioration from protracted waiting periods between right-of-way acquisition and construction.
- POP3:** Project sponsors may mitigate impacts to affordable housing as feasible through construction of affordable units (deed restricted to remain affordable for an appropriate period of time) or payment of any fee established to address loss of affordable housing.

PUBLIC SERVICES AND UTILITIES

- PS1:** Project implementation agencies may ensure that prior to construction all necessary local and state road and railroad encroachment permits are obtained. The project implementation agency may also comply with all applicable conditions of approval. As deemed necessary by the governing jurisdiction, the road encroachment permits may require the contractor to prepare a traffic control plan in accordance with professional engineering standards prior to construction. Traffic control plans may include the following:

- Identification of all roadway locations where special construction techniques (e.g., directional drilling or night construction) would be used to minimize impacts to traffic flow.
- Development of circulation and detour plans to minimize impacts to local street circulation. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone.
- Scheduling of truck trips outside of peak morning and evening commute hours.
- Limiting of lane closures during peak hours to the extent possible.
- Usage of haul routes minimizing truck traffic on local roadways to the extent possible.
- Inclusion of detours for bicycles and pedestrians in all areas potentially affected by project construction.
- Installation of traffic control devices as specified in the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones.
- Development and implementation of access plans for highly sensitive land uses such as police and fire stations, transit stations, hospitals, and schools. The access plans would be developed with the facility owner or administrator. To minimize disruption of emergency vehicle access, affected jurisdictions may be asked to identify detours for emergency vehicles, which may then be posted by the contractor. Notify in advance the facility owner or operator of the timing, location, and duration of construction activities and the locations of detours and lane closures.
- Storage of construction materials only in designated areas.
- Coordination with local transit agencies for temporary relocation of routes or bus stops in work zones, as necessary.

PS2: Project sponsors may identify projects in the 2012-2035 RTP/SCS that require police protection, fire service, and emergency medical service and may coordinate with local fire and police departments to ensure that the existing public services would be able to handle the increase in demand for their services. If the current levels of services at the project site are found to be inadequate, infrastructure improvements and/or personnel requirements for the appropriate public service may be identified in each project's CEQA documentation.

PS3: Project sponsors may ensure that during project construction, all construction vehicles and equipment may be fitted with spark arrestors to

minimize accidental ignition of dry construction debris and surrounding dry vegetation.

- PS4:** Project sponsors may encourage the use of fire-resistant vegetation native to Southern California and/or to the local microclimate (e.g., vegetation that has high moisture content, low growth habits, ignition-resistant foliage, or evergreen growth), eliminate brush and chaparral, and discourage the use of fire-promoting species especially non-native, invasive species (e.g., pampas grass, fennel, mustard, or the giant reed) in the immediate vicinity of development in areas with high fire threat.
- PS5:** Project sponsors may encourage natural re-vegetation or seeding with local, native species after a fire and discourage re-seeding of non-native, invasive species to promote healthy, natural ecosystem re-growth. Native vegetation is more likely to have deep root systems that prevent slope failure and erosion of burned areas than shallow-rooted non-natives.
- PS6:** Project sponsors may submit a fire safety plan (including phasing) to the Lead Agency and local fire agency for their review and approval. The fire safety plan may include all of the fire safety features incorporated into the project and the schedule for implementation of the features. The local fire protection agency may require changes to the plan or may reject the plan if it does not adequately address fire hazards associated with the project as a whole or the individual phase.
- PS7:** Local jurisdictions may discourage development on potentially hazardous developments in hillsides, canyons, areas with steep slopes or that are susceptible to flooding, earthquakes, wildfire and other known hazards, and areas with limited access for emergency equipment.
- PS8:** Local jurisdictions may promote Fire-wise Land Management: by encouraging the use of fire-resistant vegetation and the elimination of brush and chaparral in the immediate vicinity of development in areas with high fire threat.
- PS9:** Local jurisdictions may promote Fire Management Planning that help reduce fire threats in the region as part of the Compass Blueprint process and other ongoing regional planning efforts.
- PS10:** Local jurisdictions may encourage the use of fire-resistant materials when constructing projects in areas with high fire threat. Local jurisdictions may discourage development in high fire hazard areas and recommend using project design to reduce risk including building with a compact defensible footprint and minimizing perimeter length.
- PS11:** The growth inducing potential of individual RTP projects may be carefully evaluated so that the full implications of the projects are understood. Individual environmental documents may quantify indirect impacts

(growth that could be facilitated or induced) on public services and utilities to the extent feasible. Lead and responsible agencies may then make any necessary adjustments to the applicable General Plan. Any such identified adjustment may be communicated to SCAG.

- PS12:** Project sponsors may undertake project-specific review of the impacts to educational facilities as part of project specific environmental review. For any identified impacts, project sponsors may ensure that the appropriate school district fees are paid in accordance with State law. The project sponsors or local jurisdiction may be responsible for ensuring adherence to required mitigation. SCAG may be provided with documentation of compliance with any necessary mitigation measures.
- PS13:** Project sponsors may ensure that projects are consistent with federal, state, and local plans that preserve open space.
- PS14:** Project sponsors may consider corridor realignment, buffer zones and setbacks, and berms and fencing where feasible, to avoid open space and recreation land and to reduce conflicts between transportation uses and open space and recreation lands.
- PS15:** Project sponsors may identify open space areas that could be preserved and may include mitigation measures (such as dedication or payment of in-lieu fees) for the loss of open space.
- PS16:** Prior to final approval of each project, the project sponsor may conduct the appropriate project-specific environmental review, including consideration of loss of open space. Potential significant impacts to open space may be mitigated, as feasible. The project sponsors or local jurisdiction may be responsible for ensuring adherence to the mitigation measures prior to construction.
- PS17:** Local jurisdictions may prepare a Needs Assessment to determine the level of adequate community open space level for their areas.
- PS18:** Local jurisdictions may participate in regional efforts to identify regionally significant open space resources within their jurisdictions as feasible and appropriate.
- PS19:** Where practical and feasible, project sponsors and local jurisdictions may consider increasing the accessibility to natural areas and lands for outdoor recreation. Such measures may be coordinated with local and regional open space planning or management agencies.
- PS20:** Local jurisdictions may encourage multiple use spaces and encourage redevelopment in areas where it will provide more opportunities for recreational uses and access to natural areas close to the urban core.

- PS21:** Project level mitigation for significant cumulative and growth-inducing impacts on open space resources may include the conservation of natural lands, community open space and important farmland through existing projects in the region.
- PS22:** Local governments may consider the most recent annual report on open space conservation in planning and evaluating projects and programs in areas with regionally significant open space resources.
- PS23:** Local governments may encourage patterns of urban development and land use, which reduce costs on infrastructure and make better use of existing facilities. Strategies local governments may pursue include:
- Increasing the accessibility to natural areas lands for outdoor recreation.
 - Promoting infill development and redevelopment to revitalize existing communities
 - Utilizing "green" development techniques
 - Promoting water-efficient land use and development.
- PS24:** Project sponsors and local governments may encourage multiple use spaces and encourage redevelopment in areas where it will provide more opportunities for recreational uses and access to natural areas close to the urban core.
- PS25:** Future impacts to open space and recreation lands may be avoided through cooperation, information sharing, and program development as part of SCAG's ongoing regional planning efforts.
- PS26:** Project sponsors for projects identified in the 2012-2035 RTP/SCS may comply with applicable regulations related to solid waste disposal.
- PS27:** Projects sponsors may work with the respective local jurisdiction's Recycling Coordinator to ensure that source reduction techniques and recycling measures are incorporated into project construction.
- PS28:** Local jurisdictions may estimate the amount of solid waste generated during construction prior to construction, and appropriate disposal sites may be identified and utilized.
- PS29:** Project sponsors may integrate green building measures into project design such as those identified in the U.S. Green Building Council's Leadership in Energy and Environmental Design, energy Star Homes, Green Point Rated Homes, and the California Green Builder Program. These measures could include the following:

- Reuse and minimization of construction and demolition (C&D) debris and diversion of C&D waste from landfills to recycling facilities.
- The inclusion of a waste management plan that promotes maximum C&D diversion.
- Source reduction through: 1) use of materials that are more durable and easier to repair and maintain; 2) design to generate less scrap material through dimensional planning; 3) increased recycled content; 4) use of reclaimed materials; and, 5) use of structural materials in a dual role as finish material (e.g., stained concrete flooring, unfinished ceilings, etc.).
- Reuse of existing structure and shell in renovation projects.
- Design for deconstruction without compromising safety.
- Design for flexibility through the use of moveable walls, raised floors, modular furniture, moveable task lighting and other reusable building components.
- Development of indoor recycling program and space.

PS30: Local jurisdictions and waste management agencies may discourage the siting of new landfills unless all other waste reduction and prevention actions have been fully explored. If landfill siting or expansion is necessary, landfills may be sited with an adequate landfill-owned, undeveloped land buffer to minimize the potential adverse impacts of the landfill in neighboring communities.

PS31: Project sponsors may discourage exporting of locally generated waste outside of the SCAG region during the construction and implementation of a project. Disposal within the county where the waste originates may be encouraged as much as possible. Green technologies for long-distance transport of waste (e.g., clean engines and clean locomotives or electric rail for waste-by-rail disposal systems) and consistency with SCAQMD and 2012-2035 RTP/SCS policies may be required.

PS32: Project sponsors may encourage waste reduction goals and practices and look for opportunities for voluntary actions to exceed the 50 percent waste diversion target.

PS33: Project sponsors and local jurisdictions may encourage the development of local markets for waste prevention, reduction, and recycling practices by supporting recycled content and green procurement policies, as well as other waste prevention, reduction and recycling practices.

PS34: Local jurisdictions may develop ordinances that promote waste prevention and recycling activities such as: requiring waste prevention and recycling efforts at all large events and venues; implementing recycled content

procurement programs; and developing opportunities to divert food waste away from landfills and toward food banks and composting facilities.

- PS35:** Local jurisdictions and waste management agencies may develop alternative waste management strategies such as composting, recycling, and conversion technologies.
- PS36:** Project sponsors, local jurisdictions and waste management agencies, where practical and feasible, may develop and site composting, recycling, and conversion technology facilities that have minimum environmental and health impacts.
- PS37:** Local jurisdictions may require the reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).
- PS38:** Project sponsors may integrate reuse and recycling into residential industrial, institutional and commercial projects.
- PS39:** Local jurisdictions may provide easy and convenient recycling opportunities for residents, the public, and tenant businesses.
- PS40:** Local jurisdictions may provide education and publicity about reducing waste and available recycling services.
- PS41:** The California Integrated Waste Management Board may continue to enforce solid waste diversion mandates that are enacted by the Legislature.
- PS42:** Local jurisdictions may continue to adopt programs to comply with state solid waste diversion rate mandates and, where possible, may encourage further recycling to exceed these rates.
- PS43:** Local jurisdictions may implement or expand city or county-wide recycling and composting programs for residents and businesses. This could include extending the types of recycling services offered (e.g., to include food and green waste recycling) and providing public education and publicity about recycling services.
- PS44:** Local jurisdictions, waste management agencies and SCAG may coordinate regional approaches and strategic siting of waste management facilities.
- PS45:** Local jurisdictions and waste management agencies may encourage and, where practical and feasible, facilitate the creation of synergistic linkages between community businesses and the development of eco-industrial parks and materials exchange centers where one entity's waste stream becomes another entity's raw material.

- PS46:** Local jurisdictions and waste management agencies may prioritize siting of new solid waste management facilities including recycling, composting, and conversion technology facilities in conjunction with existing waste management or material recovery facilities.
- PS47:** Local jurisdictions and waste management agencies may increase programs to educate the public and increase awareness of reuse, recycling, composting, and green building benefits and raise consumer education issues at the county and city level, as well as at local school districts and education facilities.
- PS48:** For projects identified in the 2012-2035 RTP/SCS that require solid waste collection, project sponsors may coordinate with the local public works department to ensure that the existing public services and utilities would be able to handle the increase. If the current infrastructure servicing the project site is found to be inadequate, infrastructure improvements for the appropriate public service or utility may be identified in each project's CEQA documentation.
- PS49:** The growth inducing potential of individual projects may be carefully evaluated so that the full implications of the projects are understood. Individual environmental documents may quantify indirect impacts (growth that could be facilitated or induced) on public services and utilities to the extent feasible. Lead and responsible agencies then may make any necessary adjustments to the applicable General Plan. Any such identified adjustment may be communicated to SCAG.
- PS50:** Prior to construction, the project implementation agency may identify the locations of existing utility lines. The contractor may avoid all known utility lines during construction.
- PS51:** In reviewing projects Lead Agencies and project sponsors may consider energy implications of construction processes. In general the most energy efficient construction process and long-term operational design may be selected unless there is an overriding reason why not.
- PS52:** Local jurisdictions may include energy analyses in environmental documentation and general plans with the goal of conserving energy through the wise and efficient use of energy. For any identified energy impacts, appropriate mitigation measures may be developed and monitored. SCAG recommends the use of Appendix F, Energy Conservation, of the *CEQA Guidelines*.
- PS53:** Project sponsors may consider the most cost-effective alternative and renewable energy generation facilities.

- PS54:** Project sponsors may require that projects use efficient lighting. (Fluorescent lighting uses approximately 75% less energy than incandescent lighting to deliver the same amount of light.)
- PS55:** Project sponsors may require measures that reduce the amount of water sent to the sewer system. (Reduction in water volume sent to the sewer system means less water has to be treated and pumped to the end user, thereby saving energy.)
- PS56:** Project sponsors may pursue incentives to encourage the use of energy efficient equipment and vehicles.
- PS57:** State and federal lawmakers and regulatory agencies may pursue the design of programs to either require or incentivize the expanded availability including the expansion of alternative fuel filling stations and use of alternative-fuel vehicles to reduce the impact of shifts in petroleum fuel supply and price.
- PS58:** Local jurisdictions may consider various best practices and technological improvements that can reduce the consumption of fossil fuels, such as:
- Expanding light-duty vehicle retirement programs
 - Increasing commercial vehicle fleet modernization
 - Implementing driver training module on fuel consumption
 - Replacing gasoline powered mowers with electric mowers
 - Reducing idling from construction equipment
 - Incentivizing alternative fuel vehicles and equipment
 - Developing infrastructure for alternative fueled vehicles
 - Increasing use and mileage of High Occupancy Vehicle (HOV), High Occupancy Toll (HOT) and dedicated Bus Rapid Transit (BRT) lanes
 - Implementing truck idling rule, devices, and truck-stop electrification
 - Requiring electric truck refrigerator units
 - Reducing locomotives fuel use
 - Modernizing older off-road engines and equipment
 - Limit use and develop fleet rules for construction equipment
 - Requiring zero, and/or near zero-emission forklifts
- PS59:** Local jurisdictions or agencies with purview over utilities may, as practical and feasible, streamline permitting and provide public information to facilitate accelerated construction of geothermal, solar and wind power generation facilities and transmission line improvements.

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- PS60:** Utilities may increase capacity of existing transmission lines to meet forecast demand that supports sustainable growth, where feasible and appropriate in coordination with local planning agencies.
- PS61:** Project sponsors may support programs to reduce single occupancy vehicle trips such as telecommuting, ridesharing, alternative work schedules, and parking cash-outs.
- PS62:** Project sponsors may submit projected electricity and natural gas demand calculations to the local electricity or natural gas provider, for any project anticipated to require substantial utility consumption. Any infrastructure improvements necessary for project construction may be completed according to the specifications of the energy provider.
- PS63:** Project sponsors may encourage, to the extent practical and feasible, ensure that new buildings incorporate solar panels in roofing and tap other renewable energy sources to offset new demand on conventional power sources. For example, transit providers may, as feasible, assure that designers of new transit stations incorporate solar panels in roofing.
- PS64:** Project sponsors may encourage energy efficient design for buildings, potentially including strengthening local building codes for new construction and renovation to achieve a higher level of energy efficiency. This may include strengthening local building codes for new construction and renovation to require a higher level of energy efficiency.
- PS65:** Local jurisdictions may seek funding through utility-sponsored programs to conduct energy efficiency “tune-ups” of existing buildings, as practical and feasible, by checking, repairing, and readjusting heating, ventilation, air conditioning, lighting, hot water equipment, insulation and weatherization.
- PS66:** Project sponsors may provide individualized energy management services for large energy users.
- PS67:** Local jurisdictions and project sponsors may encourage the use of energy efficient appliances and office equipment.
- PS68:** Project sponsors may pursue incentives and technical assistance for lighting efficiency.
- PS69:** Local jurisdictions may provide public education and publicity about energy efficiency programs and incentives in cooperation with local utility providers.
- PS70:** If a carbon trading system is established, a lead agency may consider whether carbon offsets would be an appropriate means of project mitigation. The project sponsor could, for example, fund off-site projects

(e.g., alternative energy projects) that will reduce carbon emissions, or could purchase “credits” from another entity that will fund such projects. The lead agency may ensure that any mitigation taking the form of carbon offsets is specifically identified and that such mitigation will in fact occur

PS71: Local jurisdictions may encourage the integration of green building measures into project design and zoning such as those identified in the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED), Energy Star Homes, Green Point Rated Homes, and the California Green Builder Program. Energy saving measures for new and remodeled buildings include:

- Using energy efficient materials in building design, construction, rehabilitation, and retrofit
- Encouraging new development to exceed Title 24 energy efficiency requirements
- Developing Cool Communities measures including tree planting and light-colored roofs. These measures focus on reducing ambient heat, which reduces energy consumption related to air conditioning and other cooling equipment.
- Utilizing efficient commercial/residential space and water heaters: This could include the advertisement of existing and/or development of additional incentives for energy efficient appliance purchases to reduce excess energy use and save money. Federal tax incentives are provided online at:
http://www.energystar.gov/index.cfm?c=Productspr_tax_credits
- Encouraging landscaping that requires no additional irrigation: utilizing native, drought tolerant plants can reduce water usage up to 60 percent compared to traditional lawns.
- Encouraging combined heating and cooling (CHP), also known as cogeneration, in all buildings.
- Encouraging neighborhood energy systems, which allow communities to generate their own electricity
- Orienting streets and buildings for best solar access
- Encouraging buildings to obtain at least 20% of their electric load from renewable energy

PS72: Project sponsors may install energy efficient lighting (e.g., light emitting diodes (LEDs)), heating and cooling systems, appliances, equipment, and control systems.

PS73: Project sponsors may use passive solar design, e.g., orient buildings and incorporate landscaping to maximize passive solar heating during cool

seasons, minimize solar heat gain during hot seasons, and enhance natural ventilation.

- PS74:** Project sponsors may design buildings to take advantage of sunlight.
- PS75:** Project sponsors may install light colored “cool” roofs and cool pavements.
- PS76:** Install efficient lighting (including LEDs) for traffic, street and other outdoor lighting.
- PS77:** Project sponsors may reduce unnecessary outdoor lighting.
- PS78:** Project sponsors may use automatic covers, efficient pumps and motors, and solar heating for pools and spas.
- PS79:** Project sponsors may provide education on energy efficiency to residents, customers and/or tenants.
- PS80:** Project sponsors may use paving materials with a Solar Reflective Index (SRI) of at least 29, or open grid paving systems.
- PS81:** Project sponsors may use roofing material with SRI of at least 29 on covered parking (underground, beneath decking or roofs, or beneath a building).
- PS81:** Local jurisdictions may adopt a Heat Island Mitigation Plan that requires cool roofs, cool pavements, and strategically placed shade trees, and actively inspect and enforce state requirements for cool roofs on non-residential re-roofing projects.
- PS82:** Local jurisdictions may pursue policies and programs to improve energy efficiency of existing buildings.
- PS83:** Local jurisdictions may require the performance of energy audits for residential and commercial buildings prior to completion of sale, and that audit results and information about opportunities for energy efficiency improvements be presented to the buyer.
- PS84:** Local jurisdictions may create an outreach and incentive program to promote energy efficiency and conservation in the community, including:
- Launching an “energy efficiency challenge” campaign for community residents;
 - Implementing a low-income weatherization assistance program;
 - Implementing conservation campaigns specifically targeted to residents, and separately to businesses;

- Promoting the purchase of Energy Star® appliances, including, where feasible, incentive grants and vouchers;
- Promoting participation in the local “Green Business” program;
- Distributing free CFL bulbs or other efficiency fixtures to community members;
- Offering exchange programs for high-energy-use items, such as halogen torchiere lamps;
- Adopting an ordinance requiring energy upgrades at time of property sale.

PS85: Project sponsors may install solar, wind, and geothermal power systems and solar hot water heaters.

PS86: Project sponsors may install solar panels on unused roof and ground space and over carports and parking areas.

PS87: Project sponsors may include energy storage where appropriate to optimize renewable energy generation systems and avoid peak energy use.

PS88: Project sponsors may use combined heat and power (CHP) in appropriate applications.

PS89: Local jurisdictions may identify possible sites for production of renewable energy (such as solar, wind, small hydro, and biogas), as compatible with surrounding uses, and protect and promote that use, including:

- Designating suitable sites to prioritize their development for renewable energy generation;
- Evaluating potential land use, environmental, economic, and other constraints on that use, and mitigate such constraints, as feasible;
- Adopting measures to protect the renewable energy use of the sites and their resources, such as utility easements, rights-of-way, and land set-a-sides.

PS90: Local jurisdictions may allow renewable energy projects in areas zoned for open space, where consistent with the Open Space element, and other uses and values.

PS91: Local jurisdictions may promote and require renewable energy generation, and co-generation projects where feasible and appropriate.

PS92: Local jurisdictions may require that new office/retail/commercial or industrial development, or major rehabilitation (e.g., additions of 25,000 square feet commercial, or 100,000 square feet industrial) incorporate

renewable energy generation either on- or off-site to provide 15 percent or more of the project's energy needs.

- PS92:** Local jurisdictions may promote and encourage cogeneration projects for commercial and industrial facilities, provided they meet all applicable air quality standards and provide a net reduction in GHG emissions associated with energy production.
- PS93:** Local jurisdictions may require that, where feasible, all new buildings be constructed to allow for easy, cost-effective installation of solar energy systems in the future, using such "solar-ready" features as:
- Designing the building to include optimal roof orientation (between 20 to 55 degrees from the horizontal), with sufficient south-sloped roof surface;
 - Clear access without obstructions (chimneys, heating and plumbing vents, etc.) on the south sloped roof;
 - Designing the roof framing to support the addition of solar panels;
 - Installation of electrical conduit to accept solar electric system wiring;
 - Installation of plumbing to support a solar hot water system and provision of space for a solar hot water storage tank.
- PS94:** Local jurisdictions may require that residential projects of 6 units or more participate in the California Energy Commission's New Solar Homes Partnership, which provides rebates to developers who offer solar power in at least 50 percent of new units, or a program with similar provisions.
- PS95:** Local jurisdictions may require that any building constructed in whole or in part with local jurisdiction funds incorporate passive solar design features, such as daylighting and passive solar heating, where feasible.
- PS96:** Local jurisdictions may protect active and passive solar design elements and systems from shading by neighboring structures and trees, as consistent with existing tree shading requirements.
- PS97:** Local jurisdictions may provide, where feasible, creative financing for renewable energy projects, including subsidized or other low-interest loans, and the option to pay for system installation through long-term assessments on individual property tax bills.
- PS98:** Local jurisdictions may pursue partnerships with other governmental entities and with private companies and utilities to establish incentive programs for renewable energy.
- PS99:** Local jurisdictions may establish and maintain a clearinghouse of information on available funding alternatives for renewable energy

projects, rates of return, and other information to support developers and community members interested in pursuing renewable energy projects.

PS100: Local jurisdictions may establish targets for the purchase of renewable energy, in excess of the state Renewable Portfolio Standards, using such mechanisms as green tags or renewable energy certificates.

PS101: Local jurisdictions may evaluate the feasibility and effectiveness of using Community Choice Aggregation as a model for providing renewable energy to meet the community’s electricity needs, including potential partnerships with other jurisdictions.

PS102: Local jurisdictions may prepare and implement a comprehensive plan to improve energy efficiency of municipal facilities, including:

- Conduct energy audits for all municipal facilities;
- Retrofit facilities for energy efficiency where feasible and when remodeling or replacing components, including increased insulation, installing green or reflective roofs and low-emissive window glass;
- Implement an energy tracking and management system;
- Install energy-efficient exit signs, street signs, and traffic lighting;
- Install energy-efficient lighting retrofits and occupancy sensors, and institute a “lights out at night” policy;
- Retrofit heating and cooling systems to optimize efficiency (e.g., replace chillers, boilers, fans, pumps, belts, etc.);
- Install Energy Star® appliances and energy-efficient vending machines;
- Improve efficiency of water pumping and use at municipal facilities, including a schedule to replace or retrofit system components with high-efficiency units (i.e., ultra-low-flow toilets, fixtures, etc.);
- Provide chilled, filtered water at water fountains and taps in lieu of bottled water;
- Install a central irrigation control system and time its operation for off-peak use;
- Adopt an accelerated replacement schedule for energy inefficient systems and components.

PS103: Local jurisdictions may require that any newly constructed, purchased, or leased municipal space meet minimum standards as appropriate, such as:

- Requirements for new commercial buildings to meet LEED criteria established by the U.S. Green Building Council;

- Requirements for new residential buildings to meet criteria of the Energy Star® New Homes Program established by U.S. EPA;
- Incorporation of passive solar design features in new buildings, including daylighting and passive solar heating;
- Retrofitting of existing buildings to meet standards under Title 24 of the California Building Energy Code, or to achieve a higher performance standard as established by the local jurisdiction;
- Retrofitting of existing buildings to decrease heat gain from non-roof impervious surfaces with cool paving, landscaping, and other techniques.
- Training & Support: Local jurisdictions or agencies may ensure that staff receives appropriate training and support to implement objectives and policies to reduce GHG emissions, including:
 - Providing energy efficiency training to design, engineering, building operations, and maintenance staff;
 - Providing information on energy use and management, including data from the tracking and management system, to managers and others making decisions that influence energy use;
 - Providing energy design review services to departments undertaking new construction or renovation projects, to facilitate compliance with LEED standards.

PS104: Local jurisdictions may collaborate with local energy suppliers and distributors to establish energy conservation programs, Energy Star® appliance change-out programs, rebates, vouchers, and other incentives to install energy-efficient technology and products and to cooperate on advertising.

TRANSPORTATION, TRAFFIC & SECURITY

TR-1: Project-specific workshops on Sustainability Planning and Development may be held by local agencies.

TR-2: Transit operators may incorporate ITS technologies as part of their security and emergency preparedness and share that information with other operators. Aside from deploying ITS technologies for advanced customer information, transit agencies may work intensely with ethnic, local and disenfranchised communities through public information/outreach sessions ensuring public participation is utilized to its fullest. In case of evacuation, these transit dependent persons may need additional assistance to evacuate to safety.

- TR3:** Local jurisdictions may institute teleconferencing, telecommute and/or flexible work hour programs to reduce unnecessary employee transportation.
- TR4:** Local jurisdictions may create a ride-sharing program, including promoting existing ride sharing programs e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading for ride sharing vehicles, and providing a web site or message board for coordinating rides.
- TR5:** Local jurisdictions may create or accommodate car sharing programs, e.g., provide parking spaces for car share vehicles at convenient locations accessible by public transportation.
- TR6:** Local jurisdictions may provide a vanpool for employees for commute trips.
- TR7:** Transportation Planning: Local jurisdictions may encourage that new developments incorporate both local and regional transit measures into the project design that promote the use of alternative modes of transportation.
- TR8:** As may be appropriate, project sponsors may submit fair share traffic payments to the local agency for funding capital improvement projects to accommodate future traffic demand in the area.
- TR9:** Local jurisdictions may coordinate controlled intersections so that traffic passes more efficiently through congested areas. Where traffic signals or streetlights are installed, may require the use of Light Emitting Diode (LED) technology.
- TR10:** Local jurisdictions may promote ride sharing programs e.g., by designating a certain percentage of parking spaces for high-occupancy vehicles, providing larger parking spaces to accommodate vans used for ride-sharing, and designating adequate passenger loading and unloading and waiting areas.
- TR11:** Local jurisdictions may encourage the use of car-sharing programs such as ZipCar. Accommodations for such programs include providing parking spaces for the car-share vehicles at convenient locations accessible by public transportation.
- TR12:** Project sponsors of a commercial use may submit to the Lead Agency (or other appropriate government agency) a Transportation Demand Management (TDM) plan containing strategies to reduce on-site parking demand and single occupancy vehicle travel. The sponsor may implement the approved TDM plan. The TDM may include strategies to increase bicycle, pedestrian, transit, and carpools/vanpool use. All four modes of travel may be considered. Strategies to consider include the following:

- Inclusion of additional bicycle parking, shower, and locker facilities that exceed the requirement
- Construction of bike lanes per the prevailing Bicycle Master Plan (or other similar document)
- Signage and striping onsite to encourage bike safety
- Installation of pedestrian safety elements (such as cross walk striping, curb ramps, countdown signals, bulb outs, etc.) to encourage convenient crossing at arterials
- Installation of amenities such as lighting, street trees, trash and any applicable streetscape plan.
- Direct transit sales or subsidized transit passes
- Guaranteed ride home program
- Pre-tax commuter benefits (checks)
- On-site car-sharing program (such as City Car Share, Zip Car, etc.)
- On-site carpooling program
- Distribution of information concerning alternative transportation options
- Parking spaces sold/leased separately
- Parking management strategies; including attendant/valet parking and shared parking spaces

TR13: Project sponsors and construction contractors may meet with the appropriate Lead Agency (or other government agency) to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this project and other nearby projects that could be simultaneously under construction. The project sponsor may develop a construction management plan for review and approval by the Lead Agency (or other government agency as appropriate). The plan may include at least the following items and requirements:

- A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes.
- Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur.
- Location of construction staging areas for materials, equipment, and vehicles at an approved location.

- A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an onsite complaint manager. The manager may determine the cause of the complaints and may take prompt action to correct the problem. The Lead Agency may be informed who the Manager is prior to the issuance of the first permit.
- Provision for accommodation of pedestrian flow.
- As necessary, provision for parking management and spaces for all construction workers to ensure that construction workers do not park in on street spaces.
- Any damage to the street caused by heavy equipment, or as a result of this construction, may be repaired, at the project sponsor's expense, within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair may occur prior to issuance of a final inspection of the building permit. All damage that is a threat to public health or safety may be repaired immediately. The street may be restored to its condition prior to the new construction as established by the Lead Agency (or other appropriate government agency) and/or photo documentation, at the sponsor's expense, before the issuance of a Certificate of Occupancy.
- Any heavy equipment brought to the construction site may be transported by truck, where feasible.
- No materials or equipment may be stored on the traveled roadway at any time.
- Prior to construction, a portable toilet facility and a debris box may be installed on the site, and properly maintained through project completion.
- All equipment may be equipped with mufflers.
- Prior to the end of each work-day during construction, the contractor or contractors may pick up and properly dispose of all litter resulting from or related to the project, whether located on the property, within the public rights-of-way, or properties of adjacent or nearby neighbors.

TR14: Local jurisdictions may encourage the use of public transit systems by enhancing safety and cleanliness on vehicles and in and around stations, providing shuttle service to public transit, offering public transit incentives and providing public education and publicity about public transportation services.

TR15: Local jurisdictions may encourage bicycling and walking by incorporating bicycle lanes into street systems in regional transportation plans, new subdivisions, and large developments, creating bicycle lanes and walking paths directed to the location of schools and other logical points of

destination and provide adequate bicycle parking, and encouraging commercial projects to include facilities on-site to encourage employees to bicycle or walk to work.

TR16: Transit agencies may encourage bicycling to transit facilities by providing additional bicycle parking, locker facilities, and bike lane access to transit facilities when feasible.

TR17: Project sponsors may ensure that prior to construction all necessary local and State road and railroad encroachment permits are obtained. As deemed necessary by the governing jurisdiction, the road encroachment permits may require the contractor to prepare a traffic control plan in accordance with professional engineering standards prior to construction. Traffic control plans may include the following requirements:

- Identification of all roadway locations where special construction techniques (e.g., directional drilling or night construction) would be used to minimize impacts to traffic flow.
- Development of circulation and detour plans to minimize impacts to local street circulation. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone.
- Scheduling of truck trips outside of peak morning and evening commute hours.
- Limiting of lane closures during peak hours to the extent possible.
- Usage of haul routes to minimize truck traffic on local roadways to the extent possible.
- Inclusion of detours for bicycles and pedestrians in all areas potentially affected by project construction.
- Installation of traffic control devices as specified in the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones.
- Development and implementation of access plans for highly sensitive land uses such as police and fire stations, transit stations, hospitals, and schools. The access plans would be developed with the facility owner or administrator. To minimize disruption of emergency vehicle access, affected jurisdictions may be asked to identify detours for emergency vehicles, which will then be posted by the contractor. Notify in advance the facility owner or operator of the timing, location, and duration of construction activities and the locations of detours and lane closures.
- Storage of construction materials only in designated areas

- Coordination with local transit agencies for temporary relocation of routes or bus stops in work zones, as necessary.

- TR18:** Local jurisdictions may meet an identified transportation-related benchmark.
- TR19:** Local jurisdictions may adopt a comprehensive parking policy that discourages private vehicle use and encourages the use of alternative transportation.
- TR20:** Project sponsors may build or fund a major transit stop within or near the development.
- TR21:** Local jurisdictions and transit agencies may provide public transit incentives such as free or low-cost monthly transit passes to employees, or free ride areas to residents and customers.
- TR22:** Local jurisdictions and project sponsors may promote “least polluting” ways to connect people and goods to their destinations.
- TR23:** Local jurisdictions and project sponsors may incorporate bicycle lanes, routes and facilities into street systems, new subdivisions, and large developments.
- TR24:** Local jurisdictions may require amenities for non-motorized transportation, such as secure and convenient bicycle parking.
- TR25:** Local jurisdictions may ensure that the project enhances, and does not disrupt or create barriers to, non-motorized transportation.
- TR26:** Local jurisdictions may connect parks and open space through shared pedestrian/bike paths and trails to encourage walking and bicycling.
- TR27:** Local jurisdictions may create bicycle lanes and walking paths directed to the location of schools, parks and other destination points.
- TR28:** Local jurisdictions may work with the school districts to improve pedestrian and bike access to schools and to restore or expand school bus service using lower-emitting vehicles.
- TR29:** Local jurisdictions and transit agencies may provide information on alternative transportation options for consumers, residents, tenants and employees to reduce transportation-related emissions.
- TR30:** Local jurisdictions may educate consumers, residents, tenants and the public about options for reducing motor vehicle-related greenhouse gas emissions. Include information on trip reduction; trip linking; vehicle performance and efficiency (e.g., keeping tires inflated); and low-, and/or near zero- and/or zero-emission vehicles.

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- TR31:** Local jurisdictions may purchase, or create incentives for purchasing, low- and/or near zero- and/or zero-emission vehicles.
- TR32:** Local jurisdictions may create local “light vehicle” networks, such as neighborhood electric vehicle systems.
- TR33:** Local jurisdictions may enforce and follow limits idling time for commercial vehicles, including delivery and construction vehicles.
- TR34:** Local jurisdictions may provide the necessary facilities and infrastructure to encourage the use of low-, and/or near zero- and/or zero-emission vehicles.
- TR35:** Local jurisdictions may reduce GHG emissions by reducing vehicle miles traveled and by increasing or encouraging the use of alternative fuels and transportation technologies.
- TR36:** Local jurisdictions may reduce VMT-related emissions by encouraging the use of public transit through adoption of new development standards that would require improvements to the transit system and infrastructure, increase safety and accessibility, and provide other incentives.
- TR37:** Project Selection: Local jurisdictions may give priority to transportation projects that would contribute to a reduction in vehicle miles traveled per capita, while maintaining economic vitality and sustainability.
- TR38:** Equal Pedestrian Access Local jurisdictions may include separated sidewalks whenever possible, on both sides of all new street improvement projects, except where there are severe topographic or natural resource constraints.
- TR39:** Public Involvement: Local jurisdictions may carry out a comprehensive public involvement and input process that provides information about transportation issues, projects, and processes to community members and other stakeholders, especially to those traditionally underserved by transportation services.
- TR40:** System Interconnectivity: Local jurisdictions may create an interconnected transportation system that allows a shift in travel from private passenger vehicles to alternative modes, including public transit, ride sharing, car sharing, bicycling and walking, by incorporating the following:
- Ensuring transportation centers are multi-modal to allow transportation modes to intersect;
 - Providing adequate and affordable public transportation choices, including expanded bus routes and service, as well as other transit choices such as shuttles, light rail, and rail;

- To the extent feasible, extending service and hours of operation to underserved arterials and population centers or destinations such as colleges;
- Focusing transit resources on high-volume corridors and high-boarding destinations such as colleges, employment centers and regional destinations;
- Coordinating schedules and routes across service lines with neighboring transit authorities;
- Supporting programs to provide “station cars” for short trips to and from transit nodes (e.g., neighborhood electric vehicles);
- Studying the feasibility of providing free transit to areas with residential densities of 15 dwelling units per acre or more, including options such as removing service from less dense, underutilized areas to do so;
- Employing transit-preferential measures, such as signal priority and bypass lanes. Where compatible with adjacent land use designations, right-of-way acquisition or parking removal may occur to accommodate transit-preferential measures or improve access to transit. The use of access management may be considered where needed to reduce conflicts between transit vehicles and other vehicles;
- Providing safe and convenient access for pedestrians and bicyclists to, across, and along major transit priority streets;
- Using park-and-ride facilities to access transit stations only at ends of regional transitways or where adequate feeder bus service is not feasible.

TR41: Transit System Infrastructure: Local jurisdictions may upgrade and maintain transit system infrastructure to enhance public use, including:

- Ensuring transit stops and bus lanes are safe, convenient, clean and efficient;
- Ensuring transit stops have clearly marked street-level designation, and are accessible;
- Ensuring transit stops are safe, sheltered, benches are clean, and lighting is adequate;
- Placing transit stations along transit corridors within mixed-use or transit-oriented development areas at intervals of three to four blocks, or no less than one-half mile.

TR42: Customer Service: Transit agencies may enhance customer service and system ease-of-use, including:

- Developing a Regional Pass system to reduce the number of different passes and tickets required of system users;
- Implementing “Smart Bus” technology, using GPS and electronic displays at transit stops to provide customers with “real-time” arrival and departure time information (and to allow the system operator to respond more quickly and effectively to disruptions in service);
- Investigating the feasibility of an on-line trip-planning program.

TR43: Transit Funding: Local jurisdictions may prioritize transportation funding to support a shift from private passenger vehicles to transit and other modes of transportation, including:

- Give funding preference to improvements in public transit over other new infrastructure for private automobile traffic;
- Before funding transportation improvements that increase roadway capacity and VMT, evaluate the feasibility and effectiveness of funding projects that support alternative modes of transportation and reduce VMT, including transit, and bicycle and pedestrian access.

TR44: Transit and Multimodal Impact Fees: Local jurisdictions may consider the use of transit and multimodal impact fees on new developments to fund public transportation infrastructure, bicycle infrastructure, pedestrian infrastructure and other multimodal accommodations.

TR45: Local jurisdictions may implement traffic and roadway management strategies to improve mobility and efficiency, and reduce associated emissions.

TR46: System Monitoring: Local jurisdictions may monitor traffic and congestion to determine when and where new transportation facilities are needed in order to increase access and efficiency.

TR47: Arterial Traffic Management: Local jurisdictions may modify arterial roadways to allow more efficient bus operation, including bus lanes and signal priority/preemption where necessary.

TR48: Signal Synchronization: Local jurisdictions may expand signal timing programs where emissions reduction benefits can be demonstrated, including maintenance of the synchronization system, and coordination with adjoining jurisdictions as needed to optimize transit operation while maintaining a free flow of traffic.

TR49: HOV Lanes: Local jurisdictions may encourage the construction of high-occupancy vehicle (HOV) lanes or similar mechanisms whenever necessary to relieve congestion and reduce emissions.

- TR50:** Delivery Schedules: Where operationally feasible, local jurisdictions may establish ordinances or land use permit conditions limiting the hours when deliveries can be made to off-peak hours in high traffic areas.
- TR51:** Local jurisdictions may reduce VMT related-emissions by implementing and supporting trip reduction programs.
- TR52:** Ride-Share Programs: Local jurisdictions may promote ride-sharing programs, including:
- Designate a certain percentage of parking spaces for ride-sharing vehicles;
 - Designate adequate passenger loading, unloading, and waiting areas for ride-sharing vehicles;
 - Provide a web site or message board for coordinating shared rides;
 - Encourage private, for-profit community car-sharing, including parking spaces for car share vehicles at convenient locations accessible by public transit;
 - Hire or designate a rideshare coordinator to develop and implement ridesharing programs.
- TR53:** Employer-based Trip Reduction: Local jurisdictions may support voluntary, employer-based trip reduction programs, including:
- Provide assistance to regional and local ridesharing organizations;
 - Advocate for legislation to maintain and expand incentives for employer ridesharing programs;
 - Require the development of Transportation Management Associations for large employers and commercial/ industrial complexes;
 - Provide public recognition of effective programs through awards, top ten lists, and other mechanisms.
- TR54:** Ride Home Programs: Local jurisdictions may implement a “guaranteed ride home” program for those who commute by public transit, ride-sharing, or other modes of transportation, and encourage employers to subscribe to or support the program.
- TR55:** Local Area Shuttles: Transit agencies may encourage and utilize shuttles to serve neighborhoods, employment centers and major destinations.
- TR56:** Local jurisdictions and transit agencies may create a free or low-cost local area shuttle system that includes a fixed route to popular tourist destinations or shopping and business centers.

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- TR57:** Local jurisdictions may work with existing shuttle service providers to coordinate their services.
- TR58:** Low- and No-Travel Employment Opportunities: Local jurisdictions may facilitate employment opportunities that minimize the need for private vehicle trips, including:
- Amend zoning ordinances and the Development Code to include live/work sites and satellite work centers in appropriate locations;
 - Encourage telecommuting options with new and existing employers, through project review and incentives, as appropriate.
- TR59:** Local jurisdictions may support bicycle use as a mode of transportation by enhancing infrastructure to accommodate bicycles and riders, and providing incentives.
- TR60:** Development Standards for Bicycles: Local jurisdictions may establish standards for new development and redevelopment projects to support bicycle use, including:
- Amending the Development Code to include standards for safe pedestrian and bicyclist accommodations, by incorporating the following:
 - “Complete Streets” policies that foster equal access by all users in the roadway design;
 - Bicycle and pedestrian access internally and in connection to other areas through easements;
 - Safe access to public transportation and other non-motorized uses through construction of dedicated paths;
 - Safe road crossings at major intersections, especially for school children and seniors;
 - Adequate, convenient and secure bike parking at public and private facilities and destinations in all urban areas;
 - Street standards may include provisions for bicycle parking within the public right of way.
- TR61:** Local jurisdictions may require new development and redevelopment projects to include bicycle facilities, as appropriate with the new land use, including:
- Construction of weatherproof bicycle facilities where feasible, and at a minimum, bicycle racks or covered, secure parking near the building entrances;
 - Provision and maintenance of changing rooms, lockers, and showers at large employers or employment centers.

- Prohibit projects that impede bicycle and pedestrian access, such as large parking areas that cannot be safely crossed by non-motorized vehicles, and developments that block through access on existing or potential bicycle and pedestrian routes;
- Encourage the development of bicycle stations at intermodal hubs, with attended or “valet” bicycle parking, and other amenities such as bicycle rental and repair, and changing areas with lockers and showers;
- Conduct a connectivity analysis of the existing bikeway network to identify gaps, and prioritize bikeway development where gaps exist.

TR62: Bicycle and Pedestrian Trails: Local jurisdictions may establish a network of multi-use trails to facilitate safe and direct off-street bicycle and pedestrian travel, and provide bike racks along these trails at secure, lighted locations

TR63: Bicycle Safety Program: Local jurisdictions may develop and implement a bicycle safety educational program to teach drivers and riders the laws, riding protocols, routes, safety tips, and emergency maneuvers.

TR64: Bicycle and Pedestrian Project Funding: Local jurisdictions may pursue and provide enhanced funding for bicycle and pedestrian facilities and access projects, including, as appropriate:

- Apply for regional, State, and federal grants for bicycle and pedestrian infrastructure projects;
- Establish development exactions and impact fees to fund bicycle and pedestrian facilities;
- Use existing revenues, such as State gas tax subventions, sales tax funds, and general fund monies for projects to enhance bicycle use and walking for transportation.

TR65: Bicycle Parking: Local jurisdictions may adopt bicycle parking standards that ensure bicycle parking sufficient to accommodate five to 10 percent of projected use at all public and commercial facilities, and at a rate of at least one per residential unit in multiple-family developments (suggestion: check language with League of American Bicyclists).

TR66: Local jurisdictions may establish parking policies and requirements that capture the true cost of private vehicle use and support alternative modes of transportation.

TR67: Parking Policy: Local jurisdictions may adopt a comprehensive parking policy to discourage private vehicle use and encourage the use of alternative transportation by incorporating the following:

- Reduce the available parking spaces for private vehicles while increasing parking spaces for shared vehicles, bicycles, and other alternative modes of transportation;
- Eliminate or reduce minimum parking requirements for new buildings;
- “Unbundle” parking (require that parking is paid for separately and is not included in the base rent for residential and commercial space);
- Use parking pricing to discourage private vehicle use, especially at peak times;
- Create parking benefit districts, which invest meter revenues in pedestrian infrastructure and other public amenities;
- Establish performance pricing of street parking, so that it is expensive enough to promote frequent turnover and keep 15 percent of spaces empty at all times;
- Encourage shared parking programs in mixed-use and transit-oriented development areas.

TR68: Event Parking Policies: Local jurisdictions may establish policies and programs to reduce onsite parking demand and promote ride-sharing and public transit at large events, including:

- Promote the use of peripheral parking by increasing on-site parking rates and offering reduced rates for peripheral parking;
- Encourage special event center operators to advertise and offer discounted transit passes with event tickets;
- Encourage special event center operators to advertise and offer discount parking incentives to carpooling patrons, with four or more persons per vehicle for on-site parking;
- Promote the use of bicycles by providing space for the operation of valet bicycle parking service.

TR69: Parking “Cash-out” Program: Local jurisdictions may require new office developments with more than 50 employees to offer a Parking “Cash-out” Program to discourage private vehicle use.

TR70: Electric/Alternative Fuel Vehicle Parking: Local jurisdictions may require new commercial and retail developments to provide prioritized parking for electric vehicles and vehicles using alternative fuels.

TR71: Local jurisdictions may support and promote the use of low-, and/or near zero- and/or zero-emission vehicles, and alternative fuels, and other measures to directly reduce emissions from motor vehicles.

- TR72:** Low-, and/or near zero and/or Zero Emission Vehicles: Local jurisdictions may support and promote the use of low-, and/or near zero- and/or zero-emission vehicles, by doing the following:
- Develop the necessary infrastructure to encourage the use of low-, and/or near zero- and/or zero-emission vehicles and clean alternative fuels, such as development of electric vehicle charging facilities and conveniently located alternative fueling stations;
 - Encourage new construction to include vehicle access to properly wired outdoor receptacles to accommodate ZEV and/or plug in electric hybrids (PHEV);
 - Encourage transportation fleet standards to achieve the lowest emissions possible, using a mix of alternate fuels, PZEV or better fleet mixes;
 - Establish incentives, as appropriate, to taxicab owners to use alternative fuel or gas-electric hybrid vehicles.
- TR73:** Vehicle Idling: Local jurisdictions may enforce State idling laws for commercial vehicles, including delivery and construction vehicles.
- TR74:** Pedestrian and Bicycle Promotion: Local jurisdictions may work with local community groups and downtown business associations to organize and publicize walking tours and bicycle events, and to encourage pedestrian and bicycle modes of transportation.
- TR75:** Local jurisdictions may organize events and workshops to promote GHG-reducing activities.
- TR76:** Fleet Replacement: Local jurisdictions and agencies may establish a replacement policy and schedule to replace fleet vehicles and equipment with the most fuel efficient vehicles practical, including gasoline hybrid and alternative fuel or electric models.
- TR77:** Local jurisdictions may implement measures to reduce employee vehicle trips and to mitigate emissions impacts from municipal travel.
- TR78:** Trip Reduction Program: Local jurisdictions may implement a program to reduce vehicle trips by employees, including:
- Providing incentives and infrastructure for vanpooling and carpooling, such as pool vehicles, preferred parking, and a website or bulletin board to facilitate ride-sharing;
 - Providing subsidized passes for mass transit;
 - Offering compressed work hours, off-peak work hours, and telecommuting, where appropriate;

- Offer a guaranteed ride home for employees who use alternative modes of transportation to commute.

TR79: Bicycle Transportation Support: Local jurisdictions may promote and support the use of bicycles as transportation, including:

- Providing bicycle stations with secure, covered parking, changing areas with storage lockers and showers, as well as a central facility where minor repairs can be made;
- Providing bicycles, including electric bikes, for employees to use for short trips during business hours;
- Implementing a police-on-bicycles program;
- Providing a bicycle safety program, and information about safe routes to work.

TR80: Municipal Parking Management: Local jurisdictions may implement a Parking Management Program to discourage private vehicle use, including:

- Encouraging carpools and vanpools with preferential parking and a reduced parking fee;
- Institute a parking cash-out program;
- Renegotiate employee contracts, where possible, to eliminate parking subsidies;
- Install on-street parking meters with fee structures designed to discourage private vehicle use;
- Establish a parking fee for all single-occupant vehicles.

TR81: Travel Mitigation: Local jurisdictions may mitigate business-related travel, especially air travel, through the annual purchase of verified carbon offsets.

TR82: Transit Access to Municipal Facilities: Local jurisdiction and agency facilities may be located on major transit corridors, unless their use is plainly incompatible with other uses located along major transit corridors.

TR83: Local jurisdictions and development project sponsors may and are encouraged to coordinate and consult early with the Caltrans District Planning offices of Local Development Intergovernmental Review on any land use proposal that would be located within 500 feet of state transportation facilities to enable consideration of the site specific access and operational safety impacts.

WATER RESOURCES

- W1:** Local jurisdictions may encourage new development and industry to locate in those service areas with existing wastewater infrastructure and treatment capacity, making greater use of those facilities prior to incurring new infrastructure costs.
- W2:** Local jurisdictions may promote reduced wastewater system demand by: designing wastewater systems to minimize inflow and increase upstream treatment and infiltration to the extent feasible, reducing overall source water generation by domestic and industrial users, deferring development approvals for industries that generate high volumes of wastewater until wastewater agencies have expanded capacity.
- W3:** Wastewater treatment agencies are encouraged to have expansion plans, approvals and financing in place once their facilities are operating at 80 percent of capacity.
- W4:** Project sponsors may coordinate with the local wastewater provider in order to ensure that existing and/or planned sewer conveyance and treatment facilities are capable of meeting wastewater flow capacity requirements. Each project sponsor may identify specific on- and off-site improvements needed to ensure that impacts related to wastewater conveyance capacity are addressed prior to issuance of plans. Sewer capacity clearance from the local wastewater provider may be required at the time that a sewer connection permit application is submitted.
- W5:** As appropriate, confirmation of the capacity of the surrounding stormwater and sanitary sewer system and state of repair may be completed by a qualified civil engineer with funding from the project sponsor. The project sponsor may be responsible for the necessary stormwater and sanitary sewer infrastructure improvements to accommodate the proposed project. In addition, the sponsor may be required to pay any fees to improve sanitary sewer infrastructure as may be required by the applicable local agencies. Improvements to the existing sanitary sewer collection system may specifically include, but are not limited to, mechanisms to control or minimize increases in infiltration/inflow to offset sanitary sewer increases associated with the proposed project. To the maximum extent practicable, the sponsor may be required to implement Best Management Practices to reduce the peak stormwater runoff from the project site. Additionally, the project sponsor may be responsible for payment of any required installation or hook-up fees to the affected service providers.
- W6:** Wastewater treatment agencies may maximize efficiency of wastewater treatment and pumping equipment.

- W7:** Project sponsors with projects requiring the discharge of dredged or fill materials into U.S. waters, including wetlands, may comply with sections 404 and 401 of the Clean Water Act including the requirement to obtain a permit from the U.S. Army Corps of Engineers and the governing Regional Water Quality Control Board.
- W8:** Project sponsor may ensure that natural riparian conditions near projects are maintained, wherever feasible, to minimize the effects of stormwater flows at stream crossings. Where feasible, riparian areas may be restored or expanded to mitigate additional impervious surface and associated runoff.
- W9:** Prior to construction within the vicinity of a watercourse, the project sponsor may obtain all necessary regulatory permits and authorizations from the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), California Department of Fish and Game, California Coastal Commission, and local jurisdictions, and may comply with all conditions issued by applicable agencies. Required permit approvals and certifications may include, but not be limited to the following:
- U.S. Army Corps of Engineers (Corps): Section 404. Permit approval from the Corps may be obtained for the placement of dredge or fill material in Waters of the U.S., if any, within the interior of the project site, pursuant to Section 404 of the federal Clean Water Act.
 - Regional Water Quality Control Board (RWQCB): Section 401 Water Quality Certification. Certification that the project will not violate state water quality standards is required before the Corps can issue a 404 permit, above.
 - California Department of Fish and Game (CDFG): Section 1602 Lake and Streambed Alteration Agreement. Work that will alter the bed or bank of a stream requires authorization from CDFG.
- A qualified environmental consultant may be retained and paid for by the project sponsor to make site visits as necessary; and as a follow-up, submit to the Lead Agency a letter certifying that all required conditions have been instituted during the grading activities.
- W10:** Prior to issuance of a demolition, grading, or building permit within vicinity of a watercourse project sponsors may develop a final detailed landscaping and irrigation plan for review and approval by the appropriate local jurisdiction prepared by a licensed landscape architect or other qualified person. Such a plan may include a planting schedule, detailing plant types and locations, and a system for temporary irrigation of plantings.

- Plant and maintain only drought-tolerant plants on the site where appropriate, as well as native and riparian plants in and adjacent to riparian corridors. Along the riparian corridor, native plants may not be disturbed to the maximum extent feasible. Any areas disturbed along the riparian corridor may be replanted with mature native riparian vegetation and be maintained to ensure survival.
- All landscaping indicated on the approved landscape plan may be installed prior to the issuance of a Final inspection of the building permit, otherwise permitted.

All landscaping areas shown on the approved plans may be maintained in neat and safe conditions, and all plants may be maintained in good growing condition and, whenever necessary replaced with new plant materials to ensure continued compliance with all applicable landscaping requirements. All paving or impervious surfaces may occur only on approved areas.

W11: Project sponsors may comply with the State-wide construction storm water discharge permit requirements including preparation of Storm Water Pollution Prevention Plans for transportation improvement construction projects. Roadway construction projects may comply with the Caltrans storm water discharge permit. Best Management Practices may be identified and implemented to manage site erosion, wash water runoff, and spill control.

W12: Project sponsors may comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) to address stormwater runoff. Detailed examples of potential mitigation activities that may be required by the Lead Agency are described below.

Project sponsors may submit with the application for a building permit (or other construction-related permit) a completed Construction-Permit-Phase Stormwater Supplemental Form. The project drawings submitted for the building permit (or other construction-related permit) may contain a stormwater management plan, for review and approval by the appropriate agency, to manage stormwater run-off and to limit the discharge of pollutants in stormwater after construction of the project to the maximum extent practicable. The post-construction stormwater management plan may include and identify the following:

- All proposed impervious surface on the site;
- Anticipated directional flows of on-site stormwater runoff; and
- Site design measures to reduce the amount of impervious surface area and directly connected impervious surfaces; and
- Source control measures to limit the potential for stormwater pollution;

- Stormwater treatment measures to remove pollutants from stormwater runoff; and
- Hydromodification management measures so that post-project stormwater runoff does not exceed the flow and duration of pre-project runoff, if required under the NPDES permit.

The following additional information may be submitted with the post-construction stormwater management plan:

- Detailed hydraulic sizing calculations for each stormwater treatment measure proposed; and
- Pollutant removal information demonstrating that any proposed manufactured/mechanical (i.e., non-landscape-based) stormwater treatment measure, when not used in combination with a landscape-based treatment measure, is capable of removing the range of pollutants typically removed by landscape-based treatment measures and/or the range of pollutants expected to be generated by the project.

All proposed stormwater treatment measures may incorporate appropriate planting materials for stormwater treatment (for landscape-based treatment measures) and may be designed with considerations for vector/mosquito control. Proposed planting materials for all proposed landscape-based stormwater treatment measures may be included on the landscape and irrigation plan for the project. The sponsor is not required to include on-site stormwater treatment measures in the post-construction stormwater management plan if he or she secures approval from an appropriate agency that an alternate approach is appropriate. The project sponsor may implement the approved stormwater management plan.

- W13:** Project sponsors may consult with the RWQCB and Storm Water Management Plan permit holders as projects are designed to ensure that projects protect the goals of the Clean Water Act and comply with federal storm water NPDES permits.
- W14:** Project sponsors may ensure that new facilities include structural water quality control features such as drainage channels, detention basins, oil and grease traps, filter systems, and vegetated buffers to prevent pollution of adjacent water resources by polluted runoff where required by applicable urban storm water runoff discharge permits.
- W15:** Structural storm water runoff treatment may be provided according to the applicable urban storm water runoff permit where facilities will be operated by a permitted municipality or county. Where Caltrans is the operator, the statewide permit applies.
- W16:** Project sponsors may ensure that operational best management practices for street cleaning, litter control, and catch basin cleaning are implemented to prevent water quality degradation in compliance with applicable storm

water runoff discharge permits. Efforts may be made to assure treatment controls are in place as early as possible, such as during the acquisition process for rights-of-way, not just later during the facilities design and construction phase.

- W17:** In compliance with applicable municipal separate storm sewer system discharge permits as well as Caltrans' storm water discharge permit, long-term sediment control may be affected through erosion control and revegetation programs designed to allow reestablishment of native vegetation on slopes and undeveloped areas.
- W18:** Drainage of roadway runoff may comply with Caltrans' storm water discharge permit. Wherever possible, roadways may be designed to convey storm water through vegetated median strips that provide detention capacity and allow for infiltration before reaching culverts.
- W19:** Treatment and control features such as detention basins, infiltration strips, and porous paving, other features to control surface runoff and facilitate groundwater recharge may be incorporated into the design of new transportation projects early on in the process to ensure that adequate acreage and elevation contours are provided during the right-of-way acquisition process.
- W20:** Project sponsors may assure projects mitigate for changes to the volume of runoff, where any downstream receiving water body has not been designed and maintained to accommodate the increase in flow velocity, rate, and volume without impacting the water's beneficial uses. Pre-project flow velocities, rates, and volumes must not be exceeded. This applies not only to increases in storm water runoff from the project site, but also to hydrologic changes induced by flood plain encroachment. Projects may not cause or contribute to conditions that degrade the physical integrity or ecological function of any downstream receiving waters.
- W21:** Impacts may be reduced to the extent possible by providing culverts and facilities that do not increase the flow velocity, rate, or volume and/or acquiring sufficient storm drain easements that accommodate an appropriately vegetated earthen drainage channel.
- W22:** Project sponsors of improvement projects on existing facilities may include upgrades to stormwater drainage facilities to accommodate any increased runoff volumes. These upgrades may include the construction of detention basins or structures that will delay peak flows and reduce flow velocities, including expansion and restoration of wetlands and riparian buffer areas. System designs may be completed to eliminate increases in peak flow rates from current levels.

W23: Local jurisdictions may encourage Low Impact Development and incorporation of natural spaces that reduce, treat, infiltrate and manage stormwater runoff flows in all new developments, where practical and feasible.

W24: Project sponsor may ensure that for sites less than one acre, project drawings submitted for a building permit (or other construction-related permit) contain a final site plan to be reviewed and approved by the appropriate local agency. The final site plan may incorporate appropriate site design measures to manage stormwater runoff and minimize impacts to water quality after the construction of the project. These measures may include, but are not limited to, the following:

- Minimize impervious surfaces, especially directly connected impervious surfaces;
- Utilize permeable paving in place of impervious paving where appropriate;
- Cluster buildings;
- Preserve quality open space; and
- Establish vegetated buffer areas.

The approved plan may be implemented and the site design measures shown on the plan may be permanently maintained.

W25: Project sponsors may implement BMPs to reduce erosion, sedimentation, and water quality impacts during construction to the maximum extent practicable. Plans demonstrating BMPs may be submitted for review and approval by the Lead Agency. At a minimum, the project sponsor may provide filter materials deemed acceptable to the Lead Agency at nearby catch basins to prevent any debris and dirt from flowing into the local storm drain system and creeks.

W26: Project sponsors for sites over one acre, may obtain coverage under the General Construction Activity Storm Water Permit (General Construction Permit) issued by the State Water Resources Control Board (SWRCB). The project sponsor may file a notice of intent (NOI) with the SWRCB. The project sponsor may be required to prepare a stormwater pollution prevention plan (SWPPP) and submit the plan for review and approval by the Lead Agency. At a minimum, the SWPPP may include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; site-specific erosion and sedimentation control practices; a list of provisions to eliminate or reduce discharge of materials to stormwater; BMPs, and an inspection and monitoring program. Prior to the issuance of any construction-related permits, the project sponsor may submit to the lead

agency a copy of the SWPPP and evidence of submittal of the NOI to the SWRCB. Implementation of the SWPPP may start with the commencement of construction and continue through the completion of the project. After construction is completed, the project sponsor may submit a notice of termination to the SWRCB.

W27: Project sponsors may ensure that project drawings submitted for a building permit (or other construction-related permit) contain a drainage plan to be reviewed and approved by the appropriate agency. The drainage plan may include measures to reduce the post-construction volume and velocity of stormwater runoff to the maximum extent practicable. Stormwater runoff may not be augmented to adjacent properties or creeks. The drainage plan may include and identify the following:

- All proposed impervious surface on the site;
- Anticipated directional flows of on-site stormwater runoff;
- Site design measures to reduce the amount of impervious surface area and directly connected impervious surfaces;
- Source control measures to limit the potential for stormwater pollution; and
- Stormwater treatment measures to remove pollutants from stormwater runoff.

W28: Project sponsors may submit an erosion and sedimentation control plan for review and approval by the appropriate government agency. All work may incorporate all applicable BMPs for the construction industry, including BMP's for dust, erosion and water quality. The measures may include, but are not limited to, the following:

- On sloped properties, the downhill end of the construction area must be protected with silt fencing (such as sandbags, filter fabric, silt curtains, etc.) and hay bales oriented parallel to the contours of the slope (at a constant elevation) to prevent erosion into the street, gutters, stormdrains.
- In accordance with an approved erosion control plan, the project sponsor may implement mechanical and vegetative measures to reduce erosion and sedimentation, including appropriate seasonal maintenance. One hundred (100) percent degradable erosion control fabric may be installed on all graded slopes to protect and stabilize the slopes during construction and before permanent vegetation gets established. All graded areas may be temporarily protected from erosion by seeding with fast growing annual species. All bare slopes may be covered with staked tarps when rain is occurring or is expected.

- Minimize the removal of natural vegetation or ground cover from the site in order to minimize the potential for erosion and sedimentation problems. Maximize the replanting of the area with native vegetation as soon as possible.
- Install filter materials acceptable to the appropriate agency at the storm drain inlets nearest to the project site prior to the start of the wet weather season (October 15); site dewatering activities; street washing activities; saw cutting asphalt or concrete; and in order to retain any debris flowing into the storm drain system. Filter materials may be maintained and/or replaced as necessary to ensure effectiveness and prevent street flooding.
- Ensure that concrete/granite supply trucks or concrete/plaster finishing operations do not discharge wash water into water courses, street gutters, or storm drains.
- Direct and locate tool and equipment cleaning so that wash water does not discharge into the street, gutters, or stormdrains.
- Create a contained and covered area on the site for storage of bags of cement, paints, flammables, oils, fertilizers, pesticides, or any other materials used on the project site that have the potential for being discharged to the storm drain system by the wind or in the event of a material spill. No hazardous waste material may be stored on-site.
- Gather all construction debris on a regular basis and place them in a dumpster or other container which is emptied or removed on a weekly (or other interval approved by the Lead Agency) basis. When appropriate, use tarps on the ground to collect fallen debris or splatters that could contribute to stormwater pollution.
- Remove all dirt, gravel, refuse, and green waste from the sidewalk, street pavement, and storm drain system adjoining the project site. During wet weather, avoid driving vehicles off paved areas and other outdoor work.
- As appropriate, broom sweep the street pavement adjoining the project site on a daily basis. Caked-on mud or dirt may be scraped from these areas before sweeping. At the end of each workday, the entire site may be cleaned and secured against potential erosion, dumping, or discharge to the street, gutter, and/or stormdrains.
- All erosion and sedimentation control measures implemented during construction activities, as well as construction site and materials management may be in strict accordance with the control standards listed in the latest edition of the Erosion and Sediment Control Field Manual published by the RWQB.

All erosion and sedimentation control measures may be monitored regularly by the project sponsor. If measures are insufficient to control

sedimentation and erosion then the project sponsor may develop and implement additional and more effective measures immediately.

- W29:** Project sponsors may ensure that projects requiring continual dewatering facilities implement monitoring systems and long-term administrative procedures to ensure proper water management that prevents degrading of surface water and minimizes, to the greatest extent possible, adverse impacts on groundwater for the life of the project. Construction designs may comply with appropriate building codes and standard practices including the Uniform Building Code.
- W30:** Project sponsors, lead agencies, and local jurisdictions may maximize, where practical and feasible, permeable surface area in existing urbanized areas to protect water quality, reduce flooding, allow for groundwater recharge, and preserve wildlife habitat. New impervious surfaces may be minimized to the greatest extent possible, including the use of in-lieu fees and off-site mitigation.
- W31:** Project sponsors may avoid designs that require continual dewatering where feasible.
- W32:** Where feasible, transportation facilities may be sited away from groundwater recharge areas, to prevent conversion of those areas to impervious surface.
- W33:** Project sponsors may reduce hardscape to the extent feasible to facilitate groundwater recharge as appropriate.
- W34:** Project sponsor may ensure that all roadbeds for new highway and rail facilities be elevated at least one foot above the 100-year base flood elevation. Since alluvial fan flooding is not often identified on FEMA flood maps, the risk of alluvial fan flooding may be evaluated and projects may be sited to avoid alluvial fan flooding. Delineation of floodplains and alluvial fan boundaries may attempt to account for future hydrologic changes caused by global climate change.
- W35:** Project sponsors of transportation improvements may comply with local, state, and federal floodplain regulations. Projects requiring federal approval or funding may comply with Executive Order 11988 on Floodplain Management, which requires avoidance of incompatible floodplain development, restoration and preservation of the natural and beneficial floodplain values, and maintenance of consistency with the standards and criteria of the National Flood Insurance Program.
- W36:** Local jurisdictions may, to the extent feasible and appropriate, prevent development in flood hazard areas that do not have appropriate protections, especially in alluvial fan areas of the region.

- W37:** Local water agencies may continue to evaluate future water demands and establish the necessary supply and infrastructure to meet that demand, as documented in their Urban Water Management Plans.
- W38:** Project sponsors, local jurisdictions, and water agencies may include conjunctive use as a water management strategy when feasible.
- W39:** Regional water agencies may consider, to the greatest extent feasible, potential climate change hydrology and attendant impacts on available water supplies and reliability in the process of creating or modifying systems to manage water resources for both year-round use and ecosystem health. As the methodology and base data for such decisions is still developing, agencies may use the best currently available science in decision-making. Local jurisdictions and water agencies may rely on current regional analyses when making local decisions regarding future water supply and reliability.
- W40:** Project sponsors and local jurisdictions may reduce exterior uses of water in public areas, and may promote reductions in private homes and businesses, by shifting to drought-tolerant native landscape plantings, using weather-based irrigation systems, educating other public agencies about water use, and installing related water pricing incentives. Local jurisdictions may also work with local retailers and vendors to promote the availability of drought resistant landscaping options and provide information on where these can be purchased. Use of recycled water especially in median landscaping and hillside landscaping may be implemented where feasible.
- W41:** Project sponsors may coordinate with the local water provider to ensure that existing and/or planned water supply and water conveyance facilities are capable of meeting water demand/pressure requirements. In accordance with State Law, a Water Supply Assessment may be required for projects that meet the size requirements specified in the regulations. In coordination with the local water provider, each project sponsor may identify specific on- and off-site improvements needed to ensure that impacts related to water supply and conveyance demand/pressure requirements are addressed prior to issuance of a certificate of occupancy. Water supply and conveyance demand/pressure clearance from the local water provider may be required at the time that a water connection permit application is submitted.
- W42:** Project sponsors may coordinate with the local fire service provider in order to ensure that existing and/or planned fire hydrants are capable of meeting fire flow demand/pressure requirements. The issuance of building permits may be dependent upon submission, review, approval, and testing of fire flow demand and pressure requirements, as established by the local fire service provider prior to occupancy.

W43: Project sponsors may implement water conservation measures in new development that may include but not be limited to the following:

- Installation of high-efficiency toilets (1.28 gallons per flush or less, includes dual flush.
- High-efficiency urinals (0.125 gallons per flush or less, includes waterless)
- Restroom faucet flow rate of 1.5 gallons per minute or less
- Public restroom faucet flow rate of 0.5 gallons per minute or less and self-closing
- Showerhead flow rate of 2.0 gallons per minute or less
- Limit of one showerhead per shower stall
- High efficiency clothes washers (water factor of 4.0 or less)
- High efficiency dishwashers (Energy Star rated)
- Domestic water heating system located in close proximity to point(s) of use, as feasible; use of tankless and on-demand water heaters as feasible
- Cooling towers must be operated at a minimum of 5.5 cycles of concentration
- Install on-site water recycling as feasible
- Use of recycled water (if available) for appropriate end uses (irrigation, cooling towers, sanitary)
- Single pass cooling may be prohibited (e.g., any vacuum pumps or ice machines)
- Irrigation may include:
 - Weather-based irrigation controller with rain shutoff
 - Flow sensor and master valve shutoff (for large landscaped areas)
 - Matched precipitation (flow) rates for sprinkler heads
 - Drip/microspray/subsurface irrigation where appropriate
 - Minimum irrigation system distribution uniformity of 75%
 - Proper hydro-zoning, turf minimization and use of native/drought tolerant plant materials
 - Use of landscape contouring to minimize precipitation runoff

W44: Project sponsors may consult with the local water provider to identify feasible and reasonable measures to reduce water consumption, including, but not limited to, systems to use recycled water for landscaping, drip

irrigation, re-circulating hot water systems, water conserving landscape techniques (such as mulching, installation of drip irrigation systems, landscape design to group plants of similar water demand, soil moisture sensors, automatic irrigation systems, clustered landscaped areas to maximize the efficiency of the irrigation system), water conserving kitchen and bathroom fixtures and appliances, thermostatically controlled mixing valves for baths and showers, and insulated hot water lines.

- W45:** Project sponsors may incorporate compliance with local drought measures as appropriate including prohibiting hose watering of driveways and associated walkways; requiring decorative fountains to use recycled water, and repairing water leaks in a timely manner.
- W46:** Project sponsors may incorporate automatic sprinkler systems that irrigate landscaping during morning hours or during the evening to reduce water losses from evaporation. Sprinklers may be required to reset to water less often in cooler months and during the rainfall season, so that water is not wasted in excessive landscape irrigation.
- W47:** Prior to issuance of building permits, project sponsors may pay any appropriate fees imposed by local water providers to off-set any fair share project costs as identified by the local water provider.
- W48:** As part of the general plan update process, local jurisdictions may coordinate with water providers to identify water budgets for development within their jurisdiction. Local water providers may provide for new water supply through a combination of water conservation (on and potentially off-site) and recycled water, such that the net increase in water demand (not including demand for recycled water) does not exceed the calculated demand anticipated in the most recent Urban Water Management Plan or other similar document.
- W49:** Project sponsors may create water-efficient landscapes.
- W50:** Project sponsors may install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls and use water-efficient irrigation methods.
- W51:** Project sponsors may incorporate water-reducing features into building and landscape design.
- W52:** Project sponsors may make effective use of graywater for landscape irrigation. (Graywater is untreated household wastewater from bathtubs, showers, bathroom wash basins, and water from clothes washing machines.)

W53: Project sponsors may implement low-impact development practices that maintain the existing hydrology of the site to manage storm water and protect the environment by doing the following:

- Devise a comprehensive water conservation strategy appropriate for the project and location.
- Design buildings to be water-efficient. Install water-efficient fixtures and appliances.
- Offset water demand from new projects so that there is no net increase in water use.
- Provide education about water conservation and available programs and incentives.

W54: Local jurisdictions may adopt and implement a comprehensive strategy to increase water conservation and the use of recycled water that includes similar measure to the following:

- **Water Consumption Reduction Target:** Regional water agencies may work together to set a target for to reduce per capita water consumption by 2020.
- **Water Conservation Plan:** Regional water agencies may establish a water conservation plan that may include such policies and actions as:
 - Tiered rate structures for water use;
 - Restrictions on time of use for landscape watering, and other demand management strategies;
 - Performance standards for irrigation equipment and water fixtures;
 - Requirements that increased demand from new construction be offset with reductions so that there is no net increase in water use.
- **Recycled Water Use:** Local jurisdictions and regional water agencies may establish programs and policies to increase the use of recycled water, including:
 - Create an inventory of non-potable water uses within the jurisdiction that could be served with recycled water;
 - Produce and promote the use of recycled water for agricultural, industrial, and irrigation purposes, including grey water systems for residential irrigation;
 - Produce and promote the use of treated, recycled water for potable uses where GHG emissions from producing such water are lower than from other potable sources.
- **Water Conservation Outreach:** Local jurisdictions and regional water agencies may implement a public education and outreach campaign to

promote water conservation, and highlights specific water-wasting activities to discourage, such as the watering of non-vegetated surfaces and using water to clean sidewalks and driveways.

- W55:** Local jurisdictions may ensure that building standards and permit approval processes promote and support water conservation.
- W56:** Local jurisdictions may establish building design guidelines and criteria to promote water-efficient building design, including minimizing the amount of non-roof impervious surfaces around the building(s).
- W57:** Local jurisdictions may establish menus and check-lists for developers and contractors to ensure water-efficient infrastructure and technology are used in new construction, including low-flow toilets and shower heads, moisture-sensing irrigation, and other such advances.
- W58:** Local jurisdictions may establish criteria and standards to permit the safe and effective use of gray water (on-site water recycling), and review and appropriately revise, without compromising health and safety, other building code requirements that may prevent the use of such systems.
- W59:** Local jurisdictions may establish programs and policies to ensure landscaping and forests are installed and managed to optimize their climate benefits.
- W60:** Project sponsors may install water efficient landscapes and irrigation, including:
- Planting drought-tolerant and native species, and covering exposed dirt with moisture-retaining mulch;
 - Installing water-efficient irrigation systems and devices, including advanced technology such as moisture-sensing irrigation controls; and/or
 - Installing edible landscapes that provide local food.
- W61:** Regional water agencies may maximize efficiency at drinking water treatment, pumping, and distribution facilities.
- W62:** Impacts to waters of the state (i.e., water bodies, drainages, and the beneficial uses they support) from proposed transportation (and/or development) projects -- or loss of beneficial uses from cumulative projects and their impacts, may be mitigated by enhancing or restoring water quality attributes and environmental values of water bodies impacted by previous transportation (and/or development) projects. For example, a new project could examine where an earlier project (preferably in close proximity to the new project area), created impairment to a riparian wildlife corridor, and then plan to remove this impairment as

mitigation. Alternatively a new project could remove an obstruction to sediment transport or remove a check dam currently preventing fish (for example, steelhead trout) migration.

APPENDIX G

Comments on the Draft Program EIR and Responses to Comments

Letter #1

Lori Moore

From: Clayton Miller [clayton@Lewisandco.net]
Sent: Tuesday, October 23, 2012 11:52 AM
To: Steve Smith
Cc: Jeffrey Inabinet
Subject: CIAQC Comments on Draft PEIR for Draft 2012 AQMP
Attachments: CIAQC Comment Letter on 2012 AQMP PEIR - 10-23-12.pdf

Dear Mr. Smith,

Please find attached the comments prepared by the Construction Industry Air Quality Coalition (CIAQC) on the Draft Program Environmental Impact Report dated September 2012 for the Draft 2012 Air Quality Management Plan.

Please do not hesitate to contact me or Michael Lewis at mike@lewisandco.net or at the phone number below if you have any questions or any difficulty opening the attached letter.

Thank you,
Clayton Miller
Construction Industry Air Quality Coalition
(826) 858-4611 office

1-1



**CONSTRUCTION INDUSTRY
AIR QUALITY COALITION**

Coalition Members



Associated General Contractors
America-San Diego Chapter, Inc.



Building Industry Association
of Southern California



California Dump Truck Owners
Association



Engineering
Contractors Association



Engineering & General
Contractors Association



Engineering & Utility
Contractors Association



Southern California
Contractors Association

October 23, 2012

South Coast Air Quality Management District
Mr. Steve Smith (c/o CEQA)
21865 Copley Drive
Diamond Bar, CA 91765-4182

via email: ssmith@aqmd.gov

Dear Mr. Smith:

The following comments from the Construction Industry Air Quality Coalition (CIAQC) are submitted to address the South Coast Air Quality Management District's Draft Program Environmental Impact Report (PEIR) for the 2012 Air Quality Management Plan dated September, 2012.

1-2

In the Draft PEIR, Chapter 6, Alternatives, Section 6.4 Project Alternatives to the 2012 AQMP, includes four alternatives to the proposed project (2012 Air Quality Management Plan) that the Program Environmental Impact Report will discuss and compare. Section 6.4.3 describes Alternative 3 - Greater Reliance on NOx Emissions Reductions. This alternative would rely on greater NOx emission reductions from the accelerated turnover and retirement of off-road construction equipment and on-road (trucks) mobile sources to achieve the federal 24-hour PM 2.5 standard while removing BCM-01 (Further Emission Reductions from Wood Burning Devices) from the 2012 Air Quality Management Plan.

1-3

The PEIR is to provide a discussion of alternatives to the proposed project as required by CEQA. Pursuant to the CEQA guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project and avoid or substantially lessen any of the significant effects of the project, and provide means for evaluating the comparative merits of each alternative (CEQA, Guidelines, §15126.6(a)).

1-4

CIAQC believes Alternative 3 does not meet the established criteria for analysis as required by CEQA as described on Page 1-35 of the Initial Study for the Draft PEIS that stated "The rationale for selecting alternatives rests on CEQA's requirement to present "realistic" alternatives; that is alternatives that can actually be implemented." While SCAQMD could contemplate accelerating the turnover of off-road construction vehicles and medium and heavy-duty trucks, any requirement that goes beyond those already required by the California Air Resources Board (CARB) is simply unrealistic and infeasible.

1-5

Off-road diesel-fueled equipment 25 horse power and greater used by the construction industry in California is strictly regulated under the CARB Off-Road Regulation. Idling limitations, written idling policies, equipment

1-6

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Major Funding Provided by the Construction Industry Advancement Fund and the Fund for Construction Industry Advancement

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registration, disclosure for selling vehicles and equipment labeling requirements are already enforceable and fleet average targets established in the regulation begin in 2014. The fleet average targets effectively accelerate the turnover of older engines each year through 2023 to levels that are equal to Tier 4i (interim) or Tier 4 depending on the horsepower range for both large and medium sized fleets. For engines greater than 750 hp the final fleet average target is equivalent to an equal number of Tier 2 and Tier 4 engines (no Tier 3 standards established for this category). Small fleets, those less than 2,500 gross horsepower, are required to meet similar fleet average targets established for 2023 by 2028.

The Off-Road Regulation establishes very stringent NOx fleet average targets that will require fleet owners to sell older equipment, retire equipment, purchase new equipment or repower existing equipment with new engines (if possible) to remain in compliance. In order to achieve the fleet average targets described above, the current statewide fleet mix of equipment (engines) will need to change dramatically in the next ten years. Additionally, the economic and technological challenge the CARB regulation creates for contractors and equipment owners is further compounded by current federal policy under US EPA's Replacement Engine Regulation (40 CFR 1068.240) that prohibits the repowering of a machine with a previous tier engine unless the engine has prematurely failed. This policy increases compliance costs significantly.

According to CARB, as of September 2012, the current statewide construction fleet is comprised of approximately 27-percent Tier 0 engines, 23.3-percent Tier 1, 29-percent Tier 2, 13.6-percent Tier 3 and 6.8-percent Tier 4i (interim). These values demonstrate that the existing off-road construction fleet will experience a significant change (an estimated 80 to 85% turnover) by 2023.

The timeframe for fleets to replace and or repower equipment (if possible) is even more compressed than the Off-Road Regulation compliance dates might suggest in that Tier 4 engines become available in 2014 for those between 175 to 750 hp and 2015 for those 75 to 174 hp. These horsepower ranges encompass a large portion of construction equipment power systems. The accelerated implementation of CARB's Off-Road Regulation contemplated in Alternative 3 would require CARB to amend the regulation to require doubling the implementation rate of the regulation such that the emission reductions expected by 2021 would be realized by 2017. This is simply impossible for the construction industry.

Another important consideration is that off-road construction equipment is very expensive. A new dual-engine scrapper can cost more than one-and-a-quarter million dollars. For this reason, most contractors have historically purchased used equipment when it is needed for a specific job and the work to be performed. The equipment is then retained in the fleet after it has been paid for and becomes an integral asset to a company, giving it the ability to generate income throughout the useful life of the equipment. If a new equipment purchase is not possible because of cost, a company can rent equipment, but this results in additional costs that has to be absorbed by the contractor. Rental equipment can help satisfy a portion of the need for equipment in construction.

1-6
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Mr. Steve Smith
Page Three

but certainly not a majority of it. Further, contractors are not likely to purchase lower tiered engines, such as Tier 3 to improve fleet averages, before the final Off-Road Regulation compliance date (even if it is used and less costly than a new machine) and then turn around a couple of years later and replace it by purchasing a Tier 4 or Tier 4I to achieve final fleet average targets. That approach would simply cost too much in what is still a down economy in southern California. Alternative 3 would effectively require the construction industry to turn over most of its equipment in only 2 or 3 years time. The economic strain on a fleet would be too great.

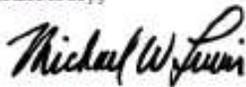
The Off-Road Regulation presents a significant change to the way companies must plan and purchase equipment. The fleet average targets are structured in such a way that older equipment in a fleet must be offset and replaced by newer, lower emitting engines to achieve the targets. The engine and equipment turnover needed to comply with the Off-Road Regulation will necessarily result in fleets with very few, if any, older lower-tiered engines that currently exist now remaining in fleets by 2023. For these reasons, CIAQC strongly maintains that it is simply unrealistic for the SCAQMD to consider a measure that accelerates the turnover of off-road construction vehicles to Tier 4 standards as Alternative 3 in the PEIR describes.

Additionally, Alternative 3 would require proposed control measure ONRD-03 to be modified to accelerate implementation of CARB's on-road truck and bus regulation, to double the compliance requirements currently in place by 2017. This requirement in addition to the accelerated turnover of construction equipment is not possible for contractors, many of which also own regulated trucks (approximately 70,000 in California).

For these reasons, CIAQC believes Alternative 3 is not a viable or realistic alternative and it should not be included in the final Draft PEIR or presented to the SCAQMD Governing Board as such.

Please do not hesitate to contact me if you have any questions or would like additional information.

Sincerely,



Michael W. Lewis,
Senior Vice-President

cc: Jeffrey Inabinet

1-6
Con't

1-7

**Responses to Comment Letter #1
Construction Industry Air Quality Coalition (CIAQC) –
Mike Lewis & Clayton Miller (10/23/2012)**

- 1-1 This comment notifies the SCAQMD that a comment letter is attached to the email. No further response is necessary.
- 1-2 This comment notifies the SCAQMD that the comments contained in the letter pertain to the Draft Program EIR for the 2012 AQMP. No further response is necessary.
- 1-3 This comment briefly describes Alternative 3 – Greater Reliance on NO_x Emissions Reductions, in Chapter 6 of the Draft Program EIR. No further response is necessary.
- 1-4 This comment identifies CEQA requirements for a discussion of alternatives in CEQA Guidelines §15126.6 (a). SCAQMD staff is aware of the requirements for an alternatives discussion in an EIR and the Draft Program EIR complies with all relevant requirements for preparing an alternatives analysis.
- 1-5 This comment suggests that Alternative 3 is not feasible. As noted in Chapter 6 of the Draft Program EIR, alternatives to the 2012 AQMP were developed by modifying the criteria and VOC reduction strategies. This approach has been used in the past for previous AQMPs. With regard to why the commenter believes Alternative 3 is infeasible, see responses to comments #1-6 through #1-11.
- 1-6 This comment summarizes the requirements of CARB’s existing On-road Truck & Bus Regulation and CARB’s existing Off-road Vehicle Regulation. No further response is necessary. The comment then goes on to say that complying with these existing regulations presents significant change in the way companies must plan and purchase equipment. The comment asserts that accelerating the compliance rate for both on-road and off-road mobile sources, as proposed in Alternative 3, means that Alternative 3 is not a “viable or realistic alternative.” CEQA Guidelines §15126 (a) states, “An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation.” Further, CEQA Guidelines §15364 defines feasible as, “...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.” Alternative 3 is considered to be a feasible alternative for the following reasons.
- Reasonable period of time – this alternative would require modifications to an existing regulation, which could be expeditiously implemented to ensure that the additional NO_x reductions from accelerating the turnover of vehicles are realized. These amendments would result in a modest increase in the average annual turnover rate of approximately three percent when compared to the current form of the regulation (from nine percent to 12 percent), which, while challenging, is not so extreme as to render the alternative unreasonable;

- Economic – the average annual turnover rate (and the costs of complying with the regulation) would increase by approximately 33 percent for the four-year timeframe of the alternative. While the cost increase is not insignificant, it is not so extreme as to eliminate the alternative from consideration. In addition, incentive funding such as the SOON and Moyer programs is available to alleviate some of the increased costs. Although Alternative 3 would result in greater compliance costs as indicated above, no physical effects of higher compliance costs have been identified as indicated in CEQA Guidelines §15131;
- Environmental – No environmental factors are identified that would make the alternative infeasible. In fact, the Alternative 3 would help make expeditious progress attaining the one-hour ozone standard (revoked) and the eight-hour ozone standard, which are included as project objectives. Impacts from Alternative 3 have been comprehensively analyzed in Chapter 6 of the Final Program EIR;
- Legal – No legal issues identified that would prevent implementing Alternative 3, although Alternative 3 does not reduce potential environmental impacts compared to the 2012 AQMP;
- Social – Alternative 3 primarily affects the penetration of new or retrofitted compliant on-road and off-road vehicles and retirement of old vehicles. For this reason Alternative 3 is not expected to create physical impacts to existing or planned land uses or physically divide established populations in the Basin that could result in adverse social impacts to places of worship or religious practices, cause urban blight, or limit or eliminate housing, especially low cost housing; and finally
- Technological – No technological impediments are identified as compliant vehicles and/or control technologies are readily available and would be in sufficient quantity to implement the alternative.

In summary, SCAQMD staff asserts that Alternative 3 is feasible as required by the CEQA Guidelines and the alternative should be included as one of the program alternatives.

- 1-7 This comment concludes the letter by repeating the assertion that Alternative 3 is unrealistic and infeasible. See response to comment #1-6, which addresses this comment.

Letter #2

Lori Moore

From: Steve Smith
Sent: Wednesday, October 31, 2012 7:03 AM
To: Steve Smith
Subject: FW: Comments on DPEIR for the 2012 AQMP
Attachments: CSPA Comments on AQMD Draft EIR for the 2012 AQMP - Oct 23 2012.pdf; Attachment A - CSPA Comments on the DPEIR for the 2012 AQMP.pdf; Attachment B - CSPA Comments on the DPEIR for the 2012 AQMP.pdf; Attachment C - CSPA Comments on the DPEIR for the 2012 AQMP.pdf; Attachment D - CSPA Comments on the DPEIR for the 2012 AQMP.pdf

From: Joe Yost [<mailto:JYost@cspa.org>]
Sent: Tuesday, October 23, 2012 2:40 PM
To: Jeffrey Inabinet
Subject: Comments on DPEIR for the 2012 AQMP

Dear Mr. Inabinet:

The Consumer Specialty Products Association (CSPA) appreciates the opportunity to offer comments on the South Coast Air Quality Management District Draft Program Environmental Impact Report (DPEIR) for the 2012 Air Quality Management Plan. Attached, please find our comments and four attachments.

2-1

Thank you in advance for providing confirmation that the comments and four attachments were received.

Respectfully submitted,

D. Douglas Fratz
Vice President, Scientific & Technical
Affairs and Aerosol Products Division Staff
Executive



Protecting Household & Institutional Products

Member: Air Care - Consumer - Aerosol
Associative Care - Analytical - Pesticide Management

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October 23, 2012

via e-mail

Mr. Jeff Inabinet
Office of Planning, Rule Development, and Area Sources/CEQA
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182
jnabinet@aqmd.gov

Subject: Draft Program Environmental Impact Report: 2012 Air Quality Management Plan (AQMP)¹

Dear Mr. Inabinet:

The Consumer Specialty Products Association (CSPA)² appreciates the opportunity to offer comments on the South Coast Air Quality Management District (AQMD) Draft Program Environmental Impact Report (DPEIR) for the 2012 Air Quality Management Plan (AQMP), which was issued for comment on September 6, 2012.³ 2-2

CSPA submitted comments on the Initial Study for the Draft Program Environmental Impact Report on July 18, 2012. In addition, CSPA submitted comments on the draft 2012 AQMP on October 9, 2012. These documents are expressly incorporated herein by express reference. 2-3

In our earlier comments we expressed concerns that the 2012 AQMP should not include control measures for consumer products, and furthermore urged that AQMD remove all ozone control measures from this AQMP update, and proceed with only the PM 2.5 update. The numerous reasons supporting this include: 2-4

¹ The DPEIR for the 2012 AQMP is posted on the AQMD's website at: http://www.aqmd.gov/ceqa/documents/2012/aqmd/draftEA/2012AQMP/2012aqmp_dpeir.html.

² CSPA is a voluntary, non-profit national trade association representing approximately 240 companies engaged in the manufacture, formulation, distribution, and sale of products for household, institutional, commercial and industrial use. CSPA member companies' wide range of products includes home, lawn and garden pesticides, antimicrobial products, air care products, automotive specialty products, detergents and cleaning products, polishes and floor maintenance products, and various types of aerosol products. Through its product stewardship program Product Care[®], and scientific and business-to-business endeavors, CSPA provides its members a platform to effectively address issues regarding the health, safety, sustainability and environmental impacts of their products.

³ The DPEIR includes a project description and an analysis of potential adverse environmental impacts that could be generated by the proposed project. The AQMD explains that the 2012 AQMP identifies control measures that will be implemented to demonstrate attainment of the federal 24-hour standard for particulate matter less than 2.5 microns in diameter (PM 2.5) and provides Clean Air Act Section 182(e)(5) proposed implementation measures to make progress in attaining federal one-hour and eight-hour ozone standards.

1667 K Street NW, Suite 300 | Washington, DC 20006 | www.cspa.org | 202-872-8110

CSPA Comments on the DPEIR for the 2012 AQMP

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- EPA has proposed an one-hour ozone SIP Call⁴ that will only be finalized after EPA receives, considers, and responds to all public comments. The final SIP Call will probably not be issued until sometime next year, and the final rule could differ from the proposal. The state will then have 12 months to respond. AQMD should therefore await the final SIP Call and move carefully to assure that its updated ozone AQMP is consistent with that rule. 2-5
- We have shown in previous comments that modeling studies (*see* Attachment A) have shown the further VOC reductions for consumer products contained in the 2007 AQMP are not necessary for ozone attainment, and therefore should be removed. AQMD needs to better evaluate its ozone attainment strategies, which requires more time. 2-6
- We have shown in previous comments that new environmental multimedia modeling data show that the low vapor pressure (LVP) compounds targeted for reduction in CTS-04 do not contribute significantly to ozone production. (*See* Attachment B.) That new measure is therefore ineffective and not appropriate for inclusion in the AQMP. 2-7
- Numerous other data have also been put on the record to show that the proposed control measures and ozone attainment demonstration for the 2012 AQMP are not appropriate, and work on updating the ozone portions of the AQMP need to be deferred. (*See* Attachment C.) 2-8

We therefore appreciate that the revised Draft Program Environmental Impact Report includes assessment of “Alternative 4: PM_{2.5} Emission Reduction Strategies Only.” Unfortunately, the flawed analysis of this alternative fails to consider the critical reasons we have provided for deferral of the ozone update. The assessment instead looks at the implementation of the Clean Air Act Section 182(e)(5) ozone attainment measures in the “black box” of the 2007 AQMP, including the vague and undefined “SCLTM-03” measure on Consumer Products—the very measure that we have shown in our 2007 ozone attainment modeling study to be unnecessary. (*See* Attachment A.) CSPA is not seeking to have the 2007 control measures implemented, but rather to have AQMD take time to consider the extensive data showing that more effective and cost effective measures can be adopted for ozone attainment. 2-9

The revised Draft Program Environmental Impact Report also includes assessment of “Alternative 3: Greater Reliance on NO_x Emissions Reductions.” Unfortunately, while the general concept would seem consistent with the evidence provided by CSPA in previous comments that NO_x reductions are more effective than VOC reductions for ozone attainment, the actual scenario assessed in Alternative 3 relates only to PM_{2.5} attainment, and eliminates only a wood burning measure. CSPA believes that this general concept should also be evaluated as an alternative for the ozone AQMP, substituting accelerated NO_x reductions for low-reactivity VOC reductions. 2-10

For reasons provided in our previous comments, and further detailed below, the 2012 AQMP should only include commitments for reductions in emission sources that are necessary for attainment of the federal PM_{2.5} standard. Moreover, to the extent that any future ozone AQMP contains Clean Air Act Section 182(e)(5) proposed implementation measures, the AQMD should 2-11

⁴ 77 Fed. Reg. 58072-58076 (September 19, 2012)

CSPA Comments on the DPEIR for the 2012 AQMP
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focus only on NOx reductions for demonstrating progress in attaining federal one-hour and eight-hour ozone standards. In addition to being a PM 2.5 precursor, NOx is also an ozone precursor. Thus, focusing on NOx is consistent with the AQMD's efforts to continue making expeditious progress in attaining the federal one-hour and eight-hour ozone standards.

2-11
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1. The Low Reactivity of VOCs in Consumer Products Make Further Reductions Unnecessary.

The low reactivity and low ozone impact of the VOC emissions from consumer products may make it *unnecessary* to further reduce the VOC content of consumer products to attain the federal ozone standard in the South Coast Air Basin. Therefore, for reasons detailed below, the 2012 AQMP should not include "black box" emission reduction measures for consumer products.

2-12

a. There are very significant differences between the relative ozone impacts of equal amounts of VOC emissions from various sources.

Scientific studies funded by our industry strongly suggest that a mass-based inventory approach overestimates the actual impact of consumer product VOC emissions on ozone attainment in the South Coast and other areas of California. In 2002, Sierra Research, Inc. conducted a research project to create a reactivity-weighted VOC emissions inventory for the South Coast. Sierra Research used the official emissions inventory for South Coast in 2000 and the official speciated emissions profiles, as well as the official ARB estimates for "maximum incremental reactivity" (MIR) for each species of VOC emission, to create an estimate of the maximum ozone formation potential attributable to each major category of anthropogenic emissions of organic gases in the region. This type of MIR-weighted inventory provides a much more scientifically accurate assessment of the relative ozone impact of various emissions sources than any mass-based VOC emissions inventory.

2-13

The results of that MIR-weighted VOC inventory project are presented in Attachment D to these comments. The study found significant differences between the total mass emissions and the ozone formation potential of those emissions, and these differences are due solely to the differing weighted MIR for the species of VOCs that make up the specific source emission. Some emissions sources therefore have a much higher ozone formation potential than their mass emissions suggest, while other emissions categories have a much lower ozone formation potential than suggested by their mass emissions. Consumer products are among the emissions categories with below average reactivity, and therefore lower ozone impact than would be expected based on mass of emissions alone.

The MIR scale provides an estimate of the maximum amount of ozone potentially formed from a VOC emission under the tropospheric conditions where ozone is most sensitive to VOCs. The conditions in the ozone attainment run are far less sensitive to VOC emissions, but although absolute VOC reactivity will decrease significantly, the relative reactivity differences between various VOCs will remain relevant.

As shown in the data in Attachment D, VOCs from consumer products have a weighted-average MIR of 1.5, well below the average for all emissions sources. Many mobile sources of VOCs have very high reactivity, including Aircraft (6.8), Farm Equipment (5.4), Heavy Duty Diesel Urban Buses (5.5), Heavy Duty Diesel Trucks (5.5), Light Duty Diesel Trucks (5.5), Medium

CSPA Comments on the DPEIR for the 2012 AQMP
 October 23, 2012
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Duty Diesel Trucks (5.5), Ships and Commercial Boats (5.3) and Trains (5.5). VOC emissions from these sources cause three to five times as much ozone formation pound-per-pound as consumer product VOCs. The VOC sources with the largest potential ozone impacts in 2000 also exhibited very high reactivity profiles, including Light Duty Passenger Cars (3.7), Light Duty Trucks (3.8), and Off-Road Equipment (4.6).

The data from this study provide important evidence that very significant differences exist between the relative ozone impacts of equal amounts of VOC emissions from various sources. Generally speaking, mobile source VOC emissions create three to five times as much ozone as equal amounts of VOC emissions from most stationary and area sources, including consumer products. These significant differences in relative photochemical reactivity of various VOC sources must be taken into account in choosing and implementing effective, workable and cost-effective ozone attainment strategies.

- b. The U.S. Environmental Protection Agency's (EPA's) 2005 Interim Guidance on SIP development provides clear instructions that relative reactivity and ozone formation potential should be considered in SIPs, and that alternative fates and availability also should be considered.

EPA provided clear guidance to states in 2005 that differences in VOC reactivity should be considered in the development and implementation of SIPs. In its "Interim Guidance on Control of Volatile Organic Compounds in Ozone State Implementation Plans,"⁵ EPA "...encourages States to consider recent scientific information on the photochemical reactivity of volatile organic compounds (VOCs) in the development of State implementation plans (SIPs) designed to meet the national ambient air quality standard (NAAQS) for ozone."⁶ That guidance also states that, "By distinguishing between more reactive and less reactive VOCs, it should be possible to decrease ozone concentrations further or more efficiently than by controlling all VOCs equally."⁷ The Interim Guidance goes on to provide the specific guidance regarding factors that States should consider, including the following:

- The potential for alternative (non-atmospheric) fates and limited availability for ozone-forming photochemical reactions.
- Prioritizing control measures using reactivity metrics.
- Targeting emissions of highly reactive VOCs with control measures.
- The fate of VOC emissions and their availability for atmospheric reactions.

As we have demonstrated in previous comments, new data has shown that not only do LVPs have limited if any ability to contribute to VOC emissions and ozone formation, but many VOCs also have limited availability due to alternative environmental fates. (See Attachment B.) In regard to this important issue, the Interim Guidance, EPA instructs that:

⁵ 70 *Fed. Reg.* 54046-51 (Sept. 13, 2005).

⁶ *Id.* at 541046, col. 3.

⁷ *Id.* at 541047, col. 2

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2-14

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October 23, 2012
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States should also consider emerging research on the actual availability of VOCs for atmospheric reaction. In estimating VOC emissions, especially from coatings, solvents, and consumer products, it is often assumed that the entire volatile fraction is emitted and available for photochemical reaction, unless captured by specific control equipment. In some situations, however, otherwise volatile compounds may be trapped in liquid or solid phases or adhere to surfaces such that they are not actually released to the atmosphere. Once emitted into the atmosphere, VOCs may also be scavenged by rain, form particles, or deposit on surfaces. Taking this behavior into account should lead to more accurate VOC emissions inventories and photochemical modeling. It may also allow States to consider volatility thresholds or other approaches designed to reflect atmospheric availability in certain types of regulatory programs.

2-14
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CSPA urges the AQMD to follow the 2005 Interim Guidance and consider the relative reactivity and ozone impacts and atmospheric availability of various compounds to determine which, if any, VOC control measures are considered for inclusion in any revised and updated ozone AQMP.

- c. Earlier scientific studies also document the fact that the low-reactivity of VOCs used in consumer products have negligible impacts on peak ozone levels.

Earlier studies also clearly demonstrated the minimal impact of consumer product VOCs on ozone non-attainment in California. Subsequent to the statewide revision of the California SIP in 1994, CSPA and another trade association funded an air quality modeling study to determine the specific role of consumer products in ozone attainment in both South Coast and in Sacramento regions. That study, "Impact of Consumer Products on California's Air Quality"⁸ used the exact Urban Airshed Model (UAM), inventories and meteorology utilized in the attainment demonstrations for the 1994 SIP. (See Attachment C.)

The study compared UAM outputs for two scenarios in the South Coast Air Basin:

- The attainment demonstration in the SIP, which included an 85 percent reduction in the VOC emissions from consumer products, and demonstrated attainment with the one-hour ozone standard in 2010; and,
- The exact same modeling run with only a 30 percent reduction in consumer products VOC emissions (the reduction already obtained by ARB regulations adopted prior to 1994).

2-15

The results showed that both scenarios demonstrated attainment of the one-hour ozone standard of 0.12 ppm in both South Coast and Sacramento. In both airsheds, the additional consumer product emissions, despite their very significant mass, had such small impacts on peak ozone formation that insufficient ozone was formed to cause non-attainment. This result was attributed to both the low reactivity of the consumer product emissions, and the geographic distribution of those emissions that lessened impacts on peak ozone levels. Aerosol consumer products exhibit especially low reactivity, since aerosol propellants tend to among the least reactive of all VOCs in the emissions inventory.

⁸ Sierra Research Report No. SR97-07-01 (July 1997) and addendum Report No. SR98-03-01 (March, 1998). See Attachment C.

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 October 23, 2012
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Unfortunately, CSPA was not able to obtain the underlying data from the AQMD to conduct a similar study using the computer model, inventories and meteorology utilized in the attainment demonstrations for the 2003 AQMP, but we believe that a similar result would have been obtained, especially considering that regulations promulgated by the ARB since 1994 provided additional reductions in consumer products VOC emissions.

The 1997 attainment remodeling study was conducted under 2010 attainment conditions that remained highly sensitive to overall VOC emissions. Therefore, the results of the study demonstrated that even under highly VOC-limited conditions where ozone formation is highly sensitive to overall VOC levels, ozone formation was *not* at all sensitive to consumer product VOC emissions. The attainment demonstration modeling for the 2007 AQMP, on the other hand, was under atmospheric conditions that are far more NO_x-limited, and far less sensitive to overall VOC emissions. We therefore had reason to expect that consumer product VOC emissions should have even less relative impact on ozone attainment in the 2023 attainment scenario.

CSPA believes that the results of these types of studies provide important information to support the development of effective ozone attainment strategies. It is important that the control measures in the SIP be focused primarily on those emissions sources (primarily NO_x) that play a significant role in ozone non-attainment in the South Coast.

The need to carefully consider the relative ozone impacts of various emission sources provides further reasons that the AQMD's commitment for future emissions reductions in the "black box" should not be allocated to consumer products. CSPA urges the AQMD to consider these data and adhere to the EPA 2005 Interim Guidance,⁹ which would result in only including commitments of for reductions in emissions sources that are actually necessary for ozone attainment in the South Coast Air Basin.

2-15
 Con't

SUMMARY AND CONCLUSIONS

CSPA appreciates the opportunity to comment on the DPEIR. We support the AQMD's goal of improving air quality in the South Coast Air Basin. However, the proposed VOC emission reduction measures for consumer products are neither necessary nor feasible. Moreover, these proposed measures would harm the consumers and businesses who rely on our products to provide a clean and healthy environment in which to live and work.

Additional reduction measures for consumer products or other low-reactivity sources are not needed for demonstrating attainment of the federal one-hour and eight-hour ozone standards. In addition, as documented in CSPA's earlier comments, reducing LVP materials in consumer products will have little or no impact in VOC emissions an ozone formation. Since the control measures impacting consumer products are *not* feasible, necessary or cost-effective, the AQMD should not include these measures in the final 2012 AQMP.

2-16

CSPA therefore urges AQMD to defer all ozone revisions in the 2012 AQMP until next year to allow time for a final EPA SIP Call rule to be issued, and to provide time to adequately address the numerous issues raised by CSPA and others in these comments. CSPA is willing to continue

⁹ 70 Fed. Reg. 54046-51 (Sept. 13, 2005).

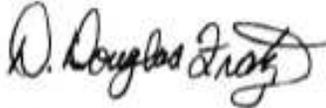
CSPA Comments on the DPEIR for the 2012 AQMP
October 23, 2012
Page 7 of 7

working with AQMD next year to develop an appropriate, feasible and effective attainment plan for ozone for incorporation into the State Implementation Plan for Ozone.

} 2-17
Con't

If you have any questions, please contact us at (202) 872-8110.

Respectfully submitted,



D. Douglas Fratz
Vice President, Scientific & Technical Affairs



Joseph T. Yost
Senior Director, Strategic Issues Advocacy



Kristin Power
Director, State Affairs – West Region

Attachments (4)

cc: Linda C. Murchison, Ph.D., Air Resources Board
Kurt Karperos, P.E., Air Resources Board
Carla D. Takemoto, Air Resources Board
CSPA Air Quality Committee and Task Forces
Laurie E. Nelson, Randlett Nelson Madden Associates

Attachment A - CSPA Comments on the DPEIR for the 2012 AQMP
Report No. SR2007-09-03



**Assessment of the Need for
Long-Term Reduction in
Consumer Product Emissions
in the South Coast Air Basin**

prepared for:

Consumer Specialty Products Association

September 12, 2007

prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95811
(916) 444-6666

2-18
This entire
document is
included as
comment
#2-18

Attachment B - CSPA Comments on the DPEIR for the 2012 AQMP

Scientific Critique of South Coast Air Quality Management District Paper

“Non-Volatile, Semi-Volatile, or Volatile:

Redefining Volatile for Volatile Organic Compounds”

October 2012

ABSTRACT

A draft paper entitled “Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds” authored by Uyên- Uyên T. Võ and Michael P. Morris is subjected to a scientific critique. The paper presents ambient evaporation data for organic compounds of varying volatility that is portrayed as drawing into question the regulatory criteria and test methods used to determine what low-vapor-pressure compounds are exempted from the regulatory definition of “Volatile Organic Compound” (VOC) for various uses. The paper fails to grasp the crucial differences between the technical term “volatile” and the regulatory term “VOC”, which relates to the ability to contribute significantly to formation of ozone in tropospheric ambient air through vapor-phase photochemistry. In this critique, the scientific concepts and studies are noted that limit the ability of low-volatility organic compounds to contribute significantly to tropospheric ozone formation and refute the arguments in the draft paper.

SCIENTIFIC CRITIQUE

“Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds” authored by Uyên- Uyên T. Võ and Michael P. Morris was obtained from the authors in the form of a draft paper dated August 31, 2012, as well as a presentation dated June 21, 2012, that was presented at an Air & Waste Management Association meeting. This scientific critique was conducted by a number of chemists and environmental scientists in the consumer products industry.¹

¹ Scientists involved in developing this critique included representatives from the Consumer Specialty Products Association, Personal Care Products Council, American Chemistry Council, American Cleaning Institute, American Coatings Association, Automotive Specialty Products Alliance, National Aerosol Association, International Sanitary Supply Association, and International Fragrance Association North America.

2-19
This entire document is included as comment #2-19

Attachment C - CSPA Comments on the DPEIR for the 2012 AQMP

Report No. SR97-07-01

Impact of Consumer Products on California's Air Quality

prepared for:

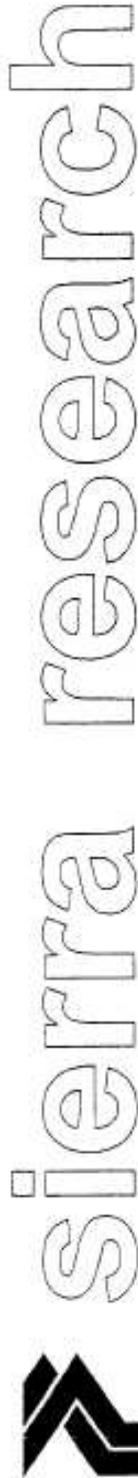
**Chemical Specialties Manufacturers
Association and the
Cosmetic, Toiletry, and Fragrance
Association**

July 1997

prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95814
(916) 444-6666

2-20
This entire
document
comprises
comment
#2-10 and
is available
upon
request



Responses to Comment Letter #2
Consumer Specialty Products Association (CSPA) – Joe Yost (10/23/2012)

- 2-1 This comment notifies the SCAQMD that a comment letter with three attachments is submitted. No further response is necessary.
- 2-2 This comment notifies the SCAQMD that the comments contained in the letter pertain to the Draft Program EIR for the 2012 AQMP. This comment and footnote #2 also provide background information describing the nature of the commenter’s business. Footnote #3 provides a general description of the contents of the Draft Program EIR for the 2012 AQMP. No further response is necessary.
- 2-3 This comment notifies the SCAQMD that previous comments submitted, relative to the Initial Study for the Draft Program EIR for the 2012 AQMP on July 18, 2012 [sic] and relative to the Draft Program EIR for the 2012 AQMP on October 9, 2012, should be incorporated by reference. (Note that the comment letter relative to the Initial Study for the Draft Program EIR for the 2012 AQMP was dated July 19, 2012.)
- 2-4 This comment reiterates previous comments suggesting that control measures for consumer products and ozone control measures should not be included in the 2012 AQMP. See response to comment #2-8.
- 2-5 With regard to the one-hour ozone SIP call, a requirement for the submittal of an attainment demonstration for the revoked one-hour ozone standard has been proposed by U.S. EPA, and the submittal will be due by early 2014. Since the emissions inventory and control strategy has already been developed for the 2012 AQMP, and because attaining the one-hour standard can rely on the same strategy as the federal eight-hour ozone Plan, SCAQMD staff was able to complete an attainment demonstration for the one-hour ozone standard as an Appendix to the 2012 AQMP. Moreover, no additional measures were identified. The comment expresses a preference to delay the submittal of the one-hour ozone attainment demonstration, taking the full one year time frame provided by U.S. EPA. However, SCAQMD staff believes that there is no reason to wait until the one-hour ozone attainment demonstration is due given that no new measures are being proposed and the work has been completed. Utilizing the current 2012 AQMP emissions inventory, modeling framework, and public process is the most efficient use of resources and time.
- 2-6 Reducing ozone precursor emissions, both NO_x and VOC emissions, is necessary to continue making progress in attaining the federal one-hour ozone standard (revoked) and the federal eight-hour ozone standard. The set of isopleths provided in the June 2012 STMPR meeting was based on the initial 2023 baseline inventory and preliminary modeling to illustrate the preferred path to attaining the ozone standard. Subsequent modeling sensitivity simulations that varied the VOC emissions by approximately 12 tons per day (across the board reductions) resulted in a 1.0 ppb movement in the eight-hour future design projection with lower VOC resulting in lower ozone. The current draft 2012 update to the 2007 AQMP eight-hour ozone projected 2023 future year design value placed several Basin sites within 1-2 ppb of the U.S. EPA threshold for demonstrating attainment. (U.S. EPA’s threshold was set at 84.4 ppb with rounding.) Far from being

insignificant, a 1.0 ppb change in the eight-hour ozone would jeopardize the attainment demonstration.

- 2-7 SCAQMD staff appreciates the efforts by CSPA to bring together a coalition of industry scientists to review the SCAQMD Paper “Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds,” U. Vø and M. Morris, August 2012. Implementing Control Measure CTS-04 would require reevaluating the criteria established for LVP-VOCs by relying on scientific data and, therefore, the information provided in the critique supplements the scientific data available for consideration.

Although lower volatility compounds have limited vapor-phase availability, the study cited indicates that many LVP-VOC compounds are indeed non-volatile limiting their ability to contribute to ozone formation. However, the paper also demonstrates that many compounds that qualify as LVP-VOC under the existing criteria are volatile and semi-volatile, thus, available to participate in ozone formation and indeed participating in ozone formation due to their relatively higher Maximum Incremental Reactivity values.

Current U.S. EPA, CARB and SCAQMD emissions inventory and photochemical air quality models include speciation profiles that account for total organic gases (TOGs), including reactive compounds, unreactive and exempt compounds, as well as LVP-VOC compounds. Modeling results for ozone non-attainment areas have demonstrated that even compounds with low photochemical reactivity or LVP-VOCs contribute to photochemical ozone formation and not including these compounds would compromise the ozone attainment demonstrations. SCAQMD staff recognizes that some multi-media models that incorporate partitioning concepts such as “Atmospheric Availability” or “Environmental Fate” may have been recently developed; however, current peer-reviewed ambient ozone models used by CARB and SCAQMD do not include such partitioning concepts. SCAQMD staff will continue to work with USEPA and CARB staff on ozone model improvements, especially if additional peer-reviewed environmental fate and atmospheric availability studies justify incorporation into these predictive models.

The commenter attempts to justify the LVP-VOC exemption by noting that LVP-VOC compounds are predominantly partitioned into other environmental media (soil, water, etc.). The conclusion being that these products do not go into the air but instead are biodegraded. Yet this observation is true for nearly every chemical (LVP-VOC and non-LVP-VOC). Despite this partitioning, some fraction of the chemical enters the atmosphere and contributes to ozone formation. Contrary to the assertions made by the commenter, the critique does not provide evidence that LVP-VOC compounds are any different than traditional VOC compounds with respect to environmental partitioning. In fact, of the compounds studied (LVP-VOC and non-LVP-VOC) the highest predicted partitioning ratios into air are for some LVP-VOCs (22 percent for Light Distillate). It appears that there is no correlation between partitioning to air and LVP-VOC status. Furthermore, it is of concern that the current regulatory methodology may be requiring the transition from traditional VOC compounds (such as isopropanol) to LVP-VOCs (such as Light Distillate) with similar evaporation profiles, higher MIR values and more than four times higher predicted air partitioning factors.

SCAQMD staff concurs that the current VOC emissions inventory for consumer products should be reevaluated to more accurately and precisely determine their contribution to ozone formation using the best available scientific data and methodologies, including environmental chamber studies and evaporation studies using fully formulated products. However, because consumer products represent the largest single source of VOC emissions (under current methodologies), uncertainty about the inventory because of the LVP-VOC exemption, and the current regulatory structure may be limiting the environmental benefits sought after in the current CARB regulation, SCAQMD staff believes that it is imperative that Control Measure CTS-04 be included in the 2012 AQMP. Furthermore, Control Measure CTS-04 has been revised to include the commenter's suggestions pertaining to additional studies and refined emissions inventory.

It should be noted that Attachment B, cited in this comment, does not discuss Control Measure CTS-04 in any way, but instead critiques a paper prepared by SCAQMD staff regarding defining volatile compounds. It appears that this critique is included in an attempt to further demonstrate why VOC emission reductions are not necessary to attain the ozone standards (see also response to comment #2-19).

The comment does not explain why the ozone attainment demonstration is not appropriate. However, the comment states that working on the ozone part of the 2012 AQMP should be delayed. In light of the SIP call by U.S. EPA (see response to comment #2-5), SCAQMD staff disagrees.

- 2-8 Consistent with the previous AQMP, the current analysis shows that approximately 65 percent of additional NO_x emissions reductions, beyond already adopted rules and measures, will be needed to meet the eight-hour ozone standard of 80 ppb in 2023. The percent reduction in VOC emissions to meet the eight-hour ozone standard of 80 ppb in 2023, based on the 2007 AQMP carrying capacity projections, is approximately four percent. The Basin can only demonstrate attainment of the eight-hour standard by using the CAA §182 (e)(5) provision allowing for long-term measures that anticipate the development of new technologies or improving of existing control technologies. This CAA provision requires that these long-term measures be specifically identified at least three years prior to the attainment year (2020).

With less than eight years remaining to identify these so-called “black box” emissions reductions, it is imperative to move forward with the identification and development of all feasible specific measures to achieve these reductions as soon as possible. If progress is delayed, there will be even less time to develop and implement strategies before the looming deadlines, and thus the resulting necessary measures could be more burdensome and disruptive. Delaying progress will also provide less certainty and lead time to the regulated community for planning compliance with potential new regulatory requirements. The considerable time it takes for new technologies to be developed, assessed and implemented widely, especially in the mobile source sector, also underscores the need to begin immediately. Note that while this Plan commits to the adoption of several ozone measures in the near-term, the implementation date and emissions reduction commitments are deferred until 2020 or beyond.

Recent litigation regarding U.S. EPA approvals of previous SIPs has focused on the reliance on a relatively large “black box” to demonstrate attainment and the short time frame available to develop and deploy potential new technologies. The SCAQMD believes it is important to demonstrate progress towards ozone attainment by making commitments for additional emissions reductions that reduce the size of the “black box” commitments. In U.S. EPA’s comment letter on the Draft 2012 AQMP (August 30, 2012), they state that they “fully support the SCAQMD’s inclusion in the 2012 AQMP of updates on the implementation of control measures and emission reduction commitments relied upon in the South Coast 2007 AQMP to demonstrate expeditious attainment of the 1997 eight-hour ozone NAAQS. We urge the SCAQMD to continue working closely with EPA staff to identify the specific near-term and long-term control measures that will fulfill the NO_x and VOC emission reduction commitments contained in the SIP-approved South Coast 2007 eight-hour ozone plan, and to develop appropriate methodologies for calculating the emission reductions attributed to each such measure.”

Furthermore, U.S. EPA recently proposed to require a new one-hour ozone SIP for the Basin. In order to demonstrate attainment with this revoked standard by 2022, all feasible measures must be included in the SIP. Making enforceable emissions reductions commitments based on specific measures as they are identified is the best way to demonstrate that the SCAQMD is dedicated to realizing the emission reductions necessary to achieve the eight-hour and one-hour ozone standards. Future AQMPs would need to identify further specific measures and associated emissions reductions that will allow the “black box” commitments to shrink to zero by 2020.

Finally, it should be noted that Attachment C is an evaluation of consumer products on air quality prepared in 1997, so it does not provide comments specifically on either the 2012 AQMP or the Draft Program EIR. See response to comment #2-20 regarding the specific issues raised in Attachment C.

- 2-9 The commenter states that he appreciates the fact that the Draft Program EIR included Alternative 4 – PM_{2.5} Emissions Reduction Strategy Only, but states that it is flawed because, as asserted by the commenter, it does not include consideration of deferral of the ozone update CAA §182 (e)(5) block box measures from the 2007 AQMP (in particular 2007 AQMP Control Measure SCLTM-03 – Consumer Products. With regard to continued consideration of ozone reduction strategies, SCAQMD staff disagrees that Alternative 4 is flawed because, as explained in the description of Alternative 4, preparing a PM_{2.5} only plan means that the currently adopted 2007 AQMP, which is an ozone and one-hour PM_{2.5} Plan, remains in effect. This means that 2007 AQMP Control Measure SCLTM-03 continues to be a long-term control measure that could still be promulgated as a rule or regulation. By acknowledging that the ozone portion of the 2007 AQMP would remain in effect if Alternative 4 is ultimately adopted, the analysis presents a more realistic and conservative analysis of potential environmental impacts than would be the case by artificially ignoring the currently adopted 2007 AQMP. The SCAQMD cannot remove measures from the existing approved 2007 AQMP without substituting measures that would be equally effective. With regard to the need for further VOC emission reductions, see responses to comments #2-6 through #2-8. With regard to deferral of the one-hour ozone SIP submittal, see responses to comments #2-5 and #2-8.

- 2-10 The comment states that Alternative 3 - Greater Reliance on NO_x Emissions Reductions, only differs from the 2012 AQMP by eliminating Control Measure BCM-01, but the concept of accelerated NO_x reductions, instead of VOC reductions should be explored further. Although Alternative 3 does not include Control Measure BCM-01, the rest of the characterization of the alternative is incorrect. Alternative 3 includes a control measure that would include incentives for NO_x emission reductions from accelerated implementation of CARB's existing truck and bus regulation. The control measure assumes that the rate of compliance with the existing requirements by 2017 would be double the compliance rate estimated by CARB, which would be approximately an additional 5,000 compliant trucks. Similarly, Alternative 3 includes a NO_x control measure that would include incentives for accelerated compliance with CARB's off-road diesel vehicle regulation. The control measure assumes that the rate of compliance with the existing regulation by 2021 would occur in 2017, which is a doubling of the compliance rate estimated by CARB. The off-road control measure would result in approximately an additional 19,344 compliant off-road vehicles. For the emission effects of Alternative 3 compared to the 2012 AQMP, see Tables 6-14 through 6-16 in the Draft and Final Program EIRs. Based on the on-road and off-road control measures described here for Alternative 3, accelerated NO_x emission reductions have been explored as requested by the comment.
- 2-11 With regard to the comment relative to reasons for only going forward with PM_{2.5} reduction strategies, see response to comment #2-8 which provides the reasons to include ozone measures in the 2012 AQMP as required to demonstrate attainment of the 24-hour PM_{2.5} standard. The long-term ozone precursor reduction strategies demonstrate attainment of the ozone standards at all the air quality monitoring stations throughout the Basin by 2023. Modeling analysis shows that significant NO_x emissions reductions are the main path to attaining the eight-hour ozone standards in the Basin. Therefore, the ozone strategy focuses primarily on NO_x reductions. However, VOC emissions reductions can also be effective in improving the rate of progress towards attainment of the ozone standards, especially in the western portions of the Basin. Furthermore, there is a significant health benefit to meeting the ozone standards as soon as possible in as many areas of the Basin as possible. While the current eight-hour ozone design value site is at Crestline in the San Bernardino Mountains, projections for 2023 show that the design value site will be at Glendora in the San Gabriel Valley to the west. As shown in the 2023 baseline eight-hour ozone NO_x/VOC isopleths for Glendora and other western sites presented in the attachment to Appendix V, VOC reductions will help to lower ozone concentrations in the San Gabriel Valley and Western portions of the Basin. This is true near the level of the eight-hour ozone standards, but is even more significant along the path to attainment. This is due to the higher VOC/NO_x ratios projected to occur in future years, especially in the western Basin.

Based on the above information, short-term VOC controls (through 2020) will help offset the impact of the increased VOC/NO_x ratio in the impacted areas of the Basin, such as the San Gabriel Valley, that are immediately downwind of the primary emissions source areas. As such, a nominal amount of VOC reductions are proposed in the Draft 2012 AQMP. The proposed VOC control measures in the 2012 AQMP are based on implementing all feasible control measures through the application of available technologies and best management practices, while seeking a fair share reduction from

both mobile and stationary sources. As zero and near-zero technologies are implemented for mobile sources to reduce NO_x emissions, concurrent VOC reductions from mobile sources are expected. Thus, stationary sources must continue to achieve their fair share of VOC reductions in the future. This plan proposes a modest six tons per day of VOC emissions reductions out of a total 28 to 30 tons per day of VOC reductions needed for basin-wide attainment in 2023.

- 2-12 See responses to comments #2-6 and #2-7 for a discussion of the reasons for including consumer products as an ozone control measure and discussion on MIR control values of LVP-VOCs and VOCs found in consumer products, respectively. The paper, “Non-Volatile, Semi-Volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds,” U. Vø and M. Morris, August 2012, includes MIR values for the LVP-VOC samples studied. The MIR values for LVP-VOCs are comparable to traditional VOCs and widely used LVP-VOCs (benzyl alcohol, propylene glycol and ethylene glycol) have MIR values significantly higher than isopropyl alcohol and similar to 2-butoxyethanol, two traditional VOC chemicals for which the LVP-VOCs were meant to replace.
- 2-13 SCAQMD staff is concerned that reformulation of products by substituting LVP-VOCs for other solvents considered to be VOCs may not achieve the ozone reduction benefits anticipated by the Consumer Products Regulation (CPR). Further, considering the increasing use of LVP-VOCs used in formulations to comply with the CPR may offset any perceived benefits, especially since their relative evaporation rates under ambient conditions and maximum incremental reactivity (MIR) values can be much higher than ethane’s MIR value, the “bright line” used by U.S. EPA to distinguish between VOCs and negligibly reactive compounds.

The research project conducted in 2002 by Sierra Research did not include changes to the speciation of chemicals resulting from the last five amendments to the CPR, the adjustments made to MIR values over the last decade and may not have included LVP-VOCs in the inventory and speciation. However, even disregarding these factors and using the stated weighted-average MIR values cited in the comment letter, the MIR weighted inventory for consumer products still exceeds those from Passenger Vehicles, Light Duty Trucks and Medium Duty Trucks; all categories for which a host of control measures are included in the AQMP. Consumer product emissions, even when allowing for weighted-average MIR values cited by the comment, continue to be a major source of VOC emissions.

- 2-14 SCAQMD staff supports using recent scientific data and emerging research on the actual availability of VOCs for atmospheric reaction. The guidance document referenced by the commenter notes that a reactivity approach is more difficult to develop and implement than traditional mass-based approaches because reactivity-based programs carry the extra burden of characterizing and tracking the full chemical composition of VOC emissions. U.S. EPA encouraged all interested parties to continue to work through the Reactivity Research Working Group to improve the scientific foundation for reactivity-based regulatory approaches. SCAQMD staff committed to studying the effects of a reactivity-based approach by actively participating in the North American Research Strategy for Tropospheric Ozone (NARSTO) work related to reactivity. SCAQMD staff participated in the Reactivity Industry Working Group (RIWG) in 2009-2010 with leading scientists

from industry, government and public groups to identify issues surrounding reactivity-based regulatory strategies and consider multi-pollutant impacts in the hope of determining a path forward to addressing issues (Moore, B., U.S. EPA, Reactivity Summit Brief Summary, July 2009). However, despite these efforts, no resolution was reached regarding downwind impacts, toxics and particulate from secondary organic aerosols, and enforceability associated with limitations in analytical test methods capable of differentiating petroleum distillates. Lastly, the final RIWG meeting held in May 2010 resulted in U.S. EPA staff making a determination that additional review was necessary before any specific guidance or ‘toolkit’ can be made available to states and local agencies, and that this potential guidance is not designated as a high priority item for the Office of General Counsel of U.S. EPA. To date, no additional guidance has been issued by the U.S. EPA.

Factors (alternative fates and limited availability, using reactivity metrics, targeting highly reactive VOCs) cited in the 2005 U.S. EPA Guidance document referenced by the commenter, are in no way considered in the current LVP-VOC exemption in the CPR. CARB and SCAQMD staff will continue to work closely with interested stakeholders, including consumer product manufacturers, using the best scientific data to revise the LVP-VOC exemption. Moreover, given that the “black box” requires additional VOC reductions beyond those available with existing technology, SCAQMD needs to reduce VOCs from all feasible sources, even if their reactivity is low compared to high reactivity VOCs.

See response to comment #2-7 with regard to the relationship between reactivity and ozone production. For a discussion of the reasons for including consumer products as an ozone measure, see response to comment #2-6.

- 2-15 See response to comment #2-7 with regard to the relationship between reactivity and ozone production. For a discussion of the reasons for including consumer products as an ozone measure, see response to comment #2-6.
- 2-16 See responses to comments #2-6 and #2-7 regarding the necessity and feasibility of VOC reductions from consumer products.
- 2-17 See response to comment #2-5 regarding the need to adopt ozone reduction strategies in the 2012 AQMP.
- 2-18 This comment letter has the following document attached: Attachment A – Sierra Research, Inc. 2007, *Assessment of the Need for Long-term Reduction in Consumer Product Emissions in the South Coast Air Basin*, Prepared for the Consumer Specialty Products Association, September 12. The document evaluated control measures from the 2007 AQMP in an attempt to demonstrate why VOC emission reductions from consumer products are not necessary, so the information it contains is not the most current information available. This document does not specifically include comments on the 2012 AQMP, but attempts to demonstrate why VOC emission reductions are not necessary to attain the ozone standards. With regard to the need for VOC emission reductions, see responses to comments #2-6 and #2-7. In addition, there are no comments on the environmental analysis, mitigation measures, or the alternatives analysis in the Draft Program EIR for the 2012 AQMP. Therefore, no further response is necessary. Because this document does not provide comments or other information on

the 2012 AQMP or the Draft Program EIR for the 2012 AQMP, the full text of this document has not been included in Appendix G; instead, only the cover page is included. The full document comprising Attachment A to this letter, however, is available upon request.

2-19 This comment has the following document attached: Attachment B – *Scientific Critique of the South Coast Air Quality Management District Paper, “Non-volatile, Semi-volatile, or Volatile: Redefining Volatile for Volatile Organic Compounds*. No authors are listed for this critique, but footnote #1 on page 1 states that the scientists involved in the critique include representatives from CSPA, Personal Care Products Council, etc. This document does not comment on the 2012 AQMP, but critiques a paper prepared by SCAQMD staff regarding defining volatile compounds. It appears that this critique is included in an attempt to further demonstrate why VOC emission reductions from consumer products are not necessary to attain the ozone standards. With regard to the need for VOC emission reductions, see responses to comments #2-6 and #2-7. In addition, there are no comments specifically on the environmental analysis, mitigation measures, or the alternatives analysis in the Draft Program EIR for the 2012 AQMP. Therefore, no further response is necessary. Because this document does not provide comments or other information on the 2012 AQMP or the Draft Program EIR for the 2012 AQMP, the full text of this document has not been included in Appendix G; instead, only the cover page is included. The full document comprising Attachment B to this letter, however, is available upon request.

2-20 This comment letter also has the following document attached: Attachment C – Sierra Research, Inc. 1997, *Impact of Consumer Products on California’s Air Quality*, Prepared for the Chemical Specialties Manufacturers Association and the Cosmetic, Toiletry, and Fragrance Association, July 19. This document was prepared in 1997 and makes many of same points already expressed in the comment letter as indicated in the following paragraphs.

The paper concludes that VOC emissions are overestimated in the 1994 SIP. The implication is that VOC emissions from consumer products are overestimated in the current inventory. See response to comment #2-7 which indicates that consumer products represent the largest single source of VOC emissions. Response to comment #2-7 notes, however, that there is uncertainty about the VOC inventory for consumer products because of the current LVP-VOC exemption. Finally, evidence is accumulating that compared to VOC emissions from other sources, VOCs from consumer products have similar evaporation profiles, higher MIR values and more than four times higher predicted air partitioning factors.

The paper also asserts that VOC emissions from consumer products are less photochemically reactive. See response to comment #2-7.

The paper asserts that VOC emissions from consumer products have far less impact on air quality in California than VOC emissions from other sources. See response to comment #2-7.

The paper asserts that no further regulations of consumer products are necessary. See responses to comments #2-6 and #2-7 for a discussion of the reasons for regulating consumer products.

Finally, due to its size, the full text of this document has not been included in Appendix G; instead, only the cover page is included. The full document comprising Attachment C to this letter, however, is available upon request.

Letter #3

Lori Moore

From: Steve Smith
Sent: Wednesday, October 31, 2012 7:07 AM
To: Steve Smith
Subject: FW: Comments on Draft Environmental Impact Report for 2012 AQMP
Attachments: 2012-10-23 LF JWA to SCAQMD Re Draft EIR.pdf

From: Rainee Fend [<mailto:rfend@gdandb.com>]
Sent: Tuesday, October 23, 2012 4:28 PM
To: Jeffrey Inabinet
Cc: Lori Ballance; Michael Krause; shawn.nelson@hoa.ocgov.com; bob.franz@hoa.ocgov.com; amurphy@ocair.com; Loan Leblow; Wiercioch, Courtney; lserafini@ocair.com
Subject: Comments on Draft Environmental Impact Report for 2012 AQMP

Mr. Inabinet,

Please see the attached comment letter submitted on behalf of the County of Orange in its capacity as the owner and operator of John Wayne Airport, Orange County regarding the Draft Environmental Impact Report for the 2012 Air Quality Management Plan.

3-1

Please contact Ms. Ballance with any questions at (760) 431-9501.

Thank you,

Rainee L. Fend
Legal Assistant to Lori D. Ballance
760.431.9501
www.gdandb.com

G | D | B Gatzke Dillon & Ballance LLP
L A W Y E E R S

NOTICE: This communication and any attached document(s) are privileged and confidential. In addition, any disclosure of this transmission does not compromise or waive the attorney-client privilege or the work product doctrine. If you have received this communication in error, please delete it and contact me at rfend@gdandb.com.



October 23, 2012

By Electronic Mail

Mr. Jeff Inabinet
(c/o Office of Planning, Rule Development, and Area Sources/CEQA)
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, California 91765-4182
jinabinet@aqmd.gov

Re: *Comments on Draft Environmental Impact Report for 2012 Air Quality Management Plan*

Dear Mr. Inabinet:

This letter is submitted on behalf of the County of Orange ("County") in its capacity as the owner and operator of John Wayne Airport, Orange County ("JWA"). This letter contains the County's written comments on the Draft Program Environmental Impact Report ("Draft PEIR") for the proposed 2012 Air Quality Management Plan ("2012 AQMP"), issued by the South Coast Air Quality Management District ("SCAQMD" or "District"). The County appreciates the opportunity to provide comments on the Draft PEIR.¹

3-2

Our comments on the Draft EIR are intended to serve the following principal objectives:

1. First, we appreciate the opportunity to continue to work constructively and cooperatively with the SCAQMD in evaluating and developing realistic airport emissions inventories and aviation forecasts for the proposed 2012 AQMP and analyzing the potential environmental impacts of the proposed measures. We hope that our past comments, our comments in this letter, and our continued cooperation in this process will allow us to make meaningful contributions toward resolving and addressing the difficult and complex airport regulatory issues associated with air quality in the Basin.
2. Second, we are concerned with a number of the responses that the SCAQMD provided to our July 27, 2012, comment letter on the Notice of Preparation and Initial Study ("NOP/IS") for the proposed 2012 AQMP. These responses warrant further comment and discussion at this time.

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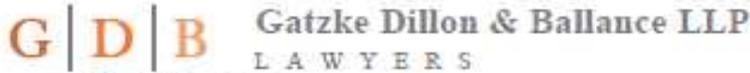
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¹ The County has previously submitted comment letters on the Notice of Preparation of a Draft Program EIR, the draft 2012 AQMP and The Integra Report. Please see enclosed comment letters to Mr. Steve Smith from Ms. Lori Ballance, dated July 27, 2012, to SCAQMD from Mr. Alan Murphy, dated August 31, 2012, and to SCAQMD from Mr. Alan Murphy, dated September 28, 2012.

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3. Third, there are important questions and issues which must be addressed in the EIR which have not been addressed, including the accuracy of the baseline emissions inventory, whether the lack of clarity regarding the proposed emission control measures prevents the EIR from meeting CEQA's informational disclosure standards, whether this lack of clarity renders the project description so uncertain that the impact analysis is speculative, and whether emission reductions associated with these measures can actually be quantified because their parameters are so uncertain. Without careful attention and response to these important issues, the District will be unable to provide an EIR that meets the CEQA requirements and will be unable to structure appropriate and effective air quality regulations which might affect the operations of the air carrier airports in the Basin while minimizing the environmental impacts of those regulations. 3-5
4. Fourth, and finally, we continue to have a number of concerns and questions regarding Control Measures MCS-03 and ADV-07 as well as the long term black box measures and the proposed regulation of ultrafine particles that require further comment and discussion. 3-6

GENERAL COMMENTS

EMISSION INVENTORY

The draft AQMP provides an emission inventory using 2008 as the baseline year. In our July 27, 2012, written comments to the District on the NOP/IS, JWA expressed concern regarding the accuracy of the baseline emissions inventory assumptions utilized in the CEQA analysis for the 2012 AQMP.² In order to help ensure the accuracy of the baseline emissions inventory assumptions for JWA, JWA provided the District with aircraft activity data and airport specific data for JWA for incorporation into the 2012 AQMP and requested that the baseline emissions inventory be updated and modified to incorporate this new information. In response to the County's request, the District indicated that staff "... will consider the request ... and determine the magnitude of the change from the information provided in the Draft 2012 AQMP." We want to confirm by this letter that staff will include all of the information provided by JWA to the District with respect to the aircraft activity data and airport specific data for JWA, including, but not limited to, the recent information the County provided after reviewing the Integra Environmental Consulting, Inc. Report which provides the assumptions utilized in preparing the 2012 AQMP's emissions inventories relative to the aviation sector. 3-7

We are particularly concerned with this issue because the baseline year is not only used to determine future year air quality emissions projections, but also appears to be used in the development of AQMP control measures. As we have stated in our previous comments to the

² A copy of the District's response to this letter is included in Appendix B to the Draft EIR.



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District, the District needs to be seriously concerned about both the accuracy and completeness of the existing data that it relied upon for the emission inventory. Revision is required to accurately reflect the baseline and projected future activity levels at JWA. These revisions should be presented in the 2012 AQMP and the County recommends that the Draft EIR be revised to accommodate such a discussion, as well.

3-7
Con't

DISTRICT'S LACK OF REGULATORY AUTHORITY RELATIVE TO AIRCRAFT EMISSIONS

In our July 27, 2012, written comments on the NOP/IS, we requested that the District clearly inform the public and decision makers of the District's lack of regulatory purview relative to aircraft emissions. Although the District's response to this request acknowledges that "the Clean Air Act expressly preempts state and local agencies from adopting or enforcing any standard respecting emissions of any air pollutant from any aircraft or engine thereof unless such standard is identical to a standard [adopted by EPA and FAA] applicable to aircraft ...", the District's response also indicates that "...the term standard ... does not include in-use or operational requirements [and that] whether any individual measure, which does not constitute a standard preempted under the CAA, would be preempted by any other law would need to be decided on the facts of each case."

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We continue to have a fundamental disagreement with the District regarding the extent of the District's authority to regulate aircraft emissions. Specifically, we continue to believe that, to the extent the District attempts to regulate aircraft related emissions, directly or indirectly (through in-use or operational requirements), any such regulation would constitute a constitutionally impermissible local intrusion into a federally preempted field of regulation. *People of State of Cal., v. Dept. of Navy* (1977) 431 F.Supp. 1271, 1281; *Washington v. General Motors Corp.* (1972) 405 U.S. 109, 92 S.Ct. 1396, 31 L.Ed.2d 727. The District's attempted indirect regulation of airport related emissions through in-use or operational requirements would be an impermissible and unconstitutional intrusion into an area which is pervasively and exclusively controlled by federal law and federal authority. *City of Burbank v. Lockheed Air Terminal, Inc.* (1973) 411 U.S. 624, 633.

SPECIFIC COMMENTS ON FAILURE TO MEET CEQA REQUIREMENTS

PERFORMANCE STANDARDS

The Draft EIR is a program EIR that attempts to examine the environmental effects of the proposed control measures that we understand will ultimately be issued as rules or regulations and promulgated as part of a continuing regulatory program for the District. Although a program EIR may properly focus on "broad policy alternatives and program wide mitigation measures," as well as "regional influences, secondary effects, cumulative impacts, broad alternatives and other factors that apply to the program as a whole," the District should adopt performance

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standards or objectives that can then be translated into specific measures or regulations when a project specific CEQA analysis is prepared. The Draft PEIR fails to comply with this requirement.

Although the 2012 AQMP has identified a number of control measures, the EIR, in many cases, fails to discuss any performance standards for these measures. For example, proposed Control Measure MCS-03 includes as a methodology “diverting or eliminating process streams that are vented to flares, and installing redundant equipment to increase operational reliability.” (EIR, p. 4.2-4). However, the District has not provided any performance standards that it feels are appropriate – the EIR must address any performance targets that have been established so that they can be translated into specific control measures. Similarly, proposed Control Measure ADV-07 includes measures “to continue the development of cleaner aircraft engines and work with the airlines and local airport authorities to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin.” (EIR, p. 2-28). Again, the EIR must address any performance targets that the District has established independent from the FAA’s CLEEN Program so that they also can be translated into specific control measures for the airline and airport industry.

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CEQA’S INFORMATIONAL DISCLOSURE STANDARDS

The lack of clarity regarding the proposed control measures also prevents the EIR from meeting CEQA’s informational disclosure standards and arguably renders the project description so uncertain that the impact analysis borders on speculation. As stated above, the proposed control measures must be revised to include performance standards and objectives to provide an adequate basis for the impact analysis.

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EMISSION REDUCTION CREDITS

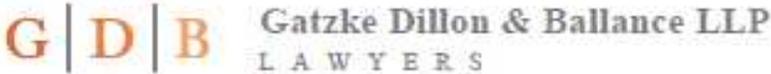
In addition, because of the uncertain parameters of the proposed control measures, the EIR should not indicate that emission reductions will be associated with these measures. Only once the parameters of each of the control measures are better defined can the analysis provide a meaningful discussion of possible emission reductions that may result from implementation of the control measures.

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AREAS OF CONTROVERSY

CEQA Guidelines require an EIR to contain a discussion of the areas of controversy known to the lead agency, including issues raised by agencies and the public and issues to be resolved. Cal.Code Regs. 15123(b)(2)(3). Although the draft PEIR provides a brief discussion, this discussion is incomplete and must be revised. Specifically, this section must include those issues raised by the County in connection with its comment letters submitted on both the NOP and the

3-12



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Draft 2012 AQMP including, but not limited to, issues relating to the accurateness of the baseline data used and the cost effectiveness of the measures proposed.

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SPECIFIC COMMENTS ON PROPOSED CONTROL MEASURES

CONTROL MEASURE MCS-03

With respect to Control Measure MCS-03, although we appreciate the District's response to our comment letter on the NOP/IS which acknowledges that "operational, technological and economic variables will be among the key variables to be consider[ed] ..." during the second phase of implementation, there is little, if any, discussion in the Draft PEIR regarding these constraints and how they will be taken into account when designing the measure's parameters and predicting associated emission reductions. The Draft PEIR should be revised to include a discussion relative to the fact that controlling emissions during start-up and shutdown is constrained by operational, technological and economic limitations and provide an analysis of how these limitations may impact the projected emission reductions for this Measure.

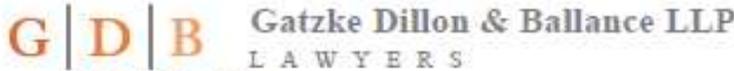
3-13

CONTROL MEASURE ADV-07

Relative to Control Measure ADV-07, as indicated in our comment letter on the Draft 2012 AQMP, we continue to be concerned about the extent to which ADV-07 is intended to impose affirmative obligations on the District or local airport authorities to regulate the aircraft fleet mix serving the South Coast Air Basin. Although we continue to have no immediate objection to the District providing support for FAA's Continuous Lower Energy, Emissions and Noise ("CLEEN") Program, JWA objects to any measure that requires local airport authorities to regulate the aircraft fleet mix serving the South Coast Air Basin on the grounds that such affirmative obligation would be incompatible with the jurisdictional authorities and powers of airport owners/operators. The Draft PEIR should be revised to provide additional information on the ultimate intent of ADV-07.

In addition to the concern addressed above, we are also concerned that the EIR fails to discuss any performance standards for this Control Measure ADV-07. As indicated on page 2-28 and 4.2-37 of the Draft PEIR, the proposed Measure includes the development of cleaner aircraft engines; however, the only performance standard provided for this Measure is based on FAA's CLEEN Program, which has as a goal the development of new aircraft engines that are up to 60 percent cleaner in NOx emissions than current aircraft engines. Is this the performance target that the District has established for this Measure and, if so, will this performance target be used to develop additional specific control measures for the airline industry? The Draft PEIR must clarify any performance targets that have been established for this Control Measure, whether this Control Measure is intended to merely provide support for the CLEEN program, and discuss

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whether any additional affirmative obligations will be imposed on the District or local airport authorities with respect to the regulation of the aircraft fleet mix serving the Basin.

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The proposed Control Measure also includes working with the airlines and local airport authorities to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin. As we have discussed with the District on many occasions in the past, neither the District nor airport operators can ensure that only the "cleanest aircraft" operated by commercial airlines serve the Basin; such a requirement would trigger federal preemption and interstate commerce implications. In addition, we have serious doubt, particularly after adoption of the Airport Noise and Capacity Act of 1990 (49 USCA 2151, et seq.), as to whether airport proprietors generally have sufficient residual authority to act effectively as the agencies working with the District and the airlines in developing, implementing and enforcing a program that requires the cleanest aircraft to serve the Basin. At a minimum, the District should receive adequate assurances from the Federal Aviation Administration, the Department of Transportation, and any other relevant federal authorities that airport proprietors do, in fact, have sufficient regulatory authority to allow them to make meaningful implementation choices which would allow them to enforce local regulations to achieve whatever mandates are imposed on them by the District.

3-15

LONG-TERM (BLACK BOX) CONTROL MEASURES FROM THE 2007 AQMP

Table 6-2 in the Draft PEIR shows the black box measure strategies from the 2007 AQMP and also shows the proposed control measures from the 2012 AQMP that affect the same emissions sources. It is unclear from this Table and the discussion provided whether the methods of emissions control from the 2007 AQMP are still being considered for implementation. Specifically, the method of emissions control for aircraft from the 2007 AQMP is as follows: "More stringent emission standards for jet aircraft (engine standards, clean fuels, retrofit controls); Airport bubble."

It is unclear from the discussion whether the District is still considering implementation of an "airport bubble" concept in connection with the proposed 2012 AQMP control measures. The EIR must clarify whether this method of emission control is still being considered and whether this concept will be translated into specific control measures for the airport and airline industry.

3-16

We have discussed at length with the District our concern regarding the role of the airport proprietor relative to the administration of air quality emission strategies at airports in the Basin. As you know, we have expressed strong opposition to the "airport bubble" concept previously proposed by the District and will continue to oppose any measure that requires an airport to become the air quality "enforcer" for airport users.



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REGULATION OF ULTRAFINE PARTICLES

As indicated in the District's response to the County's comment letter on the NOP/IS for the 2012 AQMP, the District is continuing to include a discussion of the evaluation of ultrafine particles as a "subset of PM_{2.5}." This is neither necessary nor appropriate for the following reasons. First, while the federal Clean Air Act requires submittal of a plan by December 14, 2012 outlining how the District will achieve the National Ambient Air Quality Standards (NAAQS) for PM_{2.5} in the South Coast Air Basin, there is no such deadline for ultrafine particles which are not regulated by NAAQS. Second, by including control measures specific to ultrafine particles in connection with their status as a subset of PM_{2.5}, the District is addressing issues beyond the current regulatory framework established by the U.S. Environmental Protection Agency via the NAAQS program. Third, and finally, it is impossible to determine how the PM_{2.5} control measures may regulate ultrafine particles as a "subset of PM_{2.5}."

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As indicated in our comment letter on the Draft 2012 AQMP, the County/JWA supports a bifurcated approach to 2012 AQMP which focuses on attention on NAAQS achievement; other air quality related issues relating to ultrafine particles can, and should, be addressed via a separate and subsequent process.

CONCLUSION

In closing, the County/JWA thanks the District again for this opportunity to comment on the Draft PEIR for the 2012 AQMP. We look forward to continuing to engage in an open, thorough and responsive public process on the 2012 AQMP and assisting the District with its efforts to improve air quality in the South Coast Air Basin. If you have any questions regarding the issues addressed in this letter, please do not hesitate to contact us at your convenience.

3-18

Very truly yours,

A handwritten signature in cursive script that reads "Lori D. Ballance".

Lori D. Ballance
of
Gatzke Dillon & Ballance LLP

LDB:rlf

Enclosures



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cc: Michael Krause, South Coast Air Quality Management District
Supervisor Shawn Nelson, Vice Chair, 4th District
Robert J. Franz, Interim County Executive Officer
Alan Murphy, Airport Director, John Wayne Airport
Loan Leblow, Assistant Airport Director, John Wayne Airport
Courtney Wiercioch, Deputy Director, Public Affairs, John Wayne Airport
Larry Serafini, Deputy Director, Facilities, John Wayne Airport

Responses to Comment Letter #3
Gatzke Dillon & Balance Representing Orange County – Lori Balance (10/23/2012)

- 3-1 This comment notifies the SCAQMD that a comment letter submitted on behalf of John Wayne Airport is attached. No further response is necessary.
- 3-2 This comment notifies the SCAQMD that the comment letter on the Draft Program EIR is submitted on behalf of Orange County in its capacity as the owner and operator of the John Wayne Airport is attached. No further response is necessary. The comment also provides a general statement that the comments serve a number of principal objectives. With regard to the principal objectives stated and SCAQMD staff's responses to these principal objectives, see responses to comments #3-3 through #3-6.
- 3-3 The comment requests that past comments, current comments, and continued cooperation in this process will allow the County to continue contributing to complex airport regulatory issues associated with air quality in the Basin. The SCAQMD welcomes participation in AQMP development from all stakeholders including, but not limited to, public agencies, affected industries, environmental organizations, and other interested parties. To the extent that AQMP control measures affect a specific stakeholder group, it is important that the group affected participate in crafting control measures, as well as any resulting rules or regulations. Currently, the 2012 AQMP contains Control Measure ADV-07 – Actions for the Deployment of Cleaner Aircraft Engines. This control measure describes the actions needed to develop, demonstrate, and commercialize advanced technologies, procedures, and sustainable alternative jet fuels that could be deployed in the 2020 to 2030 timeframe, so no emission reductions are associated with it as part of this AQMP process. The control measure recognizes that state and local aircraft emission regulations are preempted by the Clean Air Act, which gives that responsibility to U.S. EPA in consultation with the Federal Aviation Administration (FAA). However, emission reductions are needed from all emissions sources, including those regulated by the federal government. Therefore, it is important that the County participated in any future control measure development relative to emission reductions from aircraft to ensure the most effective and cost-effective measures are identified.
- 3-4 This comment expresses general concern regarding SCAQMD responses to comments regarding the NOP/IS for the 2012 AQMP, although the comment does not identify the specific responses of concern. The SCAQMD provided responses to all comments received relative to the NOP/IS. However, it is important to keep in mind that responses to comments made at the NOP/IS stage often result in changes that get incorporated into the Draft Program EIR. Further, at the NOP/IS stage, the environmental analysis is not complete, so detailed responses were not always possible.
- 3-5 With regard to the accuracy of the baseline emissions inventory, see response to comment #3-7.

The comment also states that, without consideration of the baseline issue identified in the first part of the comment, the Draft Program EIR is prevented from meeting CEQA's disclosure requirements and the SCAQMD would be unable to structure appropriate and effective air quality regulations affecting airports while minimizing environmental impacts of those regulations. SCAQMD staff disagrees with the assertion that the

Program EIR does not comply with CEQA's disclosure requirements. The Program EIR complies with all relevant CEQA requirements for preparing an EIR (CEQA Guidelines §§15120 through 15131) and for preparing a program CEQA document (CEQA Guidelines §15168). Regarding the comment on disclosure requirements and the project description, see response to comment #3-10.

It is also unclear what is meant by the phrase structure appropriate and effective air quality regulations. Among other requirements, one of the primary purposes of the Program EIR is to evaluate adverse environmental impacts from the control measures in the 2012 AQMP as written. Some of the control measures, especially long-term and advanced control measures, cannot at this stage identify specific control technologies anticipated to be used to comply with any future regulatory requirements or include emission reduction targets. As a result, assumptions had to be made to provide a comprehensive and conservative environmental analysis. The Program EIR describes all 2012 AQMP control measures to the extent they have been developed. Further development would occur in the future when the control measures are promulgated as rules or regulations. Control measures will be promulgated as rules, regulations, or other mechanisms in the future through an open public process. At that time, a project-specific NEPA and/or CEQA document would be prepared by the appropriate public agency based on the actual regulatory requirements.

3-6 This comment expresses general concerns regarding several control measures in the 2012 AQMP. See responses to comments #3-9 and #3-13 regarding a discussion of Control Measure MCS-03 and responses to comments #3-9 and #3-14 regarding a discussion of Control Measure ADV-07.

3-7 The 2012 AQMP baseline inventory was developed incorporating all information submitted by John Wayne Airport and SCAQMD staff will revise the Integra Report to reflect the updated information provided by the airport authority. SCAG's growth information was used to estimate the future airport activity listed in Table 3.3 of the Integra Report and is further described in their Aviation and Ground Access Appendix of the 2012 Regional Transportation Plan (http://rtpscs.scag.ca.gov/Documents/2012/final/SR/2012fRTP_Aviation.pdf).

The emission estimates for 2035 listed in Table 2.4 of the Integra Report were generated using the airport activity as estimated by SCAG's RADAM model and FAA's Emissions and Dispersion Modeling System (EDMS) airport model. For John Wayne Airport the activity was capped at the authorized limit of 10.8 MAP. The emission estimates for John Wayne Airport are not inconsistent with the expected improvement in engine technology and growth in airport activity in that increased activity resulted in increased emissions with the exception of NO_x, which has been and will continue to be the main focus of emissions improvements from aircraft engines.

The projected 2035 fleet mix was provided by SCAG and is included in their recently adopted 2012–2035 RTP/SCS. The estimates were generated by the Regional Airport Demand Allocation Model (RADAM) an approved model used by SCAG staff since 1994 to project growth in aircraft activity in the region. While SCAQMD staff recognizes that operations at the airport do not include some aircraft types today, there is nothing limiting the use of these types in the future and we believe it is appropriate to use

information that is consistent with SCAG’s 2012–2035 RTP/SCS and other growth assumptions used in the AQMP. (The one exception would be a physical characteristic that would not allow operation of an aircraft type at the airport such as the B737-900 craft referenced as too long to operate at John Wayne Airport. However the engine type is the same as the other B737 classes that would likely be used in lieu of the 900 series and we would expect the estimated emissions would be similar).

- 3-8 The comment repeats a concern that an attempt by the SCAQMD to regulate airport related emissions, even through in-use or operational requirements, would be federally preempted. As identified in NOP/IS response to comment #4-7 (see Appendix B of this Program EIR), the Clean Air Act generally preempts state and local agencies from adopting or enforcing any standard respecting emissions of any air pollutant from any aircraft or engine. [42 U.S.C. §7573.] The term “standard”, however, does not include in-use or operational requirements. [*Engine Manufacturers’ Association v. EPA*, 88 F.3d 1075 (D.C. Cir. 1996).]

In any event, Control Measure ADV-07 does not purport to seek regulation of aircraft emissions. The control measure does not take credit for emissions reductions, does not identify cost effectiveness and recognizes that the implementing agencies are the SCAQMD, U.S. FAA, U.S. EPA, and CARB (see AQMP Appendix IV-B, page IV-B-86). Rather, ADV-07 is intended to develop and demonstrate new technologies for improved efficiency and reduced emissions through the FAA initiated Continuous Lower Energy, Emissions and Noise (CLEEN) program and through other incentive-based or demonstration-based projects (see AQMP Appendix IV-B, page IV-B-86). If, through the development of these projects, it is determined that feasible regulatory action exists, the SCAQMD may elect to pursue that path after determining whether such action, while not preempted under the CAA, would be preempted by any other law.

- 3-9 The comment states that the SCAQMD should adopt performance standards or objectives that can be translated into specific measures or regulations when a project-specific CEQA analysis is prepared. It is assumed here that, since the terms performance standards and objectives refer specifically to the control measures, the comment is requesting specific emission reduction targets for each control measure, which will be addressed in the following paragraphs. However, CEQA does not require “performance standards” for control measures in an AQMP. If objectives refer to project objectives defined pursuant to CEQA Guidelines §15124, then the commenter is referred to Section 2.9 in Chapter 2 of the Program EIR, which clearly identifies the objectives of the 2012 AQMP.

While some of the control measures have performance standards or emission reduction expectations, each control measure varies in inventory, targeted pollutant, affected sources, and ability to generate emission reductions. For these reasons, a standardized objective for all measures is not possible. The primarily goal is to reduce emissions but the methods of achieving reductions can vary, for example modifying operating processes, upgrading/replacing equipment, or lowering emission rates. The goal of Control Measure MCS-03 is to establish procedures to better quantify emission impacts from start-up, shutdown and turnarounds. Secondly, an analysis will be conducted to identify improved operating procedures that minimize emissions. The target emission reductions from this control measure have not yet been determined because the analysis

that will take place during rule development has not been completed to reach that conclusion.

The advanced control technology (ADV) measures are designed to deploy the cleanest control technologies as early as possible, but many of these actions will need time to develop. Specific amount of expected reduction from future proposed requirements will be determined during the rule development phase and after control technology is deployed.

It should be noted that the development of control strategies for the 2012 AQMP and selection of emission reduction measures are based on a list of criteria. The criteria include technological feasibility, cost effectiveness, emission reduction potential, rate of emission reduction, enforceability, public acceptability and legal authority. For further discussion of the criteria, see Table 4-1 in Chapter 4 of the 2012 AQMP. For the 2012 AQMP, other goals were considered such as promoting fair share responsibility and maximizing private/public partnerships.

The comment acknowledges that the CEQA document for the 2012 AQMP is a Program EIR and a Program EIR properly focuses on broad policy alternatives and program wide mitigation measures.” The comment states that the EIR must address performance targets established independent from FAA’s CLEEN Program so they can be translated into specific control measures for the airline and airport industry. As noted in response to comment #3-3, Control Measure ADV-07 describes actions that could be deployed in the 2020 to 2030 timeframe, so no emission reductions are associated with it as part of this AQMP process. There is no requirement that a particular control measure must include emission reduction targets. Among other requirements, the AQMP must demonstrate attainment with the applicable ambient air quality standards for the non-attainment pollutants. In the case of the 2012 AQMP, it is specifically a PM2.5 SIP that demonstrates attainment of the federal 24-hour PM2.5 standard by 2015, as required by the CAA and contains additional ozone control measures to partially fulfill the 2007 SIP commitment. SCAQMD staff is also proposing a one-hour ozone demonstration to comply with U.S. EPA’s proposed SIP call. This demonstration is included in 2012 AQMP Appendix VII. As noted in response to comment #3-5, one of the main purposes of the Program EIR is to analyze environmental impacts from the control measures as written, which it does.

- 3-10 The comment states that there is a lack of clarity regarding the 2012 AQMP control measures because, in part, they do not include performance standards and objectives. As a result, the Program EIR does not meet CEQA’s disclosure standards, the project description is uncertain and the impact analysis is speculative. With regard to performance standards and objectives, see response to comment #3-9. The Program EIR includes a comprehensive description of the proposed project in Chapter 2, which includes summaries of all stationary and mobile source control measures. Similarly, Appendix F identifies all transportation control measures provided by SCAG. Further, the actual 2012 AQMP and associated appendices describing the control measures were available concurrently with the Draft Program EIR. The Program EIR complies with all relevant CEQA requirements for preparing a project description (see CEQA Guidelines §15124). The environmental analysis in the Program EIR includes examinations of potential secondary impacts from emission reduction technologies, as well as impacts

from other types of compliance approaches and is, therefore, not speculative. CEQA recognizes that preparing an EIR involves some degree of forecasting, and must use its best efforts to find out and disclose all that it reasonably can (CEQA Guidelines §15144). The Program EIR was prepared consistent with CEQA Guidelines §15144 and has disclosed all impacts that it reasonably can. Chapter 4 of the Program EIR includes robust analyses of potential adverse impacts to each of the environmental topics analyzed. Further, the analyses of environmental impacts in the Program EIR are commensurate with the level of detail of the 2012 AQMP and, therefore, cannot be as detailed as the environmental analysis for a specific construction project. The subchapters clearly identify control measures that could potentially contribute to impacts to that environmental topic; provides a quantitative or qualitative analysis of all control measures and PM2.5 control measures separately from the ozone control measures, depending on the information available for that control measure; and provides significance determinations for the 2012 AQMP overall and separately for impacts from PM2.5 and ozone control measures.

- 3-11 As noted in response to comment #3-9, criteria are followed in the development of the control measures. Some source categories already have established inventories and proposed methods of future control that enabled SCAQMD staff to determine an anticipated range of emission reductions from implementation of the proposed control strategy. Other measures, however, require further evaluation of inventory, available control technology, etc., that can only be established with a technological assessment and public participation during the rule development process. Estimated emission reductions will be determined at that time.
- 3-12 This comment requests the areas of controversy discussion in the Draft Program EIR to be revised to reflect issues previously raised on behalf of John Wayne Airport. While it is correct that CEQA Guidelines §15123 (b)(2) requires a public agency to identify the areas of controversy in the CEQA document, including issues raised by agencies and the public, no areas of controversy were identified at the time of release of the NOP/IS relative to the environmental analysis so no discussion was included in the NOP/IS. In response to this comment, however, an areas of controversy discussion has been added to the Final Program EIR. The issue of cost-effectiveness of the AQMP control measures is not an environmental topic required to be analyzed in a CEQA document because it did not result in a chain of cause and effect resulting in physical effects. Cost effectiveness is a topic discussed in the Socioeconomic report. With regard to the issue raised in this comment relative to the baseline, the 2012 AQMP baseline inventory was developed incorporating all information submitted by John Wayne Airport. Consequently, because the baseline inventory incorporates the data provided by the John Wayne Airport, this issue does not constitute an area of controversy as defined by CEQA. As explained in Section 1.3 in Chapter 1, no areas of controversy were identified in this comment letter or other comment letters on the Draft Program EIR received by the SCAQMD.
- 3-13 All control measures identified in the 2012 AQMP may be subject to constraints specific to the emission sources being controlled. Control measures are general blueprints for reducing emissions from affected sources, including sources that would be regulated by Control Measure MCS-03. Determining potential operational, technical and economic constraints more appropriately takes place during the rule development process when a

thorough evaluation of the source category is performed. Similarly, during the rule development process input from, and participation by affected industry, stakeholders, and the public would help identify potential constraints and strategies for overcoming these constraints, such as tiered compliance dates, compliance exemptions, and program incentives. Control measure MCS-03 is expected to initially include an evaluation of emission reductions from a number of sources, refineries in particular.

The analysis in the Draft Program EIR takes a conservative approach to analyzing environmental impacts from control measures such as MCS-03. Reasonable assumptions were made regarding potential types of control technologies or approaches that could be used to reduce emissions from this source category and secondary environmental impacts were analyzed accordingly.

- 3-14 Control Measure ADV-07 includes recognition of the efforts associated with the CLEEN Program to develop cleaner aircraft engines. However, in order to route cleaner aircraft to region, there is a need to determine if there are mechanisms such as incentives that will bring cleaner aircraft to the region. SCAQMD staff recognizes that this effort will involve local airport authorities, state and federal agencies and the airlines. It is premature at this point to determine the “performance target” for this measure since specific mechanisms have not been developed. The measure will be further developed as part of the next AQMP development.
- 3-15 The commenter asserts that a control measure that would have the SCAQMD work with the airports and airlines to develop mechanisms to route the cleanest aircraft to serve the South Coast Air Basin would necessarily be federally preempted, particularly in light of the Airport Noise and Capacity Act of 1990 (49 U.S.C. §2151 et seq.). SCAQMD staff disagrees. The measure involves working together with the affected parties. SCAQMD staff notes that the relevant preemption provision, 49 U.S.C. §41713, preempts regulations that “have the force and effect of law related to a price, route, or service of an air carrier...” Thus, it would not include, for example, incentive programs not having the force and effect of law. Moreover, the statute expressly provides that it does not limit a state or political subdivision of a state “from carrying out its proprietary powers and rights.” [49 U.S.C. §41713 (b)(3).] Thus, the airports may be able to exercise their authority as “municipal proprietors” in this area. The Airport Noise and Capacity Act (now reorganized at 49 U.S.C. §47521 et seq.) does not seem to be relevant since it deals with noise restrictions, and should not be interpreted to apply to air pollution issues. But even if it applied, it still allows restrictions on noisier aircraft in certain cases. [49 U.S.C. §47524.] The SCAQMD will work with the airports and other stakeholders to implement this measure to the extent legally feasible and not preempted.
- 3-16 As indicated in the text of Chapter 6 in the Draft Program EIR, Alternative 1 – No Project Alternative, consists of not adopting the 2012 AQMP. In this situation, the currently adopted AQMP, which is the 2007 AQMP, would remain in effect. Similarly, adopting Alternative 4 – PM_{2.5} Emissions Reduction Strategy Only, nevertheless means the ozone portion of the 2007 AQMP would still remain in effect. Table 6-2 identifies the remaining measures from the 2007 AQMP that could be implemented under these two scenarios. If Alternative 1 or Alternative 4 is adopted, then the airport control measure from the 2007 AQMP could be promulgated as a rule in the future based on the fact that it is also a control measure from the 2007 AQMP. Since the airport control measure in

the 2007 AQMP includes the bubbling concept, this could be considered in any future rule that is promulgated. Control measure ADV-07 in the 2012 AQMP does not identify airport bubbling as a proposed method of control.

The black box control measures in the 2007 AQMP are concepts that require further development. These concepts will be further developed with input from all affected stakeholders. Concepts included in the 2007 AQMP black box measures but not discussed in ADV-07 should not be interpreted as being removed from further consideration. Ultimately, some concepts may require actions on the federal level to implement, while other actions may potentially be incentives based that could be implemented at the local level.

- 3-17 Although it is correct that no national ambient air quality standards have been established for ultrafine particles, they are not part of demonstration of attainment of the 24-hour PM_{2.5} standard as analyzed in Chapter 5 and Appendix V of the 2012 AQMP. In addition, ultrafine particulates are not characterized in the emissions inventory data and were not considered in the development of the control strategy. Thus, no commitments to reduce ultrafine particles are submitted in the 2012 AQMP. Finally, the PM_{2.5} control measures in the 2012 AQMP do not specifically regulate ultrafine particles. As discussed in Chapter 9 of the 2012 AQMP, in most urban environments, vehicular fossil fuel combustion constitutes the major contributing sources of ultrafine particles. The PM_{2.5} control strategy in the 2012 AQMP is the curtailment of wood burning, thus, targeting PM_{2.5} emissions and not ultrafine particles. Reference to ultrafine particulates as a subset of PM_{2.5} in the 2012 AQMP is meant to inform the public that PM_{2.5} control measures would potentially provide ultrafine emission reductions. Although ultrafine particulates are included in the PM_{2.5} category, there are not control measures specific to ultrafine particulates in the 2012 AQMP.
- 3-18 The comment reiterates the County's desire to continue working with the SCAQMD with its efforts to improve air quality in the Basin. No further response is necessary.
- 3-19 This comment letter has the following documents attached as enclosures.
1. Copy of a July 27, 2012 comment letter from Ms. Lori Ballance on the June 28, 2012 NOP/IS for the 2012 AQMP. Responses to these comments were prepared and have been included in Appendix B of the Draft and Final Program EIR. Since this document is in Appendix B, it has not been included in Appendix G of the Final Program EIR.
 2. Copy of the August 31, 2012 comment letter from Ms. Lori Ballance on the Draft 2012 AQMP. This comment letter and responses to these comments have been prepared by AQMP staff and will be made available prior to the adoption hearing. Since this comment letter and responses to comments will be included as part of the 2012 AQMP documentation, it is not included here.
 3. Copy of the September 28, 2012 comment letter from Mr. Alan Murphy on the Draft 2012 AQMP. This comment letter and responses to these comments have been prepared by AQMP staff and will be made available prior to the adoption hearing. Since this comment and responses to comments will be included as part of the 2012 AQMP documentation, it is not included here.

The main focus of the above three documents is ensuring that the 2012 AQMP baseline includes up to date information on emissions from the John Wayne Airport. See response to comment #3-7, which addresses this topic.

Letter #4

Lori Moore

From: David Englin [david.englin@bizfed.org]
Sent: Tuesday, October 23, 2012 5:32 PM
To: Steve Smith; 2012 AQMP Comments
Cc: Matt Petteruto; Tracy Rafter
Subject: CORRECTED: AQMP Draft Plan EIR Business Comment Letter
Attachments: AQMP Draft Plan EIR Business Comment Letter.pdf

Steve,

There was a signature listed incorrectly on the comment letter sent earlier. Please replace that one with the attached. } 4-1

Best,

David

--
David Englin
Advocacy/Communications
BizFed, Los Angeles County Business Federation
703.505.6045 ~ David.Englin@bizfed.org
bizfed.org
*A Grass Roots Alliance of Over 100 Top LA County Business Groups
Mobilizing More Than 185,000 Businesses*



October 22, 2012

Dr. William A. Burke, Chairman
Members of the SCAQMD Governing Board
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: Draft Program EIR for the 2012 Air Quality Management Plan

Dear Chairman Burke and Governing Board Members:

As representatives of Southern California's broader business community, we appreciate the opportunity to provide comments on the 2012 Air Quality Management Plan (AQMP), and, here in particular, on the Draft Program Environmental Impact Report (DPEIR)¹.

Our group is comprised of leaders from many of Southern California's largest regional business entities and associations. The final 2012 AQMP, and the rule making that will eventually stem from it, will directly affect many of these businesses' interests. Our highest priority is to work with SCAQMD to develop a well-balanced strategy that addresses federal requirements through an economically feasible compliance program. To that end, we offer the following comments on the DPEIR:

4-2

1. A PM2.5-Only Plan as an alternative to the project currently proposed.

We requested² that the District include a PM2.5-only alternative in its CEQA evaluation and we very much appreciate the fact that such a Plan has been included as Alternative 4 in the DPEIR. We also want to acknowledge three specific conclusions about Alternative 4 in the DPEIR:

- A PM2.5-only Plan was not rejected as infeasible as were two other potential Alternatives³.
- A PM2.5-only Plan "... is considered to be a legally viable alternative ..." because, with this 2012 Plan submission, the District is only required to demonstrate attainment of the 24-hour PM-2.5 standard⁴.
- Alternative 4 - again, a PM2.5-only Plan - would generate fewer adverse environmental impacts or less severe impacts than the Project (i.e., the draft AQMP)⁵.

4-3

We strongly support these findings.

¹ The DPEIR was released on Thursday, September 8th.

² Comment letter on the CEQA Initial Study, July 27, 2012, comment letter on the Draft AQMP, August 31, 2012, and verbally at workshops and other venues.

³ DPEIR Section 6.3.

⁴ DPEIR Section 6.4.4.

⁵ DPEIR Section 6.8.

2. The summaries of some of the stationary source control measures in the DPEIR⁶ remain at odds with the draft proposed control measures themselves.

As was noted in our letter on the CEQA Initial Study, there were discrepancies between the descriptions of some of the stationary source control measures and the language of the actual measures. Notwithstanding the explanation that the DPEIR examines "... impacts from secondary effects that may not be directly stated in the control measure,"⁷ there are still a few fundamental differences in the descriptions (DPEIR compared to the Revised AQMP).

- CMB-01, NO RECLAIM, Phase I. Whereas the control measure itself has been made a contingency measure, there is no mention of that fact in the summary of the measure in the DPEIR.
- CMB-01, NOx RECLAIM, Phase II. There is no mention in the DPEIR of the contingency status of Phase I. Further, the actual control measure speaks of implementation beginning in 2020 while the summary in the DPEIR states that the control measure would seek further reductions by 2020.
- FUG-01, Vacuum Trucks. The summary in the DPEIR states that the "... control measure seeks to reduce emissions from the further venting of vacuum trucks." It is not known what is meant by "further venting", and there is no such discussion in the control measure itself.
- FUG-02, LPG Transfer and Dispensing. The expansion of the applicability of this control measure to is not a given. As is clearly stated in the control measure, with Rule 1177 having been adopted as Phase I, the intended next phase (Phase II) will be an evaluation of the potential for further emissions reductions.

4-4

3. DPEIR, Appendix F.

The Coalition is concerned that the current title of Appendix F, RTP/SCS Mitigation Measures Table, might be misinterpreted to imply that these are required mitigation measures. The title on the first page of the appendix, "Examples of Measures That Could Reduce Impacts from Planning, Development, and Transportation Projects," accurately conveys the proper meaning. In fact, the wording was carefully crafted by SCAG's Regional Council in response to concerns from local governments and the business community. The title of Appendix A should be changed to agree with the title on page F-1.

4-5

Finally, our July 27th comment letter on the CEQA Initial Study raised our concerns with the non-timely release of documents related to the 2012 AQMP. The District, in its response⁸ to our concerns, noted that four regional hearings had been scheduled in order to provide more opportunity for public comment. However, the late release dates of the DPEIR and the Revised AQMP (September 6th⁹, and September 8th¹⁰,

4-6

⁶ DPEIR Section 2.8.1.1

⁷ Responses to comments number 6-6, DPEIR.

⁸ Responses to comments number 6-4, DPEIR.

⁹ E-mail from CEQA Administration, SCAQMD.

¹⁰ E-mail from Mr. Michael Krause, SCAQMD.

respectively) effectively precluded meaningful review of the documents or presentation of appropriate comments at the regional hearings. We are now aware of the second round of regional hearings (scheduled for November 13th through 15th), and we sincerely hope that there will not be any further changes to the documents prior to these new hearings.

4-6
Con't

As the AQMP process moves forward, the individuals and organizations who have signed onto this letter look forward to our continued partnership with SCAQMD. Please know that the business community remains committed to helping develop a balanced, workable 2012 AQMP that provides for both environmental and economic success. We join here, however, to express our unity in finding that the Draft Program EIR for the 2012 AQMP is in need of additional improvement and correction - especially in regard to the issues outlined above. Also, please note that, in addition to supporting this joint letter, some of our members may wish to submit a comment letter of their own.

4-7

We welcome further discussion of these comments; please contact Tracy Rafter, CEO of BizFed (Tracy.rafter@bizfed.org) or Matt Petteruto, Vice President of Economic Development for the Orange County Business Council (mpetteruto@ocbc.org).

Sincerely,



Tracy Rafter
BizFed, Los Angeles County Business Federation



Matt Petteruto
Orange County Business Council



James Clarke
Apartment Association of Greater Los Angeles



Steven Schuyler
BIA of Southern California, Inc.



Michele Dennis
Building Owners and Managers Association of Greater Los Angeles



Jay McKeeman
California Service Station and Auto Repair Association / California Independent Oil Marketers Association

**Responses to Comment Letter #4
BizFed – David Englin (10/23/2012)**

- 4-1 This comment notifies the SCAQMD that a comment letter is attached to the email. No further response is necessary.
- 4-2 This comment provides a general description of groups represented by the comment letter. No further response is necessary. The comment also states that the groups' priority is to work with the SCAQMD to develop a well-balanced strategy that addresses federal requirements economically. The SCAQMD welcomes participation in the AQMP from all stakeholders including, but not limited to, public agencies, affected industries, environmental organizations, and other interested parties. To the extent that AQMP control measures affect a specific stakeholder group, it is important that the group affected participate in crafting control measures, as well as any resulting rules or regulations.
- 4-3 The comment indicates appreciation for including a PM2.5 only alternative (Alternative 4) in the Program EIR for the 2012 AQMP. The comment also lists three conclusions about Alternative 4 from Chapter 6 and supports the conclusions listed. No further response is necessary.
- 4-4 The comment notes that there were some discrepancies in the description of three control measures in the 6/28/12 NOP/IS compared to the Draft 2012 AQMP. Based on comments received regarding this inconsistency, the NOP/IS was revised to accurately describe the control measures and recirculated for an additional 30-day comment period. No comments were received.

The comment also states that there are fundamental differences in the descriptions in the Draft Program EIR compared to the Revised Draft EIR. SCAQMD staff disagrees with this assertion. As noted in the comment, the text in the Program EIR is a summary, so it does not track the text in the control measure word for word.

The Draft Program EIR does not mention that Phase I of Control Measure CMB-01 is now a contingency measure. In response to public comment, the emission reductions for Control Measure CMB-01 are now included as a contingency measure, which would be implemented if the emission reductions are needed to demonstrate attainment. This minor change has been included in the Final Program EIR as follows. “This proposed control measure will seek further reductions of 2 tpd of NO_x allocations by 2014. The proposed Phase I reductions are designed to serve as a contingency measure. It will be implemented if the Basin does not attain the federal 24-hr PM_{2.5} standard by 2014. If necessary, Phase I is expected to be adopted in 2013 and the shave will be implemented/triggered for compliance year 2015 if the attainment of 24-hr PM_{2.5} standard is not met by 2014.” If Phase I of Control Measure CMB-01 is not triggered or implemented, Phase II would target a cumulative three to five tons per day of NO_x emission reductions. These modifications are noted in the Final Program EIR, were evaluated by SCAQMD staff, and do not affect the environmental analysis in any way because, regardless of whether or not Phase I is implemented, potential adverse impacts would be at most the same as those analyzed in the Draft Program EIR because the same types of secondary environmental impacts from the same types of control equipment

would occur to achieve NO_x emission reductions of three to five tons per day. As a result, changing Phase I of Control Measure CMB-01 to a contingency measure does not affect the environmental analysis or change any significance determinations.

The comment also notes that Control Measure CMB-01 states that Phase II would be implemented in 2020, whereas the Draft Program EIR states that Phase II of Control Measure CMB-01 would seek NO_x reductions by 2020. Implementation means that the control requirements would be in effect and that emission reductions would be occurring, so the two phrases are not inconsistent. However, the text in the Final Program EIR has been modified to as follows, “This proposed NO_x control measure would seek further reductions in NO_x allocations by the year is expected to be adopted by 2015 for implementation between 2017 and 2020 to be consistent with the 2012 AQMP. If Control Measure CMB-01, RECLAIM Phase I, contingency measure emission reductions are not triggered and implemented, Phase II will target a cumulative three to five tons per day of NO_x emission reductions.”

The comment indicates that the summary of Control Measure FUG-01 in the Draft Program EIR states that the control measure would seek to reduce emissions from further venting from vacuum trucks, whereas, the control measure does not include this exact phrase. To further clarify the summary of Control Measure FUG-01, the text has been modified as follows, “This control measure will primarily focus on high-emitting seeks to reduce emissions from the further venting of vacuum trucks operations, such as those found in petrochemical industries and other operations that include the transfer of volatile liquids such as gasoline.”

The comment also states that the text in the Draft Program EIR does not indicate what the applicability of Control Measure FUG-02 would be expanded to. The summary of Control Measure FUG-02 in Chapter 2 of the Program EIR states, “The purpose of Control Measure FUG-02 is to further reduce fugitive VOC emissions associated with the transfer and dispensing of LPG by expanding rule applicability to include LPG transfer and dispensing at currently exempted facilities such as refineries, marine terminals, natural gas processing plants and pipeline transfer stations, as well as facilities that conduct fill-by-weight techniques.” This sentence clearly states the applicability of Control Measure FUG-02. However, for the full text of Control Measure FUG -02, the commenter is referred to 2012 AQMP Appendix IV-A.

Finally, it should be noted that the Draft Final 2012 AQMP was available for public review and comment during the same time period as the Draft Program EIR was available, so the public had access to the actual description of the 2012 AQMP control measures in addition to the summaries in the Draft Program EIR. As is apparent in the comment, the commenter had a copy of the Draft Final 2012 AQMP control measures to be able to make the comparisons with the summaries in the Draft Program EIR.

- 4-5 The comment requests that the cover page title of Appendix F be changed to match the title on the first page of the appendix. This requested change has been made.
- 4-6 This comment reiterates a previously submitted comment on the NOP/IS from July 27, 2012 regarding the difficulties of not having a sufficient amount of time to review the NOP/IS relative to the scheduling of the regional hearings. The comment also indicates that the timing of releasing the Draft Program EIR and the Revised Draft 2012 AQMP

relative to the scheduling of the four regional hearings held in September precluded meaningful review of the documents and presentation materials. Lastly, this comment acknowledges that additional regional hearings will be held in November and requests that no additional changes to the documents will be made prior to the hearings.

SCAQMD staff, while aware of the compressed time frame for the 2012 AQMP development, is also committed to providing sufficient time for public comment. It is important to note that the development schedule was constrained by the availability of input data from SCAG's 2012 RTP and CARB's emissions inventories as well as U.S. EPA's submittal deadline of December 2012. Nonetheless, SCAQMD staff continues the enhanced outreach efforts to all stakeholders and SCAQMD staff has made every effort to provide all data and information to the public as soon as it became available.

SCAQMD staff believes that there have been ample opportunities for the public to review and comment on the 2012 AQMP and supporting documents, including the NOP/IS and Draft Program EIR as demonstrated in the following timeline of events regarding the 2012 AQMP development process:

- The NOP/IS was released for a 30-day public review and comment period from June 28, 2012 to July 27, 2012. Five public workshops/CEQA scoping meetings were held regarding the NOP/IS on July 10, 2012, July 11, 2012 (two meetings), July 12, 2012 and July 24, 2012.
- The Draft 2012 AQMP (with Appendices I-IV and VI) was released for public review and comment on July 18, 2012. Appendix V of the Draft 2012 AQMP was released for public review and comment on August 2, 2012. Comments were encouraged to be submitted by August 31, 2012 for inclusion of possible modifications into the Revised Draft 2012 AQMP.
- The Recirculated NOP/IS was released for a 30-day public review and comment period from August 2, 2012 to August 31, 2012. Two public workshops/CEQA scoping meetings were held regarding the Recirculated NOP/IS on August 9, 2012 and August 12, 2012.
- The Draft Program EIR was released for a 47-day public review and comment period from September 7, 2012 to October 23, 2012.
- The Revised Draft 2012 AQMP was also released for public review and comment on September 7, 2012.
- Four Regional Hearings for the Revised Draft 2012 AQMP were held between September 11, 2012 and September 13, 2012.
- The Socioeconomic Report was released for a 45-day public review and comment period from September 28, 2012 to November 12, 2012.
- Four additional Regional Hearings for the Revised Draft 2012 AQMP will be held between November 13, 2012 and November 15, 2012.

Further, while comments on the 2012 AQMP can be received up to the date of the Governing Board hearing scheduled for December 7, 2012, SCAQMD staff continues to strongly encourage comments to be submitted as early as possible to allow staff time to

respond and make any necessary modifications to the document. In addition, so that all stakeholders can keep current with issues raised in the comments, all comment letters submitted to the SCAQMD on the 2012 AQMP have been made available online when received (<http://www.aqmd.gov/aqmp/2012aqmp/commentletters/commentlist.html>) and responses to these comments will be released prior to the Governing Board Hearing for consideration during the adoption hearing. Lastly, all comments submitted relative to the Draft Program EIR and their responses have been included in Appendix G of this Final Program EIR.

As demonstrated by the timeline outlined above, the review period for most of the documents has been extended, additional workshops and regional public hearings have been added, and the scheduled Governing Board hearing date has been delayed until December 2012. Further, an additional 45 days were provided when the Socioeconomic Report was released on September 28, 2012.

Thus, SCAQMD staff believes that with such additional review time, adequate time has been provided. For example, the total public review and comment period for both the Draft and Revised Draft 2012 AQMP will be over 100 days.

With regard to the comment about making changes to the documents prior to the regional hearings, there have been minor edits to the Revised Draft 2012 AQMP due to the comments received that have been reflected in the Draft Final 2012 AQMP released November 7, 2012, before the Regional Hearings starting on November 13, 2012. In addition, the Final Program EIR has been modified accordingly. Thus, because of the multiple opportunities for submitting comments, SCAQMD staff could not guarantee that the documents will not be revised again prior to the regional hearings scheduled in November.

Finally, when converting the Draft Program EIR to a Final Program EIR, changes are often made to the text based on public comments received on the environmental analysis. Changes in the text may also be made in response to modifications of the 2012 AQMP resulting from updated information, public testimony or other public comments. Any changes to the Program EIR are evaluated to determine whether or not they provide substantial new information or result in new significant impacts or substantially increase the severity of existing significant impacts, pursuant to CEQA Guidelines §15088.5. If changes to the Program EIR do not trigger any of the conditions identified in CEQA Guidelines §15088.5, recirculation is not required.

- 4-7 This comment states that members of the business community remain committed to helping develop a balanced and workable 2012 AQMP. However, the business community believes that the Program EIR needs improvement and correction, especially with regard to the issues outlined in the comment letter. As noted in response to comment #4-2, the SCAQMD welcomes participation in the AQMP development process from all stakeholders. Further, the Program EIR complies with all relevant CEQA requirements and includes responses to all issues raised in the comment letter. Most requested changes have been made. The changes to the Program EIR suggested in the comments have been evaluated and do not trigger any of the conditions in CEQA Guidelines §15088.5 requiring recirculation.

Letter #5

Lori Moore

From: Steve Smith
Sent: Wednesday, October 31, 2012 7:05 AM
To: Steve Smith
Subject: FW: 2012 AQMP Draft EIR
Attachments: 10-22-12 Draft 2012 AQMP Program Environmental Impact Report.pdf

From: Porter, Dylan [<mailto:dylan.porter@polb.com>]
Sent: Tuesday, October 23, 2012 2:45 PM
To: Jeffrey Inabinet
Cc: Holzhaus, Dominic; 'Gose, Joy'; Elaine Chang; Tomley, Heather; Wunder, Lisa
Subject: 2012 AQMP Draft EIR

Mr. Inabinet. Attached please find a comment letter from the Port of Long Beach and Port of Los Angeles regarding the 2012 AQMP EIR. A hard copy is in the mail.

} 5-1

Thank you,

Dylan Porter
Environmental Planning
Port of Long Beach
(562) 283-7100
porter@polb.com

CONFIDENTIALITY NOTE: This email message and its attachments contain work product or other information which is privileged, confidential and/or protected from disclosure. This information is intended only for the use of the individual or entity named above. If you think that you have received this message in error, please email or phone the sender. If you are not the intended recipient, any dissemination, distribution or copying is strictly prohibited.



October 22, 2012

Jeff Inabinet
c/o Office of Planning, Rule Development, and Area Sources/CEQA Facilities
South Coast Air Quality Management District Development and Planning Branch
21865 Copley Drive
Diamond Bar, CA 91765-4182

Subject: Draft 2012 AQMP Program Environmental Impact Report

Dear Mr. Inabinet:

The Port of Long Beach (POLB) and Port of Los Angeles (POLA) appreciate the opportunity to comment on the Draft Program Environmental Impact Report (Draft EIR) developed for the 2012 Air Quality Management Program (AQMP). The ports appreciate that AQMD staff took steps to address the scoping comments provided by the ports, specifically the inclusion of a transportation and traffic impact analysis as part of the Draft EIR.

5-2

However, the ports must reiterate their concerns relating to AQMP Control Measure IND-01 (Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources). As the AQMD knows from prior comment letters submitted by the ports (please see AQMP comment letters dated August 30, 2012; July 10, 2012; and May 4, 2010), the ports believe that Measure IND-01 exceeds the AQMD's authority and should not be included in the AQMP for the reasons set forth in the referenced letters.

5-3

Measure IND-01 also contains various flaws which contribute to the inadequacy of the Draft EIR and failure to comply with the California Environmental Quality Act (CEQA). First, Measure IND-01, as described in the project description of the Draft EIR and in the AQMP itself, is unconstitutionally vague and lacks sufficient description of exactly what it proposes to impose on the ports or substantial evidence in support. The Draft EIR's failure to describe the project fully makes it impossible for AQMD, the ports, or the public to assess its environmental impacts. An EIR must describe the whole of the action, or the entirety of a project, including reasonably foreseeable actions that are part of a project, and must analyze the impacts of those reasonably foreseeable actions. Because of the importance and consequences of the AQMP to the State of California's State Implementation Plan (SIP) if adopted by California Air Resources Board (ARB), and to the Federal Clean Air Act enforcement if approved by the U.S. Environmental Protection Agency (EPA), the AQMD is required to fully disclose the details of Measure IND-01 before adoption, and CEQA requires a full disclosure and discussion, which AQMD has failed to do.

5-4

Port of Los Angeles • Environmental Management
425 S. Palms Verdes Street • San Pedro • CA 90731 • 310-732-3675

Port of Long Beach • Environmental Planning
925 Harbor Plaza • Long Beach • CA 90802 • 562-590-4160

The San Pedro Bay Ports Clean Air Action Plan was developed with the participation and cooperation of the staff of the US Environmental Protection Agency, California Air Resources Board and the South Coast Air Quality Management District.

Jeff Inabinet
 October 22, 2012
 Page -2-

Second, to the extent the AQMD intends to approve the Draft EIR and AQMP containing the vague current version of Measure IND-01, and later, as a part of future rulemaking, provide details regarding its proposed actions against the ports including an environmental assessment, that would be segmentation or piecemealing of its CEQA analysis.

5-5

Third, Measure IND-01 has serious problems of infeasibility which the Draft EIR has failed to analyze at all. Measure IND-01 in effect attempts to convert the ports' various aspirational goals, set forth in their voluntary Clean Air Action Plan (CAAP), into enforceable regulation against the ports. However, the CAAP goals depend upon future technology advancement which has not yet occurred, all of which are beyond the control of the ports. Therefore, there are technology feasibility issues with the AQMD making the ports' goals into required emissions limits. Further, as the ports are not air regulators and they do not themselves own, operate, or control the emissions equipment operated by the port industry, there are legal feasibility questions over the ports' ability to exercise authority to carry out the actions of Measure IND-01. There are also serious legal feasibility questions including federal preemption asserted by railroads in connection with locomotive specifications and rail operations, and international preemption asserted over ocean vessels. The Draft EIR is flawed in its failure to discuss these infeasibility issues, and had it done so, it would lead to the conclusion that Measure IND-01 should be removed from the AQMP.

5-6

5-7

Fourth, the AQMD has concluded in the air quality analysis that specific measures associated with Measure IND-01 "are unknown, and therefore the impacts are speculative," (see page 4.2-7 of Draft EIR). This is yet another reason why the Draft EIR is flawed. CEQA Guidelines Section 15145 specifies that if, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation the agency should note its conclusion and terminate discussion of the impact. Instead, the AQMD proceeded to analyze secondary impacts to air quality that are based on speculative assumptions regarding construction emissions, energy demand, and operations.

5-8

Lastly, to the extent that Measure IND-01 proposes to impose upon the ports a form of enforcement for port industry's failure to meet the CAAP's target emissions reduction goals, when the ports do not own, operate, or control the emissions sources, it violates constitutional limitations requiring that exactions imposed on a party must be proportional to the party's contribution, when it fails to include all parties involved in the CAAP, including the actual emissions sources.

5-9

Given these deficiencies and speculation under CEQA and with the AQMP rulemaking, Measure IND-01 should be removed from the final EIR and the AQMP, and the analysis should be revised accordingly. With this change, the ports can support the revised AQMP and can continue to work with AQMD, other agencies, and the port industry in the collaborative manner that has made the ports' voluntary CAAP a success.

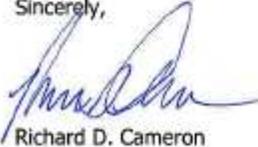
5-10

Jeff Inabinet
October 22, 2012
Page -3-

Thank you for considering the above comments. If you have any questions, please contact Dylan Porter, Port of Long Beach, at (562) 283-7100 or Lisa Wunder, Port of Los Angeles, at (310) 732-7688.

5-10

Sincerely,



Richard D. Cameron
Director of Environmental Planning, Port of Long Beach



Christopher Cannon
Director of Environmental Management, Port of Los Angeles

DP:s

cc: Elaine Chang, South Coast Air Quality Management District
Dominic Holzhaus, Deputy City Attorney, City of Long Beach
Joy Crose, Assistant General Counsel, City of Los Angeles

**Responses to Comment Letter #5
Ports of Long Beach and Los Angeles –
Richard Cameron & Christopher Cannon (10/23/2012)**

- 5-1 This comment notifies the SCAQMD that a comment letter pertaining to the Draft Program EIR for the 2012 AQMP is attached. No further response is necessary.
- 5-2 The comment states that the ports appreciate the opportunity to comment on the Draft Program EIR. No further response is necessary. The comment also expresses appreciation that SCAQMD staff took steps to address scoping comments provided by the ports, specifically by including a transportation and traffic analysis in the Program EIR.
- 5-3 The comment reasserts the commenters' position that the SCAQMD lacks legal authority to adopt Control Measure IND-01. The SCAQMD has responded to the commenters' previous letters. In brief, the SCAQMD has authority to regulate indirect sources under existing law. Health & Safety Code §§40716 (a)(1); 40440 (b)(3). The Ports satisfy the definition of indirect source because they are a "facility, ...installation...[or] real property...which attracts, or may attract, mobile sources of air pollution. 42 U.S.C. §7410 (a)(5)(C). Air districts may regulate indirect sources even though the regulation is intended to reduce emissions from the mobile sources associated with the indirect source, and although the district would be preempted from setting emission standards for those mobile sources. See *Nat'l Ass'n of Home Builders v. San Joaquin Valley APCD*, 627 F. 3d 730 (9th Cir. 2010)
- 5-4 The comment asserts that Control Measure IND-01 is unconstitutionally vague and that the Draft Program EIR's analysis fails to sufficiently describe the project so as to allow the public to comment on it. The doctrine against unconstitutionally vague laws is designed to assure that a penal statute defines "the criminal offense with sufficient definitiveness that ordinary people can understand what conduct is prohibited, " and to ensure that the statute establishes "minimal guidelines to govern law enforcement." *Kolender v. Lawson*, 461 U.S. 352, 357-58 (1983). Control measure IND-01 does not violate this doctrine because it has not yet been developed into a rule and hence cannot subject anyone to criminal enforcement.

The Draft Program EIR provides an overall project description as well as a general description of each control measure, including IND-01. The document analyzes the types of technologies and processes that would be used to reduce emissions from port-related sources and evaluates the potential environmental impacts of such methods. Since it is not known at this date exactly which technology or technologies will be selected, this description is all that can feasibly be provided. The CEQA document is a Program EIR because it covers a series of actions that can be characterized as one large project and is being prepared in connection with the issuance of rules, regulations, plans or other general criteria to govern the conduct of a continuing program (CEQA Guidelines §15168 (a)(3)). As such, CEQA expressly contemplates that future activities under the program will be evaluated as they are individually approved to determine if further environmental analysis is needed (CEQA Guidelines §15168 (c)). A program EIR may properly focus on "broad policy alternatives and programwide mitigation measures" as well as "regional influences, secondary effects, cumulative impacts...and other factors

that apply to the program as a whole” (CEQA Guidelines §15168 (b)(4) and (d)(2)). Therefore, a program EIR “... need not be as precise as an EIR on the specific projects which might follow.” *Rio Vista Farm Bureau Center .v County of Solano*, 5 Cal. App. 4th 351, 374 (1992) Program EIRs are frequently used in conjunction with the process of tiering, which is expected to be the case when preparing project-specific CEQA documents for control measures promulgated as rules or regulations. Tiering is “the coverage of general matters in broader EIRs (such as on general plans or policy statements) with subsequent narrower EIRs...” (CEQA Guidelines §15385). As stated by the California Supreme Court: “An agency that chooses to tier may provide analysis of general matters in a broader EIR, then focus on narrower project-specific issues in later EIRs.” *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1173(2008). The Draft Program EIR for the 2012 AQMP analyzed the potential environmental impacts of various types of technologies and processes that could be used to reduce emissions from sources such as those found at the ports. The exact impacts resulting from the particular methods that will be used under Control Measure IND-01 can only be determined in the future as the measure is developed into a rule or regulation and adopted. As held by the California Supreme Court, this approach is proper where the details of future projects that are part of the overall program will be developed in the future.

The comment states that Control Measure IND-01 contains various flaws that contribute to the inadequacy of the Draft Program EIR, including a vague project description, which makes it difficult to assess environmental impacts. SCAQMD staff disagrees with the assertion that the Draft Program EIR is flawed and does not comply with CEQA. The Draft Program EIR complies with all relevant CEQA requirements for preparing an EIR (CEQA Guidelines §§15120 through 15131) and for preparing a program CEQA document (CEQA Guidelines §15168). The Program EIR includes a comprehensive description of the proposed project in Chapter 2, which includes summaries all stationary and mobile source control measures. Similarly, Appendix F identifies all transportation control measures provided by SCAG. Consequently, the Program EIR complies with all relevant CEQA requirements for preparing a project description (see CEQA Guidelines §15124). It should also be noted that the Draft Final 2012 AQMP was available for public review and comment during the same time period as the Draft Program EIR was available, so the public had access to the actual description of the 2012 AQMP control measures in addition to the summaries in the Draft Program EIR. Finally, Chapter 4 of the Program EIR includes comprehensive analyses of potential adverse impacts to each of the environmental topics analyzed. The subchapters clearly identify control measures that could potentially contribute to impacts to that environmental topic; provides a quantitative or qualitative analysis of all control measures and PM2.5 control measures separately from the ozone control measures, depending on the information available for that control measure; and provides significance determinations for the 2012 AQMP overall and separately for impacts from PM2.5 and ozone control measures. The Program EIR was prepared consistent with CEQA Guidelines §15144 and has disclosed all impacts that it reasonably can.

SCAQMD staff disagrees with the commenter that 2012 AQMP lacks sufficient description of Control Measure IND-01. As described in Chapter 4 of the 2012 AQMP, Control Measure IND-01 is a backstop measure whose implementation is triggered if

emission levels projected to result from the current regulatory requirements and voluntary reduction strategies specified by the Ports are not realized. These reductions are considered in the baseline emissions inventory, so if not achieved, the control strategy and attainment demonstration in the 2012 AQMP would not be accurate. A detailed description of Control Measure IND-01 can be found in Appendix IV-A which includes source category background, emission inventory, regulatory history, proposed method of control, rule compliance, cost effectiveness and implementing agency. Under the “Elements of the Backstop Rule” is a description of the phases of implementation such as a determination if: 1) reported emissions for 2014 exceed the 2014 target milestone; 2) Basin fails to meet the 24-hour PM_{2.5} standard by 2014; and, 3) further emission reductions from port-related sources are feasible. The discussion continues regarding the submittal of an Emission Control Plan if the backstop rule is triggered and details as to what should be included in the plan, for instance sufficient control measures to bring back into compliance with 2014. Any further details regarding the future requirements will be determined more appropriately during the rule development process.

- 5-5 The comment states that if the SCAQMD certifies the Program EIR and approves the 2012 AQMP, which includes Control Measure IND-01, future rulemaking, including the preparation of an environmental analysis would be piecemealing the CEQA analysis. As indicated, the CEQA document for the 2012 AQMP is a Program EIR prepared pursuant to CEQA Guidelines §15168 because the 2012 AQMP constitutes a series of actions that can be characterized as one large project and are related in the connection with the issuance or rules, regulations, plans, or other criteria to govern the conduct of a continuing program. In addition, preparation of a Program EIR allows an agency to consider broad policy alternatives and program-wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts. Further, CEQA recognizes that preparation of more than one CEQA document may occur for projects that contain a series of related actions or ongoing programs. Specifically, CEQA Guidelines §15152 describes the concept of tiering which refers to using the analysis of general matters contained in a broader EIR (such as one prepared for a general plan or policy statement) with later EIRs and negative declarations on narrower projects; incorporating by reference the general discussions from the broader EIR; and concentrating the later EIR or negative declaration solely on the issues specific to the later project. Any subsequent environmental analysis for Control Measure IND-01 would likely tier off of the 2012 AQMP Program EIR and, therefore, would not constitute piecemealing.

With regard to the comment that Control Measure IND-01 is vague, see response to comment #5-4 regarding details of the control measure.

- 5-6 SCAQMD staff considers the Control Measure IND-01 to be feasible for the following reasons. The control measure trigger is based on emission reduction targets from port-related sources, and “backstops” those emission reductions already expected from existing air quality rules, regulations, and commitments (such as the CARB/Class 1 Railroads MOUs). These emission reductions are part of the SIP’s future baseline emissions inventory for port-related sources, so nothing in the CAAP that isn’t already being implemented to meet existing and future reductions required by state and federal law, is required to meet the targets in the control measure. If the “backstop” rule is

triggered, the Ports would submit an Emission Control Plan to the District. The plan should include measures sufficient to bring the Ports back into compliance with the 2014 emission targets (Phase I) and to further reduce their emissions to the new target based on their contribution to the total inventories, necessary in meeting the 24-hr PM_{2.5} standard through a SIP amendment (Phase II). The “backstop” rule would be triggered if it is later determined that there is a shortfall in the original target or a change occurs in the Basin-wide carrying capacity for the 2014 federal 24-hr PM_{2.5} ambient air quality standard. In response to the statement that the measure makes the ports responsible for voluntary goals under the CAAP, the SCAQMD staff believes it can regulate Port sources under its existing authority under current state law. As stated in Control Measure IND-01, the SCAQMD has the authority to adopt rules to control emissions from indirect sources under existing law. The Clean Air Act defines an indirect source as a “facility, building, structure, installation, real property, road or highway which attracts, or may attract, mobile sources of pollution.” [42 U.S.C. §7410 (a)(5)(C); CAA §110 (a)(5)(C).] Under this definition, the Ports are an indirect source. As specified in the California State Air Pollution Control Laws, codified in the California Health & Safety Code, districts are further authorized to adopt rules to “reduce or mitigate emissions from indirect sources” of pollution. (Health & Safety Code §40716 (a)(1)). The SCAQMD is also required to adopt indirect source rules for areas where there are “high-level, localized concentrations of pollutants or with respect to any new source that will have a significant impact on air quality in the South Coast Air Basin,” (Health & Safety Code §40440 (b)(3)).

- 5-7 The comment asserts that there are serious legal feasibility questions regarding Control Measure IND-01, including federal preemption asserted by railroads, an international preemption asserted by ocean vessels, and because the ports do not own or operate the sources. The SCAQMD recognizes the preemption arguments raised by various industries but does not believe that these arguments establish that there can never in any case be a state or local rule affecting such sources. For example, a state rule affecting foreign-flagged vessels, even outside the three-mile state boundary, was upheld by the Ninth Circuit, and the US Supreme Court declined to review the case. *Pacific Merchant Shipping Ass’n. v. Goldstene*, 639 F. 3d 1154 (9th Cir. 2011). And the Ninth Circuit has held that when a state or local air pollution rule affecting railroads has been approved by U.S. EPA into the State Implementation Plan, the courts will harmonize the purposes of the Clean Air Act with the Interstate Commerce Commission Termination Act to determine whether the state or local rule is preempted. Preemption is not automatic. *Ass’n. of American Railroads v. South Coast AQMD*, 662 F. 3d 1094(9th Cir. 2010).

For a discussion of the issue relative to the ports not owning the polluting sources, see response to comment #5-9.

- 5-8 The comment refers to footnote “a” to Table 4.2-1, which states, “The specific actions associated with the control measure are unknown and, therefore, the impacts are speculative.” This footnote references Control Measure IND-01 among other control measures. The comment states that because impacts are speculative, Control Measure IND-01 should not have been further analyzed. However, footnote “a” goes on to say, “In order to provide a conservative analysis, it is assumed that the control measure could require air pollution control technologies that are similar to those that are currently required (e.g., SCR, electrification, use of alternative fuels, etc., and would have the

potential to require construction activities that would generate noise).” This approach was taken to provide a conservative analysis of environmental impacts from all control measures, including IND-01.

- 5-9 The comment asserts that Control Measure IND-01 violates constitutional limits requiring that exactions imposed on a party be proportional to the party’s contribution, because the ports do not own, operate, or control the emissions sources, when it fails to include all parties involved in the CAAP, including the actual emissions sources. The basic concept of indirect source contemplates that the emissions to be controlled are from sources not owned or operated by the indirect source. For example, Rule 2202 applies to employers of 250 or more employees and focuses on emissions from employee vehicles which are not owned or operated by the source. The concept of an “exaction” generally refers to a requirement that, as a condition of a development approval, a developer must dedicate sites for public or common facilities, or make payments to defray the costs of land or facilities or otherwise provide public amenities. Abbott, et al. *“Exactions and Impact Fees In California”* (Solano Press 2001), p. 15. Therefore, a regulation to reduce air pollution would not normally be considered an exaction. Moreover, the principle of proportionality referred to by the commenter was established by the United States Supreme Court which decided that a land dedication requirement must bear a “rough proportionality” to project impacts. *Dolan v. City of Tigard*, 512 U.S. 374(1994). In this case, all of the impacts of concern are ultimately the result of the fact that the two major ports operate here in the district, so the concept of proportionality to impacts is not violated. Finally, the state and the SCAQMD are also seeking to impose all feasible emission reduction measures on all types of mobile sources found within the ports, so the regulatory program does not fail to include all parties.
- 5-10 With regard to the deficiencies in the Program EIR asserted by the commenters, see responses to comments #5-4 and #5-5. With regard to the comments on speculation, see response to comment #5-8.
- See response to comment #5-4 regarding the reasons for keeping Control Measure IND-01 as part of the PM2.5 control strategy that relies on the emission reductions projected to be achieved from the current regulatory requirements and voluntary reduction strategies specified by the Ports. The SCAQMD intends to continue to work with the Ports in a collaborative manner to strive not to trigger Control Measure IND-01, but if a backstop rule is necessary, the SCAQMD will work cooperatively with the Ports to develop a feasibility analysis and implementation schedule.
- 5-11 The comment thanks SCAQMD staff for considering the comments in the letter and provides a contact person and phone number in case of questions. No further response is necessary.

Letter #6

Lori Moore

From: Steve Smith
Sent: Wednesday, October 31, 2012 7:06 AM
To: Steve Smith
Subject: FW: Comments to 2012 AQMP Draft Program Environmental Impact Report
Attachments: J. Inabinet It - 10_23_12.pdf

From: Noguera-Zagala, Denise M [<mailto:DNoguera-Zagala@semprautilities.com>]
Sent: Tuesday, October 23, 2012 3:32 PM
To: Jeffrey Inabinet
Cc: Garcia, Albert J
Subject: Comments to 2012 AQMP Draft Program Environmental Impact Report

Sent on behalf of and with Albert Garcia's approval.

} 6-1

Please see attached.

Denise Noguera - Zagala
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Please consider the environment before printing this email.



Albert J. Garcia
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October 23, 2012

Jeff Inabinet
Office of Planning, Rule Development, and Area Resources/CEQA
South Coast Air Quality Management District
21865 Copely Drive
Diamond Bar, CA 91765-4182

Re: Comments to 2012 Air Quality Management Plan (AQMP) Draft Program Environmental Impact Report (DPIER)

Dear Mr. Inabinet:

Southern California Gas Company ("SoCalGas") appreciates the opportunity to review and comment on the DPEIR for the AQMP. SoCalGas supports the South Coast Air Quality Management District's ("SCAQMD") comprehensive control strategies towards attainment of the Federal 24-hour PM2.5 ambient air quality standard, while making expeditious progress towards attainment of State PM standards, as currently outlined in the AQMP and the DPEIR. We encourage SCAQMD to continue along this path towards attainment. SoCalGas has no points of contention with DPEIR and applauds SCAQMPD for its work to date. In continued support of SCAQMD's efforts, SoCalGas offers the following comments to the DPEIR.

6-2

1. Subchapter 4.3 Project Specific Impacts - Energy

Section 4.3.4.2 states that control measures in the 2012 AQMP may result in an increase in demand for natural gas associated with stationary sources. In particular, the DPEIR asserts that demand for natural gas in Southern California is expected to increase by approximately .20 percent from 2010 to 2020 (DPEIR p. 4.3-13). However, SoCalGas' 2012 California Gas Report (CGR) predicts that our service area within Los Angeles, Riverside, Orange and San Bernardino Counties should expect to see a .13 percent decline in demand over the same period. Based on the 2012 CGR predictions, the overall statewide natural gas demand is projected to decrease by .25 percent.

6-3

Section 4.3.4.2 also identifies mitigation measures required for potentially significant impacts to natural gas resources associated with the AQMP. Mitigation Measure E-8 would focus on requiring project sponsors to pursue incentives to promote energy efficient equipment and promote energy conservation. SoCalGas supports this measure, as energy efficiency naturally leads to lower fuel consumption, which in turn reduces overall greenhouse gas

6-4

emissions as secondary pollutant. In addition, SoCalGas' efforts have also encouraged our industrial and commercial customers to utilize natural gas stationary sources during peak hours to reduce their electric demand and lower their electric bill, especially for those customers under a Time-Of-Use (TOU) contract. Further, SoCalGas encourages SCAQMD to require mitigation measures that include analysis of energy usage with the goal of conserving energy through the efficient use of energy. As part of the mitigation measures, SCAQMD should encourage project proponents to consider the potential for reducing energy peak demand by utilizing natural gas stationary sources during off-peak hours. Finally, SCAQMD should recognize that California natural gas utilities are subject to the California Public Utilities Commission's ("CPUC's") Evaluation, Measurement and Verification (EM&V) Policy framework. The EM&V objectively values the energy efficiency savings of the IOUs. For your reference, I am including an attachment that summarizes the CPUC's EM&V policy as we understand how it applies to SoCalGas.

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Once again, SoCalGas recognizes the importance of this DPEIR and appreciates continued collaboration with SCAQMD on the AQMP. If you have any questions to these comments, please free to contact Noel Muyco at (213) 244- 5514 or via email at NMuyco@semprautilities.com

6-5

Sincerely,



Albert J. Garcia
Senior Counsel

cc: Lee Wallace
Noel Muyco
Daniel McGivney
Alison Smith
Vince Gonzales
Colby Morrow

Summary of CPUC's EM&V Policy as applicable to SoCalGas

Energy Efficiency

Energy Efficiency and Demand Response are the first priority in California's loading order for energy resources. Pursuant to applicable Public Utilities Code sections, the CPUC regulates the IOUs' energy efficiency programs. Energy efficiency typically refers to the installation of energy efficient technologies or measures to reduce energy usage and eliminate energy losses in homes, businesses, and new construction. An energy efficient home or business can help consumers reduce energy usage while maintaining comparable service, thereby saving money on utility bills. On September 24, 2009, the CPUC approved funding and programs for the 2010-2012 energy efficiency program cycle. These energy efficiency programs are projected to save 7000GWh, 3460MW, and 150 MMTherms and follow the 2006-2008 program cycle, which resulted in savings of over 6000GWh, 1175MW, and 84MMTherms. The funding is 42% higher than the prior three-year cycle (2006-2008) and will support programs designed to produce deeper and more comprehensive savings that the Commission believes California's utilities can and will achieve. These programs and related energy savings are a key component of California's broader energy policies and greenhouse gas mitigation strategies. Energy Division's Demand-side Management (Evaluation, Measurement and Verification and Integrated Demand-side Analysis), and Residential and Non-Residential Programs sections work with the IOUs to develop and evaluate these energy efficiency programs.

Background

In 2003, the Commission, in collaboration with the California Energy Commission (CEC) and the now defunct California Consumer Power and Conservation Financing Authority developed California's first Energy Action Plan (EAP). The EAP sets forth a loading order that prioritizes which energy resources California will use to meet its future energy needs. The loading order stipulates that energy efficiency is California's "resource of first choice." Since the loading order issued, the Commission has invested in energy efficiency programs designed to displace or defer costly supply-side alternatives.

It is in the context of energy efficiency as a resource that the Commission's existing EM&V policy framework took shape. Decision (D.) 05-01-055 returned California's Investor Owned Utilities (IOUs)³ to the role of energy efficiency program administrators and tasked the Commission's Energy Division with EM&V of the utility programs. D.05-01-055 defined the objectives of EM&V as follows:

- 1) measure and verify energy and peak load savings for individual programs, groups of programs, and at the portfolio level;
- 2) generate data for savings estimates and cost-effectiveness inputs;
- 3) measure and evaluate the achievements of energy efficiency programs, groups of programs and/or the portfolio in terms of the "performance basis" established under Commission-adopted EM&V protocols: and

6-6

4) evaluate whether programs or portfolio goals are met. (D.05-01-055, at 12.)

Evaluation, Measurement, and Verification (EM&V) of California Utility Energy Efficiency Programs

http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/125983.htm#P84_3093

The EM&V Methodological Framework

Two documents contain the Commission's methods and best practices to date: the California Evaluation Framework (Evaluation Framework) and the California Energy Efficiency Protocols (Protocols). The Evaluation Framework was developed through the collaborative work of the IOUs, Energy Division and TecMarket Works. Teams of professional evaluators offered recommendations for consistent methods and best practices for a wide range of evaluation questions outlined options for a cyclical approach to planning and conducting evaluations of energy efficiency programs. The Protocols were initially adopted by an Administrative Law Judge (ALJ) ruling in April 2006 as a follow up to the Evaluation Framework and were offered as a more prescriptive guide for conducting evaluation and allocating resources. Minor updates were adopted by ruling in January 2007. The Protocols were developed by TecMarket Works specifically to guide evaluation of the 2006-2008 IOU energy efficiency program cycles. The Protocols specify in detail acceptable approaches and procedures for the evaluation of IOU energy efficiency portfolios. The content of these documents has remained largely unchanged since 2006.

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The California Evaluation Framework (Evaluation Framework)

ftp://ftp.cpuc.ca.gov/Egy_Efficiency/CaliforniaEvaluationFrameworkSept2004.doc

California Energy Efficiency Protocols (Protocols)

ftp://ftp.cpuc.ca.gov/puc/energy/electric/energy+efficiency/cm+and+v/EvaluatorsProtocols_Final_AdoptedviaRuling_06-19-2006.doc

Responses to Comment Letter #6
Southern California Gas Company – Albert Garcia (10/23/2012)

- 6-1 The email informs the reader that the comments are included as an attachment and that the commenter is available to answer questions about the comment letter. No further response is necessary.
- 6-2 This comment states that SoCalGas supports the control strategies in the 2012 AQMP and encourages the SCAQMD to continue along this path towards attainment. Further, SoCalGas has no points of contention with the Draft Program EIR for the 2012 AQMP. No further response is necessary.
- 6-3 The commenter states that the Draft Program EIR presents a future increase in natural gas demand of 0.2 percent in southern California, but the SoCalGas *2012 California Gas Report* predicts a 0.13 decrease in natural gas demand over the same period.

Review of the *2012 California Gas Report*, indicates SoCalGas projects total gas demand to grow at an annual rate of 0.12% from 2011 to 2030. Over the forecast period 2012-2030, demand is expected to exhibit annual decline (of 0.13%) from the level in 2012 due to modest economic growth, CPUC-mandated energy efficiency (EE)s and renewable electricity goals, decline in commercial and industrial demand, and continued increased use of non-utility pipeline systems by enhanced oil recovery customers and savings linked to advanced metering modules. The Report states that although the forecast covers an 18-year natural gas demand and forecast period, from 2012 through 2030; only the consecutive years 2012 through 2014 and the point years 2015, 2020, 2025, and 2030, “These single point forecasts are subject to uncertainty, but represent best estimates for the future, based upon the most current information available.”

The future increase in natural gas demand in the Program EIR was obtained from the CEC’s *California Energy Demand 2012-2022 Final Forecast*. This report includes the following natural gas demand forecast.

“For the high demand scenario, consumption in the pure econometric forecast was almost 2 percent lower and peak demand 0.60 percent higher in 2022 compared to high demand CED 2011 Final statewide results shown in this chapter. The mid demand econometric scenario yielded projected 2022 consumption almost identical to CED 2011 Final, while peak demand was 1.8 percent higher. In the low econometric demand scenario, statewide consumption was projected to be 0.3 percent higher and peak 1.9 percent higher versus CED 2011 Final in 2022.”

Based on the above information, using the CEC’s natural gas demand forecast for the analysis of potential natural gas demand impacts in the Draft Program EIR provides a conservative estimate of future natural gas demand. Further, since future natural gas demand impacts were concluded to be significant, it is not necessary to revise the analysis. However, a footnote will be added to Subchapter 4.3, reporting the SoCalGas Report natural gas demand projections.

- 6-4 The commenter states that SoCalGas supports Mitigation Measure E-8 – Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation. The commenter states that SoCalGas encourages the

SCAQMD to require mitigation measures that include analysis of energy usage with the goal of conserving energy through the energy efficiency and consider the potential for reducing energy peak demand by utilizing natural gas stationary sources during off-peak hours. When promulgating 2012 AQMP control measures as SCAQMD rules or regulations, additional project-specific CEQA analyses will be prepared. To the extent that energy impacts from the subsequent projects need to be analyzed, if impacts are significant the SCAQMD would likely include energy conservation measures such as those suggested in the comment.

The commenter states that SCAQMD should recognize that natural gas utilities in the state are subject to the California Public Utilities Commission's Evaluation, Measurement and Verification (EM&V) Policy framework. The commenter states that the EM&V objectively values the energy efficiency savings of the investor-owned utilities (IOUs). The commenter prepared and provided an attachment to the comment letter that summarizes the policy as it applies to SoCalGas. SCAQMD staff recognizes that the EM&V policy appears to apply to the four largest IOUs in California with regard to implementing energy efficiency programs.

- 6-5 The concluding paragraph provides information on SoCalGas contacts. No further response is necessary.
- 6-6 As mentioned in comment #6-4, the commenter prepared and included an attachment that summarizes the EM&V policy as it applies to SoCalGas. SCAQMD staff may consider the EM&V policy, as appropriate, when evaluating projects with potential energy impacts. As already noted, the EM&V policy appears to apply specifically to the four largest IOUs in California with regard to implementing energy efficiency programs.

Letter #7

Lori Moore

From: Adams, Greg [GAdams@lacsds.org]
Sent: Tuesday, October 23, 2012 12:52 PM
To: Steve Smith; Michael Krause
Cc: Adams, Greg
Subject: LACSD 2012 AQMP CEQA COMMENTS

Hello Steve Smith and Mike Krause:

You and your staff have done a great job on this document. Our thoughts are as follows:

} 7-1

On Page 1-13, last paragraph of Section 1.4.5, I think you are confusing agencies and the facilities that they operate. I suggest the following re-write or something close to it:

} 7-2

"Much of the urbanized areas of Los Angeles and Orange Counties are serviced by three agencies that operate coastal facilities: the City of Los Angeles Bureau of Sanitation's Hyperion Treatment Plant in El Segundo and Terminal Island in San Pedro, the Los Angeles County Sanitation Districts' Joint Water Pollution Control Plant (JWPCP) in Carson and two Orange County Sanitation District treatment plants, one in Huntington Beach and one in Fountain Valley."

On Page 1-15, first sentence of Section 1.4.8, I checked and the two transformation (waste-to-energy) facilities located within the district have a long term combined average daily capacity of about 1600-1700 tons per day, not 3240 tons per day, depending on BTU content of the post-recycled waste stream they manage.

} 7-3

On Page 1-20, Section 1.5.5, wastewater treatment facilities can probably manage a reasonable increase in wastewater flows generated from air pollution control equipment scrubbers but not the SOx RECLAIM shave impacts (~ 2 billion gallons per day), for example.

} 7-4

On Page 3.3-8, LADWP operates Haynes (not Los Angeles County) and LADWP in cooperation with DWR operates the Castaic Pumped Storage Facility and not Los Angeles County.

} 7-5

On Page 3.3-20, Section 3.3.4.3.3 Anaerobic Digestion, it is amusing that you cite a small operation in Tulare operating two engines under a 100KW each, while right here in your back yard LACSD operates a combined cycle turbine facility in Carson using digester gas that produces around 20 MW and a landfill gas Rankine cycle steam plant at the Puente Hills Landfill that produces around 48 MW net, to mention a few. In the third paragraph, it is misleading to say that there are 132 "waste-to-energy" plants in California because of the term's very specific historical meaning. "Renewable energy" plants might be more appropriate.

} 7-6

6. In Subchapter 4.2 Air Quality, it is difficult for us to make intelligent comments on the CEQA-related aspects of the MCS-01 control measure, mentioned several times throughout this chapter, due to the almost complete lack of specificity on the measure. Many subtleties involved in the control measures can never be aired via this CEQA review process in absence of that detail. One example concern is our Rule 1134-governed digester gas fired combustion turbines mentioned above. Notwithstanding the fact that LACSD spent approximately \$3.5MM in the 1995-98 timeframe, under a SCAQMD variance, attempting to make Steuler GmbH post-combustion SCR catalysts work, there are several CEQA related aspects to upgrading to BARCT levels that should that be discussed now. These include the disposal of substantial quantities of gas-pretreatment media, whatever they may be, because of the near-zero siloxane tolerance of the catalysts; additional hydrogen sulfide sulfur removal capital systems and chemicals again for catalyst protection, and effects of non-optimum mixing length downstream of ammonia injection grids on particulate matter formation and ammonia slip plus the usual construction related emissions and additional electrical parasitic load considerations. The present CEQA document discusses SCR issues as ammonia slip in detail and a little about ammonium bisulfate formation and the construction emissions and additional electrical loads, but other project aspects are presumably left for rule-specific CEQA documents that accompany the formal rulemaking. Having certainty over the scope of the proposed control measure is only what we ask.

7-7

All in all, this is a comprehensive and well-crafted document. Again, you and your staff have done a commendable job and are to be congratulated.

7-8

Gregory M. Adams
Assistant Departmental Engineer
Air Quality Engineering
L.A. County Sanitation Districts
562 908 4288 ext. 2113
562 692 9690 FAX
e-mail: gadams@lacsdc.org

Responses to Comment Letter #7
Los Angeles County Sanitation Districts – Greg Adams (10/23/2012)

- 7-1 This comment compliments SCAQMD staff on the work performed for the Draft Program EIR. No further response is necessary.
- 7-2 This comment recommends clarifications to the description of the agencies that operate POTWs and the actual facility names of the POTWs in the hydrology and water quality discussion in Chapter 1. The Final Program EIR has been modified accordingly in the hydrology and water quality discussions in Section 1.5.5 of Chapter 1 and in Section 3.5.7 of Subchapter 3.5.
- 7-3 This comment recommends a correction to the capacity of the two transformation facilities in the solid and hazardous waste discussion from 3,240 tons per day to an average daily capacity of 1,600 to 1,700 tons per day. While the comment did not include a reference to support the suggested revision, according to CalRecycle, the permitted capacities of the Southeast Resource Recovery Facility and the Commerce Refuse-To-Energy Facility are 2,240 tons per day¹ and 1,000 tons per day², respectively. Thus, the combined permitted capacity of these two transformation facilities is correctly stated at 3,240 tons per day. For clarity, the Final Program EIR has been modified to reflect the CalRecycle citations in the solid and hazardous waste discussions in section 1.5.8 of Chapter 1 and in section 3.8.2 of Subchapter 3.8.
- 7-4 This comment suggests that wastewater treatment facilities can handle a reasonable increase in wastewater generated from air pollution control equipment such as scrubbers as part of implementing the 2012, but not to the extent of the wastewater projections previously analyzed under the 2010 amendments to Regulation XX - RECLAIM for the SOx shave of RTCs. Based on the analysis in the Final Program Environmental Assessment (PEA) prepared for the 2010 amendments to the SOx RECLAIM program, which involved air pollution control equipment that utilize water and generate wastewater, SCAQMD staff also believes that wastewater treatment facilities should be able to accommodate a moderate increase in wastewater generation. However, it is important to note that Control Measure CMB-01 would call for a NOx shave of RTCs, not a SOx shave. Because control equipment installed to control NOx emissions is not typically water intensive, implementation of Control Measure CMB-01 would not be expected to have the same magnitude of wastewater impacts as was analyzed in the Final PEA for the 2010 amendments to the SOx RECLAIM program.
- 7-5 This comment recommends a correction to the name of the operator of the Haynes Natural Gas Power Plant to be changed from Los Angeles County to the LADWP. This comment also recommends a correction to the name of the operator of the Castaic Pump-Storage Power Plant to be changed from Los Angeles County to the LADWP and to note that the LADWP operates this plant in cooperation with the DWR. The Final Program EIR has been revised to reflect both of these corrections.

¹ Permitted capacity of Southeast Resource Recovery Facility,
<http://www.calrecycle.ca.gov/SWFacilities/Directory/19-AK-0083/Detail/>.

² Permitted capacity of Commerce Refuse-To-Energy Facility,
<http://www.calrecycle.ca.gov/SWFacilities/Directory/19-AA-0506/Detail/>.

- 7-6 This comment recommends including a reference to the LACSD’s combined cycle turbine facility in Carson and the landfill gas Rankine cycle steam plant at the Puente Hills landfill as examples of operations that also utilize anaerobic digestion. The Final Program EIR has been revised to reflect this recommendation in the discussion regarding anaerobic digestion in Subchapter 3.3.

This comment also recommends changing the phrase “waste-to-energy” to “renewable energy” because the phrase “waste-to-energy” has a specific historical meaning. While the comment did not include a reference to support the suggested revision, according to the California Energy Commission discussion of waste-to-energy facilities, the statement that there are 132 “waste-to-energy” plants in California is accurate³. Thus, the Final Program EIR will not be revised to reflect this recommendation.

- 7-7 The intent of Control Measure MCS-01 – Application of All Feasible Measures Assessment, is to focus on new technology developed in the future subsequent to the approval of the 2012 AQMP, so the specific description of the future actions under the control measure is not possible at this time. However, triggering requirements of the control measure would likely occur when new feasible cost-effective best available retrofit control technology is developed and made available. Implementation of Control Measure MCS-01 could take place in two phases if a technology study is warranted. However, if an assessment of the feasibility, cost effectiveness, and availability of new technology has already been prepared and properly demonstrated, a two-phase approach might not be necessary.

This comment remarks on the difficulty of commenting on the potential air quality impacts of implementing Control Measure MCS-01 due to the lack of specificity of elements in the control measure and requests certainty over the scope of the control measure. This comment also provides examples of potential environmental impacts pertaining to implementing BARCT requirements for digester gas fire combustion turbines subject to Rule 1134 and suggests including these examples in the Program EIR. This comment also recommends a modification to the CEQA document that reflects a discussion of ammonium bisulfate formation, construction and additional electrical loads. Lastly, this comment recognizes that several project aspects are left for rule-specific CEQA documents that accompany the formal rulemaking process.

Because Program EIRs analyze broad policies and not project-specific details, the analysis of Control Measure MCS-01 in the Final Program EIR for the 2012 AQMP is commensurate with the level of specificity of the project. However, as the comment acknowledges, when Control Measure MCS-01 undergoes the rule making process, the specifics of implementing the control measure and the individual environmental impacts will be fully analyzed to a much greater level of detail during the rule development process. For this reason, the Final Program EIR does not contain the same level of detail as suggested in the comment’s example of the environmental impacts relative to implementing Rule 1134.

- 7-8 This comment again compliments SCAQMD staff on the work performed for the Draft Program EIR. No further response is necessary.

³ California Energy Commission, Waste-to-Energy and Biomass; <http://www.energy.ca.gov/biomass/>

Letter #8



Comments by Sierra Club Angeles Chapter on
 Draft South Coast Air Quality Management Plan (AQMP) and
 Draft Program Environmental Impact Report (PEIR)

October 23, 2012, Sent to: 2012aqmpcomments@scqmd.gov

Dear South Coast Air Quality Management District,

For over a decade, the top priority of the Sierra Club has been stopping global warming to protect life on this planet. We are pleased with the emphasis placed in both the AQMP and PEIR on analyzing and reducing GHG emissions.

8-1

However, there are numerous examples in the PEIR of where opportunities to stake out a clear position to reduce GHG emissions are ignored.

For example, p. 1-11 states, "One of the key areas of concern in the energy sector is reducing the amount of petroleum-based fuels in the District. Consumption of these fuels is a major factor in the amount of criteria pollutants in southern California. Alternative fuels play an important role in the strategy to reach attainment in the region. Renewable energy resources include biomass, hydro, geothermal, solar and wind."

It is incorrect to talk about "alternative fuels" as a group. In fact, it is very misleading to have the sentence immediately following the use of the term "alternative fuels" be a definition of "renewable energy resources." A layman might conclude that "alternative fuels" only include "renewable energy resources." The PEIR should clearly specify that, compared to gasoline and diesel, there are some small criteria pollutant reductions from "alternative fuels" such as natural gas and methanol, but much larger reductions from "alternative fuels" such as electric cars, especially those powered by renewable energy resources.

8-2

In fact, the term "alternative fuels" is so misleading as to be obsolete. The term "alternative fuels" is widely misconstrued to include natural gas, especially by proponents and beneficiaries of that industry. Wind, solar, biomass and geothermal sources, moreover, are now fully "mainstream" fuels increasingly competitive with most fossil fuels. They are not "alternative" or second-class to anything else and are now as solidly established—in terms of legitimacy and need—as traditional fuels. SCAQMD should henceforth avoid the term and use instead terms that specify more precisely what is being referred to, such as renewable energy sources. In addition, energy efficiency and energy conservation, the cheapest and most abundant sources of clean energy—"negawatts"—should not be ignored or neglected in any discussion of "clean energy sources." Again, energy efficiency and conservation are not "alternative" sources but fully-accepted mainstream contributors to greenhouse gas reduction and air quality improvement.

Even more of a problem on p. 1-11 is ignoring the importance of GHG emissions from natural gas. We request the sentence be reworded as follows (bold added):

8-3

“One of the key areas of concern in the energy sector is reducing the amount of petroleum consumption of fossil based fuels in the District. Consumption of these fuels is a major factor in the amount of criteria pollutants and GHG emissions in southern California. Alternative fuels play an important varying roles in the strategy to reach attainment in the region. There are some small criteria pollutant reductions from “alternative fuels” such as natural gas and methanol, but much larger reductions in both criteria pollutants and GHG emissions using “alternative fuels” such as electric cars, especially those powered by renewable energy resources.” Then continue with the definition of renewable energy resources. ¶

8-3
Con’t

¶
In addition, we do not see any mention in the PEIR of the fact that much of the imported natural gas (which is 88% of the natural gas used in California) is produced by fracking of shale gas, which has been documented to have greater GHG impact than burning coal to make electricity. In fact, the latest analyses state, “Using all available information and the latest climate science, we conclude that for most uses, the GHG footprint of shale gas is greater than that of other fossil fuels on time scales of up to 100 years. When used to generate electricity, the shale gas footprint is still significantly greater than that of coal at decadal time scales but is less at the century scale. We reiterate our conclusion from our April 2011 paper that shale gas is not a suitable bridge fuel for the 21st Century.” – from “Venting and leaking of methane from shale gas development,” by Robert W. Howarth, Renee Santoro & Anthony Ingraffea, Climatic Change (2012) 113:537–549. ¶

¶
To summarize the latest science: ¶

1. • Unless leakage rates for new methane can be kept below 2%, substituting gas for coal is not an effective means for reducing the magnitude of future climate change. ¶
2. • Fugitive methane emissions from conventional natural gas wells are estimated at 2–5% of well production and thus conventional wells are major contributors to global warming, beyond even burning coal for electricity. ¶
3. • Fugitive methane emissions from natural gas fracked wells are estimated at least 2% more than a conventional natural gas wells, and thus are significantly greater contributors to global warming. ¶
4. • Industry admits that fugitive methane emissions from conventional natural gas wells are likely 2%. However, the only scientific study has found fugitive methane emissions of 4%. ¶
5. • We can’t slow global warming with natural gas; the only hope is ‘rapid and massive deployment’ of clean energy technologies (with zero-carbon emissions). ¶
6. • Therefore, fracked shale gas is not a suitable fuel for the 21st Century. ¶

8-4

¶
This means the PEIR must be amended to state the GHG emissions from the use of natural gas, for vehicles, power generation, and perhaps other uses, are significant and require strong mitigation measures, such as those listed below. ¶

8-5

¶
In addition, as the PEIR correctly reports, “Executive Order S-3-05 . . . established emission reduction . . . goals to . . . reduce GHG emissions . . . to 80 percent below 1990 levels by 2050.” The SCAQMD is legally bound to comply with Executive Order S-3-05. Therefore the AQMP and PEIR must show how they are supporting reduction of “GHG emissions . . . to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.” ¶

¶
Since there are many sources of GHG emissions in addition to fossil fuels, such as industrial processes, to achieve 80 percent below 1990 levels by 2050 means that essentially all use of fossil fuels for combustion (such as natural gas for electricity and hot water) must end by 2050. Since most large natural gas power plants have life expectancies of 40 years, it is past time for AQMP to state its policy is not to support construction of any new large natural gas plants. This would support reductions of both NOx and GHG emissions. ¶

8-6

¶ A simple straight-line extrapolation from 1990 levels by 2020 to 80 percent below 1990 levels by 2050 yields 40% percent below 1990 levels by 2035. Thus this AQMP and PEIR must show how they are on track to reduce GHG emissions to 40% percent below 1990 levels by 2035, the final target date in this plan (and the SCAG RTP). ¶

8-6
Con't

¶ Thus it is time for SCAQMD to end support for natural gas, whether it is for large natural gas power plants, hot water heaters, or even some industrial uses, which could be supplied by solar hot water, especially concentrating solar. State goals are zero net energy new buildings (residential by 2020 and commercial by 2030). SCAQMD should support this by all feasible control measures, plus investigate how to require this on sales. ¶

¶ We also call to SCAQMD's attention Sierra Club California's formal opposition to new licensing of all new natural gas-fired electrical generation power plants (larger than 50 MW). The only exceptions are permitting of certain technologies using natural gas fuel (such as cogeneration plants, renewables with natural gas backup, large fuel cell facilities, biogas wheeling) only if they significantly reduce fossil fuel consumption and carbon emissions and protect air quality. ¶

¶ This discussion has important implications for control measures, especially those that must begin now, because of the extremely slow turnover of residential, commercial, and government buildings. Some examples of such control measures would be as follows: ¶

- Requiring solar PV electricity generation for new, major remodels, and sales of residences, commercial, industrial, and government buildings. ¶
- Requiring solar thermal hot water generation for new and major remodels of residences, commercial, industrial and government buildings. ¶
- Requiring solar thermal hot water generation for new swimming pools. ¶
- Requiring industrial processes to install energy efficiency measures and convert as rapidly as possible to solar thermal hot water generation wherever feasible. ¶
- Requiring all new and major remodels of all large commercial, industrial and government buildings to install additional solar thermal generation to supply heat in the winter and operate absorption chillers for cooling in the summer. ¶
- Requiring district heating and cooling wherever feasible. ¶
- Requiring use of waste heat and co-generation where feasible from fuel cells or other sources of heat in large commercial, industrial and government buildings. ¶
- Requiring fleets to go to zero emission vehicles, such as battery electric vehicles charged by solar panels, or fuel cells fueled by hydrogen produced by solar electricity. ¶
- Requiring electric vehicles charging stations to be installed in all businesses and commercial buildings above a minimum size. ¶

8-7

¶ Mitigations for GHG effects of the use of natural gas need to be expanded. For example, Control Measure INC-01 must be amended to include efficiency and solar thermal for hot water and industrial processes. There also need to be additional control measures mandating implementation of the above requirements. ¶

8-8

¶ Thank you for the opportunity to comment. ¶

8-9

¶
Jim Stewart, PhD, Chair
Sierra Club Angeles Chapter Global Warming, Energy & Air Quality Committee
213-487-9340, Fax: 310-362-8400, Cell: 213-820-4345 ¶

Responses to Comment Letter #8
Sierra Club – Jim Stewart (10/23/2012)

8-1 This comment provides background information describing the nature of the commenter’s organization and states that there are numerous examples in the Draft Program EIR where opportunities to stake out a clear position to reduce GHG emissions are ignored. The commenter’s examples are addressed in responses to comments #8-1 through #8-6.

8-2 The commenter states that it is incorrect to discuss “alternative fuels” as a group. The commenter states that readers of the Program EIR may conclude alternative fuels only include renewable resources. The commenter states that the SCAQMD should avoid using the term alternative fuels and instead use terms that specify more precisely the energy source, such as, renewable energy resources. The commenter states that energy efficiency and energy conservation should not be neglected in any discussion of clean energy sources.

SCAQMD is fuel neutral and SCAQMD supports technologies that reduce criteria, toxic and GHG emissions. SCAQMD promotes energy efficiency and energy conservation. As stated in the Draft Program EIR, the 2012 AQMP is not expected to result in the use of fuel or energy resources in a wasteful manner.

8-3 The commenter requests modifying the last paragraph on page 1-11 of the Draft Program EIR to explicitly state that combustion of natural gas also generates GHG gases. The section in question is simply a summary of the energy existing setting. The proposed changes were not made as they specifically reference air quality impacts, not energy.

SCAQMD is fuel neutral and SCAQMD supports technologies that reduce criteria, toxic and GHG emissions. SCAQMD agrees that natural gas, as well as other combustion fuels, generates GHGs; however, the replacement of diesel and gasoline fueled sources under the 2012 AQMP with natural gas fueled sources would reduce criteria pollutant, air toxic, and GHG emissions.

8-4 The commenter states that much of the imported natural gas is produced by fracking of shale gas. The commenter states that fracking of shale gas has greater GHG impact than burning coal to make electricity. The 2012 AQMP does not include measures requiring fracking. In addition, based on discussions with natural gas utilities, it is not possible for them to distinguish what portion of the natural gas imported is from a specific source. Once natural gas is placed into the pipelines it is indistinguishable from all other natural gas in the pipeline. SCAQMD has no jurisdiction over natural gas sources outside of California.

SCAQMD staff appreciates the information on the fugitive releases of methane from the natural gas wells and transport system along with the environmental impacts from hydraulic fracturing. SCAQMD staff has been monitoring, tracking carefully, providing updates to the SCAQMD’s Governing Board, providing information to the public, and contacting representatives from academia and the oil and gas industry regarding hydraulic fracturing. Recently, the SCAQMD held a forum providing information on what hydraulic fracturing is, while focusing on potential environmental impacts of hydraulic fracturing and policy level implications. In addition, SCAQMD staff is

working with both the state and federal government in developing regulations. SCAQMD staff will also be developing hydraulic fracturing regulations in accordance with the SCAQMD's regulatory authority, if feasible and appropriate. Finally, any fugitive release of natural gas from wellheads or during transport does not affect in any way attainment of the federal 24-hour PM_{2.5} standard in the Basin.

- 8-5 The commenter states GHG emission from the use of natural gas for vehicles, power generation and other uses are significant and require strong GHG mitigation measures. The 2012 AQMP does not promote fracking (see response to comment #8-4). The comment also does not provide any qualitative data supporting the statement that GHG emissions are significant. The Program EIR includes a comprehensive analysis of GHG emission impacts, which were concluded to be less than significant.
- 8-6 SCAQMD staff recognizes the clean air benefits renewable energy provides to both the electric power grid and other services such as hot water heating. Chapter 10 of the 2012 AQMP addresses California's Renewable Portfolio Standard, requiring a 33 percent increase in the use of renewable energy generation, and the benefits that increased energy efficiency provides in reducing fuel and energy demands. The SCAQMD is exploring all options to reduce GHG emissions, while still meeting its mandates to attain the criteria pollutant standards and reduce exposures to air toxics. For example, the SCAQMD is working with the State in helping achieve the goals of S-3-05. The jointly developed document between SCAQMD, San Joaquin APCD, and the ARB *Vision for Clean Air: A Framework for Air Quality and Climate Planning* shows pathways on how we can achieve 2050 GHG reduction levels. As shown in the document there is not a single pathway that can be taken to meet the GHG goals and further development and implementation of transportation technologies is needed.

Chapter 10 shows that total energy consumption in southern California was nearly 2.1 quads⁴ in 2008 and is expected to show a slight 0.1 quad increase by 2023. However, the slight increase in projected energy use in southern California is expected to be met with a disproportionate increase in energy prices; in 2008 almost \$54 billion were spent on energy, while the projected cost of energy consumption in 2023 is expected to be \$74 billion. Overall the projected five percent increase in energy consumption is expected to be met with a 27 percent increase in energy prices. As also mentioned in Chapter 10, a large increase in the use of renewable energy coupled with the expanding mass transit systems would help lower emissions, including GHG emissions, reduce impacts from volatile energy prices, help localize dollars spent on energy, and provide some isolation from increasing energy costs.

The SCAQMD endorses solar power as a clean air solution to help provide emission-free electricity to residences and businesses. The SCAQMD has been an early supporter of implementing new solar technologies. For example, SCAQMD headquarters currently has over 180kW of solar panels installed that are being used to demonstrate three different solar technologies. Additionally, the SCAQMD is funding and participating in several technology demonstration projects that help address the limitations of solar energy, such as, coupling solar power production with energy storage to help with

⁴ A quad is a unit of energy equal to 10¹⁵ (a short-scale quadrillion) Btus, or 1.055 × 10¹⁸ joules (1.055 exajoules or EJ) in the international system (SI) of units.

intermittency (i.e., subject to interruption or periodic stopping). The SCAQMD is also promoting the benefits electrification technologies would provide to further reduce emissions, such as electric vehicles, and as mentioned earlier, promote electricity generation from clean sources such as renewable fuels.

The prices of solar panels having come down nearly a third in the past couple of years due to less expensive ways to manufacture polysilicon, an increase in solar manufacturers, and expiring solar incentives in other countries. Resulting price declines have made PV solar very competitive with conventional generating technologies. This decline in prices has helped implement solar technologies in southern California as there are now many solar installation companies that employ thousands in this sector. The recent increase in rooftop solar PV installations does not show any indication of slowing down in the near future since financing mechanisms have become available along with local incentives and federal tax credits. Additional incentives for solar installations are also likely in the near future as a portion of the revenues utilities start to receive from the Cap and Trade program under AB 32.

Unfortunately, solar power does not currently provide a standalone solution to providing all the electrical generation needs for Southern California. Until the intermittency, large storage technologies, and increased panel efficiencies become more cost effective existing generating natural gas-fired power generating technologies are required to provide base loads, ramp rates, and other ancillary services such as frequency regulation. Additionally, the clean air benefits renewable energy sources such as solar power provide in southern California would be best realized as transportation technologies, such as electrification, are implemented at a faster rate.

The *Vision* document also presented biofuels as a potential pathway among several to meet the GHG reduction mandates and goals of California. The use of biofuels does not typically provide an advantage in reducing criteria pollutants if they are combusted from standard internal combustion engines (ICEs) such as diesel ICEs. Therefore in the *Vision* document it is stated “In the longer-term, to meet the greenhouse gas targets, any combustion-based heavy-duty trucks would rely predominantly on efficiency and renewable and biofuel solutions. However, to achieve the air quality standards in the South Coast, a technology transition to zero- and near-zero emission trucks (e.g., electric, fuel cell, or hybrid with all electric range) to reduce NOx emissions is also needed.” In summary, SCAQMD staff supports the development and implementation of solar energy technologies to the maximum extent feasible and cost-effective. These technologies are not needed to attain the PM2.5 standards, but SCAQMD staff will continue to support solar technologies for attaining the ozone standards in the future.

The comment states that the 2012 AQMP and the Program EIR must show how they are on track to reduce GHG levels 40 percent by 2035. As noted earlier, the jointly developed document between SCAQMD, San Joaquin APCD, and the CARB *Vision for Clean Air: A Framework for Air Quality and Climate Planning* shows pathways on how we can achieve 2050 GHG reduction levels. Further, the purpose of the Program EIR for the 2012 AQMP is to evaluate potential environmental impacts from the proposed project. As indicated in Subchapter 4.2, potential GHG impacts from implementing the 2012 AQMP is expected to result in reducing GHG emissions approximately 0.477

million metric tons of CO₂e. Since GHG emission would be reduced from implementing the 2012 AQMP, GHG emission impacts were concluded to be insignificant and, therefore, measures to mitigate GHG emissions are not required.

- 8-7 The commenter states that the Sierra Club opposes the licensing of all new natural gas power plants, but lists exceptions. The commenter requests that the 2012 AQMP include a suggested list of control measures. Some of the alternative technologies mentioned in the comment include using natural gas in cogeneration, using biogas, and large fuel cells. Currently the SCAQMD is funding demonstration projects with many of these technologies and alternative sources of fuel. Biogas can provide a good replacement for natural gas and has GHG benefits, but currently has limited supply sources with high upfront costs to develop new sources. Generation sources using natural gas for fuel cells have many applications to provide a generation source and waste heat recovery for a building. The SCAQMD is currently installing a demonstration fuel cell to further investigate potential power generating and heating benefits. However, large fuel cells are currently very costly and the efficiency of the system with waste heat recovery is similar to a combined cycle power plant. As the costs of these systems come down they can be more widely implemented and have criteria pollutant emission benefits over large power generating facilities.

Some of the proposed control measures are covered under the Title 24 building standards. CEQA staff has referred this comment to the 2012 AQMP staff. In general, the SCAQMD supports measures such as these if and when they are feasible. The SCAQMD will consider these suggestions, as appropriate, in future rule development efforts.

See response for comment #8-6 regarding the use of solar power to replace current power generation sources.

- 8-8 The primary objective of Control Measure INC-01 is to develop programs that promote and encourage adoption and installation of cleaner, more-efficient combustion equipment with a focus on zero and near-zero emission technologies. The commenter's request to include "efficiency and solar thermal for hot water and industrial processes" in Control Measure INC-01 is not necessary as those example are in concert with the goals of Control Measure INC-01.
- 8-9 This comment concludes the letter. No further response is necessary.

Dr. Barry Wallerstein
October 23, 2012

3. There are significant errors in describing Orange County in Subchapter 3.6 – Land Use and Planning and Subchapter 3.2 – Climate Change. Corrections need to be made in the final draft of the PEIR. These errors are included as an attachment to this letter.

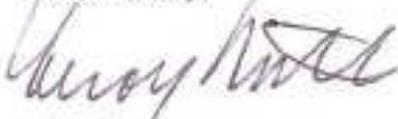
9-4

Again, OCCOG appreciates the opportunity to provide further comments on the 2012 AQMP/PEIR. At this time, we anticipate providing further comment on the overall AQMP plan and the recently released socio-economic report.

9-5

We look forward to receiving your response to our comments and would be pleased to work with your staff on the noted technical corrections.

Respectfully,



Leroy Mills
OCCOG Chairman

cc: OCCOG Board of Directors

Dr. Barry Wallerstein
October 23, 2012

**Errors Noted Orange County Data in Subchapters 3.6 and 3.2
Land Use and Planning and Climate Change**

Subsection 3.6.3.2 Orange County (page 3.6-7): The Orange County General Plan is only applicable to areas of unincorporated Orange County and does not supersede the General Plans of the 34 independent local jurisdictions. Therefore, it is erroneous and misleading to state policies identified in the County of Orange General Plan and generalize that these policies are applicable to the 34 local Orange County jurisdictions. The PEIR should either be revised to clearly state that the County of Orange General Plan is only applicable to those unincorporated areas of the County of Orange and each local jurisdiction has their own governing General Plan or remove the text in its entirety.

9-6

Subsection 3.6.3.2.2 Commercial (page 3.6-8): There are errors in describing the commercial areas within Orange County that need to be revised in the final version of the Program Environmental Impact Report. 1) The commercial area located within close proximity to the intersection of Interstate 5, State Route 22, and State Route 57 is not known as the "Orange Crush" as noted in the draft PEIR. The "Orange Crush" is used to describe the intersection of the three transportation corridors, not the commercial/office area. 2) The area surrounding John Wayne Airport and the University of California, Irvine is known as the Irvine Business Complex or IBC not the Irvine Spectrum. 3) The terminology "El Toro Y" is used to describe the intersection of two transportation corridors, Interstate 405 and Interstate 5, not the commercial/office center. That is the Irvine Spectrum.

9-7

Subsection 3.6.3.2.3 Industrial (page 3.6-8): The paragraph is erroneous in referencing the Orange County General Plan, which is only applicable to the unincorporated areas of the County of Orange. Every local jurisdiction has their own governing General Plan that may identify areas of industrial use. The paragraph needs to be revised for the final PEIR.

9-8

Subsection 3.6.3.2.5 Open Space (page 3.6-8): The Orange County Sustainable Communities Strategy identifies the preservation/open space programs located throughout all of Orange County, including the individual efforts of the County of Orange and the 34 local jurisdictions. This paragraph should be revised to generally reflect the open space policies outlined in the Orange County Sustainable Communities Strategy.

9-9

Dr. Barry Wallerstein
October 23, 2012

Table 3.2-1A and Table 3.2-1B (pages 3.2-13 and 3.2-14): It is unclear how certain calculations were made in both tables due to the rounding of the values. The Final PEIR should include the non-rounded values to ensure reviewers are able to confirm the calculations and assumptions. In addition, any reference to these numbers in the text of the document should be corrected for consistency. For example on Table 3.2-1A, under Waste Disposal NOx, the 2007 AQMP value is 2 and the draft 2012 AQMP is 2, yet the percent change is calculated at -24%. In Table 3.2-1B, under Fuel Consumption Sox, the 2007 AQMP value is 2 and the draft 2012 AQMP value is 2, yet the percent change is -3%. The Petroleum Production and Marketing Sox 2007 AQMP value is 1 and the draft 2012 AQMP value is 1, yet the percent change is -32%. The Petroleum Production and Marketing PM 2.5 2007 AQMP value is 1 and the draft 2012 AQMP value is 2, yet the percent change is 68%. The Cleaning and Surface Coatings PM 2.5 2007 AQMP value is 1 and the draft 2012 AQMP value is 2, yet the percent change is 53%.

9-10

Responses to Comment Letter #9
Orange County Council of Governments – Leroy Mills (10/23/2012)

- 9-1 This comment notifies the SCAQMD that the comments contained in the letter pertain to the Draft Program EIR for the 2012 AQMP but that the comments were not considered by the full OCCOG Board of Directors. Instead the comments were prepared by the OCCOG Technical Advisory Committee. Lastly, this comment notifies the SCAQMD that a previous comment letter was submitted relative to the Draft 2012 AQMP on August 31, 2012. No further response is necessary.
- 9-2 This comment recommends the title of Appendix F to be changed from “RTP/SCS Mitigation Measures Table” to “Examples of Measures That Could Reduce Impacts From Planning, Development, and Transportation Projects” for consistency with the SCAG 2012-2035 RTP/Sustainable Communities Strategy. The title of Appendix F of the Final Program EIR has been revised accordingly.
- 9-3 This comment states that the demographic and socioeconomic data included in the analysis of the Draft Program EIR is outdated and that the analysis should be revised to reflect the most recent data contained in the Orange County Sustainable Communities Strategy. Because the comment does not specifically state what data are obsolete, SCAQMD staff is unable to identify what data needs to be updated. Further, since Orange County’s SCS was incorporated into SCAG’s 2012-2035 RTP/SCS, which forms the basis of the 2012 AQMP’s socioeconomic forecasts, it is not necessary to update the CEQA document to include socioeconomic data.
- 9-4 This comment states that there are errors in the description of Orange County in Subchapter 3.6 – Land Use and Planning and Subchapter 3.2 – Air Quality and that the errors are described in more detail in an attachment to the comment letter. For responses to the individual described errors, see responses to comments #9-6 through #9-10.
- 9-5 This comment concludes the letter. No further response is necessary.

Responses to comments attached to Letter #9

- 9-6 This comment recommends the Land Use and Planning discussion that pertains to the Orange County General Plan be clarified to explain that the plan is only applicable to unincorporated areas within Orange County and that each of the 34 cities within Orange County has its own General Plan. Section 3.6.3.2 of Subchapter 3.6 in the Final Program EIR has been revised to reflect these recommended changes. None of these changes to the Final Program EIR, however, will alter the conclusions.
- 9-7 This comment recommends the Land Use and Planning discussion that pertains to the commercial areas within Orange County General Plan to be clarified to explain that the commercial area located within the proximity of Interstate 5, State Route 22, and State 57 is not the “Orange Crush” transportation corridor. This comment also recommends the Land Use and Planning discussion that pertains to the area surrounding John Wayne Airport and the University of California – Irvine to be described as the Irvine Business District and not the Irvine Spectrum. This comment also recommends the Land Use and Planning discussion that pertains to the intersection of Interstate 5 and Interstate 405 to be described as the “El Toro Y” and the commercial/office center in the vicinity of this

intersection to be described at the Irvine Spectrum. Subsection 3.6.3.2.2 of Subchapter 3.6 in the Final Program EIR has been revised to reflect these recommended changes. None of these changes to the Final Program EIR, however, will alter the conclusions.

- 9-8 This comment recommends the Land Use and Planning discussion that pertains to the Orange County General Plan be clarified to explain that the plan is only applicable to unincorporated areas within Orange County and that each of the 34 cities within Orange County has its own General Plan. Subsection 3.6.3.2.3 of Subchapter 3.6 in the Final Program EIR has been revised to reflect these recommended changes. None of these changes to the Final Program EIR, however, will alter the conclusions.
- 9-9 This comment recommends the Land Use and Planning discussion that pertains to open space should be revised to reflect the open space polices outlined in the Orange County Sustainable Communities Strategy. Subsection 3.6.3.2.5 of Subchapter 3.6 in the Final Program EIR has been revised to reflect these recommended changes. None of these changes to the Final Program EIR, however, will alter the conclusions.
- 9-10 The commenter has identified several typos in Tables 3.2-1A and 3.2-1B (in Chapter 3.2 of the Draft Program EIR). These typos have been corrected in the Final PEIR to match the actual, correct values as provided in Tables III-2-1A and III-2-1B in Appendix III of the 2012 AQMP, which have been available since July in both a draft (<http://www.aqmd.gov/aqmp/2012aqmp/draft/Appendices/AppIII.pdf>) and revised draft version (<http://www.aqmd.gov/aqmp/2012aqmp/RevisedDraft/appIII.pdf>).

The commenter has also suggested that the values provided in the tables should be provided in non-rounded numbers so that reviewers can confirm the calculations and assumptions. SCAQMD staff disagrees with this suggestion as the data provided in the table is a straight comparison between the emissions data in the 2007 AQMP and the 2012 AQMP, so other than the footnotes provided for certain entries, no assumptions were made when compiling this table. Further, based on the data compiled, the calculations can be confirmed as currently presented. Thus, other than the corrections made to the typos, no other changes to these tables are necessary.

Letter #10
Greg Nord, OCTA

Potential Conflicts with the 2012-2035 RTP/SCS PEIR ¶

Several sections of the PEIR for the 2012 AQMP include language along the following lines: ¶

¶

Mitigation measures are not required for the 2012 AQMP because implementation of the 2012 AQMP is not expected to result in potentially significant adverse _____ impacts and does not contribute to the impacts identified in the 2012-2035 RTP/SCS Final Program EIR. However, because implementation of the 2012-2035 RTP/SCS is expected to result in significant impacts, mitigation measures were identified in the 2012-2035 RTP/SCS Program EIR. The 2012-2035 RTP/SCS Program EIR mitigation measures are included in Appendix F, as part of the 2012 AQMP Program EIR. ¶

¶

The “legal standing” of Appendix F with respect to the 2012 AQMP PEIR is not explicitly stated anywhere within the document. Thus, circulation of Appendix F as part of the 2012 AQMP PEIR could be construed as an invitation to re-open the 2012-2035 RTP/SCS PEIR. It is recommended that language be included within the 2012 AQMP PEIR to clarify that Appendix F is provided for informational purposes only. ¶

¶

If additional mitigation to address the 2012 AQMP’s cumulative contribution is available, it should be included in the AQMP PEIR. For example, the 2012 AQMP could call for cleaner fuels and higher energy efficiency standards (regulations that would be introduced at the state and/or federal level). ¶

¶

Proposed Expansion of MM-TR-29 ¶

The following language is included on page 1-23 under the heading “Implementation of Control Measures” and is repeated later in the document: ¶

¶

SCAQMD recommends that mitigation measure MM-TR29 from SCAG’s 2012-2035 RTP/SCS PEIR (which generally requires a traffic management plan) be implemented for all [word(s) missing] that have the potential to impact roadways. ¶

¶

MM-TR29 addresses temporary construction-related traffic impacts and says project sponsors should develop construction management plans for review and approval by the lead agency. The AQMP PEIR should clarify what “all” refers to and ensure that the recommendation is reasonable for any project that would fall within the definition of “all”. (For instance, it might not be reasonable to require a comprehensive construction management plan for a small project, such as parking lot resurfacing or tree trimming that might disrupt traffic for only a few days.) ¶

¶

Site-Specific Air Quality Mitigation ¶

Page 4.2-18 of the AQMP PEIR ¶

¶

The proposed requirements AQ-1 through AQ-7 (especially the AQ-1 requirement to submit a Construction Emission Management Plan to SCAQMD/CEQA for approval prior to the start of construction) will add cost, time and complexity to the project delivery process. It is recommended (a) that appropriate thresholds be developed to distinguish which projects would be subject to these requirements and (b) that a self-certification process is implemented for compliance with them. ¶

10-1

10-2

10-3

Responses to Comment Letter #10
Orange County Transportation Authority – Greg Nord (10/23/2012)

- 10-1 This comment includes a statement from Chapter 5 in the Program EIR that addresses cumulative impacts. The statement indicates that mitigation measures are not required for specified environmental impact areas where the 2012 AQMP does not contribute to significant adverse impacts. This statement is made under two scenarios. The first scenario is where the 2012 AQMP does not create any impacts to an environmental topic area as indicated in the Initial Study and was not further analyzed in the Draft Program EIR. Under this scenario, project-specific mitigation measures are not required as no impacts are expected to be generated that could contribute to cumulative impacts, thus, cumulative impact mitigation measures would not be required.

The second scenario where this statement is made is when analysis of project-specific impacts to an environmental topic indicated that impacts would be less than significant. In this situation, impacts are not concluded to be cumulatively considerable as defined by CEQA Guidelines §15064 (h)(1) and, therefore, are not cumulatively significant. In the situation where impacts from the 2012 AQMP are not cumulatively significant, mitigation measures would not be required.

Finally, where project-specific impacts from the 2012 AQMP are concluded to be significant, the analysis concludes that project-specific impacts contribute to significant adverse cumulative impacts. For all environmental topic areas where project-specific impacts were concluded to be significant, feasible mitigation measures were identified. These measures would also serve to mitigate significant adverse cumulative impacts.

The comment also requests clarification on the “legal standing” of Appendix F, which includes mitigation measures from SCAG’s 2012–2035 RTP/SCS Final Program EIR. As recognized in the comment Appendix F is for informational purposes only. To make it clearer that Appendix F is for information purposes only, the following footnote has been added to page 5-1 in Chapter 5 of this Final Program EIR. “In addition to summarizing impacts from the 2012-2035 RTP/SCS, this document includes a list of all measures identified in the 2012-2035 RTP/SCS Program EIR to mitigate environmental impacts from that project for informational purposes only. The Program EIR for the 2012-2035 RTP/SCS, which includes all of the mitigation measures in Appendix F, was previously certified in April 2012.

As described in Chapter 4 and Appendix IV-B of the 2012 AQMP, 17 mobile source measures are being proposed that focus on accelerated retrofits or replacement of existing vehicles or equipment, acceleration of vehicle turnover, and greater use of cleaner fuels in the near-term. In the longer term, there is a need to increase the penetration and deployment of near-zero and zero-emission vehicles such as plug-in hybrids, battery-electric, fuel cells, and further use of cleaner fuels (either alternative fuels or new formulation of gasoline and diesel fuels). However, as noted by the commenter, regulating these sources would require state or federal involvement. The cost to incentivize the implementation of these mobile source measures are provided in the individual write-ups for each measure found in Appendix IV-B. Because these mobile measures already call for more efficient vehicle performance and cleaner fuels, and, thus, part of the proposed project, they are not classified as mitigation measures under CEQA.

- 10-2 This comment notes that there are words missing in a sentence in Chapter 1 on page 1-23 and requests clarification of the sentence. The sentence identified in the comment has been modified as follows:

SCAQMD recommends that mitigation measure MM-TR29 from SCAG’s 2012-2035 RTP/SCS Program EIR (which generally requires a traffic management plan) be implemented for all projects resulting from Control Measures ONRD-05 and/or ADV-01 that have the potential to impact roadways.

- 10-3 The comment recommends developing appropriate thresholds for identifying projects that would be subject to construction air quality mitigation measures AQ-1 through AQ-7 and that a self-certification process be implemented to demonstrate compliance with the referenced mitigation measures. With regard to the comment about thresholds, the SCAQMD has developed construction air quality thresholds, both regional and localized significance thresholds that are recommended for use by public agencies when preparing an environmental analysis pursuant to CEQA or NEPA. For those lead agencies that use the SCAQMD’s recommended construction significance thresholds, if projects for which they are lead agencies exceed the recommended construction air quality significance thresholds as part of complying with 2012 AQMP control measures promulgated as rules or regulations in the future, they would be required to implement mitigation measures AQ-1 through AQ-7. Projects with construction emission less than the SCAQMD’s suggested significance threshold would not be required to implement the mitigation.

It is unclear what is meant by “self-certification process.” However, when the SCAQMD imposes mitigation measures on an affected facility, it is typically the responsibility of the facility owner/operator to implement applicable mitigation measures. Further, the owners/operators are typically required to keep records documenting implementation of applicable mitigation measures that must be kept onsite for a specified period of time and be available for review by SCAQMD inspectors.

Letter #11

Lori Moore

From: Steve Smith
Sent: Wednesday, October 24, 2012 8:44 AM
To: Steve Smith
Subject: FW: Comments to AQMD Draft EIR-2012 Air Quality Management Plan AQMP due 10.23.2012

From: Joyce Dillard [mailto:dillardjoyce@yahoo.com]
Sent: Tuesday, October 23, 2012 2:25 PM
To: 2012 AQMP Comments
Subject: Comments to AQMD Draft EIR-2012 Air Quality Management Plan AQMP due 10.23.2012

Federal Register Docket EPA-R09-OAR-2012-0721-0001 titled Finding of Substantial Inadequacy of Implementation Plan; Call for California State Implementation Plan Revision; South Coast and dated August 30, 2012 states:

Our proposed SIP call is based on the evidence submitted by California in the form of the 2003 South Coast 1-Hour Ozone Plan that the approved 1997/1999 South Coast 1-Hour Ozone SIP was substantially inadequate to provide for attainment of the 1-hour ozone standard by the applicable attainment date of November 15, 2010.

Federal Register EPA-R09-OAR-2012-0713-0001 titled Disapproval of Implementation Plan Revisions; State of California; South Coast VMT Emissions Offset Demonstrations and dated September 19, 2012 states:

EPA is proposing to withdraw its final approvals of state implementation plan revisions submitted by the State of California to meet the vehicle-miles-traveled emissions offset requirement under the Clean Air Act for the Los Angeles-South Coast Air Basin 1-hour and 8-hour ozone nonattainment areas. EPA is also proposing to disapprove the same plan revisions. EPA is proposing the withdrawal and disapproval actions in response to a remand by the Ninth Circuit Court of Appeals in Association of Irrigated Residents v. EPA.

Are you figures reflective of that criteria and how does it effect the facts, assumptions, and mitigations of this plan.

You base the plan on the following components:

- 1) the SCAQMD's Stationary and Mobile Source Control Measures;
- 2) suggested State Mobile Source Control Measures; and
- 3) Regional Transportation Strategy and Control Measures provided by SCAG.

Not taken into consideration for emission projections, monitoring and mitigation are increases in density, planned by the municipalities, not SCAG and major projects that generate VMT such as an NFL Football Stadium and related sports such as Major League Baseball, whether it be in the City of Los Angeles, City of Industry or the Rose Bowl in Pasadena (temporary) and its related entertainment activities affect Air Quality such as tailgating (barbeques) and fireworks. Also, the effects of increase in Metrolink traffic, maintenance and maintenance yard usage are not addressed. The increase of hotels for tourism is not addressed nor any increase in airplane traffic and in port traffic (supplies). These are regional factors that should be reflected in your Emission Growth Factors.

11-1

11-2

In my prior comments, you ducked the question of Ozone and Signage. Though you may not be the permittees of signage, you need to take into consideration the growth effects of the region, especially 24/7 digital signage.

11-3

These factors MUST be considered in any Mitigation for the 2012 AQMP. This Draft EIR is flawed.

11-4

Under **Aesthetics**, you state:

These general plans establish local policies related to aesthetics and the preservation of scenic resources within their communities or sub-planning areas, and may include local scenic highway programs.

11-5

You also fail to list the Caltrans Arroyo Seco Scenic Byway within the District borders. This Byway should be considered for mitigation in any NFL Stadium in Los Angeles or temporary site at the Rose Bowl in Pasadena in all measures of the EIR.

Under **Hydrology and Water Quality**, you state:

2012-2035 RTP/SCS impacts associated with hydrology and water quality would be reduced following the implementation of the 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation for water quality, wastewater, riparian habitats and waters of the U.S. runoff/drainage, groundwater, flooding, and water supply.

Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would contribute to cumulatively considerable impacts following mitigation to water demand impacts. The cumulative impacts of other hydrology and water quality impacts associated with the 2012 AQMP are less than significant.

11-6

Omitted are effects on the Watersheds and Sub-Watersheds and the compliance issue of pollutants generated from emissions. This is extremely significant as the LA County Flood Control District LACFCD is implementing a parcel task to pay for watershed mitigation and maintenance under Watershed Management Areas, as guided by the LA Regional Water Quality Control Board.

The cost is extremely high for this execution, compounded by other local and state taxpayer-backed funding mechanisms.

Under **Land Use and Planning**, you state:

Implementation of the 2012 AQMP would not result in any significant impacts associated with land use or planning. Potential land use and planning impacts associated with the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures.

However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS would contribute to inconsistencies with general plans, disruption or division of established communities, changes to land uses by changing concentrations of development throughout SCAG, change patterns of growth and urbanization beyond the SCAG region, and cumulatively considerable changes to land use and the intensity of land use. Short-term construction related impacts and long-term or permanent displacement or offsite impacts from new facilities would also potentially occur as a result of implementation of the 2012-2035 RTP/SCS.

11-7

Moreover, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable land use and planning impacts requiring mitigation.

11-7
Con't

Under State law, there should be no inconsistencies with the General Plans and their Elements. Guidance is issued by the Governor's Office of Planning including COMPLETE STREETS AND THE CIRCULATION ELEMENT and COMMUNITY AND MILITARY COMPATABILITY PLANNING.

Under **Noise**, you state:

The 2012 AQMP control measures associated with construction of overhead catenary lines could result in significant noise and vibration impacts after mitigation due to the geographic proximity of sensitive receptors. Although impacts would be reduced following implementation of noise mitigation measures identified in the 2012 AQMP Program EIR, noise and vibration impacts associated with the construction of catenary lines would remain significant in areas where sensitive receptors are located near transportation corridors.

2012-2035 RTP/SCS impacts associated with noise would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation for noise and vibration during construction activities and operational activities. Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would contribute to cumulatively considerable construction noise and vibration impacts following mitigation.

11-8

You fail to recognize destruction, damage and possible emissions from underground pipes due to these factors. You have not even addressed the types of emissions from the various underground pipe infrastructure.

Under **Solid/Hazardous Waste**, you state:

The 2012 AQMP control measures would not result in significant impacts on solid or hazardous waste. Solid and hazardous waste impacts associated with the 2012-2035 RTP/SCS would remain significant following mitigation because the demand for solid waste services in the SCAG region and the resulting need to move solid waste large distances, potentially out of the region, would remain. Based on the above information, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable solid or hazardous waste impacts following mitigation

11-9

You fail to recognize attempts by municipalities to place solid waste recycling operations within the region. You fail to neither analyze landfill usage increase nor identify the landfills that would accommodate waste. All these factors contribute emissions themselves and require more mitigation than addressed.

Under **Transportation and Traffic**, you state:

The 2012 AQMP control measures that could result in the construction of overhead catenary lines are expected to remain a significant construction impact to traffic after mitigation. Such construction activities would generate traffic associated with construction worker vehicles and trucks delivering equipment, materials and supplies to the project site during the duration of the construction activities.

11-10

Similarly, transportation infrastructure improvements pertaining to overhead catenary electrical lines could require the dedication of an existing lane exclusive to vehicles using the overhead catenary electrical lines or fixed guideway systems. Thus, a reduction in the number of available lanes could result in significant adverse operational traffic impacts.

According to the 2012-2035 RTP/SCS PEIR, implementation of the RTP/SCS would result in several significant and several less than significant impacts after mitigation. The 2035 VMT and 2035 heavy-duty truck VHD would be substantially greater than the existing conditions and as such would result in a significant impact in spite of implementing mitigation measures. As the population increases through 2035, the number of trips originating and ending in Santa Barbara, San Diego and Kern counties to and from the SCAG region would increase. And the transportation demand from growth, in combination with the accommodating projects in the 2012-2035 RTP/SCS would contribute to a cumulatively considerable transportation impact.

Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and with 2012-2035 RTP/SCS projects in particular, would contribute to cumulatively considerable construction impacts following mitigation and, since no mitigation measures were identified that reduce potential operation-related traffic impacts, these remain significant.

You fail to recognize increased VMT in relationship to conversion timetables and any emission factors sustained before conversion.

Under Biological Resources, you state:

The 2012 AQMP is not expected to result in significant biological resources impacts. 2012-2035 RTP/SCS impacts associated with biological and open space resources would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation due to significant disturbance and removal of natural vegetation that may be utilized by sensitive species, habitat fragmentation and the associated decrease in habitat quality, litter, trampling, light pollution and road noise in previously undisturbed natural areas, displacement of riparian and wetland habitat, siltation of streams and other water bodies during construction, and the loss of prime farmlands, grazing lands, open space and recreation lands. The increased urban development anticipated by the 2012-2035 RTP/SCS would also result in similar impacts. However, since the 2012 AQMP was not identified as creating any adverse biological resources impacts, it would not create cumulatively considerable impacts, so adverse cumulative biological resources impacts from the 2012 AQMP are concluded to be less than significant.

You have not taken into consideration ecosystems, endangered wildlife and vegetation, wetlands and watershed management issues.

Under Cultural Resources, you state:

The 2012 AQMP is not in itself expected to result in significant cultural resources impacts. The development of transportation facilities as part of the 2012-2035 RTP/SCS may affect historical resources because many projects could be located in older urban centers where structures of architectural or historical significance are likely to be located. In addition, 2012-2035 RTP/SCS transportation projects would significantly affect archaeological and paleontological resources because projects could be located in previously undisturbed areas.

You fail to even mention Tribal issues or Disadvantaged Communities.

11-10
Con't

11-11

11-12

Under **Geology and Soils**, you state:

Implementation of the 2012 AQMP would not in itself result in significant geological or soil impacts. Potential geologic and soil resources impacts associated with the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS is expected to result in potential damage to transportation infrastructure through surface rupture, ground shaking, liquefaction, and landsliding, as well as long term soil erosion and/or loss of top soil, subsidence, and slope failure. Moreover, the 2012 AQMP would not contribute to geologic and soil resources impacts associated with transportation projects projected in the 2012-2035 RTP/SCS and, therefore, would not be expected to contribute to a cumulatively considerable impact requiring mitigation.

11-13

and under **Mineral Resources**, you state:

Implementation of the 2012 AQMP would not result in any significant impacts associated with mineral resources. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of 2012-2035 RTP/SCS would result in increased demand driven by growth and the large number of projects anticipated in the 2012-2035 RTP/SCS. The 2012 AQMP, when combined with past, present, and reasonably foreseeable activities and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable mineral resources impacts following mitigation.

You are now addressing the Fracking issue under your October 12, 2012 press release. The issue is omitted in the Draft EIR as are emissions from subsidence factors.

Under **Population and Housing**, you state:

The 2012 AQMP control measures would not result in population and housing impacts. The policies included in the 2012-2035 RTP/SCS seek to direct growth in a way that is efficient for both mobility and land consumption. Implementation of the RTP/SCS would help induce growth to certain vacant areas of the region, a substantial number of residences and businesses would likely be displaced, and the mobility benefits from the RTP/SCS may shift population, households, and employment. This may generate potentially significant adverse cumulative population and housing impacts in spite of implementing mitigation measures.

11-14

Therefore, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and with 2012-2035 RTP/SCS projects in particular, would not be expected to produce a cumulatively considerable impact following mitigation

You fail to recognize density issues in COMMUNITY PLANS of the GENERAL PLANS and the high density planned with consequences in Health Risk Assessments being underplayed.

Under **Public Services**, you state:

The 2012 AQMP control measures would not result in significant public services impacts. The public service impacts from the 2012-2035 RTP/SCS associated with police, fire, and emergency response were concluded to be significant in spite of implementing mitigation measures. Impacts to wildfire threats would also remain significant because development would occur in areas that have a high threat of fire. In addition, the region's demand to accommodate an additional 453,000 school children

11-15

would remain a significant impact on public services following implementation of 2012-2035 RTP/SCS mitigation measures.

Based on the above information, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and with 2012-2035 RTP/SCS projects in particular, is not expected to produce cumulatively considerable impacts to public services following mitigation

You fail to recognize sea-level rise with emissions and possible flooding factors. Emergency services and their need for equipment and vehicles have not been addressed in relationship to population and density increase.

Under **Recreation**, you state:

The 2012 AQMP control measures would not result in significant impacts on recreation resources. Impacts associated with recreation resources remain significant following mitigation because the 2012-2035 RTP/SCS would contribute to the loss and disturbance of open space and recreational lands. Based on the above information, the 2012 AQMP, when combined with past, present, and reasonably foreseeable activities, and in particular with the 2012-2035 RTP/SCS transportation projects, would not be expected to contribute to cumulatively considerable recreation impacts following mitigation.

You have not addressed pollution effects on warming of the air and atmosphere and its effects on plants, wildlife and birds in parks, open spaces, forests and wetlands.

Under **Agricultural Resources**, you state:

The 2012 AQMP is not expected to result in significant agriculture resources impacts, as evaluated in the NOP/IS.

For the 2012-2035 RTP/SCS, agricultural resource impacts are expected to remain significant following mitigation as the 2012-2035 RTP/SCS is expected to contribute to the loss and disturbance of agricultural lands as up to 74,300 new lane miles could be developed, some of which could disturb or consume agricultural lands. Potential agricultural resources impacts associated with the 2012-2035 RTP/SCS would be reduced following the implementation of 2012-2035 RTP/SCS Program EIR mitigation measures. However, 2012-2035 RTP/SCS impacts would remain significant following mitigation because implementation of the 2012-2035 RTP/SCS would contribute to significant loss and disturbance of agricultural lands. Moreover, the 2012 AQMP would not contribute to these impacts, so adverse cumulative operational agricultural resources impacts are concluded to be less than significant.

You have not addressed pollution effects on warming of the air and atmosphere and its effects on agriculture.

Will you be able to obtain **OVERALL ATTAINMENT STRATEGY** with this flawed and understated Draft EIR or have a Federal Implementation Plan exercised over the State Implementation Plan?

Joyce Dillard
P.O. Box 31377
Los Angeles, CA 90031

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Con't

11-16

11-17

11-18

Responses to Comment Letter #11
Ms. Joyce Dillard (10/23/2012)

- 11-1 As noted in the comment the U.S. EPA published a “SIP call” on September 19, 2012, finding the existing approved one-hour ozone SIP substantially inadequate to provide for attainment of the revoked one-hour ozone standard (<http://www.aqmd.gov/aqmp/2012aqmp/EPA/FederalRegister-SIPcall.pdf>). This action was in response to the decision of the Ninth Circuit Court of Appeals in *Association of Irrigated Residents, et al, v. United States Environmental Protection Agency, et al.*, 686 F. 2d 668 (Amended January 12, 2012). As a result, SCAQMD staff prepared Appendix VII of 2012 AQMP for the purpose of providing an attainment demonstration of the one-hour ozone standard. Appendix VII is composed largely of summaries or replication of information, such as air quality, emission inventory and ozone control strategy, presented in the main volume and appendices of the 2012 AQMP, so there is no effect on the 2012 AQMP. The only new information presented in Appendix VII is the discussion demonstrating attainment with the one-hour ozone standard. Because the one-hour ozone standard demonstration does not require that additional control measures be identified, the one-hour ozone standard attainment demonstration has no effect on the 2012 AQMP, which also demonstrates the attainment of the federal 24-hour PM_{2.5} standard.

As also indicated in the comment, in response to a decision of the Ninth Circuit Court of Appeals in *Association of Irrigated Residents v EPA*, (9th Cir., reprinted as amended on January 27, 2012, 686 F. 3d 668), EPA withdrew its approval of, and then disapproved, the vehicle miles travelled (VMT) emissions offset demonstrations in the 2003 one-hour ozone SIP and the 2007 one-hour ozone plan (“Disapproval of Implementation Plan Revisions; State of California; South Coast VMT Emissions Offset Demonstrations”, September 19, 2012 (77 Fed. Reg. 58067)). In August 2012, the U.S. EPA issued guidance entitled “Implementing Clean Air Act Section 182 (d)(1)(A): Transportation control measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Travelled.” The U.S. EPA guidance recommended a calculation methodology that could be done to determine if sufficient transportation control strategies and TCMs have been adopted and implemented to offset the growth in emissions due solely to growth in VMT. SCAQMD staff conducted a VMT emissions offset analysis pursuant to U.S. EPA guidance and concluded that actual emissions with controls and VMT growth were substantially less than emissions assuming no new measures and no VMT growth (“ceiling”). Based on this conclusion, no new TCMs are required for the one-hour ozone SIP. SCAQMD staff has prepared the *VMT Offset Requirement Demonstration* (2012 AQMP Appendix VIII) to provide the results of the VMT emissions offset analysis to the public. Consequently, the VMT offset demonstration in Appendix VIII does not affect the emission reduction strategies in the 2012 AQMP.

- 11-2 SCAG has the responsibility of preparing and approving the portions of the AQMP relating to regional demographic projections and integrated regional land use; housing; employment; and transportation programs, measures, and strategies using a “bottom up” approach. This means that the local municipalities provide the above types of information to SCAG, which in turn develops regional and subregional forecasts. The

transportation strategy and transportation control measures (TCMs) are also included in SCAG's adopted 2012-2035 RTP/SCS that links regional transportation planning to air quality planning. The 2012-2035 RTP/SCS considers every component of regional multimodal transportation system, including transit, passenger rail, high-speed rail, goods movement, aviation, airport ground access, highways, arterials, operation and maintenance. In addition, in developing the 2012-2035 RTP/SCS, SCAG worked with dozens of public agencies, 191 cities, hundreds of local, county, regional and state officials, business community, environmental groups, as well as various nonprofit organizations. Future VMT activity is determined through SCAG's transportation demand model based on the socioeconomic growth demographics and land use developments.

- 11-3 The comment states that the SCAQMD needs to take into consideration the effects of the growth of digital signage light pollution in the region on air quality. This comment is similar to a comment previously submitted by this commenter. The previous comment letter included an attachment entitled "City Light Pollution Affects Air Pollution," which asserts that light pollution has the potential to affect ozone concentrations. The 2012 AQMP is required by law to demonstrate attainment with the federal eight-hour PM2.5 ambient air quality standard, although it contains control measures to reduce ozone precursors to continue making progress in attaining the federal eight-hour ozone standard. A comprehensive ozone SIP will be prepared in 2015, so consideration of the effects of light pollution on ozone concentrations can be considered and evaluated as part of the future federal eight-hour ozone plan.

As indicated in response to comment #11-1 above, the U.S. EPA published in the Federal Register a proposed "SIP call" which, if finalized, would require the SCAQMD to prepare a demonstration of attainment of the one-hour ozone standard, with attainment required by ten years from the date the SIP call is finalized. In response to the U.S. EPA's "SIP call" and in anticipation that it will be finalized, SCAQMD staff has prepared the *One-hour Ozone Attainment Demonstration*, which demonstrates attainment of the federal one-hour (revoked) ozone standard by the year 2022. Therefore, it relies on the same ozone control measures as the eight-hour ozone plan to respond to the U.S. EPA's "SIP call."

- 11-4 This comment states that these factors [see comments #11-1 through #11-3] must be considered in any mitigation for the 2012 AQMP and the Draft Program EIR is flawed. The factors in comments #11-1 through #11-3 have been addressed. See responses to comments #11-1 through #11-3. SCAQMD staff disagrees with the assertion that the Draft Program EIR is flawed. The Draft Program EIR complies with all relevant CEQA requirements for preparing an EIR (CEQA Guidelines §§15120 through 15131) and for preparing a program CEQA document (CEQA Guidelines §15168). No evidence has been provided in the comment that supports the assertion that the Draft Program EIR is flawed.
- 11-5 The comment states that the Draft Program EIR fails to list the CalTrans Arroyo Seco Scenic Byway within the district. Subchapter 3.1 of the Draft Program EIR contains existing setting information relative to aesthetics resources. Table 3.1-2 identifies designated scenic highways within the district and Table 3.1-2 identifies highways within the district eligible for scenic highway designation. The Arroyo Seco Parkway is not a

designated scenic highway nor is it a highway listed as eligible for designation, although it is listed as an historic highway⁵. Regardless of its designation, no control measures were identified that would adversely affect this roadway. The only roadways identified that could be adversely affected by Control Measures ONRD-01, ADV-01, and ADV-02, were existing transportation corridors in areas within and adjacent to the Port of Los Angeles (e.g., Navy Way, and Port of Long Beach), around container transfer facilities (truck/train) near the Terminal Island Freeway and East Sepulveda Boulevard intersection, along the Alameda Corridor, as well as the railyards near downtown Los Angeles (East Washington Boulevard in the City of Commerce, which are located within three miles of the northern terminus of the Alameda Corridor and east of I-710). As indicated in Subchapter 4.1, based on current information regarding the possible future location of catenary lines, they would likely be located near cargo transfer facilities or on existing heavily used cargo transport corridors. The Arroyo Seco Parkway does not fit these categories. For the reasons given here, aesthetics impacts to scenic highways were concluded to be less than significant.

The comment also states that the Arroyo Seco Parkway should be considered for mitigation in any NFL Stadium in Los Angeles, temporary site at the Rose Bowl, and in all measures of the EIR. It is unclear what this comment means. The CEQA document for the NFL stadium in Los Angeles was prepared and recently certified by the City of Los Angeles. It is the responsibility of the lead agency to identify and impose feasible measures, as necessary, to mitigate aesthetics impacts from this project. As a single purpose agency responsible for air quality, the SCAQMD has no authority to impose measures to mitigate aesthetics impacts in a CEQA document prepared by another public agency. The Rose Bowl is an existing facility that currently hosts college football games as well as other events, so it unclear what mechanism would be used to require aesthetics mitigation measures. Finally, as noted in the first part of this response, control measures in the 2012 AQMP are not expected to affect in any way aesthetic resources along the Arroyo Seco Parkway or any other scenic highways in the district, so mitigation measures are not required.

- 11-6 The comment cites text regarding potential cumulative hydrology and water quality impacts from the 2012–2035 RTP/SCS. The comment then states that the Draft Program EIR does not take into consideration the effects of implementing the 2012 AQMP on watersheds and sub-watersheds and the compliance issue of pollutants generated. The comment mentions the Los Angeles County Flood Control District (LACFCD) is implementing an expensive parcel tax to cover costs for watershed mitigation and maintenance.

Implementation of the 2012 AQMP does not require the construction of structures that would affect watersheds or sub-watersheds. Further, the comment does not identify any specific effects of the project on hydrology and water quality nor does the comment provide any evidence that ecosystems would be adversely affected by implementing the 2012 AQMP. Lastly, the implementation of LACFCD's parcel tax project is unrelated to the implementation of the 2012 AQMP.

⁵ California Scenic Highway Mapping System. http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm.

- 11-7 In addition to citing text from the cumulative impacts chapter, the comment also states that under state law, there should be no inconsistencies between general plans and their elements. The 2012 AQMP is not a general plan with the various elements associated with general plans so it is not subject to general plan requirements. As discussed in response to comment #11-2, growth forecasts are provided by local jurisdictions as developed in their detailed general plans.
- 11-8 The comment cites text regarding potential cumulative biological resources impacts from the 2012–2035 RTP/SCS. The comment then states that the SCAQMD does not take into consideration potential noise impacts to underground pipes or emissions from underground pipes. It is assumed that this comment refers to the 2012 AQMP. As noted in response to comment #11-5, the only roadways identified that could be adversely affected by Control Measures ONRD-01, ADV-01, and ADV-02, were existing transportation corridors in areas within and adjacent to the Port of Los Angeles (e.g., Navy Way, and Port of Long Beach), around container transfer facilities (truck/train) near the Terminal Island Freeway and East Sepulveda Boulevard intersection, along the Alameda Corridor, as well as the railyards near downtown Los Angeles (East Washington Boulevard in the City of Commerce, which are located within three miles of the northern terminus of the Alameda Corridor and east of I-710). These roadways are already heavily travelled roadways and the control measures that propose installation of catenary lines do not increase traffic and, therefore, would not increase noise from traffic. Further, to the extent heavy-duty trucks operate on catenary lines, they have the potential to be quieter than heavy-duty diesel trucks. For these reasons, operational noise impacts were concluded to be less than significant.

Project construction could involve equipment and activities that may have the potential to generate groundborne vibration. In general, demolition of structures during construction generates the highest levels of vibration. The FTA has published standard vibration levels and peak particle velocities for construction equipment operations. The FTA uses vibration decibels (abbreviated as VdB) to measure and assess vibration amplitude. In the United States, vibration is referenced to one micro-inch/sec (25.4 micro-mm/sec) and presented in units of Vd.

As noted above noise and vibration impacts from ONRD-01, ADV-01, and ADV-02 as a result of installing catenary lines would occur along existing transportation corridors and right-of-ways where few structures, if any, would be located. Since, demolition would be the primary cause of vibrations and demolition is expected to be minimal, damage to underground pipes and any resulting emissions are not anticipated. Finally, because no specific projects are currently proposed, any noise or vibration impacts would be speculative.

- 11-9 The comment cites text regarding potential cumulative solid waste impacts from the 2012–2035 RTP/SCS. The comment then states that the SCAQMD does not recognize attempts by municipalities to place solid waste recycling operators within the region. It is assumed that this comment refers to the 2012 AQMP. The 2012 AQMP does not include any control measures that would require or result in construction and operation of solid waste recycling operations in the district. The SCAQMD has no land use authority so would not be able to require solid waste recycling facilities in any municipalities in the district. Land use decisions are made by the public agencies with general land use

authority, i.e., cities or counties. The decision by local municipalities to develop such facilities is also independent from the 2012 AQMP. If local municipalities plan to locate solid waste recycling facilities in their jurisdictions, they would be subject to CEQA, requiring a separate environmental analysis of the project.

The comment also states that the Draft Program EIR does not analyze landfill usage increase or identify landfills that would accommodate waste. The CEQA Guidelines indicate that the degree of specificity required in a CEQA document depends on the type of project being proposed (CEQA Guidelines §15146). The detail of the environmental analysis for certain types of projects cannot be as great as for others. Since the 2012 AQMP is a broad planning document the level of detail of the control measures is not as great as it would be for a specific construction project. As a result, a Program EIR is the appropriate CEQA document because it allows the analysis to properly focus on broad policy alternatives and program wide mitigation measures. The analysis of solid waste impacts in Subchapter 4.8 is commensurate with the level of detail of the 2012, which means that specific landfills that might be affected by 2012 AQMP cannot be identified. Based on that analysis, solid waste impacts were concluded to be less than significant so mitigation is not required.

- 11-10 The comment cites text regarding potential cumulative transportation and traffic impacts from the 2012–2035 RTP/SCS. The comment then states that the Draft Program EIR does not recognize a potential increase in VMT in relation to conversion timetables and any emission factors sustained before conversion. Contrary to the comment, there is no increase in VMT from converting from conventionally fueled vehicles to alternative clean fuel vehicles.
- 11-11 The comment cites text regarding potential cumulative biological resources impacts from the 2012–2035 RTP/SCS. The comment then states that the SCAQMD does not take into consideration ecosystems, endangered wildlife and vegetation, wetlands and watershed management issues. It is assumed that this comment refers to the 2012 AQMP. As is indicated in both the original 6/28/12 NOP/IS for the 2012 AQMP and the 8/2/12 Recirculated NOP/IS, all of the topics mentioned in the comment were evaluated to determine whether or not the 2012 AQMP has the potential to adversely affect biological resources (see the discussions under “IV. Biological Resources” in the 8/2/12 recirculated IS, which can be found in Appendix A of this Final Program EIR). As indicated in the original 6/28/12 NOP/IS for the 2012 AQMP and the 8/2/12 Recirculated NOP/IS, it was concluded that the 2012 AQMP would not generate any biological resources impacts. No comment letters were received that refuted this conclusion and no information or other data are provided that indicate in any way that the 2012 AQMP could adversely affect biological resources.
- 11-12 The comment cites text regarding potential cumulative cultural resources impacts from the 2012–2035 RTP/SCS. The comment then states that the Draft Program EIR fails to mention tribal issues or disadvantaged communities. The topic of cultural resources was concluded in the NOP/IS for the 2012 AQMP to have less than significant cultural resources impacts and no comments were received disputing this conclusion. Further, the comment does not provide any evidence to support the implication that Native American tribes or disadvantaged communities would be adversely affected by implementing the 2012 AQMP.

11-13 The Draft Program EIR did not evaluate hydraulic fracturing because the 2012 AQMP does not include any control measures that would require hydraulic fracturing. However, SCAQMD staff is currently assessing current SCAQMD regulations to determine if they adequately cover oil and gas production activities when hydraulic fracturing is used. Additional regulatory actions may include additional controls as well as reporting and public notification requirements for hydraulic fracturing. See also response to comment #8-4 for additional information on hydraulic fracturing.

11-14 The comment cites text regarding potential cumulative population and housing impacts from the 2012–2035 RTP/SCS. The comment then states that the SCAQMD does not recognize density issues in community plans of general plans, high planned density or the potential for health risk assessments being underplayed. It is assumed that this comment refers to the 2012 AQMP. As is indicated in both the original 6/28/12 NOP/IS for the 2012 AQMP and the 8/2/12 recirculated NOP/IS, potential impacts to land use and housing were evaluated to determine whether or not the 2012 AQMP has the potential to adversely affect these areas (see the discussions under “XIII. Population and Housing” in the 8/2/12 recirculated IS, which can be found in Appendix A of this Final Program EIR). As indicated in the original 6/28/12 NOP/IS for the 2012 AQMP and the 8/2/12 recirculated NOP/IS, it was concluded that the 2012 AQMP would not generate any impacts to population or housing in the district. No comment letters were received that refuted this conclusion and no information or other data are provided that indicate in any way that the 2012 AQMP could adversely affect biological resources.

With regard to density, the 2012 AQMP projects future emissions in the Basin using growth projections provided by SCAG, which in turn are provided from the local land use agencies. See response to comment #11-2 for additional information on density information provided to the SCAQMD by SCAG.

It is unclear what the comment about health risk assessments (HRA) “being underplayed” refers to. An HRA is an analysis of toxic air contaminants (TACs) from an institutional, commercial, or industrial facility on local sensitive receptors. New or existing facilities that have the potential to emit or currently emit TACs may be required to prepare an HRA pursuant to SCAQMD Rule 1401 or Rule 1402. If the comment implies that increases in density may increase the number of sensitive receptors affected by a new or existing facility, there is no evidence or data provided to support such an assertion. First, as already noted, the 2012 AQMP is not expected to affect population growth in any way. Second, the 2012 AQMP takes into consideration future growth as discussed in response to comment #11-2. Although the 2012 AQMP is a PM_{2.5} attainment plan, some of the ozone control measures in the plan promote replacing diesel fueled mobile sources with alternative clean fuels and accelerated compliance with existing CARB regulations that reduce diesel PM emissions. Diesel PM is classified as carcinogenic, so measures to reduce diesel PM emissions would serve to reduce exposure by sensitive receptors to TAC emissions. Finally, future projects involving air toxics emissions from stationary sources would still be subject to SCAQMD air toxics control Rules 1401, 1401.1 or Rule 1402.

11-15 The comment cites text regarding potential cumulative public services impacts from the 2012–2035 RTP/SCS. The comment then states that the SCAQMD does not consider sea level rise and flooding, which could increase demand for emergency services, equipment

and vehicles, relative to population and density increases. It is assumed that this comment refers to the 2012 AQMP. It is assumed that the reference to sea level rise and flooding refer to global climate change impacts, specifically global warming, from GHG emissions. An analysis of GHG emission impacts from the 2012 AQMP was prepared and is included in Subchapter 4.2 in the Program EIR. The analysis concluded that implementing some of the mobile source control measures would actually reduce GHG emissions compared to the baseline year (2008) levels. Consequently, potential GHG emission impacts were concluded to be less than significant so impacts to emergency service described in the comment would not be an effect of adopting the 2012 AQMP. Similarly, as previously noted, the AQMP is not expected to affect population growth in any way, so adverse impacts to emergency services from increasing population and density growth is not an effect of adopting the 2012 AQMP.

- 11-16 The comment cites text regarding cumulative recreation resources impacts from the 2012–2035 RTP/SCS. The comment then states that the SCAQMD has not addressed pollution effects on warming of the air and atmosphere and resulting effects on plants, wildlife and birds in parks, open spaces, forests, and wetlands. It is assumed that this comment refers to the 2012 AQMP. The environmental checklist used to perform the analysis of potential impacts from the 2012 AQMP in the IS identifies two types of recreation impacts: would a project increase the use of neighborhood and regional parks resulting in substantial use and accelerated deterioration; and projects that included or require construction of parks that could have adverse environmental effects (see also CEQA Guidelines Appendix G). As is indicated in both the original 6/28/12 NOP/IS for the 2012 AQMP and the 8/2/12 recirculated NOP/IS, potential recreation impacts were evaluated to determine whether or not the 2012 AQMP has the potential to adversely affect recreational resources (see the discussions under “XV. Recreation” in the 8/2/12 recirculated IS, which can be found in Appendix A of this Final Program EIR). As indicated in the original 6/28/12 NOP/IS for the 2012 AQMP and the 8/2/12 recirculated NOP/IS, it was concluded that the 2012 AQMP would not generate any recreational resources impacts. No comment letters were received that refuted this conclusion and no information or other data are provided that indicate in any way that the 2012 AQMP could adversely affect recreational resources.

With regard to the comment about warming the air and atmosphere, it is assumed this refers to global warming impacts from GHG emissions. As indicated in response to comment #11-15, some of the mobile source control measures would actually reduce GHG emissions compared to the baseline year (2008) levels, so GHG emission impacts were concluded to be less than significant.

With regard to the 2012 AQMP’s effects on plants, wildlife and birds in parks, open spaces, forests, and wetlands, these are actually biological resources impacts, so see response to comment #11-11.

- 11-17 The comment cites text regarding cumulative agricultural resources impacts from the 2012–2035 RTP/SCS. The comment then states that the SCAQMD does not take into consideration warming of the air and atmosphere and its effects on agricultural resources. It is assumed that this comment refers to the 2012 AQMP. As is indicated in both the original 6/28/12 NOP/IS for the 2012 AQMP and the 8/2/12 recirculated NOP/IS, agricultural resources were evaluated to determine whether or not the 2012 AQMP has

the potential to adversely affect agricultural resources (see the discussions under “II. Agriculture and Forest Resources” in the 8/2/12 recirculated NOP/IS, which can be found in Appendix A of this Final Program EIR). As indicated in the original 6/28/12 NOP/IS for the 2012 AQMP and the 8/2/12 recirculated NOP/IS, it was concluded that the 2012 AQMP would not generate any agriculture or forest resources impacts. No comment letters were received that refuted this conclusion and no information or other data are provided that indicate in any way that the 2012 AQMP could adversely affect biological resources.

With regard to the comment about warming the air and atmosphere, it is assumed this refers to global warming impacts from GHG emissions. As indicated in response to comment #11-15, some of the mobile source control measures would actually reduce GHG emissions compared to the baseline year (2008) levels, so GHG emission impacts were concluded to be less than significant.

- 11-18 The 2012 AQMP demonstrates attainment of the 24-hour PM_{2.5} national ambient air quality standard by 2014 (see Chapter 5 of the 2012 AQMP) with the implementation of the PM_{2.5} control strategy outlined in Chapter 4 of the 2012 AQMP. In addition, 2012 AQMP Appendix VII includes an attainment demonstration for the one-hour ozone standard by 2022 through implementing: the eight-hour ozone reduction strategy, carryover measures from the 2007 SIP, and the §182 (e)(5) (“black box”) measures. In addition to the one-hour ozone demonstration, the control strategies and emissions inventory can also be found in Appendix VII of the 2012 AQMP. If the 2012 AQMP is not approved by the U.S. EPA, then consequences can occur including a Federal Implementation Plan. The U.S. EPA approval of the 2012 AQMP or consequences if not approved does not have any bearing on the environmental analysis.

Letter #12

Lori Moore

From: Harvey Eder [harveyederpspc@yahoo.com]
Sent: Tuesday, October 23, 2012 4:52 PM
To: Steve Smith; 2012 AQMP Comments
Cc: harveyederpspc@yahoo.com; earthdayla.org, jim
Subject: Steve Smith Comments DEIR New +11 paGES 6/17/17.12 Harvey Eder & PSPC 10/23
Attachments: COMMENT LETTER.docx

Howdy SSmith AQMD,

I am incorporating the comments of the Angeles Chapter Sierra Club in the Deir and AQMP as well as the 11 pates submitted to you and the district July 17 &18 2012.

12-1

Also EDU 01 needs to include GHG green House Gases and education in the form including but not limited to public service announcements and kl-14 + education plans for teachers for various grades about how solar is cost effective now and the ghg problems from natural gas being 100 times the gwp compared to co2 etc.(co2e)

12-2

Any other public methods that the district or carb or epa used or that may be effective to educate about the costs of fosswel fuel ghgs vs solar electricity /batteries for vehicles and or solar hydrogen direct or through fuel cells for vehicles should be covered as well etc. Pro solar problems of ghg etc criteria pollution etc especially ghg of methane/natural gasw etc.

Thanks, take care

Harvey Eder 10/23/12
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1218 12th St. #25
Santa Monica , CA 90401
(310)3932589
& the P\$PC Public Solar Power Coalition

Responses to Comment Letter #12
Mr. Harvey Eder (10/23/2012)

- 12-1 The comment states that the comment letter submitted by the Sierra club is incorporated by reference. See Comment Letter #8 and responses to comments #8-1 through #8-9. The comment also states that previous comments submitted on July 17 and 18, 2012, by this commenter and attached to the e-mail are incorporated by reference. The attached comments, which were also submitted to the SCAQMD were previously evaluated and it was concluded that they did not include any comments on the environmental analyses, mitigation measures, or project alternatives in the Draft Program EIR. As a result, the comments were treated as AQMP comments and were forwarded to SCAQMD staff responsible for preparing the 2012 AQMP. The attached comments and responses to these comments have been prepared by AQMP staff and will be made available prior to the adoption hearing. As a result, the attachment to this letter is not included in this appendix.
- 12-2 The education components requested to be added into Control Measure EDU-01 are in concert with the goals of this measure and the lifecycle analysis of different energy sources and combustion processes will be included.

SCAQMD staff is aware of the larger GWP potentials of climate forcers with shorter atmospheric lifetimes, such as methane, when looking at a 20- or 10-year time horizon. Referencing these larger GWPs on a shorter timeframe has no affect on the Basin achieving PM2.5 standards. SCAQMD staff is also working on identifying ways to assess the forcing impacts of other components such as the black carbon emitted within the Basin.

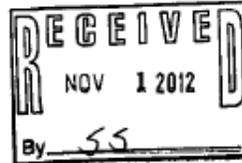
Letter #13



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October 24, 2012

Mr. Steve Smith, Ph.D., Program Supervisor
Planning, Rules, and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4182



NCL 12-029

SUBJECT: Draft Program environmental Impact Report for 2012 Air Quality Management Plan (AQMD)

Dear Mr. Smith:

The County of Orange has reviewed the Draft Program environmental Impact Report for 2012 Air Quality Management Plan (AQMD) and offers the following comments:

Advance Planning:

- 1. DEIR Appendix F: "RTP/SCS Mitigation Measures Table". The appendix title page shall be revised to reflect the more accurate title "Examples of Measures That Could Reduce Impacts from Planning, Development, and Transportation Projects", which is consistent with the adopted Southern California Association of Governments 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy. 13-1
2. It appears that the demographic and socio-economic data included in the analysis of the Program Environmental Impact Report (PEIR) is outdated and is not the most recent demographic and socio-economic data prepared for the Center for Demographic Research and used in the Orange County Sustainable Communities Strategy and the Southern California Association of Governments 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy. The analysis should be revised to include the demographic and socio-economic data contained in the Orange County Sustainable Communities Strategy. 13-2
3. There are mischaracterizations in describing Orange County in Subchapter 3.6 – Land Use and Planning. These should be revised in the final draft of the Program Environmental Impact Report. 13-3
a. Subsection 3.6.3.2 Orange County (page 3.6-7): The County of Orange General Plan is only applicable to areas of unincorporated Orange County and does not supersede the General Plans of the 34 independent local jurisdictions. Therefore, it is erroneous and misleading to state policies identified in the County of Orange General Plan and 13-4

generalize that these policies are applicable to the 34 local Orange County jurisdictions. The Program Environmental Impact Report should either be revised to clearly state that the County of Orange General Plan is only applicable to those unincorporated areas of the County of Orange and each local jurisdiction has their own governing General Plan or remove the text in its entirety.

13-4
Con't

b. Subsection 3.6.3.2.2 Commercial (page 3.6-8): There are inaccuracies in describing the commercial areas within Orange County that should be revised in the final version of the Program Environmental Impact Report. 1) The commercial area located within close proximity to the intersection of Interstate 5, State Route 22, and State Route 57 is not known as the "Orange Crush" as noted in the draft PEIR. The "Orange Crush" is used to describe the intersection of the three transportation corridors, not the commercial/office area. 2) The area surrounding John Wayne Airport and the University of California, Irvine is known as the Irvine Business Complex or IBC, not the Irvine Spectrum. 3) The terminology "El Toro Y" is used to describe the intersection of two transportation corridors, Interstate 405 and Interstate 5, not the commercial/office center. That is the Irvine Spectrum.

13-5

c. Subsection 3.6.3.2.3 Industrial (page 3.6-8): The paragraph is erroneous in referencing the County of Orange General Plan, which is only applicable to the unincorporated areas of the County. Every jurisdiction has their own governing General Plan that may identify areas of industrial use. The paragraph should be revised for the final DEIR.

13-6

d. Subsection 3.6.3.2.5 Open Space (page 3.6-8): The Orange County Sustainable Communities Strategy identifies the preservation/open space programs located throughout all of Orange County, including the individual efforts of the County of Orange and the 34 local jurisdictions. This paragraph should be revised to generally reflect the open space policies outlined in the Orange County Sustainable Communities Strategy.

13-7

Sincerely,



Michael Balsamo
Manager, OC Community Development
OC Public Works/OC Planning
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Santa Ana, California 92702-4048
Michael.Balsamo@ocpw.ocgov.com

cc: Ruby Maldonado, Advance Planning

Responses to Comment Letter #13
Orange County Public Works – Michael Balsamo (10/24/2012)

- 13-1 The comment requests that the cover page title of Appendix F be changed to match the title on the first page of the appendix. This requested change has been made.
- 13-2 The comment states that it “appears” that the demographic and socioeconomic data included in the Program EIR is outdated and that the analysis should be revised to reflect the most recent data contained in the Orange County Sustainable Communities Strategy. Because the comment does not specifically state what data are obsolete, SCAQMD staff is unable to identify what data need to be updated. Further, since Orange County’s SCS was incorporated into SCAG’s 2012-2035 RTP/SCS, which forms the basis of the 2012 AQMP’s socioeconomic forecasts, it is not necessary to update the CEQA document to include socioeconomic data. Without further clarification of what data do not appear to be the most recent, no further response is possible.
- 13-3 This comment is a general assertion that the Program EIR contains inaccurate descriptions of Orange County. See responses to comments #3-4 through #3-7 for responses to comments on each topic mentioned.
- 13-4 This comment states that discussion regarding the Orange County General Plan be clarified to explain that the plan is only applicable to unincorporated areas within Orange County and that each of the 34 cities within Orange County has its own General Plan. Section 3.6.3.2 of Subchapter 3.6 in the Final Program EIR has been revised to reflect these recommended changes. None of these changes to the Final Program EIR, however, will alter the conclusions.
- 13-5 This comment states that there are inaccuracies in Subsection 3.6.3.2.2 regarding the descriptions of commercial areas in Orange County. This comment recommends the Land Use and Planning discussion that pertains to the commercial areas within Orange County General Plan to be clarified to explain that the commercial area located within the proximity of Interstate 5, State Route 22, and State 57 is not the “Orange Crush” transportation corridor. This comment also recommends the Land Use and Planning discussion that pertains to the area surrounding John Wayne Airport and the University of California – Irvine to be described as the Irvine Business District and not the Irvine Spectrum. This comment also recommends the Land Use and Planning discussion that pertains to the intersection of Interstate 5 and Interstate 405 to be described as the “El Toro Y” and the commercial/office center in the vicinity of this intersection to be described at the Irvine Spectrum. Subsection 3.6.3.2.2 of Subchapter 3.6 in the Final Program EIR has been revised to reflect these recommended changes. None of these changes to the Final Program EIR, however, will alter the conclusions.
- 13-6 This comment recommends the Land Use and Planning discussion that pertains to the Orange County General Plan be clarified to explain that the plan is only applicable to unincorporated areas within Orange County and that each of the 34 cities within Orange County has its own General Plan. Subsection 3.6.3.2.3 of Subchapter 3.6 in the Final Program EIR has been revised to reflect these recommended changes. None of these changes to the Final Program EIR, however, will alter the conclusions.

- 13-7 This comment recommends the Land Use and Planning discussion that pertains to open space should be revised to reflect the open space polices outlined in the Orange County Sustainable Communities Strategy. Subsection 3.6.3.2.5 of Subchapter 3.6 in the Final Program EIR has been revised to reflect these recommended changes. None of these changes to the Final Program EIR, however, will alter the conclusions.

**DRAFT FINAL SOCIOECONOMIC REPORT
FOR THE DRAFT FINAL 2012 AQMP**

November 2012

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD**

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Cities of Orange County

EXECUTIVE OFFICER:
BARRY R. WALLERSTEIN, D.Env.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

DRAFT FINAL SOCIOECONOMIC REPORT FOR THE DRAFT FINAL 2012 AQMP

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The Southern California Association of Governments provided technical assistance relative to the cost and benefit of transportation projects and baseline economic forecasts associated with the 2012 [Regional Transportation Plan](#).

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PREFACE

Since the release of the Draft Socioeconomic Report in September 2012, the AQMD has added two scenarios on transportation control measures (TCMs) in the 2012 Regional Transportation Plan (RTP) that are committed to the 2012 AQMP. The congestion relief benefit analysis beyond 2014 in the Draft Socioeconomic Report was based on all TCMs in the 2012 RTP. The two scenarios focus on only those committed to the 2012 AQMP. The No TCM Scenario in Appendix G shows costs of TCMs and their associated job impacts by industry separately from other control measures; and removes the congestion relief benefit from the analysis. The TCM Benefit at 2014 Level Scenario in Appendix H assumes that the congestion relief benefit would stay constant at the 2014 level.

Appendix I is added to facilitate approximation of 2005 constant dollars to various other years' dollars. Other changes to the Draft Report are in underlines and strikeouts. Responses to comments on the Draft Socioeconomic Report received after its release have been incorporated into the Responses to Comments to the 2012 AQMP.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

As Southern Californians seek to fulfill our legal duties under the Clean Air Act, and to meet standards for air that is healthful to breathe, we are challenged by the need to consider social, economic, and environmental factors while also complying with federal attainment requirements. The socioeconomic impact assessment is designed to help decision-makers and stakeholders arrive at a clean air blueprint that lays out a strong path toward reduced public health damages while at the same time maintaining economic strength, social fairness, and long-term sustainability.

The Draft [Final](#) Socioeconomic Report for the Draft [Final](#) 2012 Air Quality Management Plan (AQMP or Plan) is a rigorous application of statistical analysis and computer modeling to assess the aggregate potential impacts of the overall suite of control measures. Competitiveness of individual businesses ~~sectors~~ will be analyzed in detail during ensuing rulemaking processes. The Draft [Final](#) Report has undergone external peer-review (See Appendix F for a list of peer-review economists) to improve information for the 2012 AQMP and seek suggestions for enhancement of future analysis.

[The \\$7.7 billion congestion benefit in the September 2012 release of the Draft Socioeconomic Report is for all TCM-type projects in the 2012 Regional Transportation Plan \(RTP\). The benefit for the SIP-committed TCMs, which is comprised of the first two years of TCM-type projects in the 2012 RTP, is estimated to be \\$519 million \(See Appendix H\).](#)

Overall, there are two main conclusions in the Report:

- The Draft [Final](#) 2012 AQMP is not expected to result in dramatic impacts on the region's competitiveness as measured by share of national jobs, cost of production, relative delivered prices, and exports and imports.
- The estimated \$10.7 billion ~~in~~ quantifiable benefits—[including congestion relief benefits for all the TCMs](#)—(21 percent of which are health benefits) of the Draft [Final](#) 2012 AQMP ~~is~~ [are](#) greater than the estimated \$448 million in average annual costs. Still there is a net modest job gain due to cleaner air.

The Draft [Final](#) 2012 AQMP has been prepared to meet the challenge of achieving healthful air quality in the South Coast Air Basin (Basin) and the Coachella Valley. This report accompanies the Draft [Final](#) 2012 AQMP and presents the potential socioeconomic impacts resulting from implementation of this Draft [Final](#) Plan. The information contained herein is considered by the South Coast Air Quality Management District (District) Governing Board when taking action on the Draft [Final](#) Plan.

PM_{2.5} levels have improved dramatically over the past two decades. In 2011, both the annual PM_{2.5} standard and the 24-hour PM_{2.5} standard were exceeded at only one air monitoring station, Mira Loma, in northwestern Riverside County. The primary focus of this Draft [Final](#) 2012 AQMP is to bring the Basin into attainment with the 24-hour PM_{2.5} standard.

The Draft [Final](#) 2012 AQMP control strategy is comprised of a traditional command-and-control approach, voluntary/incentive programs, and advanced technologies. Short- and near-

term control strategies are proposed and will be implemented by the District, local and regional governments (e.g., transportation control measures provided in the 2012 Regional Transportation Plan), and the California Air Resources Board (CARB). These strategies include basin-wide short-term PM_{2.5} measures, episodic control measures for high PM_{2.5} days, measures to partially implement the Section 182(e)(5) commitment in the 2007 ozone SIP toward meeting the 8-hour ozone standard by 2024, and transportation control measures (TCM) adopted by the Southern California Association of Governments (SCAG). Many of the measures require behavioral changes and voluntary participation through outreach, incentive, and education. Implementation of these control strategies has potential effects on the region's economy.

The District relies on a number of methods, tools, and data sources to assess the impact of proposed control strategies on the economy. The involved applications include: integration of air quality data and concentration-response relationships to estimate benefits of clean air; capital, operating and maintenance expenditures on control devices and emission reductions to assess the cost of the Draft [Final](#) Plan; and REMI (Regional Economic Models, Inc.) model to assess potential employment and other socioeconomic impacts (e.g., population and competitiveness). The Draft [Final](#) Socioeconomic Report attempts to answer the following important questions.

What Is the Total Implementation Cost of the Draft [Final](#) 2012 AQMP?

The projected annual average implementation cost of the Draft [Final](#) Plan is \$448 million annually, on average, between 2013 and 2035 to correspond to SCAG's long-term projection period. The PM_{2.5} strategy, including transportation control measures (TCM) proposed by the Southern California Association of Governments (SCAG), is projected to cost \$326.6 million. The cost of TCMs alone is \$326.4 million. The projected cost for all the ozone measures is approximately \$122 million annually, of which \$40 million is attributable to stationary source controls.

Technological advancements may reduce costs over time. However, actual costs could be higher than projected costs. Compliance costs will be further refined at individual facilities and evaluated during rulemaking.

What Are the Benefits of the Draft [Final](#) 2012 AQMP?

Over the years, there has been an overall trend of steady improvement in air quality in the Basin. Additional emission reductions are still needed in order to bring the Basin into compliance with the federal 24-hour PM_{2.5} standard. Complying with the air quality standard would allow the District to avoid potential sanctions that could increase offset ratios for major sources and result in suspension of highway transportation funding. The benefits of better air quality through implementation of the Draft [Final](#) 2012 AQMP include reductions in morbidity and mortality, visibility improvements, reduced expenditures on refurbishing building surfaces, and reduced traffic congestion.

The Draft 2012 Plan is projected to comply with the federal PM_{2.5} standard with an average annual benefit of \$10.7 billion between 2014 and 2035. The \$10.7 billion includes approximately \$7.7 billion for congestion relief [for all TCMs in the 2012 RTP](#), \$2.2 billion for

averted illness and higher survival rates, \$696 million for visibility improvements, and \$14 million for reduced damage to materials.

~~The total benefit of the Draft Plan is expected to exceed the analyzed \$10.7 billion annually since n~~Not all of the benefits associated with the implementation of the Draft [Final](#) Plan can be quantified. For example, the quantified health benefits only account for reduced exposure from PM_{2.5}, while those from decreased exposure to ozone and nitrogen dioxides are not included. In addition, reductions in vehicle hours traveled for personal trips and damages to plants, livestock, and forests have not been quantified. Further research is needed before these benefits can be quantified.

What Are the Costs of the Draft [Final](#) 2012 AQMP Compared to the Benefits?

The analysis contained herein estimates that the benefits for the Draft [Final](#) Plan significantly outweigh the anticipated costs. The measurement of clean air benefits is performed indirectly since clean air is not a commodity purchased or sold in a market. This often results in incomplete and underestimated benefits. The benefits of clean air (based on the total emission reductions required for attainment) for which a monetary figure can be applied are estimated [to be \\$10.7 billion \(including congestion relief benefits for all the TCMs\)](#) as compared to the estimated costs of \$448 million on an average annual basis. There are, however, many benefits which are still unaccounted for, such as reductions in chronic illness and lung function impairment in human beings, reduced damage to livestock and plant life, erosion of building materials, and the value of reduced vehicle hours traveled for personal trips.

What Potential Effects Will the Draft [Final](#) Plan Have on Employment?

Both control costs and clean air benefits impact regional employment. The employment impact analysis was performed separately for PM_{2.5} and ozone control measures, clean air benefits, and a combination of the two resulting from the attainment of air quality standards. Clean air benefits, [including congestion relief benefits for all the TCMs,](#) are projected to result in a gain of 42,174 jobs annually over the period of 2014-2035. Conversely, implementation of control measures would result in 3,257 jobs forgone annually. Clean air benefits and control measures would result in a gain of 37,043 jobs annually.

Many industries would experience additional jobs created due to cleaner air [based on the assumptions in the REMI model that the amenity resulting from cleaner air would attract immigration and increase business competitiveness.](#) The sectors that are projected to have relatively large shares of jobs created are accommodation and food services, government, retail trade, and real estate/rental/leasing. The retail trade sector and government would experience larger shares of jobs forgone from implementation of control measures. The District recognizes that every actual job is important.

[The socioeconomic analysis herein is designed to identify operations and sectors that are subject to control measures and assess their impacts on these sectors. The Plan can affect small businesses as they spread in every sector of the economy.](#) The potential small business impacts of individual control measures will be further examined in the rule development process [when specific elements of these measures are developed.](#) ~~The employment impacts associated with~~

~~unquantified measures will be examined further as the affected industries of these measures are defined in more detail.~~ In addition, as measures are developed into rules, their potential employment impacts will be specifically assessed.

What Are the Potential Impacts on Socioeconomic Groups and Local Communities?

The Draft [Final](#) Plan is designed to bring northwest Riverside (the Mira Loma area), the only area in exceedance of the federal PM_{2.5} standard, into attainment. However, PM_{2.5} air quality benefits occur throughout the Basin. The San Fernando Valley, southern Los Angeles County, and the northwest Riverside County would experience the highest shares of air quality benefits. The western portions of Los Angeles and Orange Counties and the eastern and northern portions of San Bernardino County are projected to have the highest shares of health benefits.

Implementation of PM_{2.5} and ozone measures would impose costs on various communities. The sub-regions with the highest costs are the central, southeast, and San Fernando areas of Los Angeles County. These three areas are projected to have the highest cost shares from SCAG TCMs and relative higher cost shares from ozone measures.

All sub-regions are projected to have additional jobs created from cleaner air. The eastern, southern, and San Fernando sub-regions in Los Angeles County and Riverside County are projected to have more jobs created than other sub-regions resulting from clean air benefits. Implementation of quantified control measures would result in jobs forgone between 2013 and 2035. Orange County is projected to have the highest share of jobs forgone from implementation of control measures. This is because the majority of SCAG transportation control measures (TCM) in Orange County would be financed by development fees, which would have a heavy burden on one single sector of the economy—the construction sector. For the entire Draft [Final](#) Plan, all sub-regions would show positive job impacts as the four-county area becomes more competitive and attractive with the progress in clean air.

Job gains from cleaner air would benefit all wage groups. Conversely, all five groups would experience jobs forgone from control measures. However, there is no significant difference in impacts expected for high- versus low-paying jobs. The same is observed for impacts on the price of consumption goods from one income group to another. These findings will be further evaluated during individual rule development.

What Potential Effect Will the Draft [Final](#) Plan Have on Competitiveness of Local Industries?

The Draft [Final](#) Socioeconomic Report examines competitiveness of local industries in four areas: the Basin's share of national jobs, cost of production, relative delivered prices, and exports and imports. The quantified measures and benefits of the Draft [Final](#) 2012 AQMP are not expected to result in discernible differences in the four-county region's share of national jobs. The impacts on product prices of nearly all the sectors are projected to be less than one percent of their respective baseline indices. The impacts on imports and exports are relatively small as well.

The competitiveness analysis of the Draft [Final](#) Plan focuses on its impact on various sectors of the local economy. Individual control measures could obviously result in impacts on individual companies. Competitiveness at the company level will be analyzed during individual rule development efforts to the extent feasible.

The actual effects of the Draft [Final](#) 2012 AQMP on regional competitiveness could vary from the projected effects. First, the analysis assumes that all control costs are "extra" costs when compared to air pollution control costs in other regions. This ignores the fact that some competing regions tend to follow the District's lead and adopt control measures with objectives similar to those proposed in the District or at a minimum have some level of control with its consequent costs. For example, a number of eastern states have adopted the California vehicle exhaust standards. The Draft [Final](#) Socioeconomic Report underestimates the benefits from clean air that would increase regional attractiveness.

Does This Analysis Affect the Selection of Possible Alternatives to the Draft [Final](#) 2012 AQMP?

It may. The Draft [Final](#) Socioeconomic Report can affect the selection of alternatives to the proposed Plan as identified in the Environmental Assessment for the Draft [Final](#) 2012 AQMP. In considering whether to adopt the Draft [Final](#) Plan or one of the alternatives, the District Governing Board will seek the best balance of greatest socioeconomic and environmental benefits and least adverse environmental and socioeconomic impacts, while ensuring compliance with all legal requirements and attainment as expeditiously as practicable.

The No Project Alternative, which is the 2007 AQMP, cannot be meaningfully compared with the Draft [Final](#) Plan since the No Project Alternative would not comply with the 24-hour PM_{2.5} standard until 2019, which is not the earliest practicable date, while the Draft [Final](#) Plan would comply with the 24-hour PM_{2.5} standard in 2014 and implement part of the 2007 ozone SIP 'black box' commitment [Clean Air Act Section 182(e)(5) measures].

The Draft [Final](#) Plan has a higher cost than the PM_{2.5} Strategy Only Alternative but would achieve ozone benefits and also higher PM_{2.5} air quality benefits due to the co-benefit from ozone measures. The Localized PM Control Alternative is projected to have lower air quality benefits than the Draft [Final](#) 2012 AQMP and the Greater Reliance on NO_x Reductions Alternative. Both the Localized PM Control and Greater Reliance on NO_x Reductions Alternatives would not meet the federal PM_{2.5} standard until 2017. The Greater Reliance on NO_x Reductions Alternative would benefit broader areas than the Draft [Final](#) Plan as NO_x is more prevalent than PM_{2.5}. Therefore, the Greater Reliance on NO_x Reductions Alternative has the highest clean air benefits among all the alternatives.

What Are the Key Areas of Uncertainty and Caveats in This Assessment?

As with any complex analysis, some uncertainty is inherent in the methodology employed. Consequently, caveats need to be applied in interpreting the results. The key areas of uncertainty and caveats in this socioeconomic assessment are described as follows:

- Air Quality Change: Air quality modeling used the most current estimates of emissions, prognostic meteorological models, multilayered dispersion platforms (i.e., CMAQ), and

sophisticated chemistry modules. The key areas of uncertainty impacting the estimation of future year health benefits arise from emission estimates, model layer structure, boundary specifications, and dispersion assumptions.

- Exposure ~~estimates~~Estimates: Exposure estimates are based on extrapolations to census boundaries. There is uncertainty in how well this captures actual population exposures.
- Health Impact Functions: There are several health effects estimates of dose-response functions in the literature for a given health effects. There are uncertainties and variability in these estimates. For example, the premature mortality estimate used in this analysis was taken from a study conducted in Southern California. Using the mortality function from this study gives estimates of premature mortality that are somewhat higher than those based on national multi-city studies.
- Health Benefits: The health benefit analysis in this report is limited by the availability of health studies that quantify health effects associated with exposure to various pollutants and their economic valuation. Not all the known adverse health effects caused by air pollution have been quantified. Similarly, not all other clean air benefits such as congestion relief related to personal trips are quantifiable at this time.
- Socioeconomic Model: The REMI model, which was used to analyze the impacts of the Draft Final 2012 AQMP, projects possible impacts on jobs, distribution of jobs, income, cost of production, relative delivered prices, exports, and imports based upon cost data for control measures and the benefit data for each effect of clean air. The projections are based on national and local statistics for a cluster of economic actors such as industries and population by age and cohort. These statistics reflect the net changes of all the events on these actors and cannot be segregated into gross changes of individual events.

What Efforts Will Be Taken to Refine the District's Socioeconomic Report?

Previous AQMPs have identified actions that would further enhance the ability to quantify and evaluate the benefits and costs of the proposed Plan. This Socioeconomic Report has accomplished several of these actions and identified others for still future assessment. Enhancements to this Socioeconomic Report include finer geography for more detailed assessments of distributional impacts, incorporation of new concentration and response health functions for a range of health effects, and greater use of the American Community Survey (ACS) 5-year estimates from the U.S. Census Bureau.

The following enhancements are recommended for future AQMPs:

- Conduct a review of the District's socioeconomic analysis; ~~methods~~ to update methods and approaches, as appropriate;
- Quantification of uncertainty through sensitivity analysis and/or probabilistic confidence intervals;
- Include the value of a statistical life (VSL) related to health risks in future years of an individual's life and illness-specific VSLs;

- Incorporate health benefits resulting from reductions in air toxic pollutants such as diesel particulates;
- Expand sub-regional analyses to include environmental justice (EJ) areas. These areas may be classified by income or race;
- Evaluate potential social ramifications of migration and job losses;
- Analyze the impact of highly polluted areas on property values and rents and the ensuing impacts on the concentration of lower-income households; ~~and~~
- Perform a periodic assessment of projections relative to reality to track the performance of various models that are used for socioeconomic analyses; ~~and~~
- Explore scenarios where other regions may adopt controls similar to AQMD's for the competitive analysis.

Future enhancements on health benefit assessments would also include the impact of exposure to pollutants on life expectancy, differential impacts on various segments of the population, and identification of significant pollutant thresholds.

The socioeconomic analysis will continue to evolve to reflect changes in regulatory structure such as greater reliance on incentive programs and public financing strategy. Building a time series database would enhance the assessment of specific segments of an industry, facilitate the alignment with published governmental statistics, and enhance the analysis of competitiveness impacts. The effort would include the use of different databases to track existing facilities and new facilities, review of inspectors' reports for annotated information on firm turnover and closure, and identification of start-up companies in high tech disciplines with the assistance of the District's Technology Advancement Office.

[Responses to comments on the Draft Socioeconomic Report for the Draft 2012 AQMP can be found in the Responses to Comments to the 2012 AQMP.](#)

CHAPTER 1

INTRODUCTION

Introduction

Draft [Final](#) 2012 AQMP

Legal Requirements

Draft [Final](#) 2012 AQMP Socioeconomic Issues

Assessment Methodology

INTRODUCTION

The Draft [Final](#) 2012 Air Quality Management Plan (AQMP or Draft [Final](#) Plan) is designed to meet the challenge of achieving clean air in southern California. The Draft [Final](#) Plan proposes strategies and programs aimed at both a healthy environment and economy. The projected costs of implementing the Draft [Final](#) Plan and the associated benefits of achieving clean air standards are the subject of this report. The purpose of this assessment is to define and present the potential socioeconomic impacts related to the Draft [Final](#) 2012 AQMP.

DRAFT [FINAL](#) 2012 AQMP

The Draft [Final](#) 2012 AQMP is a plan designed to achieve the federal 2006 24-hour PM_{2.5} standard by 2014 and partially implement commitment in the 2007 ozone State Implementation Plan (SIP) for the 1997 8-hour ozone standard by 2024 for the South Coast Air Basin (Basin) and those portions of the Salton Sea Air Basin that are under the District's jurisdiction (namely the Coachella Valley). This revision began with the remaining control strategies in the 2007 State Implementation Plan (SIP) approved by U. S. EPA in 2011, and was then expanded to include new strategies. These new control strategies focus on reducing emissions from directly emitted PM_{2.5}, ammonia and PM_{2.5} precursors—NO_x and VOC.¹

The Draft [Final](#) 2012 AQMP is comprised of a traditional command-and-control approach, voluntary/incentive programs, and advanced technologies. Short- and near-term control strategies are proposed and will be implemented by the District, local and regional governments (e.g., transportation control measures provided in the 2012 Regional Transportation Plan), and the California Air Resources Board (CARB). These strategies include basin-wide short-term PM_{2.5} measures, episodic control measures for high PM_{2.5} days, measures to partially implement Section 182(e)(5) commitment in the 2007 ozone SIP toward meeting the 8-hour ozone standard by 2024, and transportation control measures (TCM) proposed by the Southern California Association of Governments (SCAG). Many of the measures require behavioral changes and voluntary participation through outreach, incentive, and education.

As with the previous AQMPs, the District has proposed to expand its control program for mobile sources by proposing additional mobile source control strategies to supplement CARB's existing mobile source regulations. All the proposed District mobile source measures would require public funding assistance to achieve NO_x reductions through accelerated fleet turnover or the use of the cleanest off-road engine standards.

The implementation of short- and near-term measures will produce both direct and secondary impacts on the community and economy of the 21 sub-county regions. Direct impacts include costs such as expenditures on pollution control equipment, transportation infrastructure, and reformulated products. Direct impacts also include benefits such as decreased medical costs due to better air quality and reduced repainting and resurfacing costs on building materials. Secondary impacts are the spillover impacts of direct costs and benefits as a result of interactions between industries and consumers in the 21 sub-county regions.

¹ The majority of PM_{2.5} emissions in the Basin are secondarily formed.

LEGAL REQUIREMENTS

The District's socioeconomic analyses of air quality rules are subject to two types of requirements. One is District Governing Board's resolutions and the other is the California Health and Safety Code. Both apply to future rulemaking for control measures that are included in an approved AQMP. As part of the 1989 AQMP approval, the District Governing Board passed a resolution that called for District staff to prepare an economic analysis of emission reduction rules proposed for adoption or amendment. Elements to be included in the analysis include identification of affected industries, cost effectiveness of control, and public health benefits.

In addition, Health and Safety Code Section 40440.8, which took effect on January 1, 1991, requires a socioeconomic analysis of each District rule that has significant emission reduction potential. In addition to the elements required under the District's resolution, Section 40440.8 requires the District to estimate employment impacts and to perform socioeconomic analyses of the project alternatives developed pursuant to the California Environmental Quality Act (CEQA).

Health and Safety Code Section 40728.5 requires that the Governing Board actively consider any socioeconomic impacts in its rule adoption proceedings. Health and Safety Code Section 39616 requires the District to ensure that any market incentive strategies it adopts result in lower or equivalent overall costs and job impacts, (i.e., no significant shift from high-paying to low-paying jobs), when compared with command-and-control regulations. Health and Safety Code Section 40920.6, which became effective on January 1, 1996, requires that incremental cost effectiveness (difference in costs divided by difference in emission reductions) be performed whenever more than one control option is feasible to meet control requirements.

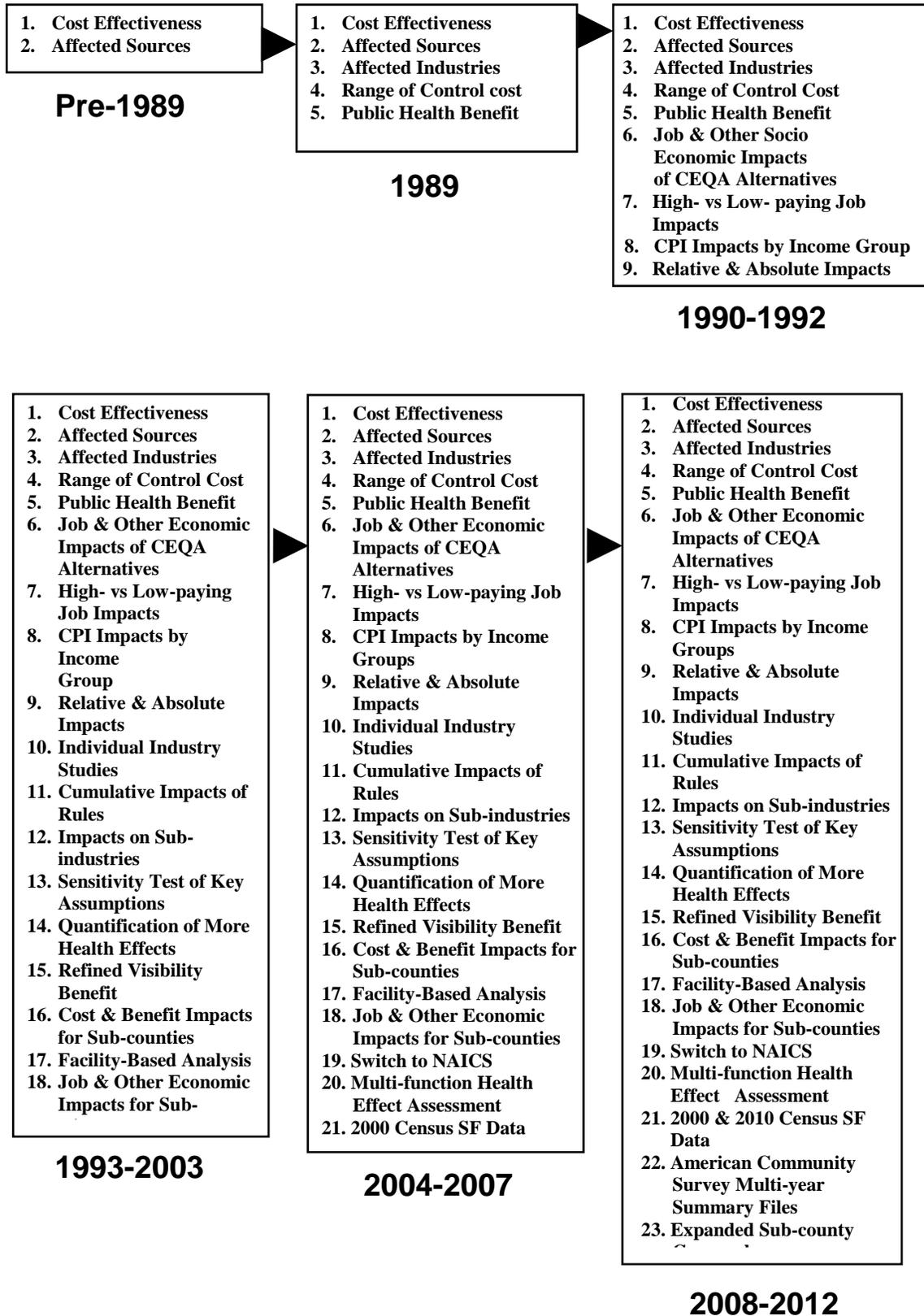
None of these requirements apply to the preparation of the AQMP. However, the District staff performs a socioeconomic analysis of the Draft [Final](#) Plan in order to further inform public discussions and the decision making process of the Draft [Final](#) Plan.

Current Socioeconomic Analysis Program

District staff continually seeks to improve its analysis of socioeconomic impacts by expanding its methods and tools. Over the years, the District's socioeconomic analyses have diversified and evolved as shown in Figure 1-1. The District relies on both quantitative and qualitative analyses, describes impacts in absolute and relative terms, and has continually refined its analysis to a more detailed level. In addition, the District has used facility-based and sub-industry data to better identify the underlying socioeconomic characteristics of various sizes of affected industries. Such analysis becomes an important analytic tool in situations where proposed regulations disproportionately impact small or minority owned businesses.

The Massachusetts Institute of Technology (MIT) conducted an audit of the District's socioeconomic impact analysis program (Polenske et al., 1992). This audit found that the District surpassed most other agencies in analytical methods. The audit did, however, recommend that the District use alternative approaches and work with the regulated community and socioeconomic experts to refine its socioeconomic assessments. The AQMP Advisory

FIGURE 1-1
Evolution of Socioeconomic Analysis



Group, Scientific, Technical and Modeling Peer Review Advisory Group (STMPRAG), the Ethnic Community Advisory Group (ECAG) and the Local Government, and Small Business Assistance Advisory Group (LGSBAAG) have been involved in providing input and refinements to the socioeconomic assessments. STMPRAG is composed of leading experts in the socioeconomic and air quality modeling fields, representatives from the regulated community, and participants from public interest groups. ECAG, the predecessor of the Environmental Justice Advisory Group, consists of representatives from community groups, small businesses, and grass roots organizations who work extensively with their communities. LGSBAAG is made up of representatives from local governments and small businesses.

In 1998, the District co-funded a visibility study with the most recent property sales data and census data for the four-county area (Beron et al., 2001). Results indicated that a strong relationship existed between the marginal willingness to pay for improved visibility (price of visibility) and educational level and household net income.

In 2000, towards the goal of expanding its analysis tools, District staff commissioned BBC Research and Consulting to examine approaches to assessing impacts of proposed regulations on a spectrum of facilities and to evaluating impacts of rules after their adoption. The study results indicated the need to employ a variety of external data sources, construct internal time series data, and explore data sharing opportunities with other governmental agencies.

Beginning in 2000, published economic statistics at the industry level have moved away from the Standard Industrial Classification (SIC) system to the North American Industrial Classification System (NAICS) to include new and emerging industries such as information technologies, among others. In 2006, all the potentially affected point source facilities in the 2002 emission inventory were re-designated with appropriate NAICS codes.

Since 2007, the District has been using a U. S. EPA approved health benefit assessment model—BenMAP—to assess health benefits associated with reductions in exposure to criteria pollutants. BenMAP is a GIS-based system and integrates epidemiological studies with air quality and demographic data, as well as economic valuation methodologies to quantify health effects associated with pollutant concentration and economic values associated with these effects. The District also uses the model to conduct sensitivity analyses on several issues related to the health benefit assessment; and the allocation of costs of individual control measures to sub-county areas.

The American Community Survey (ACS) continuously samples population to provide up-to-date demographic statistics to supplement information not provided by decennial censuses. There are ACS 1-year, 3-year, and 5-year estimates for various purposes. The 2006-2008 estimate was used to expand the four-county geography to 21 sub-regions from the previous 19 regions. The 2005-2009 and 2006-2010 estimates that provided 60 months of collected data at the census tract level were used to compile statistics on age cohorts, race, ethnicity, housing, and household characteristics to support the assessments of health, visibility, and material benefits.

In preparation for work for the Draft [Final](#) 2012 AQMP, District staff has consulted with the AQMP Advisory Group, STMPRAG, and independent consultants to discuss possible and future refinements to data collection, modeling, and socioeconomic processes.

DRAFT [FINAL](#) 2012 AQMP SOCIOECONOMIC ISSUES

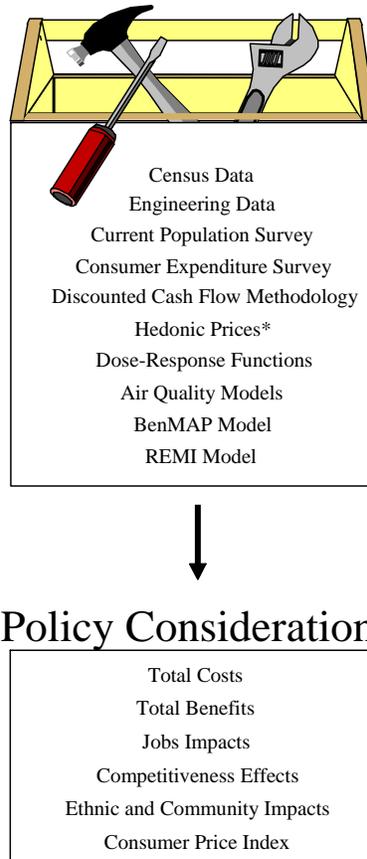
In addition to covering all the topics listed under the legal mandates for rulemaking that were previously described, this assessment addresses the following issues and provide estimates of:

- ACS 5-year estimates on race and ethnicity distribution of population;
- Benefits of the Draft [Final](#) 2012 AQMP;
- Total implementation cost of the Draft [Final](#) 2012 AQMP;
- Cost of the Draft [Final](#) 2012 AQMP as compared to the benefits;
- Effect of quantifiable measures and benefits of the Draft [Final](#) Plan on employment;
- Potential impacts on sub-county areas and socioeconomic groups;
- Effect of the Draft [Final](#) Plan on industrial competitiveness;
- Potential economic effects of the CEQA alternatives to the Draft [Final](#) 2012 AQMP; and
- Key areas of uncertainty in this assessment.

ASSESSMENT METHODOLOGY

To assess the socioeconomic impacts of the Draft [Final](#) 2012 Plan, District staff has relied on a variety of data sources, methods, and tools (Figure 1-2). The analysis is divided into a number of segments whose interrelationship is shown in Figure 1-3. The analysis is performed at the sub-county level by grouping contiguous census tracts that have similar political, geographical, and social characteristics. Los Angeles County is sub-divided into 11 regions, Orange County into four regions, and Riverside and San Bernardino Counties into three regions each.

FIGURE 1-2
Assessment Tool Kit



*See Glossary

The socioeconomic analysis period is from 2013 to 2035 to address various implementation dates of control measures and the resulting air quality benefits. The socioeconomic impacts of the Draft [Final](#) 2012 AQMP are evaluated with respect to a baseline condition, which assumed that the four-county region would continue [receiving federal highway funding to making-make](#) the necessary infrastructure investments [for implementation of the 2012 Regional Transportation Plan \(RTP\) in air-quality and transportation improvements order](#) to keep ~~it~~ [the region](#) competitive nationally and globally. [However, the funding hinges on achieving the air quality standard that is the primary goal of the Draft Final 2012 AQMP.](#) For this reason, the baseline forecast provided by SCAG includes ~~the 2012 Regional Transportation Plan (RTP) and~~ the 2012 [AQMP RTP](#). The socioeconomic analysis herein attempts to address any deviations from the baseline when the Draft [Final](#) 2012 AQMP is fully implemented in terms of benefits of cleaner air, costs of control measures, and spillover impacts of direct benefits and costs. These deviations represent the impact of the Draft [Final](#) 2012 AQMP.

Benefit Analysis

A two-step process is utilized to estimate the benefits expected from attaining the federal PM_{2.5} standard. The first step involves translating the improvements in air quality expected to result from the Draft [Final](#) Plan into dollar values. Benefit categories with quantified relationships with air quality include improved human health, the public's willingness to pay for improved visibility, reduced damage to building materials, and reduced vehicle miles and vehicle hours traveled.

Established concentration-response relationships from recent research and air quality data from different air quality models are used to assess the benefits. The second step involves qualitatively describing the remaining types of benefits that would result from implementing the Draft [Final](#) Plan, but for which monetary benefit estimates are unavailable.

Cost Analysis

A two-step process is also employed to estimate the costs of the Draft [Final](#) Plan. The first step involves the quantification of each control measure based on engineering cost estimates that can be developed at this time and identification of directly affected entities. Based on the proportions of emission reductions, the second step was to allocate the total cost of each control measure to affected sub-county regions. For stationary sources, facility emission reductions are aggregated by sub-region and industry according to the location of facilities. For area and mobile sources, emission reductions are assigned to air quality modeling grids with various surrogates. For example, population was used for VOC reductions from reformulated consumer products and housing units were used for VOC reductions from reformulated architectural coatings. For the mobile sources, emission factors from the ARB EMFAC 2011 as well as Vehicle Miles Traveled (VMT) from SCAG's transportation model were used. These emission reductions are then aggregated to 21 sub-regions according to the correspondence between grid cells and sub-regions. Population at census tracts from the 2010 Census is used to split a grid cell that may be divided into more than one sub-region.

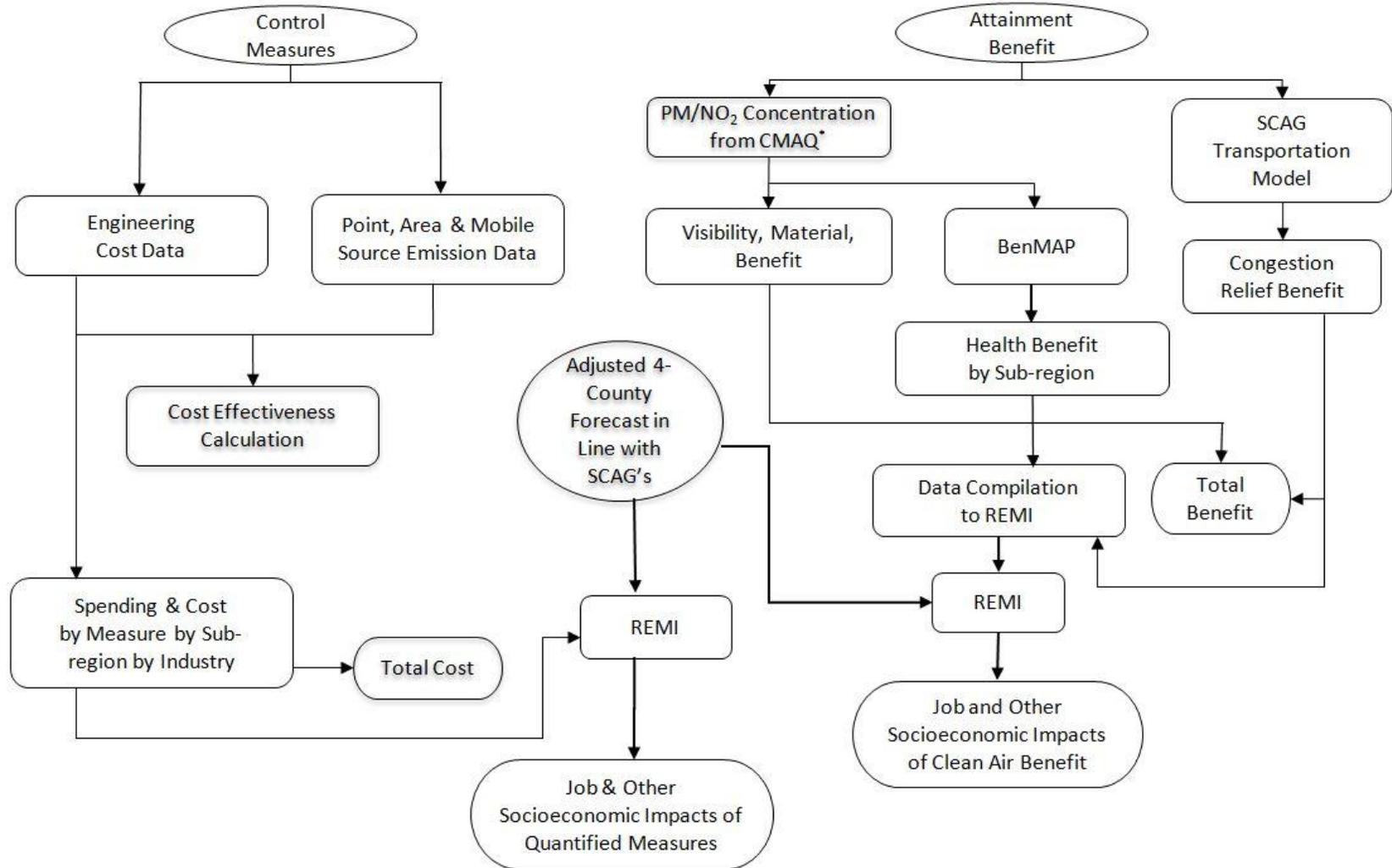
Job and Other Socioeconomic Impact Analysis

To estimate job impacts and other socioeconomic impacts that may result from the quantifiable measures and clean air benefits, the REMI (Regional Economic Models, Inc.) 18-region 70-sector model is utilized. The REMI model incorporates state-of-the-art modeling techniques and the most recent economic data. The MIT report conducted on the District's socioeconomic assessments found that the REMI model is "technically sound." Figure 1-4 shows an example of how the REMI model can be used to assess the socioeconomic impact of a policy. Both the cost and benefit impacts are developed outside of the REMI model and are used as input to the REMI model.

To assess the impacts on socioeconomic groups, the impacts on product prices from the REMI model are overlaid on consumption patterns of various income groups to examine the changes in consumer price indices of these income groups. The data on consumption patterns are from the Bureau of Labor Statistics' Consumer Expenditure Survey.

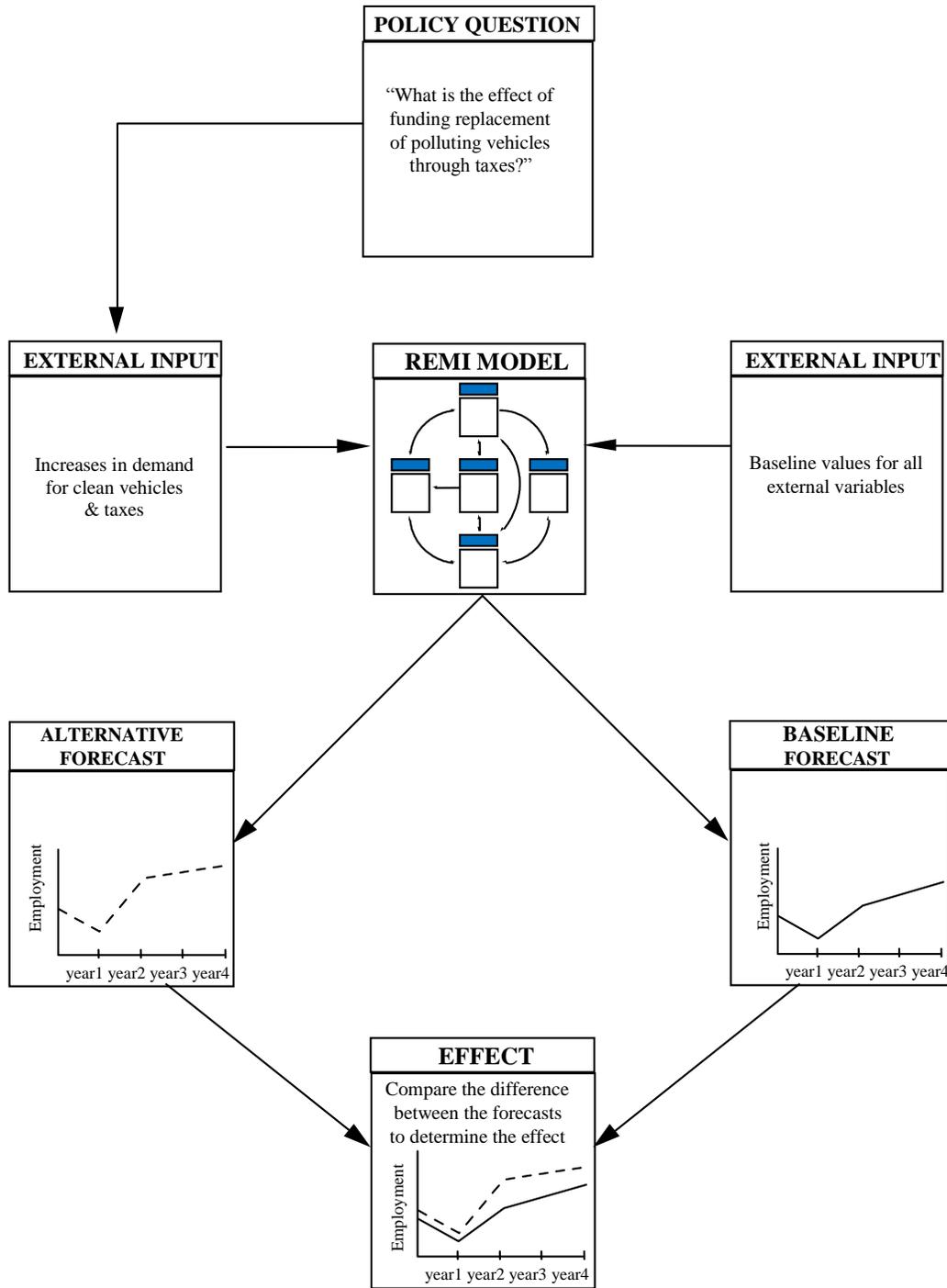
To assess the impacts on competitiveness of the four-county area, the following were considered: the region's share of national jobs in those industries whose products are also

FIGURE 1-3
AQMP Socioeconomic Analysis



*CMAQ = Community Multiscale Air Quality Model

FIGURE 1-4
Use of the REMI Model



| sold in the national market; the impacts of the Draft [Final](#) Plan on product prices by industry; and the changes in imports and exports as a result of implementing the Draft Final Plan's control measures. These factors are selected based on a review of effects of past public policies on a region's competitiveness.

CHAPTER 2

ECONOMY AND AIRQUALITY

Introduction

Demographics

Four-County Economy

Other Economies

Air Quality and Economy

Future Growth

INTRODUCTION

Los Angeles, Orange, Riverside, and San Bernardino Counties collectively constitute one of the largest regional economies in the United States. The jurisdiction of the SCAQMD includes all or the majority of the populated portions of these four counties. In 2010, the four-county area's gross domestic product (GDP) was \$768 billion (2005 dollars), which was 5.9 percent of the US GDP and 45 percent of the California GDP (U. S. BEA, 2012). These counties had 17.1 million people in 2010, which was 45.8 percent of California's total population or 5.5 percent of the U.S. population. In addition, there were 6.3 million wage and salary workers in the four-county area in 2011, a 44 percent share of the state's total wage and salary workforce (EDD, 2012b).

The South Coast Air Basin (SCAB), which is part of the four-county area, has the worst ozone in the nation along with San Joaquin Valley and Houston, and is classified as an extreme non-attainment area for the 8-hour federal ozone standard. The SCAB is also in nonattainment for the 24-hour PM_{2.5} Standard. As such, stringent control measures have to be proposed in order to meet the standard. The four-county area has the most diversified economy in the nation, and the business community has expressed concerns about the impact of air quality regulations on the local economy, in particular, on the manufacturing sector. In what follows, characteristics of the local economy are presented and compared to other local economies.

DEMOGRAPHICS

Population of the four-county area is expected to grow from its 2008 level of 16.9 million to 18.6 million in 2020, and 20.9 million in 2035 (REMI, 2011). This represents an annual population growth rate of 0.79 percent over the 2008-2035 period and between 2020 and 2035.

According to the 2010 census, 45 percent of the 17.1 million residents in the four-county area were Hispanic, followed by 33 percent White, 12 percent Asian, seven percent African American, and three percent were of other races or multiple races. Hispanics are people of Hispanic origins regardless of their races. Los Angeles County was the most racially and ethnically diverse county in the region with 28 percent Whites and 48 percent Hispanics. Los Angeles and Orange Counties had the highest percentage of Asians. Orange and Riverside Counties had the highest percentage of Whites. In all four counties, Whites and Hispanics were the two largest ethnic groups. Table 2-1 shows the ethnic distribution of population by county.

TABLE 2-1
Distribution of Race and Ethnicity in Four Counties

County	Hispanic	White	Asian	African-American	Other
Los Angeles	48%	28%	14%	8%	3%
Orange	34%	44%	18%	1%	3%
Riverside	45%	40%	6%	6%	3%
San Bernardino	49%	33%	6%	8%	3%
Total	45%	33%	12%	7%	3%

Sources: U.S. Census Bureau. 2010 SF1 100% Data [Data Files QT-P3 and QT-P4]. Retrieved June 2012 from <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?ref=geo&refresh=t>

Based on census tract boundaries with consideration of topographical features and city boundaries, the four-county area was divided into 21 sub-regions. The counties of Riverside and San Bernardino were divided into three sub-regions each: two more urbanized areas and a more sparsely populated area. Los Angeles County was divided into 11 sub-regions and Orange County was divided into four sub-regions. Figures 2-1 shows the ethnic distribution of population in each of these sub-regions, respectively, based on the 2010 census.

Socioeconomic characteristics of the sub-regions were compiled using the 2010 Census data. These data were aggregated to the sub-region level by apportioning census tracts to the appropriate sub-region. Spatial allocation of census tracts were assigned to sub-regions using ArcGIS. The 21 sub-regions showed considerable variation as measured by several socioeconomic indices (Table 2-2).

Sub-regions in Riverside and San Bernardino Counties had relatively higher share of youth population while the western area of Los Angeles County had the lowest percentage of youth among all sub-regions. The non-urbanized portion of Riverside County had the highest percentage of elderly population. Newly developed sub-regions and those in urban centers had the lowest share of the elderly. The poverty rates ranged from a low of seven percent in the southern part of Orange County to 29 percent in the south central area of Los Angeles County according to the 2006-2010 American Community Survey.

TABLE 2-2
Socioeconomic Characteristics of County Sub-areas

Sub-area	Population (thousands)	Percent (%)		
		Poverty ¹	Youth ²	Elderly ³
LA Beach & Catalina	583	9%	24%	13%
LA Burbank	579	11%	21%	14%
LA Central	1,203	23%	23%	10%
LA North	663	14%	31%	8%
LA San Fernando	1,294	14%	26%	11%
LA San Gabriel Valley East	640	10%	26%	12%
LA San Gabriel Valley West	943	13%	26%	13%
LA South	865	16%	27%	10%
LA South Central	1,020	29%	33%	8%
LA Southeast	1,174	14%	30%	10%
LA West	855	10%	17%	14%
Orange Central	1,021	15%	29%	9%
Orange North	426	8%	26%	12%
Orange South	899	7%	25%	12%
Orange West	664	9%	22%	15%
Northwest Riverside	863	13%	31%	8%
Riverside Other	722	16%	27%	18%
Riverside Southwest	605	11%	32%	10%
Other San Bernardino	585	18%	30%	11%
San Bernardino City	841	18%	33%	8%
San Bernardino Southwest	609	8%	29%	8%
Total Four Counties	17,054	14%	27%	11%

¹Poverty data are based on the U.S. Census Bureau's 2006-2010 American Community Survey. For 2010, the federal poverty threshold for a family of four is \$22,314 (Census, 2012).

²Youth = 18 years old or younger.

³Elderly = 65 years old or above.

FIGURE 2-1
2010 Census: Ethnic Distribution of Population



FOUR-COUNTY ECONOMY

The four-county region is built around the nation's largest port complex and entertainment and tourism sectors; and has a diversified manufacturing center. The ports of Los Angeles and Long Beach have the highest container traffic (a combined total of more than 14 million TEUs in 2011) among all U.S. ports.

The four-county economy has a strong and well diversified economic base. Of the total \$768 billion GDP in 2010 in the four-county area, the sector of real estate, rental, and leasing had the biggest share (19 percent), followed by manufacturing (10 percent), and government and information (nine percent each). The manufacturing share of GDP had been between nine and 10 percent of the local economy since 2001; in the recessionary year 2008, its share went up to 11 percent. Contribution of the information sector had risen from seven percent of GDP in 2001 to nine percent in 2010.

More than 8.9 million jobs supported the \$768 billion GDP in 2010. The sectors that had the highest shares of jobs were government (12 percent), retail trade (10 percent), health care and social assistance (10 percent), professional, scientific, and technical services (8 percent), manufacturing (7 percent), accommodation and food services (7 percent), and administrative and waste management services (7 percent). Table 2-3 shows the contribution of top 10 major sectors in terms of GDP and jobs in 2010, respectively. Figure 2-2 shows the manufacturing trend from 2001 to 2010 in terms of GDP and jobs in the four-county region, which was commensurate with the national trend. In 2010, the U.S. manufacturing sector produced \$100 billion more of goods than China but used only one-tenth the labor due to increases in productivity through automation. Goods that required 1,000 workers to produce in 1950 need only 177 workers today (WSJ, 2012).¹

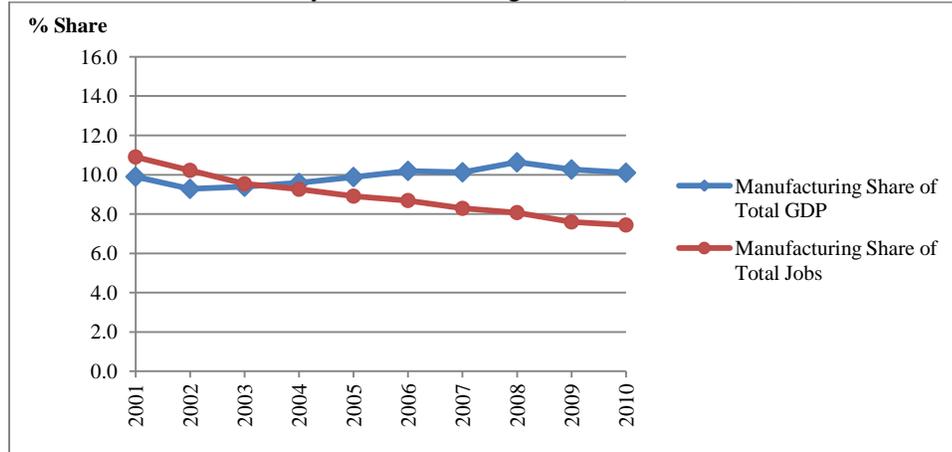
TABLE 2-3
Percentage Contribution to South Coast Economy by Sector in 2010

Industry	Share of Jobs	Share of GDP
Government	12%	9%
Retail Trade	10%	6%
Health Care and Social Assistance	10%	6%
Professional, Scientific and Technical Services	8%	8%
Accommodation and Food Services	7%	2%
Administrative and Waste Management Services	7%	3%
Other Services	7%	2%
Manufacturing	7%	10%
Finance and Insurance	5%	6%
Real Estate, Rental and Leasing	5%	19%
Wholesale Trade	5%	8%
Information	3%	9%

Industries are based on the NAICS codes.

¹“Notable & Quotable.” (WSJ) Wall Street Journal. February 1, 2012. sec A, p. A14.

FIGURE 2-2
Four-county Manufacturing Trend (2001 to 2010)



Over the 2001-2010 period, shares of the retail trade sector in the total jobs had remained at 10 percent while the sector's GDP shares had declined slowly from seven to six percent. There had been a slight increase in shares of the real estate, rental, and leasing sector in the total jobs (four to five percent) commensurate with its slight increase in the GDP shares (18 to 19 percent). The government sector had been slightly trending up in recent years in terms of job shares (11 to 12 percent), while trending down in terms of GDP shares (10 to nine percent). Job shares of the information sector had gone down from four to three percent. However, its GDP shares had been trending up from seven to nine percent.

Because the four-county economy is made up of four counties, strengths of economies in separate counties will differ from one another and from the overall four-county economy.

Green Jobs

Based on a survey conducted by the California Labor Market Information Division, green jobs (as defined in the footnote below) spread across nearly all industries (EDD, 2010).² The four-county region had 41.3 percent of the total 432,840 green jobs in California. Approximately 2.9 percent of the total jobs in southern California were green jobs. Among all the regions in California, northern California had the highest share of green jobs in its total jobs (8.1 percent). Green jobs in southern California were concentrated in existing materials recycling (29 percent), all phases of energy efficient products from construction to maintenance (26 percent), and natural and sustainable product manufacturing (20 percent).

Three industries had the highest share of all green jobs in California: manufacturing (20.5 percent), construction (14.2 percent), and professional, scientific, and technical services (9.7 percent). The share of green jobs as a percentage of all jobs was the highest in utilities (27.8 percent), followed by mining, quarrying, and oil and gas extraction (18.3 percent), and

²As detailed in the EDD survey summary, green jobs herein are defined as those workers engaging in generating and storing renewable energy; recycling existing materials; constructing, producing, installing, and maintaining energy efficient products; educating and complying with green business practices; and manufacturing natural and sustainable products.

construction (11 percent). Many occupations have benefited from green jobs. The top green job occupations were carpenters, hazardous materials removal workers, and sustainable farmers and farm workers.

Over the years, the AQMD has been in partnership with private entities to provide funding to businesses that promote commercialization of and demonstrate the successful use of clean fuels and technologies. For every dollar that the AQMD contributes, there is, on average, a \$3 investment by the AQMD partners. Many of these projects result in creation of green jobs. In 2011, approximately \$200 million funding (from Proposition 1B, the Carl Moyer Program, the Clean Fuel Program, and earmarked U.S. EPA and DOE funds) was provided by the AQMD.

Occupational Wage and Employment

Based on the May 2010 occupational employment and wage estimates for the four-county area, 29 percent of 6.3 million wage and salary jobs were in sales, office, and administrative support occupations with average annual wages between \$37,000 and \$40,000. Except for management positions, higher wage occupations included legal, engineering, computer, healthcare, and other highly skilled profession. Los Angeles and Orange Counties paid higher wages in almost all occupations but community and social services, and transportation and material moving occupations. Table 2-4 has the number of jobs and mean annual wage by occupation in the four-county area. Many of the top-paying occupations are skilled positions in the scientific, technical, and professional fields. Goods movement related jobs are not separately tracked, but are spread among all occupations.

TABLE 2-4
Number of Jobs and Mean Annual Wage by Occupation

Occupation Title	Jobs*		Mean Annual Wage	
	LA-OR	RS-SB	LA-OR	RS-SB
All Occupations	5,191,880	1,140,830	\$ 50,120	\$ 42,930
Legal Occupations	49,080	4,510	\$ 125,370	\$ 95,900
Management Occupations	292,740	46,910	\$ 121,360	\$ 99,950
Architecture and Engineering Occupations	101,760	11,800	\$ 87,290	\$ 76,850
Computer and Mathematical Occupations	128,130	13,020	\$ 80,810	\$ 69,640
Healthcare Practitioners and Technical Occupations	246,150	59,190	\$ 80,580	\$ 80,090
Business and Financial Operations Occupations	282,600	38,750	\$ 73,010	\$ 63,880
Arts, Design, Entertainment, Sports, and Media Occupations	153,530	9,480	\$ 71,030	\$ 47,690
Life, Physical, and Social Science Occupations	40,980	8,930	\$ 70,110	\$ 64,150
Education, Training, and Library Occupations	326,810	91,760	\$ 59,170	\$ 58,990
Protective Service Occupations	134,030	34,730	\$ 51,040	\$ 48,770
Community and Social Service Occupations	70,550	16,150	\$ 50,700	\$ 51,450
Construction and Extraction Occupations	155,260	51,850	\$ 50,160	\$ 48,720
Installation, Maintenance, and Repair Occupations	157,800	42,230	\$ 46,990	\$ 45,660
Sales and Related Occupations	534,950	121,510	\$ 40,120	\$ 32,860
Office and Administrative Support Occupations	976,450	195,850	\$ 36,840	\$ 33,900
Transportation and Material Moving Occupations	340,440	108,130	\$ 32,310	\$ 32,400
Production Occupations	354,410	66,260	\$ 31,480	\$ 31,280
Healthcare Support Occupations	138,950	31,190	\$ 29,140	\$ 28,320
Building and Grounds Cleaning and Maintenance Occupations	146,980	40,100	\$ 26,680	\$ 26,560
Personal Care and Service Occupations	118,780	31,190	\$ 26,090	\$ 24,370
Farming, Fishing, and Forestry Occupations	4,550	5,840	\$ 23,870	\$ 21,400
Food Preparation and Serving Related Occupations	436,980	111,450	\$ 21,540	\$ 21,310

*Exclude self-employed.

Bureau of Labor Statistics, Department of Labor, May 2010 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates [Data File], <http://www.bls.gov/oes/2010/may/oesrcma.htm>.

OTHER ECONOMIES

Due to its air quality status, the four-county region has a complex air quality program which has included various local and state regulations over decades. Although air quality control programs alone do not define the underlying economy, they are an integral part of the general environment under which people live and businesses operate. The section below examines other regions where air quality problems are less severe to ascertain whether their economic profiles are different from the four-county area.

The Bay Area is an anchor to the northern California economy. The San Diego economy is ranked fourth in California, following the Los Angeles-Long Beach-Santa Ana, San Francisco-Oakland-Fremont, and San Jose-Sunnyvale-Santa Clara metropolitan statistical areas (MSA). The Houston-Sugar Land-Baytown MSA, of which the Houston-Galveston-Brazoria area is a part, is the fifth largest MSA in the nation in terms of GDP in 2010. The Bay Area AQMD (BAAQMD), San Diego Air Pollution Control District (SDAPCD), and

the Houston-Galveston-Brazoria area are in compliance with the PM2.5 standard. The BAAQMD and SDAPCD have also attained the federal 8-hour ozone standard. Not only do the strengths of these economies differ from the South Coast economy, but their air quality status is also dissimilar to that of the South Coast economy.

The BAAQMD had 7.2 million people in 2010 and is comprised of nine counties, Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma. The BAAQMD economy had over 4.3 million jobs.³ Three sectors had the largest share of jobs: professional, scientific, and technical services (12.5 percent), government (11 percent), and healthcare and social assistance (9.4 percent). The share of manufacturing workforce in the BAAQMD economy was 7.6 percent in 2010, a decline from 10.6 percent in 2001. Table 2-5 shows the contribution of the top 10 major sectors in terms of jobs in 2010.

TABLE 2-5
 Percentage Contribution to Bay Area Economy
 by Sector in 2010

Industry	Share of Jobs
Professional, Scientific, and Technical Services	12.50%
Government	11.00%
Health Care and Social Assistance	9.40%
Retail trade	8.90%
Manufacturing	7.60%
Accommodation and food services	7.00%
Administrative and waste management services	6.00%
Other services	5.40%
Construction	4.50%
Wholesale trade	3.20%

San Diego had 3.1 million people in 2010. The total GDP of the San Diego economy was \$15.5 billion (in 2005 dollars) in 2010, which was dominated by the real estate/rental/leasing sector (19.8 percent), followed by the government (16.7 percent), professional, scientific, and technical services (9.8 percent), as well as manufacturing (9.4 percent) sectors. The share of manufacturing in the San Diego economy had been on the rise over the years from 7 percent in 2001 to 9.4 percent in 2010. In 2010 the San Diego economy supported 1.8 million jobs, most of which were in the sectors of government (18.8 percent), professional, scientific, and technical services (10.3 percent), retail trade (9.1 percent), and health care and social assistance (8.3 percent). Manufacturing jobs were 5.7 percent of the total San Diego jobs in 2010, a steady decline from 7.4 percent in 2001. Table 2-6 shows the contribution of the top 10 major sectors in terms of GDP and jobs in 2010, respectively.

³ GDP data is available for states and metropolitan statistical areas (MSA); however, it is not available at the county level. Both the BAAQMD and Houston-Galveston-Brazoria areas have geography which includes portions of MSAs; published GDP data cannot be readily constructed for these areas.

TABLE 2-6
Percentage Contribution to San Diego Economy by Sector in 2010

Industry	Share of Jobs	Share of GDP
Government	18.8%	16.7%
Professional, Scientific, and Technical Services	10.3%	9.8%
Retail Trade	9.1%	5.8%
Health Care and Social Assistance	8.3%	5.4%
Accommodation and Food Services	7.7%	3.00%
Administrative and Waste Management Services	6.1%	2.70%
Other Services	5.8%	2.10%
Manufacturing	5.7%	9.4%
Real Estate and Rental and Leasing	5.4%	19.8%
Finance and insurance	4.9%	4.7%
Construction	4.5%	3.4%
Wholesale Trade	2.8%	4.7%
Information	1.7%	6.6%

The Houston-Galveston-Brazoria area (hereafter Houston economy) is comprised of eight counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller. In 2010, the Houston economy had over 5.9 million people. Its 3.4 million jobs were dominated by the following sectors: government (11.2 percent), retail trade (9.4 percent), and health care and social assistance (9 percent). The manufacturing sector had declined to 6.7 percent of the total jobs in 2010 from 8.5 percent in 2001. The construction sector's employment continued to decline from its height in 2007. Table 2-7 shows the contribution of the top 10 major sectors in terms of jobs in 2010.

TABLE 2-7
Percentage Contribution to Houston Economy
by Sector in 2010

Industry	Share of Jobs
Government	11.20%
Retail trade	9.40%
Health Care and Social Assistance	8.90%
Professional, Scientific, and Technical Services	8.10%
Construction	7.50%
Administrative and Waste Management Services	7.40%
Manufacturing	6.70%
Accommodation and Food Services	6.70%
Other services	5.80%
Finance and insurance	5.50%

As with the South Coast economy, the economies in the Bay Area AQMD, San Diego Air Pollution Control District, and Houston-Galveston-Brazoria area had shown a decline of the share of manufacturing jobs over the years and the government sector is the highest share of

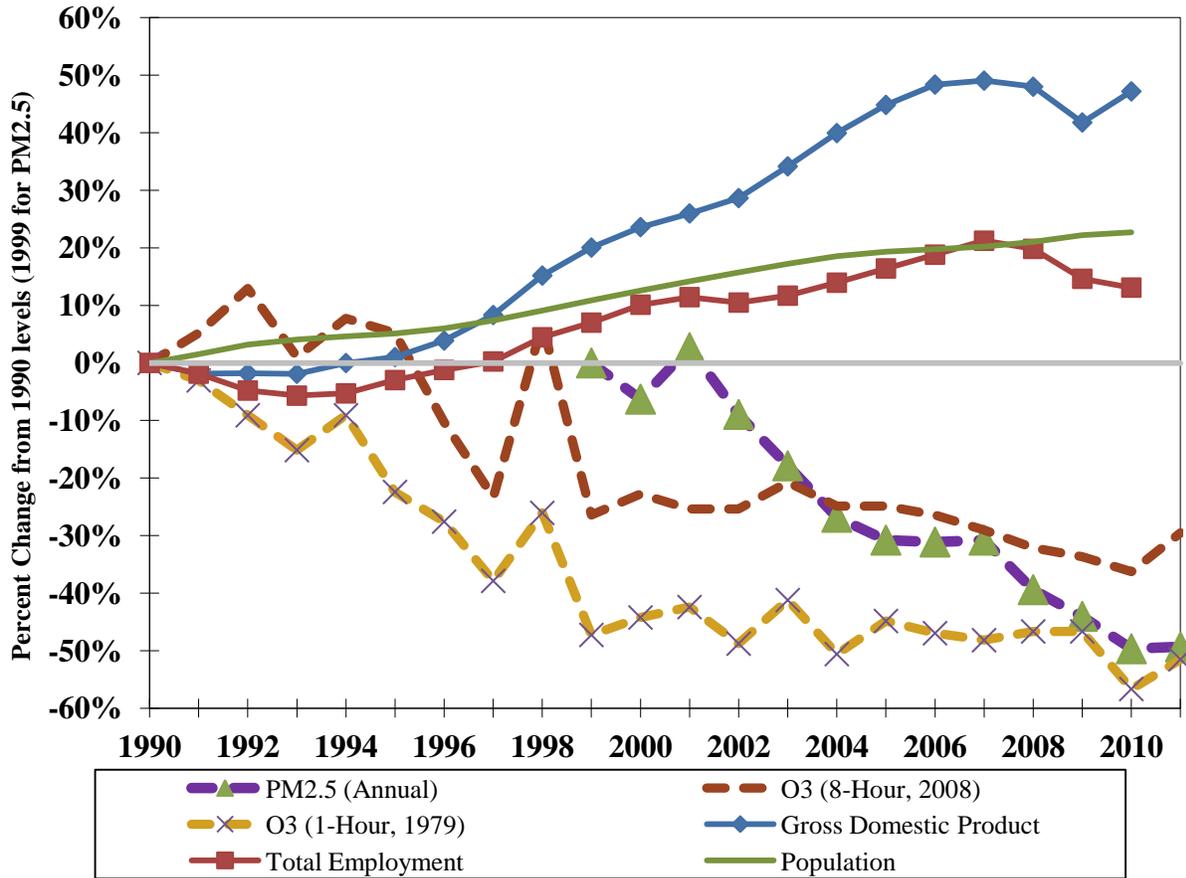
total local jobs. On the air quality front, population, industry makeup, emission profile, transportation, weather, and geography as a whole have made southern California more susceptible to air quality problems than San Diego, the Bay Area, and Houston.

AIR QUALITY AND ECONOMY

Growth is a potential impediment to progress in air quality. As such, improvements in air quality must be sufficiently large to offset increases in population and economic activities in order to achieve air quality standards.

The South Coast Air Basin (SCAB) is close to meeting the federal annual standard for PM_{2.5}, 15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). As of the end of 2011, the AQMD had been experiencing an annual reduction of 6.8 percent in PM_{2.5} concentration since its 2001 peak. The AQMD still has the most number of days exceeding the federal 8-hour ozone standard despite a downward trend. During 2001-2010, the number of days exceeding the federal 8-hour ozone standard was reduced at an annual rate of 2.82 percent. There had been significant improvements in air quality within the SCAB despite significant growth in GDP, employment, and population, as shown in Figure 2-3. In fact, economic growth is needed to support investment in cleaning the air. The business community has made great stride in complying with some of the most stringent controls in the nation while remaining competitive. The South Coast economy was hit hard during the 2007-2009 Great Recession and the 1990-1991 recession, and experienced a slowdown during the early 2000s. However, air quality continued to show steady progress.

FIGURE 2-3
Air Quality, Economic and Demographic Trends in South Coast*



*Economic and demographic data was from REMI Insight®. 18 Area Model for the South Coast Economy, Version 1.3.13, 2011.

Future Growth (Baseline Forecast)

The recent Great Recession ended in the second quarter of 2009, according to the Business Cycle Dating Committee of National Bureau of Economic Research (NBER). Since then the South Coast economy has been on a slow recovery. As with any other recovery after a recession, job recovery often lags. However, the lag is more pronounced and protracted at this time due to a slumping housing market.

According to the California State University, Long Beach, short-term forecast, the four-county region’s jobs would grow by one and one-half percent in 2012 from 2011. Job growth in a number of sectors would exceed two percent. The leisure & hospitality services sector is expected to add jobs at a pace of 3.1 percent in 2012 after a 2.1 percent gain in 2011, reflecting growing demand in the restaurant, hotel and amusement sectors. The professional & business services sector that includes accounting, management consulting and computer systems design is expected to experience job growth of 2.9 percent in 2012. The retail trade sector would add jobs at a pace of 2.3 percent. Anticipated job growth for 2012 in the health and private education sector is 2.2 percent. In 2012, both the durable and

nondurable manufacturing sectors would likely have small, but positive, job growth. Most of this growth is likely to occur in Riverside, San Bernardino and Orange Counties. Government employment is expected to decline in both federal and state and local government employment (CSULB, 2012).

Los Angeles County from 2012 to 2014 is forecasted to grow one and one-half percent in non-farm payroll jobs. Riverside and San Bernardino Counties are expected to experience job growth similar to that of Los Angeles County from 2012 to 2014. Employment in Orange County is projected to grow in the range of two percent over the same period (CSULB, 2012).

Projections by the REMI (Regional Economic Models, Inc.) model that were modified to reflect SCAG projections; indicate that from 2008 to 2035; the four-county region is expected to gain 2.03 million jobs at an annual growth rate of 0.72 percent (REMI, 2012). There are small differences in the job forecast methodology and U.S. projections between REMI and SCAG forecasts. However, these differences do not affect the results reported herein as the REMI forecast was adjusted to reflect the growth rates in the SCAG regional growth forecast (See Appendix C for details).

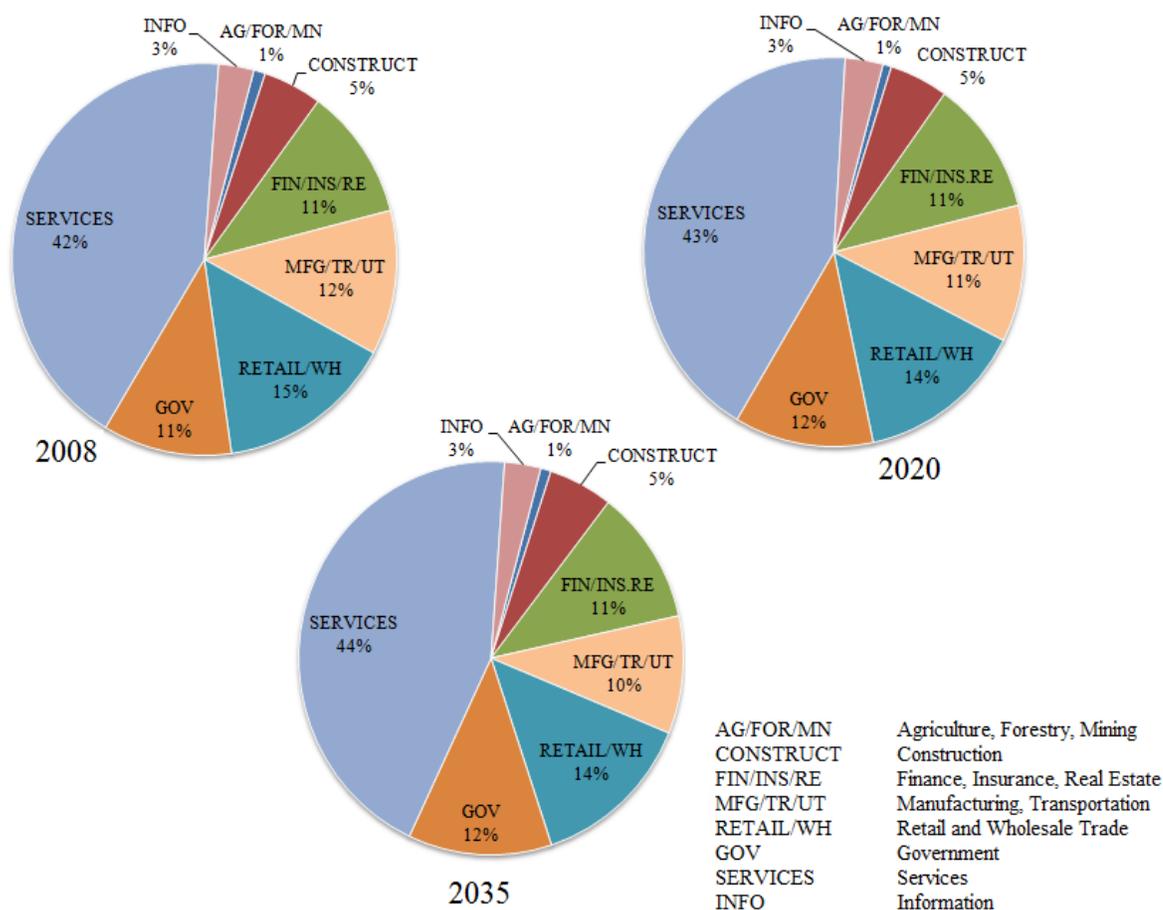
SCAG projections (which form the baseline projections for the Draft Final 2012 AQMP) assumed ~~that continuation of federal highway funding that would be necessary for~~ the four-county area ~~would continue to making make~~ the ~~necessary~~ infrastructure investments ~~for implementation of the 2012 RTP in air quality and transportation improvements order~~ to keep ~~it the region~~ competitive nationally and globally. For this reason, SCAG projections reflect the full implementation of the 2012 RTP. The highway funding hinges on the Basin's and the necessary air quality programs that would be in compliance with the federal Clean Air Act (CAA). In other words, the baseline forecast does not ~~represent a scenario of no further air quality control regulations or programs beyond what is already adopted,~~ or include the potential consequences of not meeting the federal air quality standard (e.g., 2 to 1 offset ratio for new and modified major sources and withheld highway funding under the CAA).

Total employment in Los Angeles County is projected to increase by 0.68 million jobs at a 0.41 percent annual growth rate, while Orange County is projected to increase by 0.18 million jobs at a 0.31 percent annual growth rate. Similar to population growth, total employment in Riverside County is projected to increase by 0.73 million jobs at a 2.31 percent annual growth rate, and San Bernardino County is projected to increase by 0.44 million jobs at a 1.53 percent annual growth rate.

The fastest growth would occur in the construction (NAICS 23), services (NAICS 54-56, 61-62, 71-72, 81), and finance, insurance, and real estate (NAICS 52-53) sectors. The construction sector's jobs are anticipated to grow at 0.95 percent annually, followed by the services and finance, insurance, and real estate sectors at 0.84 percent each. Job growth in the retail and wholesale trade (NAICS 44-45, 42) sector is expected to reach an annual rate of 0.48 percent. In the manufacturing, transportation, and utilities (NAICS 31-33, 48-49, 22) sectors, employment is projected to decline at 0.01 percent annually over the 2008-2035 period.

Figure 2-4 shows historical (2008) and projected sectoral share of employment for 2020 and 2035. The four-county economy, which is composed of a large non-manufacturing sector, is becoming modestly more service-based. Shares of employment in the services (NAICS 54-56, 61-62, 71-72, 81); finance, insurance, and real estate; construction; and government sectors are projected to increase over time between 2008 and 2035. Slightly smaller shares of total jobs in the four-county area are anticipated to occur in the information (NAICS 51), manufacturing, and retail and wholesale trade sectors in 2035 as these sectors become more productive.

FIGURE 2-4
Projected Sectoral Employment Share in the Four-County Economy



Source: REMI Insight®. 18 Area Model for the South Coast Economy, Version 1.3.13, 2011.

The baseline forecast is used as a benchmark against which the impacts of the Draft [Final](#) | 2012 AQMP are evaluated.

CHAPTER 3

COSTS AND BENEFITS

Introduction

Costs

Benefits

Summary

INTRODUCTION

Public policies are often examined relative to their overall costs and benefits, providing a general indication of the net economic impact of the policy. Applying that approach to the AQMP preferably would involve the full quantification of costs and benefits in monetary terms, i.e., dollars.¹ Equipment and materials which are required by control measures are purchased and sold in markets, and their prices can thus be used to measure the costs of implementing control measures. Cost quantification becomes more uncertain when control technologies cannot be specifically identified at the planning stage. Cheaper options may be deployed and marginal costs could be on the rise for the last few tons of emission reductions in order to reach attainment. On the other hand, the possibility of technology advancement and large-scale production due to regulatory requirements may drive down control costs.

There is no direct way to measure benefits of clean air because clean air is not a market commodity. Placing a monetary value on reduced incidence of illness or loss of life is also difficult and more subjective than determining control equipment costs. This often results in incomplete assessments and underestimation of benefits.

This chapter presents aggregate benefits and costs for either the four-county area or by county. Chapter 5 has more detailed results for 21 sub-regions.

COSTS

The cost of attaining clean air in the four-county area includes expenditures on control equipment, low-polluting materials, and infrastructure investments. To quantify these costs, the two-step methodology described in Chapter 1 was applied. The majority of these costs are estimated based on currently available technology.

For each point source control measure, cost data was developed for the entire District and then allocated to the industries and sub-regions to which the affected point sources belong based on the projected emission reductions in the Draft [Final](#) 2012 AQMP and the 2008 emissions inventory data.² Figure 3-1 shows the distribution of point sources in the 2008 emission inventory. Point sources include stationary, identifiable sources of emissions that release over four tons or more of VOC, NO_x, SO_x, or PM or emitting more than 100 tons of CO per year. For area, on-road, and off-road sources, the cost for each measure was assessed for affected industries in the District and then allocated to the 21 sub-regions based on emission reductions at each air quality grid and the correspondence between grids and sub-regions.³ The cost of each control measure is comprised of the annual operating and maintenance expenditure and

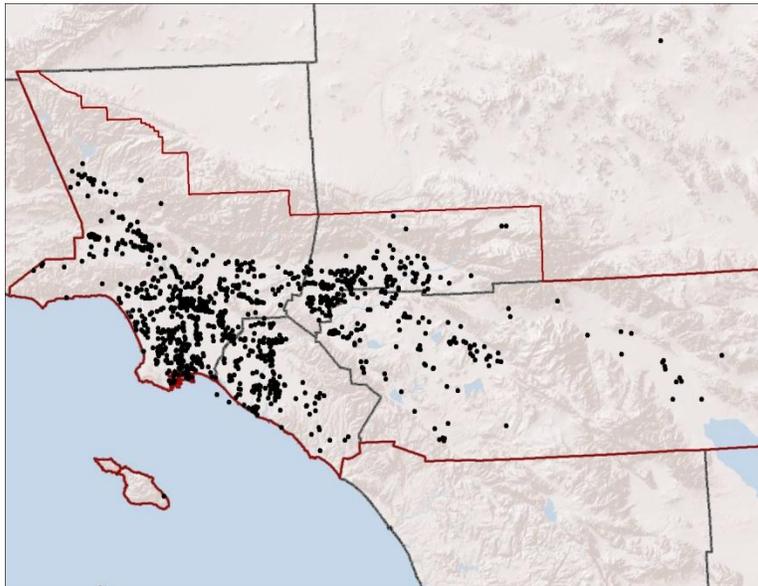
¹All the dollars in this report are expressed in constant 2005 dollars, which removes the effects of general price changes. Changes in constant dollars over time reflect changes in quantity only, which is a better barometer of the standard of living. Currently, all federal statistics in constant dollars are denominated in 2005 dollars. [Appendix I—CPI and Cost Indices—provides consumer price indices \(CPIs\) from 2005 to 2011 and the Marshall & Swift Equipment Cost Indices from 2005 to 2011.](#)

²In cases where facilities are owned by companies headquartered elsewhere, costs may not be incurred in the four-county area. Therefore, the cost burden in the four-county area may be lessened.

³For area and off-road sources, emission reductions were distributed based on CARB's emission surrogate profiles at the gridded level. For on-road sources, information at the transportation zone level from SCAG was used to distribute emission reductions to grids.

capital expenditure annualized over the economic life of equipment at the 4-percent real interest rate. The cost of stationary source control measures does not include construction costs associated with the re-design of a facility to accommodate the new required device and permitting. The cost associated with these categories will be considered during the rulemaking process.

FIGURE 3-1
Point Source Location in the 2008 Emission Inventory

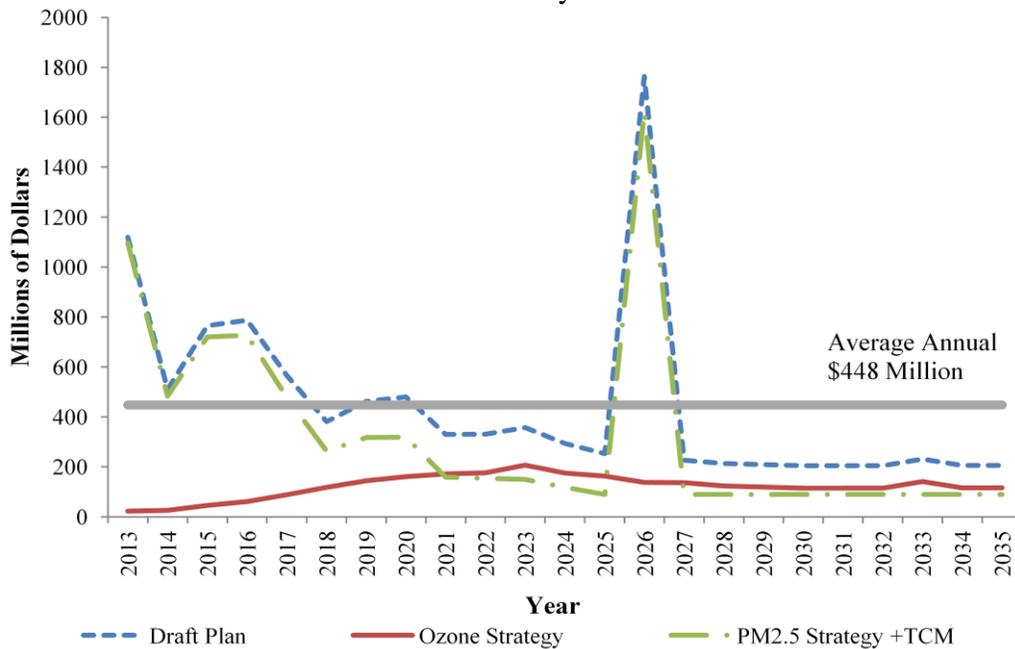


A total of 143 public and private projects with multiple implementation years associated with [the SIP-committed TCMs in the 2012 AQMP](#) were quantified. [The SIP-Committed TCMs](#) were derived from the first two years of the 2011 Federal Transportation Improvement Program (FTIP), which is a multimodal list of capital improvement projects to be implemented over a six-year period. TCMs provide mobility, increase efficiency and safety of the transportation system, and reduce transportation-related air pollution. TCMs are part of the 2012 RTP and have approximately a [fourthree](#)-percent share of the total RTP cost. Appendix E has a list of TCMs along with funding sources, completion dates, and types of costs that were used for the analysis herein. Affected sub-regions are identified according to the description of each project. Annualized capital cost and annual operating and maintenance costs were calculated for each project within its implementation period and converted to 2005 constant dollars based on an annual inflation rate of 3.2 percent. SCAG also identified public funding sources for these public projects such as local sales tax, state or federal sales tax on gasoline sales, alternative fuel tax, and motor vehicle tax.⁴ Private funding includes development fees. The cost burden was distributed to each sub-region according to the proportion of sub-region population in the county in most cases. Furthermore, it was assumed that engineering and right-of-way expenditures would occur immediately upon funding. Construction expenditures were allocated evenly from an initial funding year to the completion date of a project.

⁴Based on TCM data from SCAG, only 4.9 percent of TCM funding (\$15.9 million annually) was assumed from federal sources.

The average annual control cost of all PM_{2.5} and ozone control measures in the Draft [Final](#) 2012 AQMP is projected to be approximately \$448 million from 2013 to 2035, of which TCMs have an annualized cost of \$326 million. [Table 3-1 in Appendix G—No TCM Benefit Scenario—shows costs by industry for TCMs and the District’s portion of PM_{2.5} strategy, respectively.](#) Figure 3-2 shows the annual cost trend of these measures. The high costs in 2026 are from TCMs as public funding for two construction projects is unleashed at once. Table 3-1 shows the distribution of control costs for PM_{2.5} measures (including TCMs), ozone measures, and the Draft [Final](#) Plan, respectively, among various industries. Approximately, 84 percent of the TCM cost is borne by consumers, as shown at the end of Table 3-1. The \$43 million cost borne by the construction sector under the PM_{2.5} strategy is mainly due to the TCM development agreements. The government sector would incur a \$10 million cost as its general funds are used to finance TCM projects. Of the total \$122 million cost for the ozone strategy, sectors that are projected to bear the highest costs are consumers (\$40 million), followed by petroleum and coal products where refineries belong (\$12 million), construction (\$8.3 million), and government, and truck and rail transportation (approximately \$7 million each). Incentive funding from vehicle license fees that is assumed to partially finance the implementation of on-road measures and one off-road measure is allocated to consumers as a reduction in their expenditures. The \$12 million cost borne by the refineries is mainly from Phase II NO_x reductions of RECLAIM. The relatively high costs associated with the sectors of construction, government, and truck and rail transportation are mainly due to Control Measures ONRD-03 (Accelerated Penetration of Partial Zero-Emission and Zero-Emission Light-heavy- and Medium-heavy-duty Vehicles), ONRD-04 (Accelerated Retirement of Older On-road Heavy-duty Vehicles), or OFFRD-01 (Extension of the Surplus Off-road Opt-in for NO_x Provision for Construction Industrial Equipment). All the sectoral costs are less than 0.32 percent (32 hundredths of one percent) of each sector’s average annual output from 2013-2035.

FIGURE 3-2
Control Cost by Year*



*Seventy-three percent of the Draft [Final](#) 2012 AQMP costs related to TCM implementation, including large infrastructure projects.

Table 3-1
Average Annual Control Cost by Industry in Millions of 2005 Dollars (2013-2035)

Industry	NAICS	PM _{2.5}	Ozone	Draft Final Plan	Plan Cost as a % of Output*
Agriculture, Forestry, Fishing, and Hunting	113-115	\$0.000	\$0.160	\$0.160	0.016%
Oil and Gas Extraction, Mining, and Support	211-213	0.000	0.454	0.455	0.002%
Utilities	22	-0.191	7.007	6.816	0.027%
Construction	23	43.192	8.268	51.460	0.081%
Wood Product Mfg.	321	0.013	0.004	0.017	0.000%
Nonmetallic Mineral Product Mfg.	327	-0.148	1.790	1.642	0.039%
Primary Metal Mfg.	331	0.004	0.008	0.012	0.000%
Fabricated Metal Product Mfg.	332	0.024	2.473	2.497	0.011%
Machinery Mfg.	333	-0.007	0.012	0.005	0.000%
Computer and Electronic Product Mfg.	334	0.004	0.241	0.245	0.000%
Electrical Equipment and Appliance Mfg.	335	0.011	0.006	0.017	0.000%
Motor vehicle and Transportation Equipment Mfg.	3361-3369	-0.004	1.211	1.207	0.004%
Furniture and Related Product Mfg.	337	0.000	0.010	0.010	0.000%
Miscellaneous Mfg.	339	0.000	0.043	0.044	0.000%
Food Mfg.	311	0.004	0.033	0.037	0.000%
Beverage and Tobacco Product Mfg.	312	0.000	0.012	0.012	0.000%
Textile and Textile Products Mills	313-314	0.008	0.004	0.012	0.000%
Apparel Mfg.	315	0.000	0.011	0.011	0.000%
Leather and Allied Product Mfg.	316	0.000	0.001	0.001	0.000%
Paper Mfg.	322	0.044	0.007	0.051	0.001%
Printing and Related Support Activities	323	0.004	0.008	0.013	0.000%
Petroleum and Coal Products Mfg.	324	0.200	11.991	12.191	0.034%
Chemical Mfg.	325	0.019	0.136	0.155	0.001%
Plastics and Rubber Products Mfg.	326	0.001	2.304	2.305	0.016%
Wholesale Trade	42	-0.003	0.439	0.435	0.000%
Retail Trade	44-45	0.000	1.101	1.101	0.001%
Air Transportation	481	0.010	0.009	0.019	0.000%
Rail Transportation	482	0.000	7.357	7.357	0.298%
Water Transportation	483	0.000	0.004	0.004	0.000%
Truck Transportation; Couriers and Messengers	484,492	0.000	7.764	7.764	0.030%
Transit and Ground Passenger Transportation	485	0.000	6.821	6.821	0.319%
Pipeline Transportation	486	0.006	0.136	0.142	0.022%
Scenic and Sightseeing Transportation	487-488	0.000	6.829	6.829	0.107%
Warehousing and Storage	493	0.000	1.349	1.349	0.039%
Publishing Industries, except Internet	511	0.000	0.020	0.019	0.000%
Motion Picture and Sound Recording Industries	512	0.000	0.073	0.073	0.000%
Internet Services and Data Processing	516,518,519	0.000	0.015	0.016	0.000%
Broadcasting, except Internet; Telecomm.	515,517	0.000	0.061	0.061	0.000%
Monetary Authorities	521,522,525	0.000	0.082	0.082	0.000%
Securities, Commodity Contracts, Investments	523	0.000	0.046	0.046	0.000%
Insurance Carriers and Related Activities	524	0.000	0.042	0.042	0.000%
Real Estate	531	0.001	0.257	0.258	0.000%
Rental and Leasing Services	532-533	0.000	0.679	0.679	0.002%
Professional and Technical Services	54	0.000	0.134	0.134	0.000%
Management of Companies and Enterprises	55	0.000	0.050	0.050	0.000%
Administrative and Support Services	561	0.002	1.519	1.522	0.003%
Waste Management and Remediation Services	562	0.000	2.395	2.395	0.041%

TABLE 3-1 (Continued)

Industry	NAICS	PM _{2.5}	Ozone	A# Draft Final Plan	Plan Cost as a % of Output*
Educational Services	61	0.000	0.014	0.014	0.000%
Ambulatory Health Care Services	621	0.000	0.061	0.061	0.000%
Hospitals	622	0.000	0.035	0.035	0.000%
Nursing and Residential Care Facilities	623	0.000	0.009	0.009	0.000%
Social Assistance	624	0.000	0.006	0.006	0.000%
Performing Arts and Spectator Sports	711	0.000	0.022	0.022	0.000%
Museums, Historical Sites, Zoos, and Parks	712	0.000	0.003	0.003	0.001%
Amusement, Gambling, and Recreation	713	0.000	0.007	0.007	0.000%
Accommodation	721	0.001	0.011	0.012	0.000%
Food Services and Drinking Places	722	0.000	0.045	0.045	0.000%
Repair and Maintenance	811	0.000	0.017	0.017	0.000%
Personal and Laundry Services	812	0.016	0.012	0.028	0.000%
Membership Associations and Organizations	813	0.000	0.011	0.011	0.000%
Private Households	814	0.000	0.003	0.003	0.000%
Government	92	10.217	7.770	17.988	0.010%
Consumer		273.127	40.194	313.321	
Total		\$326.558**	\$121.597	\$448.155**	

*Average output from 2013 to 2035 in 2005 dollars.

**\$326.44 million are TCM costs.

Cost by County

Table 3-2 shows how the potential control costs are distributed among the four counties for the quantifiable measures. Los Angeles County could incur an annual cost of about \$328 million, or approximately 73 percent share of the total cost. This is because most of the affected emission sources are located in Los Angeles County.

TABLE 3-2
Average Annual Control Cost by County
(millions of 2005 dollars)

County	Control Cost	% Share
Los Angeles	\$328	73%
Orange	72	16%
Riverside	24	5%
San Bernardino	23	5%
Total*	\$448	100%

*The sum of individuals does not add to the total due to rounding.

BENEFITS

Despite the uncertainty of assigning dollar figures to the benefits of attaining the federal PM_{2.5} standard in 2014, it is apparent that clean air will result in significant benefits to the four-county region. Partial assessments can be made for the impact of better air quality on mortality, morbidity, visibility, and materials. However, the full assessment of air quality benefits in dollar terms is not possible until advances occur in human health, physical science, and

economic disciplines, which will allow monetary estimates to be made for currently unquantifiable areas.

Quantified Benefits

Air quality continues to improve due to previously adopted regulations and implementation of many control measures from the 2007 AQMP. Implementation of PM_{2.5} measures would lead to attainment of the federal 24-hour PM_{2.5} standard in 2014. Implementation of ozone measures would bring the Basin toward compliance with the federal ozone standard in 2023.

Although each attainment demonstration is performed with respect to the worst air quality site, the benefit assessment (except for the material benefit) herein is analyzed with respect to the changes in the projected year-long air quality concentrations between the expected control based on adopted regulatory programs and the Draft [Final](#) 2012 AQMP for the benchmark years in each air quality modeling grid (4 kilometer by 4 kilometer). The total average annual quantifiable benefits associated with implementing the Draft [Final](#) 2012 AQMP are projected to be \$10.7 billion, which represents the currently quantifiable benefit of moving beyond today's regulations to the level needed to meet the federal PM_{2.5} standards. A breakdown of these benefits is shown in Table 3-3. The benefit ranges from \$14 million for reduced expenditures resulting from less damage to building materials and less frequent cleaning to \$7.7 billion for reductions in congestion related to [all the TCMs proposed by SCAG in its 2012 RTP, of which the corresponding benefit for the SIP-committed TCMs in the 2012 AQMP is estimated to be \\$519 million](#). It is appropriate to consider the congestion relief benefit and SCAG TCMs because these measures are largely adopted for their congestion relief benefit as well as air quality improvements. [Based on the \\$519 million benefit for the SIP-committed TCMs, the total quantifiable benefit for the 2012 AQMP is projected to be \\$3.5 billion, as shown in Appendix H—TCM Benefit at 2014 Level](#). The detailed components of each benefit category and related assumptions are discussed in the remaining pages of this chapter.

TABLE 3-3
Quantifiable Benefits of Draft [Final](#) 2012 AQMP
(millions of 2005 dollars)

Benefit	Average Annual (2014 to 2035)
Reduction in Morbidity	\$23
Reduction in Mortality	2,225
Visibility Improvement	696
Reduced Materials Expenditures	14
Congestion Relief	7,712
Total	\$10,670

Health Benefit

It is well-documented that smog can result in short-term and chronic illness. Figure 3-3 illustrates mostly short-term smog effects. Numerous studies have demonstrated an association between illness and ambient air pollutants. [Since 2007 the Basin's residents have experienced significant health benefits due to improvements in PM_{2.5} levels from continuous implementation](#)

of PM controls and slowdown in economy. In 2011, the federal PM_{2.5} standards were exceeded at only one air monitoring station. Based on published epidemiological studies, demographic and projected air quality data, and economic valuation of health effects, the quantifiable health benefits of achieving the federal PM_{2.5} standard is estimated to be \$4.1 billion in 2014. The proposed PM_{2.5} strategy is also projected to result in co-benefits from reductions in exposure to NO₂, which is not included in the analysis due to resource constraints. Nor are co-benefits from ozone reductions because the ozone strategy in the Draft Final Plan represents a partial implementation of the Black Box whose full implementation is needed for the ozone attainment. Health effects of PM_{2.5} and other criteria pollutants are shown in Figure 3-4.

FIGURE 3-3
Effects of Smog

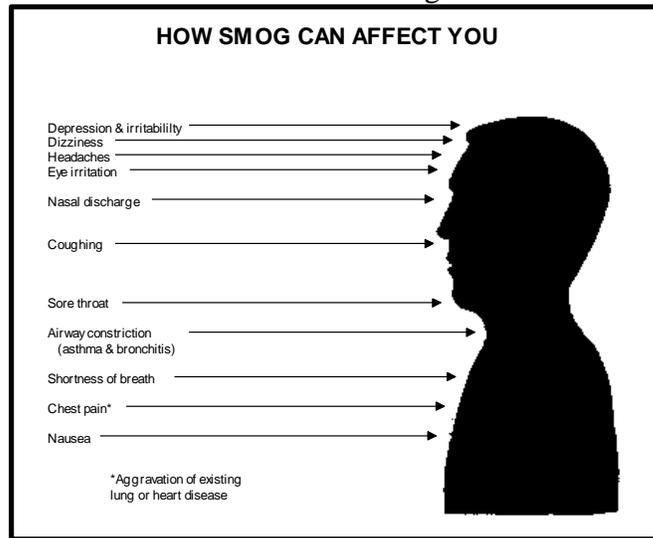
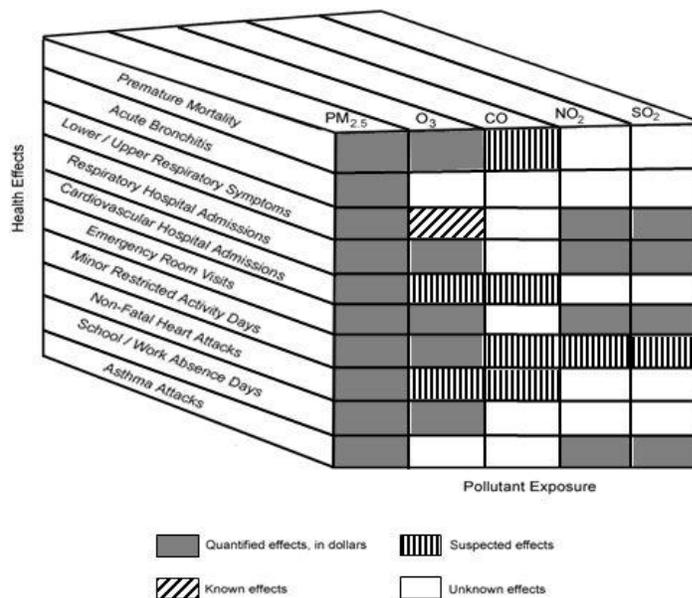


FIGURE 3-4
Health Effects of Criteria Pollutants



Quantification of health benefits requires the establishment of concentration-response functions for various symptoms and translation of health endpoints into dollar values. The latter step is needed in order to monetize known effects. Additional epidemiological studies are needed for unknown and suspected effects before developing concentration-response functions. Based on a thorough review of epidemiological literature, concentration-response functions for various health endpoints for PM_{2.5} were selected. A health benefit model, BenMAP, was used to pool population, air quality data, and economic values of health effects for the health benefit analysis.

Air quality is expected to improve due to the implementation of the existing control strategy. The analysis herein focuses on the degree of improvement in future years due to the implementation of control measures in the Draft [Final 2012 AQMP](#) by comparing the future baseline air quality (at the current level of regulations) to the future controlled air quality for the same year.

The majority of the region's population is currently exposed to unhealthful air. PM_{2.5} causes effects as extreme as premature death, as well as increased respiratory infection, asthma attacks, and other related health effects. Groups that are most sensitive to the effects of PM_{2.5} are children, the elderly, and people with certain respiratory and heart diseases. Assessments were made for reductions in premature deaths resulting from reductions in annual average PM_{2.5} concentrations; and reductions in respiratory and cardiovascular hospital admissions, emergency room visits, asthma attacks, minor restricted activity days (MRAD) from acute respiratory symptoms, and non-fatal heart attacks from reductions in daily PM_{2.5} concentration for the benchmark years 2014 and 2023.⁵ The PM_{2.5} benefit assessment herein has no threshold employed, i.e., it is assumed that there are health benefits for all reductions in emissions, even to levels below the current national ambient air quality standard (NAAQS).

Table 3-4 shows the number of avoided cases (or person-days) by health effect when the Basin attains the PM_{2.5} standard in 2014 and in 2023. The mortality impact (premature deaths) was analyzed based on the kridging model for the Los Angeles Metro Area in the 2009 Krewski et al. study (with a relative risk factor of 1.17). The elderly are more susceptible to premature deaths than other age groups. Reductions in health effects are translated into monetary terms based on the cost of illness (medical costs and work loss) or willingness-to-pay associated with each effect. The unit value of each health effect may vary by age, year, symptom, and/or county. The willingness-to-pay amount for avoiding a premature death was based on the value of a statistical life (VSL) in Kochi et al. (2006) adjusted to 2005 dollars and 2010 real income. The range of \$6.1 to \$6.7 million reflects variations in real income across sub-regions. For non-fatal heart attacks, the lower end of the range represented the average of four newer studies ([Zanobetti et al., 2009](#); [Pope et al., 2006](#); [Zanobetti and Schwartz, 2006](#); and [Sullivan et al., 2005](#)) from 2005 to 2009 and the higher end came from Peters et al. (2001).

A sensitivity analysis indicates that in 2014, eight percent of the adult (30 years old or above) avoided premature deaths would be attributed to evaluating the PM_{2.5} mortality benefit only to the NAAQS. However, there is no clear PM_{2.5} exposure threshold below which no adverse health effects are observed. In fact, California has lower PM_{2.5} standards than the federal standards. Furthermore, the U.S. EPA is in the process of proposing a more stringent annual

⁵ The health function was applied daily and aggregated to 365 days for each benchmark year.

PM_{2.5} standard based on several health studies (See Appendix I to the Draft [Final](#) 2012 AQMP for more details). The estimates in Table 3-4 assumed no existence of any health threshold below which benefits would not occur.

TABLE 3-4
Changes in Number of Symptoms for Future Years *

Health Effect	Number of Avoided Cases		Unit Value
	2014	2023	
Mortality (Adult & Infant)	668	275	\$6.1 - \$6.7 million
Acute Bronchitis	597	186	\$417
Non-Fatal Heart Attacks	29 - 261	12 - 106	\$96,935 - \$100,345
Lower & Upper Respiratory Symptoms**	18,384	5750	\$18 - \$29
Emergency Room Visits (Respiratory)	153	53	\$356
Hospital Admissions	151	62	\$30,596
Minor Restricted Activity Days (MRAD)**	287,447	95,093	\$59
Work Loss Days	48,805	16,055	\$154
Asthma Attacks**	26,910	3,628	\$50

*Changes reflect differences in base and control cases for a given year. Positive numbers are reductions in symptoms due to the Draft [Final](#) 2012 AQMP.

**Person-days.

Table 3-5 shows the quantifiable health benefit of improved air quality associated with the 2012 Draft [Final](#) AQMP for PM_{2.5} morbidity and mortality relative to air quality without the Draft [Final](#) Plan. The total annual health benefit is projected to reach \$1.7 billion in 2023. Assuming that the 2023 benefit continues into the future, the projected average annual health benefit from 2014 to 2035 is approximately \$2.2 billion. Reductions in health expenditures may benefit low-income households more since they devote more of their out-of-pocket income to health expenditures than high-income households. Although the latter tend to consume more health care, the majority of their care expenses are paid for by private insurance under employer coverage (Holahan & Zedlewski, 1992).

TABLE 3-5
Clean Air Health Benefits
(millions of 2005 dollars)

Category	2014	2023	Average Annual (2014-2035)
PM _{2.5} Morbidity	45	16	23
PM _{2.5} Mortality	4,075	1,680	2,245
Total*	\$4,120	\$1,696	\$2,247

PM_{2.5} benchmark years are 2014 and 2023. Benefits for between 2014 and 2023 were linearly interpolated based on benchmark year estimates. Benefits beyond 2023 were assumed to be the same as those in 2023.

*[The sum of individuals may not add to the total due to rounding.](#)

Visibility Aesthetic Benefit

It has been shown that visibility—the ability to see distant vistas—has an impact on property values. To examine this relationship, researchers correlated sales prices of owner-occupied single-family homes between 1980 and 1995 with socioeconomic and housing characteristics of these homes and visibility data at the census tract level to arrive at a willingness-to-pay value for visibility (Beron et al., 2001).⁶ The research was performed for Los Angeles, Orange, Riverside, and San Bernardino Counties. Results indicated that the marginal willingness to pay for visibility (or price of visibility) was related to the percentage of college degrees for people 25 years or older, net income (household income minus housing cost), and visibility (in miles) at each location.⁷

Using visibility data for the benchmark years 2014, 2023, and 2030 and the projected net income and percentage of the college degree population (age 25 and above) at the sub-region level based on the growth rates between the 2005-2009 and 2006-2010 American Community Survey (ACS) estimates for these two variables, the average monetary value of visibility improvements per household from the Draft [Final](#) 2012 AQMP was calculated for each sub-region.⁸ These values were then annualized over a 50-year period at the four-percent real interest rate, which was then multiplied by the number of households to arrive at total values of visibility benefits. These totals were further adjusted downward by 55 percent to reflect visibility aesthetics only to avoid the potential aggregation of health and visibility embedded in the willingness to pay (Loehman et al., 1994).

The benefit for visibility improvements in 2035 was estimated using visibility data in 2030 and projected 2035 net income and percentage of the college degree population. Benefits for visibility improvements during non-benchmark years were linearly interpolated based on the benefits for benchmark years. The average annual visibility aesthetic benefit between 2014 and 2035 is projected to be \$696 million. Table 3-6 shows the visibility aesthetic benefit by county.

⁶ Property prices were used as a conduit to arrive at the willingness to pay for improved visibility, which is a function of visibility, the percentage of college degree of people over 25 years old, and net income. The recent fluctuations in property prices may or may not change the relationship between these independent variables and the willingness-to-pay amount for visibility. Additional research is required to arrive at a definitive conclusion.

⁷ The marginal willingness-to-pay (MWTP) equation used for this assessment is:

$$MWTP = 9032.42 + 0.09Y + 200.73 (COLLEGE) - 425.33V$$

Where Y stands for net income, COLLEGE for percentage of population with a college degree, and V for visibility.

The total willingness-to-pay (TWTP) for a specific reading of visibility is arrived at by integrating the above equation with respect to V:

$$TWTP = 9032.43V + 0.09YV + 200.73 (COLLEGE)V - (\frac{1}{2}) 425.33V^2$$

⁸ Adjustments of the growth rates to county averages were made in those sub-regions where growth rates of the ACS 5-year estimates were negative or unreasonably large.

TABLE 3-6
 Visibility Aesthetic Benefit by County
 (millions of 2005 dollars)

County	2014	2023	Average Annual (2014-2035)
Los Angeles	\$671	\$285	\$341
Orange	247	158	147
Riverside	187	115	113
San Bernardino	168	91	97
Total*	\$1,274	\$649	\$696

*The sum of individuals may not add to total due to rounding.

Material Benefit

Total suspended particulate matter (TSP) causes accelerated wear and breakdown of painted wood and stucco surfaces of residential and commercial properties (Murray et al., 1985). In addition, TSP will lead to additional household cleaning costs (Cummings et al., 1985).

The annual average PM_{2.5} concentrations at seven locations (three in Los Angeles County, two in Riverside County and one in each of the remaining two counties) were used to calculate the avoided household cleaning and damage to wood and stucco surfaces of residential properties that were projected to grow proportionately with the growth of housing units.⁹ The avoided damage to commercial properties was assessed at three percent of that to residential properties. The 4.81 ratio of TSP to PM_{2.5} was used to convert PM_{2.5} to TSP, which was used in the original material benefit assessment (Murray et al., 1985). The analysis was performed at the county level for the benchmark years 2014, 2023, 2030, and 2035. The 2035 avoided damage was assessed based on the 2030 PM_{2.5} data. The total avoided damage from all sources was linearly interpolated for interim years between 2014 and 2035 and allocated to each sub-region according to its proportion of households within a county in the 2006-2010 ACS.

The total benefit associated with the decrease in costs for repainting stucco and wood surfaces, and cleaning is projected to be \$35 million in 2014 and \$13 million in 2023. Table 3-7 shows material benefits by county for selected years.

⁹The household cleaning coefficient was adjusted downward by multiplying the proportion of soiling in the total contingency valuation (0.088).

TABLE 3-7
Material Benefit by County
 (millions of 2000 dollars)

County	2014	2023	2030	Average Annual (2014-2035)
Los Angeles	\$16.8	\$6.3	\$0.9	\$6.5
Orange	9.2	1.8	0.3	2.9
Riverside	5.0	2.9	1.7	2.9
San Bernardino	4.0	1.9	1.0	2.0
Total	\$35.0	\$12.9	\$3.9	\$14.3

PM_{2.5} benchmark years are 2014, 2023, and 2030. Benefits for non-benchmark years are linearly interpolated numbers based on benchmark year estimates.

Traffic Congestion Relief Benefit

Los Angeles is ranked as the most congested city in the nation. An estimated 62 percent of the lane miles are congested, resulting in the loss of fuel, time, and productivity (Texas Transportation Institute, 2011).

Traffic congestion relief benefits herein for 2014 were for the committed TCMs in the 2012 AQMP whereas the benefits for 2020 and 2035 in this section were for all the TCMs in the 2012 RTP. In order to analyze the benefit from the SIP-committed TCMs between 2014 and 2035 and due to the data constraint, it was assumed that the congestion relief benefit would stay constant at the 2014 level. This estimate is conservative because

- Only those projects that will be operational in the first two years are included in the 2014 benefit, and
- Some of the SIP-committed TCM projects will not be fully completed and operational in the first two years.

The 2014 congestion relief benefit from the SIP-committed TCMs is estimated to be \$519 million in 2014 and would continue from 2015 to 2035.

Implementation of SCAG transportation control measures (TCM) will reduce daily vehicle miles traveled (VMT) and daily vehicle hours traveled (VHT) in the four-county region, amounting to an average annual benefit of \$7.7 billion from 2014 to 2035 (Tables 3-8 and 3-9). TCMs include a wide variety of transportation projects such as arterials, grade crossing improvements, high occupancy vehicle lanes, mixed flow lanes, hot lanes/toll ways, transit, intelligent transportation systems, truck lanes, commuter rail, high speed rail, and others. These projects have a combination of public and private funding.

Traffic congestion relief benefits were assessed for reductions in daily VMT for the period between 2014 and 2035. Reductions were calculated as the difference between baseline (without SCAG TCMs) and control (with SCAG TCMs) conditions for the benchmark years

2014, 2020, and 2035.¹⁰ Reductions in VMT were distributed to the 4 kilometer x 4 kilometer grid cell level using brake and tire wear in grams per mile and then aggregated up to the sub-regions in the four-county area. Daily VMT reductions were converted to an annual reduction by multiplying by 250 working days per year.

Implementation of the TCMs is projected to reduce VMT by 3.3 million miles in 2014, ~~13.3 billion-million~~ miles in 2020, and 2.3 ~~billion-million~~ miles in 2035. VMT changes were allocated to two types of vehicles: autos (93 percent) and trucks (seven percent) according to the 2008 base year VMT associated with each type of vehicle. VMT reductions (or increases) for each vehicle type were allocated to each sub-region, which was then multiplied by the operating and maintenance cost per mile of that vehicle type to arrive at the benefit of reduced travel. The operating and maintenance costs for passenger and light duty vehicles were assumed to be 19.6¢ per mile (AAA, 2012). Operating and maintenance costs for medium-duty and heavy-duty trucks were assumed to be 61¢ per mile (ATRI, 2011).

In the year 2014 an estimated \$161 million of savings on vehicle operation and maintenance is expected, as shown in Table 3-8. By the year 2035, the estimated savings would rise to \$739 million.

TABLE 3-8
Reduced Vehicle Operating and Maintenance Costs by Type of Vehicle
(millions of 2005 dollars)

Type of Vehicle	2014	2020	2035	Average Annual (2014-2035)
Autos	\$130	523	901	598
Trucks	31	123	212	141
Total	161	646	1,113	739

Implementation of TCMs is projected to reduce VHT for business and commute trips by ~~over 66123,500-000~~ hours in 2014 and over ~~2.64.7~~ million hours in 2035. For the purpose of this analysis, it was assumed that 81 percent of VHT reductions were for business and commute trips and 19 percent were for other trips (SCAG, 2012a). Only VHT reductions for business and commute trips were included in the benefit assessment. Of the 81 percent reductions in business and commute trips, it was further assumed that 8 percent was for business and 73 percent was for commute trips (SCAG, 2012a).

The benefit of VHT reductions for the sub-regions was calculated by multiplying the share of VHT within the sub-region by the appropriate hourly wage rate. Daily VHT reductions associated with commute trips were multiplied by an annual conversion rate of 250 and an hourly wage rate of \$10.78, which is one-half of the average wage rate of all workers in Los Angeles County (EDD, 2012), to arrive at the annual benefit of spending less time on commuting. One-half of the average wage (\$10.78) provides an estimate of the value of commuters' time consistent with recent research (Steimetz and Brownstone, 2005) involving Southern California transportation data and the average length of work-home trips in the four-

¹⁰Impacts on VMT and VHT from TCM were available only in 2014. For 2020 and 2035, TCM impacts on VMT and VHT were calculated by applying the ratio of TCM to RTP impacts in 2014 to 2020 and 2035 RTP impacts, respectively, since TCM is a subset of RTP.

county area (SCAG, 2012a). Daily VHT reductions from business trips were also multiplied by an annual conversion rate of 250 and an hourly wage rate of \$21.84 for truck drivers (ATRI, 2011) to arrive at the annual benefit from VHT reductions for business trips. Savings from reduced travel time for business and commute trips is estimated at \$358 million for 2014 and at \$13.8 billion for 2035, respectively, as shown in Table 3-9.

TABLE 3-9
Savings from Reduced Travel Time by Trip Type
(millions of 2005 dollars)

Type of Trip	2014	2020	2035	Average Annual (2014-2035)
Business	\$59	\$657	\$2,291	\$1,156
Commute	299	3,305	11,529	5,817
Total	\$358	\$3,962	\$13,820	\$6,973

Unquantified Benefits

Areas in which benefits from improved air quality have been identified but not fully quantified include human health, building materials, plant life and livestock, and reductions in vehicle hours traveled for personal trips. Each of these areas is discussed below.

Health Benefit

The quantifiable health benefits associated with improved air quality were assessed relative to reduced morbidity and mortality from PM_{2.5}. The present state of knowledge does not allow all adverse health effects that have been identified to be measured and valued in dollars. It should be noted that many health effects cannot be valued in dollars mainly because sufficient data are not available to establish a quantitative relationship between pollutant level and health effect. Hence quantification of health effects may be underestimated.

Material Benefit

In addition to the quantifiable materials damage caused by ozone and PM_{2.5}, a link exists between several pollutants (ozone, sulfur dioxide, PM_{2.5}, and nitrogen oxides) and ferrous metal corrosion; erosion of cement, marble, brick, tile, and glass; and the fading of fabric and coated surfaces. The damages and conversely the potential benefits from reducing the exposure currently cannot be quantified and valued in dollars.

Traffic Congestion Relief Benefit

Implementation of TCMs is projected to reduce daily VHT by 28,833 hours in 2014 for personal trips, relative to the 2014 baseline projections for VHT. Savings resulting from reduced travel time for personal trips are difficult to quantify due to the variation of the value of time from one individual to another and were not included in this benefit calculation. Based on one-half of the average hourly wage rate (\$10.78), savings from reduced travel time for personal trips is

estimated at \$78 million (2005 dollars) for the year 2014. This could bring the total traffic congestion relief benefit to approximately \$597 million in 2014.

SUMMARY

The Draft [Final](#) 2012 AQMP projects the attainment of the federal air quality standards of PM_{2.5} in 2014 and implements progress toward the ozone standard via additional measures which reduce the remaining “black box” measures. The total quantified benefit in 2014 is estimated to be \$948 million and increases to \$9 billion in 2023 (Table 3-10). [Based on the \\$519 million benefit for the SIP-committed TCMs, the total quantifiable benefit for the 2012 AQMP is projected to be \\$2.7 billion in 2023 and \\$3.5 billion annually, on average, from 2014 to 2035.](#) The quantified health benefits have not accounted for the reduction in all adverse health effects due to the implementation of the Draft [Final](#) 2012 AQMP. In addition, benefits have not been quantified for reductions in vehicle hours traveled for personal trips; and reductions in damages to plants, livestock, and forests as a result of implementing the Draft [Final](#) 2012 AQMP. If all these factors were considered, the estimated benefits would be higher than the estimates presented in this analysis.

TABLE 3-10
Total Costs and Benefits of the Draft [Final](#) Plan
(millions of 2005 dollars)

	2014	2023	Average Annual
Total Costs	\$510	\$357	\$448
Total Benefits	\$5,948	\$9,031	\$10,670

The total cost of the Draft [Final](#) Plan is projected to be at \$510 million in 2014 and decrease to \$357 million in 2023. The cost of measures was based on the prices of equipment and materials that would be required for the implementation of these measures.

As the District comes closer to its attainment goals for various pollutants, the cost in achieving the final increment towards attainment might actually result in higher costs than projected. However, technological advancements may reduce costs over time. However, actual costs could be higher than projected costs if modifications to existing plant structure are required. Impacts on individual facilities or more refined socioeconomic impact analysis will be conducted during the AQMD future rulemaking when regulated requirements and affected facilities are more defined.

Further research is needed relative to quantifying the known health effects. Relative to costs, additional efforts will be made to work with the CARB and U. S. EPA to quantify the costs associated with long-term measures where technologies are better defined.

CHAPTER 4

EMPLOYMENT IMPACTS

Introduction

Job Impacts ~~from~~ of Draft Final 2012 AQMP

Summary

INTRODUCTION

The employment impacts of control measures and clean air benefits were analyzed by utilizing the Regional Economic Model, Inc. (REMI) model. This model contains 18 sub-regions within the four-county area. Each sub-region is comprised of 70 public and private sectors. The structure of each sub-region's economy is represented through production, sales, and purchases between sectors; demand and supply of products in each sector; expenditures made by consumers, businesses, and governments; and product flows between one sub-region, the rest of the sub-regions, and the rest of the U.S.

The employment impact analysis was performed separately for control measures, clean air benefits, and both combined. The employment impacts in this chapter represent changes from the baseline regional jobs. [The assessments herein for clean air benefits, and combined measures and benefits beyond 2014 were based on the congestion relief benefit for all the TCMs in the 2012 RTP. Employment impacts based on the corresponding congestion benefit for the SIP-committed TCMs \(\\$519 million annually\) are in Appendix H—TCM Benefit at 2014 Level.](#)

JOB IMPACTS ~~FROM~~ OF DRAFT FINAL 2012 AQMP

Implementation of the Draft [Final](#) 2012 AQMP will reduce morbidity and mortality; improve visibility; decrease expenditures on household cleaning and refurbishing building surfaces; and provide relief from congestion, as discussed in Chapter 3. The total quantifiable benefit of the Draft [Final](#) 2012 AQMP amounts to approximately \$5.95 billion in 2014 and \$9.1 billion in 2023. The PM_{2.5} and ozone measures would result in an annual cost of approximately \$510 million in 2014 and \$357 million in 2023. Both benefits and costs will affect the employment base in the four-county economy.

The four-county economy will expand from the effects of two major forces resulting from cleaner air. First, the substitution of imports [general consumer purchases (which would increase due to the reduction in health care expenditures)] for local production (reduced health care services related to improved air quality) leads to jobs not created.¹ Second, the improvement in the quality of life will make the area more attractive so that more people will move in until the expected real earnings rate is reduced sufficiently to compensate for the estimated effect of the increased amenities (Greenwood et al., 1991).² This influx will increase labor force and local demand. On the other hand, the local economy will also experience relative slowdown from implementing control measures. This is because the increased cost of doing business leads to fewer jobs created and the resulting higher product price would lower consumer purchasing power. Table 4-1 shows the average annual job impacts, as well as job impacts with respect to the years 2014 and 2023, for quantified benefits and control measures,

¹ General consumer purchases can be satisfied by local production and imports. Health care services are locally produced goods.

² Because of cleaner air, economic migrants are willing to move into the Basin in exchange for lower earnings (wage and salary) than what the Basin would otherwise be. Currently, there is no systematic approach to evaluating migration of retired persons as they do not belong to the labor force. Therefore, their willingness to pay (and non-wage generated income stream) for avoided morbidity and mortality is not accounted for in the migration functions that were used only for economic migrants in the labor force.

respectively. Figure 4-1 shows the trends of job impacts from clean air benefits, control measures, and both combined from 2013 to 2035, respectively.

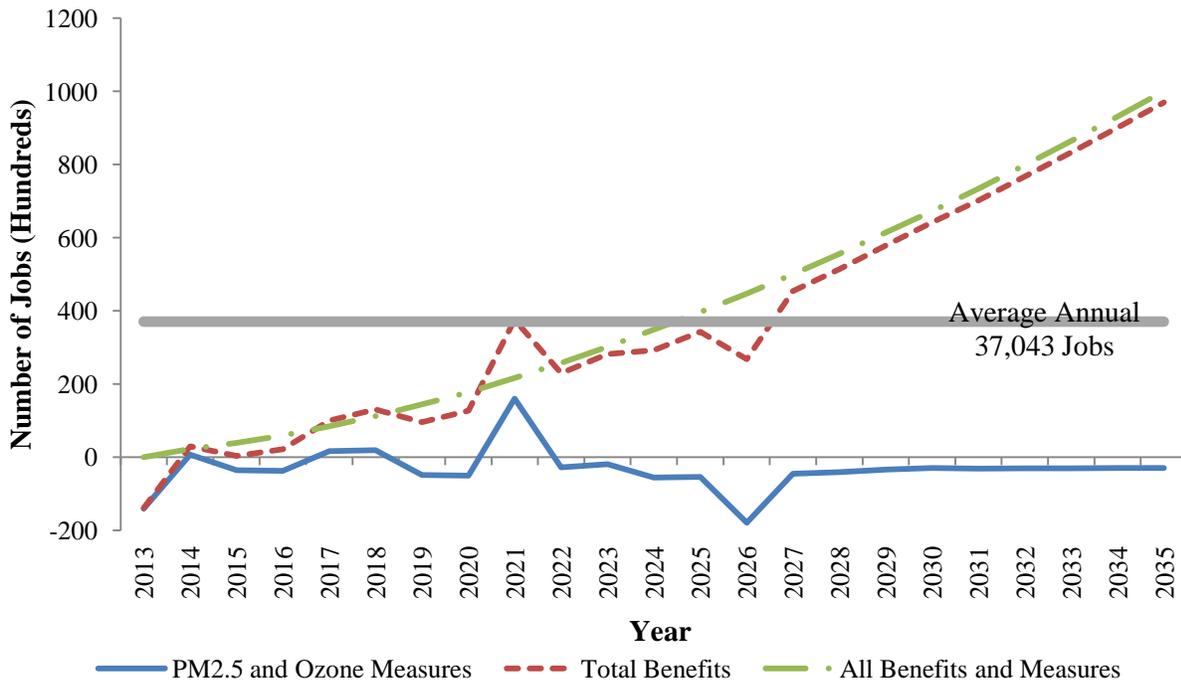
TABLE 4-1
Job Impacts of Quantified Clean Air Benefits and Measures

Category	2014	2023	2035	Average Annual
Clean Air Benefits & Measures (2013-2035)*	2,988	28,187	96,968	37,043
Clean Air Benefits (2014-2035)*	2,262	30,146	100,016	42,174
Congestion Relief*	348	20,371	87,843	32,986
Visibility Improvements	1,008	5,313	6,445	4,947
Reduced Materials Expenditures	133	191	181	179
Health Benefits	774	4,146	5,214	3,910
Control Measures (2013-2035)	731	-1,929	-2,955	-3,257
TCMs	715	537	-813	-1,611
District PM _{2.5}	7	-10	-3	-4
Ozone Strategy	26	-2,457	-2,142	-1,639

Results from modeling all the categories are slightly different from the sum of results from modeling each category one at a time because of nonlinearity of the REMI model.

*Based on all the TCMs in the 2012 RTP.

FIGURE 4-1
Job Impacts of Clean Air Benefits and Measures



Note that job impacts in the REMI model are generated for each year which represents the difference between the baseline projections and a policy event (control measures, clean air benefits, etc.) An increase or decrease in the number of jobs represents the net flow of jobs from one year to the next as the economy continues to operate. These jobs are not necessarily

permanent because of the dynamic structure of an economy. There is no implication that the jobs created or forgone in a particular year will be sustained (e.g., same employer and employee) in subsequent years.

The job impact of air quality benefits is assessed separately for each benefit category: visibility improvements, health benefits, reduced congestion, and reduced expenditures on materials. Many of the benefits of improved air quality can be seen as both direct and indirect benefits to individuals living in the area. Reductions in morbidity would lead to reduced health care expenditures by the general public and employers (the cost of illness portion only).³ It was assumed that 60 percent of the reduced expenditures would benefit the employers as a reduction in the cost of doing business and the remaining 40 percent would flow back to the economy in the form of additional spending on all consumption categories. Furthermore, reductions in out-of-pocket health expenditures are used as a proxy for the quality-of-life value of morbidity benefits (i.e., reduced illness). The positive amenities from cleaner air (reductions in premature deaths and morbidity, the ability to see farther, reduced expenditures in refurbishing and cleaning to residences, and reductions in VMT and VHT) would induce more in-migration. Additional health care expenditures from economic migrants would more than compensate for the reduction in these expenditures due to avoided morbidity. During the 2014-2035 period, a net gain of approximately 3,910 more jobs annually, on average, from health benefits is projected. Moreover, decreased congestion could create an additional 32,986 jobs during the same period. Together, the quantified benefits could result in an average of 42,174 jobs created annually.

According to the REMI baseline forecast (adjusted to reflect SCAG projections), the four-county area's jobs would grow at an annual rate of 0.92 percent between 2009 and 2035 to 11.5 million jobs in 2035. The PM_{2.5} and ozone control measures will result in an average of 3,257 jobs forgone annually, on average, over the period from 2013 to 2035. Approximately, 50 percent of the jobs forgone (or 1,611 jobs forgone) annually are projected to result from the 143 transportation projects alone. These projects were assumed to be funded through local revenue sources and out-of-area funding sources (state and federal governments). However, it should be noted that operation and maintenance of these infrastructure projects will continue to be required long after these projects are completed. The District portion of the PM_{2.5} strategy would result in very few jobs forgone. The ozone strategy is projected to result in 1,639 jobs forgone.

The combined impact of clean air benefits and control measures would translate to an annual gain of 37,043 jobs, on average, from 2013 to 2035.

Job Impacts by Industry

Table 4-2 show the job impacts for the benchmark years 2014 and 2023, and the average annual job impact by industry between 2014 and 2035 for clean air benefits. In total, cleaner air would result in a creation of 42,174 jobs annually, on average, from 2014 to 2035 which is approximately 0.4 percent of the baseline jobs (employment projections without the implementation of the 2012 AQMP) during the same period. Approximately 91 percent of the

³It should be noted that reductions in health care expenditures accrued to the government sector were not accounted for in the analysis herein. These reductions could result in more positive impacts since the government sector may use the savings to increase spending in other critical areas or to reduce taxes and fees.

projected 42,174 jobs are due to the increased amenities resulting from reduction in morbidity and mortality, improved visibility, reduced materials expenditure and reduced traffic congestion.⁴ The sectors that are projected to have the relatively large share of jobs created over the period of 2014 to 2035 are accommodation and food services, government, retail trade, and real estate/rental/leasing. As the area becomes more attractive due to cleaner air, more people will move in and thus demand more services from these sectors. The jobs forgone in the truck transportation sector are due to the reduced demand for this sector resulting from reductions in VHT due to the implementation of SCAG TCMs.

TABLE 4-2
Draft [Final](#) 2012 AQMP Employment Impacts by Industry for Clean Air Benefits*

Industry	NAICS	Jobs		Average Annual (2014-2035)	
		2014	2023	Jobs	% Baseline
Agriculture, Forestry, Fishing & Hunting	11	1	15	44	0.208%
Mining	21	8	101	132	0.300%
Utilities	22	15	167	224	0.702%
Construction	23	235	2,442	3,264	0.604%
Transportation Equipment Mfg.	336	4	73	95	0.121%
Petroleum & Coal Products Mfg.	324	2	20	25	0.371%
Other Manufacturing	31-33 ex. 324 & 336	91	1,463	1,758	0.268%
Wholesale Trade	42	92	1,136	1,511	0.318%
Retail Trade	44-45	25	3,182	4,653	0.463%
Truck Transportation	484, 492	-81	-1,191	-778	-0.464%
Transit Transportation	485	15	156	195	0.599%
Other Transportation & Warehousing	48-49 ex. 484-485 & 492	19	355	471	0.304%
Information	51	35	426	597	0.179%
Finance and Insurance	52	13	399	712	0.114%
Real Estate and Rental and Leasing	53	354	3,194	4,148	0.739%
Professional and Technical Services	54	153	1,749	2,379	0.293%
Management & Support Services	55-56	155	1,943	2,789	0.321%
Education, Health and Social Services	61-62	441	4,334	5,910	0.494%
Arts, Entertainment, and Recreation	71	104	927	1,204	0.379%
Accommodation and Food Services	72	603	5,333	6,691	0.973%
Other Services	81	-461	-944	-354	-0.052%
Government	92	440	4,866	6,505	0.516%
Total		2,262	30,145	42,174	0.399%

*Based on all the TCMs in the 2012 RTP.

Implementation of PM_{2.5} and ozone measures would, on the other hand, result in jobs forgone. Table 4-3 show the job impacts for the benchmark years 2014 and 2023, and the average annual job impact by industry between 2013 and 2035 for PM_{2.5} and ozone control measures. In 2014,

⁴Economic migrants are willing to move to an area with more amenities in exchange for lower earnings. This would lower the cost of doing business and increase the competitiveness of local industries. As a result, output will rise and more workers will be hired.

job impacts are the result of implementation of SCAG TCMs under the PM_{2.5} strategy and early implementation of incentive programs proposed in the on- and off-road measures. These are the sources for the majority of job impacts in 2023. Of the total 2,457 jobs forgone in 2023 from the ozone strategy, 70 percent are due to the on- and off-road measures.

Sectors of construction, and professional and technical services are projected to gain jobs. The heavy infrastructure investment resulting from the 143 transportation projects would certainly benefit those two sectors. On the other hand, ~~this the same construction~~ sector is assumed to participate in the voluntary/incentive programs proposed in the on- and off-road mobile source measures. The government sector is projected to experience jobs forgone due to the reduced spending elsewhere in order to compensate for the increase in these investments. The retail trade sector is projected to have a relatively large share of jobs forgone mainly due to the reduction in personal income resulting from the overall jobs forgone in the economy when clean air benefits are not considered. All the sectoral jobs forgone are less than one percent of the baseline projected jobs.

TABLE 4-3
Draft [Final](#) 2012 AQMP Employment Impacts by Industry for Measures

Industry	NAICS	2014		2023		Average Annual (2013-2035)	
		PM _{2.5}	Ozone	PM _{2.5}	Ozone	Draft Final Plan	% Baseline
Agriculture, Forestry, Fishing & Hunting	11	-1	0	-3	-1	-4	-0.020%
Mining	21	-40	1	-13	-15	-35	-0.081%
Utilities	22	-15	10	-3	41	22	0.068%
Construction	23	4,635	3	1,981	-205	1,357	0.253%
Transportation Equipment Mfg.	336	-23	24	-14	1	-7	-0.009%
Petroleum & Coal Products Mfg.	324	-6	0	-3	-5	-8	-0.122%
Other Manufacturing	31-33 ex. 324 & 336	-204	12	-106	-39	-153	-0.023%
Wholesale Trade	42	-183	13	-63	-57	-203	-0.043%
Retail Trade	44-45	-855	-118	-197	-620	-1,010	-0.101%
Truck Transportation	484, 492	-17	4	-9	-44	-57	-0.034%
Transit Transportation	485	-22	20	-10	-84	-114	-0.350%
Other Transportation & Warehousing	48-49 ex. 484-485 & 492	-81	12	-45	-114	-153	-0.099%
Information	51	-114	1	-27	-21	-71	-0.021%
Finance and Insurance	52	-407	1	-95	-69	-257	-0.041%
Real Estate and Rental and Leasing	53	-143	-1	98	-134	-168	-0.030%
Professional and Technical Services	54	396	7	-216	-116	98	0.012%
Management & Support Services	55-56	-398	9	-199	-220	-446	-0.052%
Education, Health and Social Services	61-62	-524	-4	-171	-107	-531	-0.045%
Arts, Entertainment, and Recreation	71	-85	0	-4	-28	-75	-0.024%
Accommodation and Food Services	72	-564	1	-194	-113	-440	-0.064%
Other Services	81	-229	-3	-27	-166	-317	-0.047%
Government	92	-414	35	-154	-343	-684	-0.055%
Total		705	26	528	-2,457	-3,256	-0.031%

Table 4-4 shows the job impact by industry for clean air benefits and control measures as a whole. More industries would experience jobs forgone in 2014 than in other years because the negative effect of control measures dominates the positive effect of clean air. Over time the reverse is true, thus resulting in net job gains for most of the industries.

TABLE 4-4
Job Impacts by Industry for Clean Air Benefits and Measures Combined*

Industry	NAICS	Jobs		Average Annual (2013-2035)	
		2014	2023	Jobs	% Baseline
Agriculture, Forestry, Fishing & Hunting	11	-1	11	38	0.182%
Mining	21	-32	73	91	0.210%
Utilities	22	11	205	236	0.744%
Construction	23	4,873	4,216	4,478	0.835%
Transportation Equipment Mfg.	336	4	60	83	0.107%
Petroleum & Coal Products Mfg.	324	-5	13	16	0.234%
Other Manufacturing	31-33 ex. 324 & 336	-102	1,317	1,529	0.233%
Wholesale Trade	42	-79	1,014	1,242	0.263%
Retail Trade	44-45	-949	2,358	3,428	0.343%
Truck Transportation	484, 492	-95	-1,245	-807	-0.484%
Transit Transportation	485	14	62	72	0.222%
Other Transportation & Warehousing	48-49 ex. 484-485 & 492	-51	196	297	0.192%
Information	51	-78	377	500	0.151%
Finance and Insurance	52	-393	234	422	0.068%
Real Estate and Rental and Leasing	53	210	3,160	3,803	0.680%
Professional and Technical Services	54	556	1,415	2,373	0.294%
Management & Support Services	55-56	-234	1,522	2,220	0.257%
Education, Health and Social Services	61-62	-87	4,051	5,125	0.430%
Arts, Entertainment, and Recreation	71	19	894	1,077	0.340%
Accommodation and Food Services	72	39	5,024	5,963	0.870%
Other Services	81	-694	-1,140	-679	-0.100%
Government	92	61	4,367	5,536	0.442%
Total		2,987	28,186	37,043	0.352%

*Based on all the TCMs in the 2012 RTP.

Small Business Effects

The District defines a "small business" in Rule 102 as one which employs 10 or fewer persons and which earns less than \$500,000 in gross annual receipts. In addition to the District's definition of a small business, the federal Small Business Administration (SBA), the federal Clean Air Act Amendments of 1990 (CAAA), and the California Department of Health Services (DHS) also provide their own definitions of a small business. Two common characteristics of the SBA, CAAA, and DHS small business definitions are the following: (1) standards are unique to each industry type, and (2) the businesses have to be independently owned and operated, and cannot be dominant in their field.

The SBA's definition of a small business uses the criterion of either gross annual receipts (ranging from \$0.5 million to \$17 million, depending on industry type) or number of employees (ranging from 100 to 1,500). The CAAA classifies a facility as a "small business stationary source" if it (1) employs 100 or fewer employees, (2) does not emit more than 10 tons per year of either ROG or NO_x, and (3) is a small business as defined by SBA. The DHS definition of a small business uses an annual gross receipt criterion (ranging from \$1 million to \$9.5 million, depending on industry type) for non-manufacturing industries and an employment criterion of fewer than 250 employees for manufacturing industries.

Under the SBA's and CAAA's definitions of small business, the AQMP could potentially impact a wide range of small businesses. The number of affected small businesses will be fewer under the District's definition. Small businesses are more highly concentrated in non-manufacturing than manufacturing sectors. A few control measures such as CTS-01 on architectural coatings and CMB-03 on commercial space heating may affect small businesses. Since the affected businesses are not exactly known at this stage, additional analyses of the number and types of small businesses affected by control measure and the ensuing job impacts will be performed during individual rule development processes.

SUMMARY

[The employment impact assessments herein were based on the congestion relief benefit for all the TCMs in the 2012 RTP. Employment impacts based on the corresponding congestion benefit for the SIP-committed TCMs \(\\$519 million annually\) are in Appendix H—TCM Benefit at 2014 Level.](#)

Clean air benefits are projected to result in a gain of 42,714 jobs annually, on average, from 2014 to 2035. Implementation of control measures is projected to have 3,257 jobs forgone annually, on average, from 2013 to 2035. The Draft [Final](#) 2012 AQMP as a whole would result in an annual net gain of 37,043 jobs, on average, from 2013 to 2035. The jobs created from clean air benefits would amount to 0.86 percent of the total four-county jobs in 2035. The jobs forgone from control measures would be 0.03 percent of the total jobs in 2035.

Without the 2012 AQMP, jobs in the four-county area are projected to grow at an annual rate of approximately 0.922 percent between 2009 and 2035. The Draft [Final](#) 2012 AQMP as a whole (clean air benefits and control measures) would result in an increase in the annual job growth rate by 0.033 percent. Looking at the benefits and costs separately, cleaner air from the 2012 AQMP would increase the job growth rate by 0.034 percent and bring it to an annual rate of 0.96 percent. On the other hand, control measures would slow down the rate of job growth by 0.001 percent, to 0.921 percent.

Nearly all of the industries would experience additional jobs created due to cleaner air. The sectors of accommodation and food services, government, retail trade, and real estate/rental/leasing would experience larger shares of jobs created due to additional demand for their products as more people migrate to the region and demand more services from these sectors.

The potential small business impacts of individual control measures will be further examined in the rule development process. In addition, as measures are developed into rules, their potential employment impacts will be specifically assessed.

CHAPTER 5

IMPACTS ON ECONOMIC GROUPS AND COMMUNITIES

Introduction

Costs by Sub-region

Clean Air Benefits by Sub-region

Job Impacts by Sub-region

Job Impacts on High- Versus Low-Paying Jobs

Impacts on Disposable Income

Impacts on Price Index by Income

Summary

INTRODUCTION

Socioeconomic issues have become increasingly important in recent years during the development of air quality regulations and policies. Evaluation of the distribution of job and cost impacts among ethnic and economic groups, as well as geographic communities, is a key topic to be considered.

While a socioeconomic assessment provides valuable information regarding the potential direct and secondary effects, the analysis does have some limitations. Establishing appropriate methods to estimate distribution effects is difficult given that few analytical models exist that can be easily adapted to air quality policy analysis. The lengthy data collection process makes it formidable to timely follow the rapidly-changing socioeconomic characteristics, especially in Southern California. Moreover, there is an inherent bias because costs tend to be more easily measured than benefits. Finally, there are additional uncertainties associated with examining subpopulations within the four-county area. Overall, socioeconomic assessments require substantially more data than what currently exists because existing data are often limited or based on small samples, thereby making estimates less reliable.

The REMI model, used to analyze potential impacts of the Draft [Final](#) 2012 AQMP, projects possible impacts on jobs, the distribution of jobs, income, and product prices based upon cost data for control measures and benefit data for each quantified effect of clean air. The reliability of such projections is dependent upon the validity of the input. [The assessments below were based on the congestion relief benefit for all the TCMs in the 2012 RTP. The assessments based on the corresponding congestion benefit for the SIP-committed TCMs \(\\$519 million annually\) are in Appendix H—TCM Benefit at 2014 Level.](#)

COSTS BY SUB-REGION

The Draft [Final](#) 2012 AQMP requires emission reductions from stationary, area, on-road, and off-road sources. Emission reductions from stationary sources consist of those from point and area sources. Projected emission reductions in 2023 from area sources were assigned to a 4 kilometer by 4 kilometer grid and those from point sources were assigned to a facility in the 2008 emission inventory. The emission reductions for each quantified measure in each grid or facility were then aggregated to a total of 21 sub-regions. The annual cost for each quantified measure (annualized capital and annual operating and maintenance expenditures) during the implementation period was then allocated to each sub-region according to its proportion of emission reductions.

The cost of SCAG TCMs will be mostly financed by public funding through sales and gasoline taxes and bond issuance. The private funding through development agreements plays a small role and was allocated to the construction sector according to the location of projects. The public funding was assigned to each county according to project descriptions and then to each sub-region according to its population share in the county. For area, on-road, and off-road sources, the annual cost of each control measure was allocated to each sub-region according to its share of emission reductions, which was aggregated from emission reductions at air quality grids. Surrogate variables such as population were used to

distribute emission reductions to grids. For voluntary and incentive measures where emission reductions are not available, sub-region population was used for allocation.

As described in Chapter 3, the average annual cost of all quantified measures from 2013 to 2035 is projected to be \$448 million. Table 5-1 shows the projected cost share in each sub-region for all the quantified control measures by implementation jurisdiction. Nearly all the costs of PM_{2.5} measures are from TCM projects, the distribution of which among sub-regions reflects where the TCM projects are. The Los Angeles County central, San Fernando, west, and southwest sub-regions would experience most of the costs. The southwest beach community in Los Angeles County is projected to have the highest share (10 percent) of the cost for ozone measures that would be implemented by the District. This is mainly due to the control on refinery boilers from Control Measures CMB-01 (RECLAIM Phase II). The cost distribution of the Draft [Final](#) 2012 AQMP follows that of PM_{2.5} and ozone measures. The sub-regions with the highest costs are the central, southwest, and San Fernando areas of Los Angeles County.

TABLE 5-1
Cost Share by Sub-region for Control Measures

Sub-Region	PM _{2.5} Measures		Ozone Measures		All Measures	
	Millions \$	%	Millions \$	%	Millions \$	%
LA CO Beach & Catalina	\$16	5%	\$12	10%	\$28	6%
LA CO Burbank	16	5%	3	3%	19	4%
LA CO Central	32	10%	7	6%	39	9%
LA CO North	18	5%	4	3%	22	5%
LA CO San Fernando	32	10%	7	6%	39	9%
LA CO SG Valley East	17	5%	4	3%	21	5%
LA CO SG Valley West	26	8%	5	4%	31	7%
LA CO South	23	7%	7	6%	30	7%
LA CO South Central	26	8%	5	4%	32	7%
LA CO Southeast	32	10%	7	6%	39	9%
LA CO West	23	7%	5	4%	29	6%
Orange Central	16	5%	7	6%	23	5%
Orange North	8	2%	4	3%	11	3%
Orange South	15	5%	6	5%	21	5%
Orange West	12	4%	5	4%	17	4%
Northwest Riverside	3	1%	8	6%	11	2%
Other Riverside	3	1%	4	3%	7	2%
Southwest Riverside	2	1%	4	4%	7	2%
San Bernardino City	3	1%	8	7%	11	2%
Other San Bernardino	2	1%	3	3%	5	1%
Southwest San Bernardino	2	1%	6	5%	8	2%
Total	\$327	100%	\$122	100%	\$448	100%

CLEAN AIR BENEFITS BY SUB-REGION

The Draft [Final](#) Plan is designed to bring northwest Riverside (the Mira Loma area), the only area in exceedance of the federal PM_{2.5} standard, into attainment. However, PM_{2.5} air quality benefits occur throughout the Basin. As shown in Table 5-2, the San Fernando Valley, southern Los Angeles County, and the northwest Riverside County would experience the highest proportions of the total \$10.7 billion air quality benefit. The western portions of Los Angeles and Orange Counties and the eastern and northern portions of San Bernardino County are projected to have the highest shares of health benefits due to high population density and/or lower PM_{2.5}. The health benefits from reductions in PM_{2.5} are expected to reach nearly \$4.1 billion in 2014 and \$2.2 billion annually, on average, from 2014 to 2035.

TABLE 5-2
Average Annual Benefits (2014-2035) by Sub-region

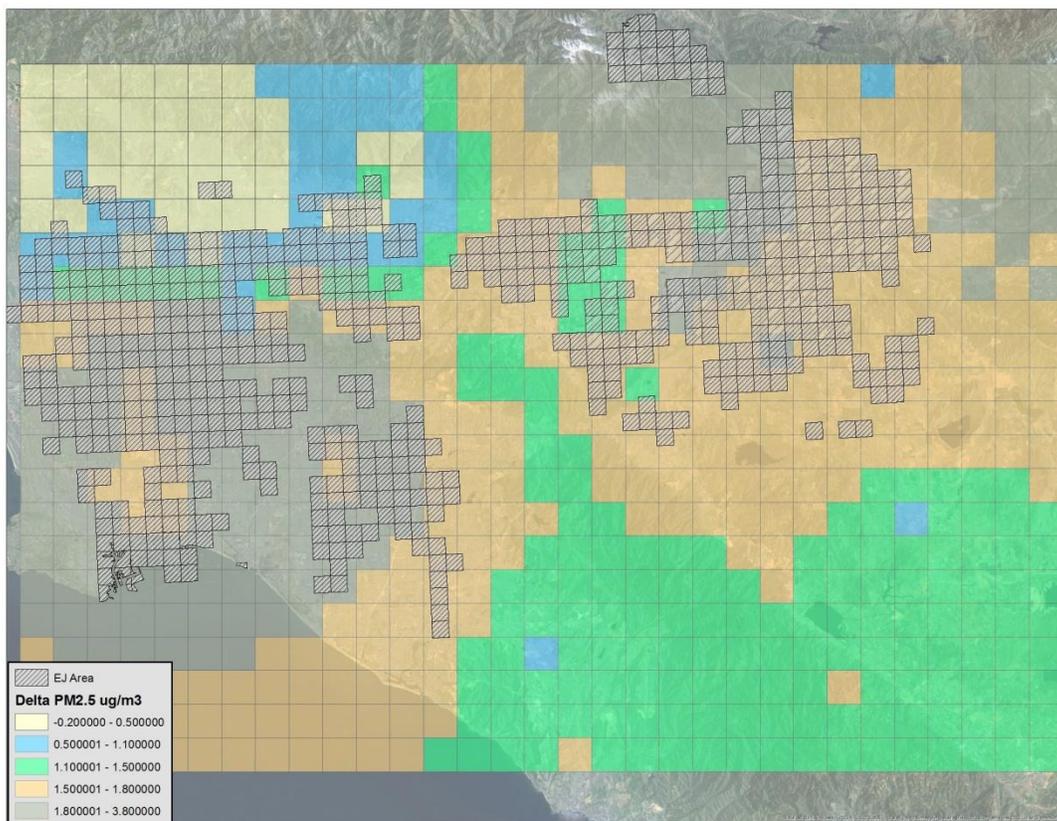
Sub-region	Health		Congestion*		Material		Visibility		Total	
	MM\$	%	MM\$	%	MM\$	%	MM\$	%	MM\$	%
LA CO Beach & Catalina	78	3%	541	7%	0.4	3%	26	4%	646	6%
LA CO Burbank	19	1%	1034	13%	0.4	3%	26	4%	1079	10%
LA CO Central	145	6%	-356	-5%	0.9	6%	37	5%	-174	-2%
LA CO North	44	2%	220	3%	0.4	3%	9	1%	273	3%
LA CO San Fernando	157	7%	946	12%	0.8	6%	41	6%	1145	11%
LA CO SG Valley East	96	4%	491	6%	0.4	3%	20	3%	608	6%
LA CO SG Valley West	81	4%	368	5%	0.6	4%	33	5%	481	5%
LA CO South	145	6%	1044	14%	0.6	4%	21	3%	1211	11%
LA CO South Central	16	1%	134	2%	0.6	4%	13	2%	163	2%
LA CO Southeast	70	3%	432	6%	0.6	5%	22	3%	524	5%
LA CO West	203	9%	64	1%	0.8	5%	94	13%	362	3%
Orange Central	115	5%	131	2%	0.8	6%	23	3%	270	3%
Orange North	118	5%	42	1%	0.4	3%	22	3%	184	2%
Orange South	128	6%	146	2%	0.9	7%	60	9%	334	3%
Orange West	202	9%	227	3%	0.7	5%	41	6%	470	4%
Northwest Riverside	117	5%	1069	14%	1.0	7%	55	8%	1242	12%
Other Riverside	116	5%	309	4%	1.1	8%	29	4%	455	4%
Southwest Riverside	60	3%	560	7%	0.8	5%	29	4%	650	6%
San Bernardino City	35	2%	130	2%	0.8	6%	47	7%	213	2%
Other San Bernardino	180	8%	16	0%	0.6	4%	10	1%	206	2%
Southwest San Bernardino	122	5%	165	2%	0.6	4%	40	6%	328	3%
Total	2247	100%	7712	100%	14.3	100%	696	100%	10670	100%

*Based on all the TCMs in the 2012 RTP.

An important element of the socioeconomic analysis is to identify how the proposed control strategy will impact the sensitive portions of the population, in particular, the segment of the community identified by the District's existing environment justice (EJ) guidance, which is an area that exceeds 10 percent of poverty rate with a cancer risk greater than 850 in a million or a PM_{2.5} concentration greater than 19.02 µg/m³. Figure 5-1 provides an overview of the impact of the 24-hr PM_{2.5} control strategy on exposure to PM_{2.5} to both the EJ and non-EJ portions of the

community. More detailed impacts on sub-populations will be conducted in the future. The figure shows the difference between the projected 2014 24-hour $PM_{2.5}$ concentrations with the control strategy applied compared with the baseline 2014 24-hr $PM_{2.5}$ concentrations. Overall across the Basin the majority of areas show 24-hour $PM_{2.5}$ air quality improvements. Only a small segment of the San Gabriel Mountains depicts a nominal negative impact of implementing the control program. Overlaid on each of the 4-km squared $PM_{2.5}$ grid cells are the 1-km squared grid depicting the EJ sub-areas of the region. As illustrated by the overlay, many of the sub-grid cells identified as EJ are located in the areas experiencing the greatest levels of air quality improvements. Those areas include the densely populated portions of metropolitan Los Angeles and southwestern San Bernardino counties. While continuing to show air quality improvements but to a lesser extent than the previously identified areas, Orange and the southern portion of Riverside counties depict a lesser EJ benefit. This is mostly due to the smaller EJ segment of the population.

FIGURE 5-1
Impact of 2014 Change in 24-Hour $PM_{2.5}$ Concentrations on EJ Areas



The majority of the congestion relief benefit would be attributed to Burbank, San Fernando, the southern portion of Los Angeles County, and northwest Riverside County. The west portion of Los Angeles County is projected to have the highest share of the visibility aesthetic benefit, which is calculated based on the number of households, visibility improvements (compared to the “no control” baseline scenario), net household income (net of housing cost), and percent of college degree holders in each sub-region. Table 5-3 shows

the values of these variables by sub-region from the 2006-2010 American Community Survey (ACS) estimates. In 2014 and 2023, southwest Riverside County and southwest San Bernardino County along with areas around San Bernardino City are projected to have the highest visibility improvement relative to its baseline air quality among all the sub-regions.

Information on net household income and percent of college degree holders for the benchmark years 2014, 2023, and 2030 are not available. The annual growth rates of net household income and percent of college degree holders, respectively, between the 2005-2009 and 2006-2010 ACS estimates in each sub-region were used to project the values of these variables for those benchmark years. County growth averages were used for sub-regions with negative growth rates between these two estimates or those with long-term unreasonably high growth rates. Additionally, SCAG household projections were used. The total willingness to pay for visibility improvement is higher in the sub-regions with more relative improvements in visibility and denser population due to their higher net household income and percentage of college degree holders.

TABLE 5-3
Determining Factors for Aesthetic Visibility Benefit by Sub-region

Sub-region	Households	Net Household Income (1995 \$)	% College Degree	% Visibility Improvement	
				2014	2023
LA CO Beach & Catalina	217,364	\$67,826	42	2.3	1.2
LA CO Burbank	217,084	\$58,910	40	3.4	0.7
LA CO Central	432,277	\$40,812	28	3.1	0.7
LA CO North	193,640	\$55,320	23	1.6	0.4
LA CO San Fernando	411,550	\$50,863	28	3.6	0.7
LA CO SG Valley East	189,738	\$55,933	29	4.8	0.7
LA CO SG Valley West	276,675	\$51,883	27	4.2	1.1
LA CO South	288,268	\$47,956	26	2.2	1.4
LA CO South Central	282,396	\$29,481	9	4.4	1.1
LA CO Southeast	320,215	\$43,251	15	5.4	0.7
LA CO West	388,682	\$80,989	58	2.3	1.8
Orange Central	270,871	\$48,218	19	3.8	1.6
Orange North	142,121	\$66,668	38	2.6	1.8
Orange South	322,268	\$78,066	50	2.9	1.6
Orange West	249,243	\$70,141	39	3.5	1.6
Northwest Riverside	239,453	\$51,552	20	5.0	3.5
Other Riverside	253,968	\$45,319	20	4.0	1.3
Southwest Riverside	173,485	\$53,984	22	6.1	2.4
San Bernardino City	234,660	\$42,914	16	7.4	3.2
Other San Bernardino	181,967	\$41,153	15	2.5	1.0
Southwest San Bernardino	179,498	\$57,174	25	6.1	3.0

Source: 2006-2010 American Community Survey

The visibility benefit analysis was performed at the 21 sub-region level by aggregating the predicted PM_{2.5} concentration data for each grid and the total light extinction coefficient at the nearest airport for each grid to 21 sub-regions. The congestion relief benefit was

assessed by aggregating the reductions in VMT and VHT at the air quality grid level to 21 sub-regions. The assessment of material benefit was performed at the county level and allocated to sub-regions according to their population and housing units within a county. All the assessments were first made for the benchmark years (2014, 2023, and 2030) in the air quality models and interpolated for interim years.

Table 5-4 shows that the \$554 per capita clean air benefit far more outweighs the \$23 per capita cost. Except for the central Los Angeles County, all sub-regions are projected to have much greater per capita benefit than per capita cost. The dis-benefit in central Los Angeles County is due to the congestion relief dis-benefit [resulting from all the TCMs in the 2012 RTP](#).

TABLE 5-4
[Average Annual](#) Per Capita Clean Air Benefit and Cost by Sub-region (in 2005 dollars)

Sub-region	Clean Air Benefit*	Cost
LA CO Beach & Catalina	\$996	\$43
LA CO Burbank	1665	29
LA CO Central	-128	29
LA CO North	460	37
LA CO San Fernando	812	28
LA CO East	617	30
LA CO South	1227	30
LA CO South Central	153	30
LA CO Southeast	402	30
LA CO West	378	30
OR CO Central	235	20
OR CO North	400	24
OR CO South	359	23
OR CO West	612	22
Northwest Riverside	985	9
Other Riverside	711	9
Chino-Redlands	305	11
Other San Bernardino	322	8
Total Four Counties	\$554	\$23

[*Based on all the TCMs in the 2012 RTP.](#)

JOB IMPACTS BY SUB-REGION

The baseline employment for Los Angeles County is projected to be 5.72 million jobs in 2014 and 6.11 million in 2023. Orange County is projected to have 1.93 million jobs in 2014 and 2.03 million in 2023. Riverside and San Bernardino Counties are projected to have 1.08 and 0.95 million jobs in 2014 and 1.26 and 1.08 million jobs in 2023, respectively.

The job impact analysis was performed at the 18 sub-region level where the San Gabriel East and West sub-regions were combined into the Los Angeles County East sub-region; the southwest Riverside sub-region was combined into the other Riverside sub-region; and the

San Bernardino City and southwest San Bernardino sub-regions were combined into the Chino-Redlands sub-region. The distribution of job impacts (Table 5-5) by sub-region very much mirrors that of clean air benefits and costs.¹ The eastern, southern, and San Fernando sub-regions in Los Angeles County and Riverside County are projected to have more jobs created than other sub-regions resulting from clean air benefits. In terms of the job impact of control measures, the majority of the jobs forgone are in Orange County. This is because the majority of SCAG TCMs in Orange County would be financed by development fees, which would have a heavy burden on one single sector of the economy—the construction sector. A sensitivity test shows that the same project financed by development fees would have 47 times as many jobs forgone as if it were financed by sales tax. For the entire Draft [Final Plan](#), all sub-regions would show positive job impacts as the four-county area becomes more competitive and attractive with the progress in clean air, which outweighs the negative job impacts of the cost of control measures alone.

TABLE 5-5
Average Annual Job Impacts by Sub-region for
Benefits, Control Measures and Draft [Final Plan](#)

Sub-region	Benefits (2014-2035)*	Control Measures (2013-2035)	Draft Final Plan * (2013-2035)	
			Jobs	% Baseline
LA CO Beach & Catalina	1,569	-35	1,466	0.34%
LA CO Burbank	2,153	17	2,076	0.50%
LA CO Central	1,158	66	1,172	0.16%
LA CO North	828	-87	704	0.20%
LA CO San Fernando	3,042	-200	2,708	0.33%
LA CO East	3,564	-230	3,177	0.31%
LA CO South	3,126	-147	2,841	0.51%
LA CO South Central	1,078	-117	914	0.21%
LA CO Southeast	1,850	14	1,782	0.28%
LA CO West	1,625	120	1,673	0.23%
OR CO Central	1,911	-528	1,298	0.21%
OR CO North	1,061	-234	779	0.27%
OR CO South	2,241	-941	1,197	0.19%
OR CO West	2,223	-687	1,436	0.28%
RV CO NW Riverside	5,698	9	5,453	0.94%
RV CO Other	6,721	-130	6,292	0.90%
Chino-Redlands	1,788	-121	1,585	0.19%
Other San Bernardino	539	-26	489	0.18%
Total	42,174	-3,256	37,043	0.35%

*Based on all the TCMs in the 2012 RTP.

JOB IMPACTS ON HIGH- VERSUS LOW-PAYING JOBS

Occupations were grouped into five categories, lowest to highest, according to median weekly earnings. Table 5-6 shows the distribution of job impacts in 2014 and 2023 resulting from clean air benefits, control measures, and their combined impacts, respectively, among various occupational wage groups. All the groups are projected to gain from cleaner air.

¹ Job impacts herein are by place of work.

Group 1 would gain the most in 2014 and 2023. For control measures, Groups 1, 2, and 5 would have jobs forgone ranging from 0.008 percent to 0.055 percent relative to the baseline 2014 and 2023 employment, with Group 1 to be affected the most. Nearly all the groups would gain employment from the combined impacts of clean air benefits and implementation of control measures. Group 1 occupations include workers in retail sales and maintenance, assemblers, and food preparation and agricultural workers. Group 5 occupations are scientists, teachers, engineers, and managers/executives. The occupations in each group are listed in Table B-1 of Appendix B.

TABLE 5-6
Employment Impacts by Occupational Wage Group for
Clean Air Benefits and Control Measures

Group	Median Weekly Earnings	No. of Occupations	% Impact from Baseline					
			Clean Air Benefits*		Control Measures		Benefits & Measures*	
			2014	2023	2014	2023	2014	2023
1	\$352-\$517	19	0.031	0.355	-0.055	-0.041	-0.024	0.313
2	\$520-\$659	19	0.021	0.256	-0.008	-0.022	0.013	0.234
3	\$661-\$820	18	0.013	0.241	0.138	0.027	0.151	0.268
4	\$821-\$996	19	0.028	0.305	0.009	-0.016	0.036	0.289
5	\$1,027-\$1,729	19	0.025	0.266	-0.008	-0.026	0.017	0.239

*Based on all the TCMs in the 2012 RTP.

IMPACTS ON DISPOSABLE INCOME

Without the Draft [Final](#) 2012 AQMP, real disposable income is projected to grow at an annual rate of 2.245 percent between 2009 and 2035.² Clean air benefits of the Draft [Final](#) AQMP could bring the annual growth rate to 2.281 percent. Cleaner air increases amenity in the four-area area, thus bringing in more economic migrants. Population is projected to grow slightly more than real total disposable income, thus resulting in a decrease in per capita disposable income. Per capita real disposable income (total real disposable income divided by population) would decrease by \$891 in 2035 relative to the baseline projection.

IMPACTS ON PRICE INDEX BY INCOME

The REMI model develops price indexes of consumption goods for households in five income groups by comparing prices of those goods between the four-county region and the rest of the U.S. Table 5-7 shows the projected percentage change in the price of consumption goods in a market basket (those goods identified in the annual Consumer Expenditure Survey by the Bureau of Labor Statistics) by income group for clean air benefits, control measures, and their combined impacts, respectively, in the years 2014 and 2023. The first quintile represents households earning the lowest 20 percent of income.

² The real disposable income for the four county area is projected to be \$561 billion (2005 dollars) in 2009 and \$999 billion in 2035. Disposable income is the sum of the incomes of all the individuals in the economy after all taxes have been deducted (Baumol and Blinder, 1982).

TABLE 5-7
Impacts on the Price of Consumption Goods for
Clean Air Benefits and Control Measures
(percent of baseline*)

Household Income	Clean Air Benefits**		Control Measures		Benefits & Measures**	
	2014	2023	2014	2023	2014	2023
1st Quintile	-0.007	-0.013	0.060	0.040	0.052	0.025
2nd Quintile	-0.007	-0.027	0.059	0.039	0.052	0.013
3rd Quintile	-0.007	-0.024	0.058	0.039	0.052	0.015
4th Quintile	-0.007	-0.028	0.058	0.038	0.052	0.011
5th Quintile	-0.007	-0.020	0.060	0.038	0.052	0.018

*Relative to the rest of the U.S.

**Based on all the TCMs in the 2012 RTP.

The change here is relative to the baseline index of consumption goods. The price of consumption goods is projected to decrease by 0.007 percent in 2014 across all household income groups and by 0.013 to 0.028 percent in 2023 due to the attainment of the PM_{2.5} standard. Implementation of control measures is projected to increase the price of consumption goods from 0.039 to 0.06 percent for these same years across all household income groups. All household groups would experience increases in prices of consumption goods resulting from combined impacts of control measures and clean air benefits. The projected increase in the price is due to the pass-through of additional control costs by industries that are affected by a number of control measures.

SUMMARY

[The assessments herein were based on the congestion relief benefit for all the TCMs in the 2012 RTP. Impacts based on the corresponding congestion benefit for the SIP-committed TCMs \(\\$519 million annually\) are in Appendix H—TCM Benefit at 2014 Level.](#)

Implementation of the Draft [Final](#) 2012 AQMP is projected to result in air quality improvements sufficient to attain the federal air quality standards in 2014 for PM_{2.5} and progress toward attaining the ozone standard in 2023. The San Fernando Valley, southern Los Angeles County, and the northwest Riverside County would experience the highest shares of air quality benefits. The western portions of Los Angeles and Orange Counties and the eastern and northern portions of San Bernardino County are projected to have the highest shares of health benefits.

The attainment of the ozone and PM_{2.5} air quality standards depends on full implementation of control measures that are proposed in the Draft [Final](#) 2012 AQMP. The costs of these measures will ripple throughout various communities. The sub-regions with the highest costs are the central, southwest, and San Fernando areas of Los Angeles County. These three areas are projected to have the highest cost shares from SCAG TCMs and relative higher cost shares from ozone measures.

All sub-regions are projected to have additional jobs created from cleaner air. Implementation of quantified control measures would result in jobs forgone between 2013 and 2035. Job gains from cleaner air would benefit all five wage groups that are comprised

of 94 occupations. Most groups would experience jobs forgone from implementation of control measures. However, there is no significant difference in impacts expected for high-versus low-paying jobs. The same is observed for impacts on the price of consumption goods from one household group to another.

Additional surveys on affected groups and communities need to be developed to better understand the detailed job impacts. Furthermore, additional tools need to be developed relative to presenting socioeconomic and air quality data geographically. Chapter 8 has a more detailed description of these proposed future enhancements to the socioeconomic analysis.

CHAPTER 6

IMPACTS ON COMPETITIVENESS

Introduction

Region's Share of U.S. Jobs

Cost of Production and Prices

Imports and Exports

Summary

INTRODUCTION

Regional economic competitiveness depends on various factors including business costs, workforce quality, public infrastructure, quality of life, and the regulatory environment. Air quality regulations directly affect business costs, quality of life, and the regulatory environment. Specifically, the Draft [Final](#) 2012 AQMP will affect regional economic competitiveness in two ways: (1) by imposing costs on business as a result of pollution control strategies; and (2) by improving the region's quality of life by reducing air pollution. Good air quality tends to attract highly qualified professionals, who, in general, are higher wage earners.

The REMI model, used to analyze potential impacts of the Draft [Final](#) 2012 AQMP, projects possible impacts on the cost of production, commodity prices, exports, and imports based upon expenditure made to implement each control measure and clean air benefits. [These impacts were analyzed based on the congestion relief benefit for all the TCMs in the 2012 RTP. Similar impacts based on the corresponding congestion benefit for the SIP-committed TCMs \(\\$519 million annually\) are in Appendix H—TCM Benefit at 2014 Level.](#)

REGION'S SHARE OF U.S. JOBS

Table 6-1 shows the impacts of clean air benefits and control measures, as well as their combined impacts on the region's share of national jobs. As the air gets cleaner, the four-county region is predicted to gain a larger share of total national jobs through 2025. The increase ranges from 0.001 percent in 2014 to 0.014 percent in 2023, compared to the baseline projection without the AQMP. A similar trend and magnitude are also observed for the region's share of manufacturing jobs in the nation.

TABLE 6-1
Impacts on Region's Share of U.S. Jobs for
Clean Air Benefits and Control Measures (percent)

	Percent Share of U.S. Jobs for Benefits		Percent Share of U.S. Jobs for All Measures		Percent Share of U.S. Jobs for Combined Benefits & Measures	
	2014	2023	2014	2023	2014	2023
<u>Total Jobs</u>						
With Benefits & Measures*					5.127	4.962
With Benefits*	5.126	4.963				
With All Measures			5.126	4.948		
Without Draft Final 2012 AQMP	5.125	4.949	5.125	4.949	5.125	4.949
Difference	0.001	0.014	0.001	-0.001	0.002	0.013
<u>Manufacturing Jobs</u>						
With Benefits & Measures*					5.654	7.305
With Benefits*	5.656	7.306				
With All Measures			5.654	7.29		
Without Draft Final 2012 AQMP	5.655	7.292	5.655	7.292	5.655	7.292
Difference	0.001	0.014	-0.001	-0.002	-0.001	0.013

Some numbers are rounded.

*Based on all the TCMs in the 2012 RTP.

As investments in infrastructure and pollution control equipment or devices occur in the beginning of a control measure's implementation period (e.g., the year 2014), the region will continue its trend of having a larger share of the total national jobs. However, as the costs of implementing these measures are continually amortized over the project period, fewer jobs would be created, thus resulting in a decrease in the region's share of total jobs and manufacturing jobs in the U.S. (in 2023). The combined impacts of benefits and control measures show that the region's share of the total national jobs would increase by 0.002 percent in 2014 and 0.013 percent in 2023. The region's share of the U.S. manufacturing jobs would drop in 2014 and rise in 2023.

Due to the extremely small values presented here, neither the quantified benefits nor the quantified measures are expected to result in discernible differences in the four-county region's share of national jobs over the analysis period.

COST OF PRODUCTION AND PRICES

The four-county area has the most diversified metropolitan economy in the U.S. Cleaner air will attract more economic migrants into the area. As the mix of labor skills expands, the access to quality labor would have a positive impact on labor productivity, thereby reducing the cost of doing business for local industries. On the other hand, implementation of control measures increases the cost of doing business for affected industries.

Table 6-2 shows the percentage change in relative cost of production as a result of clean air benefits, control measures, and both combined in 2018 and 2023. These two years were chosen because they have relatively higher impacts than other years in the analysis period of 2013-2035. An index of 0 indicates that there is no change in the cost of production relative to the rest of the United States. An index of above or below 0 means that the cost of production in the four-county areas resulting from the Draft 2012 AQMP is higher or lower, respectively, than that in the rest of the U.S.

Most of the industries would experience a reduction in the cost of production due to clean air benefits. The transportation and warehousing industry is projected to experience the highest cost reduction (1.23 percent in 2014 and increase to 2.25 percent in 2023) because of reductions in vehicle hours traveled associated with business trips (Table 3-9). The same sector would also experience the highest increase in the cost of production (0.096 percent) from the implementation of control measures in 2023 because this sector would experience a relatively higher share of the total cost of the Draft [Final](#) Plan (Table 3-1). All the remaining sectors will experience a smaller magnitude of increase in production cost due to the 2012 AQMP control measures. The combined impact of clean air benefits and control measures shows a downward trend in the cost of doing business for the majority of industries.

TABLE 6-2
Impacts on Cost of Production Relative to Those in the Rest of the U.S.
for Clean Air Benefits and Control Measures

Industry	Clean Air Benefits [*]		Control Measures		Combined Benefits & Measures [±]	
	2018	2023	2018	2023	2018	2023
Forestry, Fishing, Other	-0.038%	-0.074%	0.013%	0.007%	-0.025%	-0.068%
Mining	0.045%	0.121%	0.029%	0.018%	0.074%	0.139%
Utilities	0.023%	0.066%	0.057%	0.045%	0.080%	0.112%
Construction	-0.059%	-0.115%	0.238%	0.051%	0.179%	-0.064%
Manufacturing	-0.041%	-0.078%	0.034%	0.021%	-0.008%	-0.057%
Wholesale Trade	-0.047%	-0.087%	0.034%	0.018%	-0.013%	-0.068%
Retail Trade	-0.030%	-0.051%	0.055%	0.032%	0.025%	-0.019%
Transportation and Warehousing	-1.225%	-2.251%	0.054%	0.096%	-1.171%	-2.155%
Information	0.011%	0.034%	0.042%	0.023%	0.052%	0.058%
Finance and Insurance	-0.002%	0.006%	0.049%	0.013%	0.047%	0.019%
Real Estate, Rental, Leasing	0.051%	0.125%	0.124%	0.019%	0.175%	0.143%
Professional and Technical Services	-0.026%	-0.047%	0.038%	0.016%	0.013%	-0.031%
Management of Companies and enterprises	-0.034%	-0.067%	0.034%	0.018%	0.000%	-0.049%
Administrative and Waste Services	-0.031%	-0.057%	0.039%	0.024%	0.008%	-0.034%
Educational Services	-0.029%	-0.057%	0.031%	0.017%	0.002%	-0.040%
Health Care and Social Assistance	-0.035%	-0.071%	0.028%	0.015%	-0.007%	-0.055%
Arts, Entertainment and Recreation	0.000%	0.007%	0.043%	0.024%	0.043%	0.030%
Accommodation and Food Services	-0.020%	-0.033%	0.036%	0.014%	0.016%	-0.019%
Other Services (ex. Government)	-0.017%	-0.025%	0.041%	0.017%	0.024%	-0.008%

^{*}Based on all the TCMs in the 2012 RTP.

Changes in production costs will affect prices of goods produced locally. The relative delivered price of a good is based on its production cost and the transportation cost of delivering the good to where it is consumed or used. The average price of a good at the place of use reflects prices of the good produced locally and imported elsewhere.

Based on the measurement of relative delivered prices in the REMI model, cleaner air is projected to result in lower delivered prices, as shown in Table 6-3. The effect of cleaner air on reducing the production cost in the transportation and warehousing industry is directly transmitted to a lower delivered price in this industry as well (0.96 percent reduction in 2023). Nearly all other industries share the same positive impact, which mirrors the effect of reduction in production cost. As expected, the relative delivered prices will rise as a result of implementing control measures throughout all the industries in the four-county economy. The impact of combined benefits and control measures on the delivered price very much mimics that on the cost of production. The lower cost of production translates to lower delivered prices.

TABLE 6-3
Impacts on Delivered Prices Relative to Those in the Rest of the U.S.
for Clean Air Benefits and Control Measures

Industry	Clean Air Benefits*		Control Measures		Combined Benefits & Measures*	
	2018	2023	2018	2023	2018	2023
Forestry, Fishing, Other	-0.005%	-0.010%	0.003%	0.001%	-0.003%	-0.008%
Mining	0.017%	0.045%	0.011%	0.006%	0.027%	0.051%
Utilities	0.020%	0.058%	0.049%	0.040%	0.070%	0.099%
Construction	-0.056%	-0.110%	0.220%	0.052%	0.164%	-0.058%
Manufacturing	-0.022%	-0.042%	0.018%	0.011%	-0.004%	-0.031%
Wholesale Trade	-0.045%	-0.084%	0.032%	0.018%	-0.013%	-0.066%
Retail Trade	-0.024%	-0.040%	0.044%	0.026%	0.020%	-0.014%
Transportation and Warehousing	-0.657%	-1.236%	0.025%	0.046%	-0.632%	-1.189%
Information	0.003%	0.016%	0.034%	0.016%	0.037%	0.032%
Finance and Insurance	-0.001%	0.005%	0.032%	0.009%	0.031%	0.014%
Real Estate, Rental, Leasing	0.053%	0.128%	0.121%	0.024%	0.174%	0.152%
Professional and Technical Services	-0.024%	-0.044%	0.035%	0.015%	0.011%	-0.029%
Management of Companies and enterprises	-0.021%	-0.040%	0.021%	0.011%	0.001%	-0.029%
Administrative and Waste Services	-0.029%	-0.054%	0.038%	0.024%	0.009%	-0.030%
Educational Services	-0.022%	-0.043%	0.024%	0.013%	0.002%	-0.030%
Health Care and Social Assistance	-0.024%	-0.047%	0.019%	0.011%	-0.004%	-0.037%
Arts, Entertainment and Recreation	-0.003%	0.002%	0.042%	0.019%	0.039%	0.021%
Accommodation and Food Services	-0.016%	-0.027%	0.030%	0.012%	0.014%	-0.015%
Other Services (ex. Government)	-0.013%	-0.018%	0.034%	0.014%	0.021%	-0.004%

*Based on all the TCMs in the 2012 RTP.

IMPORTS AND EXPORTS

Table 6-4 summarizes the overall impact of control measures, benefits, and their combined impacts, respectively, on the region's exports and imports relative to the baseline projections. Cleaner air will increase quality of life for residents, and make the area more attractive to live and more competitive for businesses. As more people migrate to the area, the additional supply of labor would dampen real wage rates, thereby lowering production costs and product prices. As a result, production is projected to rise relative to its baseline condition. Increased production would translate to increases in exports and make the area more self-sufficient, thus able to satisfy the additional demand from local residents and other industries. Part of the demand increase is projected to be fulfilled by increases in imports. The delivered price of products is projected to drop or stay the same.

Implementation of control measures is projected to decrease output (production) in the region as the cost of doing business rises. Demand for additional investments and other goods and services would be satisfied mostly by increases in imports. Demand for goods and services would decline because of the current and carry-over effects of higher product prices resulting from pass-through of additional control costs by affected industries. The

dampened demand would also result in a reduction in imports. Finally, lower production also exerts a negative impact on exports.

The combined benefits and measures are projected to increase demand for products and services as more people are moving into the area. In earlier years, imports would play a bigger role to satisfy the increased demand and there would also be a reduction in exports. As the region adjusts to a larger supply of labor due to migration, output and exports would rise. Overall, the cost of production and the delivered prices would drop or have no change.

It should be noted that the magnitude of all of these directional changes is relatively small when compared with the overall size of the four-county economy. For example, exports are projected to decrease by 0.012 percent of the baseline exports in 2023 resulting from implementing control measures.

TABLE 6-4
Impacts on Imports and Exports for Clean Air Benefits and Control Measures

	Clean Air Benefits**			Control Measures			Benefits & Measures**		
	2014	2023	2030	2014	2023	2030	2014	2023	2030
Demand*	+	+	+	-	-	-	+	+	+
Imports	+	+	+	+	+	+	+	+	+
Self Supply*	+	+	+	-	-	-	-	+	+
Exports	+	+	+	-	-	-	-	+	+
Output (Production)	+	+	+	-	-	-	-	+	+
Delivered Price	NC ₋	NC ₋	-	NC ₋	+	+	NC ₋	NC ₋	-
Cost of Production	NC ₋	-	-	NC ₋	+	+	NC ₋	-	-

A plus or minus sign means that there is an increase or decrease in the value of that economic variable resulting from benefits, measures, or both of the Draft [Final 2012 AQMP](#) relative to the baseline economic activities.

*Includes changes in demand due to changes in control requirements.

**Based on all the TCMs in the 2012 RTP.

NC = No Change

SUMMARY

The Draft [Final Socioeconomic Report](#) examines competitiveness of local industries in four areas: the Basin's share of national jobs, cost of production, relative delivered prices, and exports and imports. [These impacts were analyzed based on the congestion relief benefit for all the TCMs in the 2012 RTP. Similar impacts based on the corresponding congestion benefit for the SIP-committed TCMs \(\\$519 million annually\) are in Appendix H—TCM Benefit at 2014 Level.](#)

The PM_{2.5} and ozone measures and clean air benefits of the Draft [Final 2012 AQMP](#) are not expected to result in discernible differences in the four-county region's share of national jobs. The impacts on product prices of nearly all the sectors are projected to be less than one percent of their respective baseline indices. The impacts on imports and exports are relatively small as well.

The competitive analysis focuses on the impact on various sectors of the local economy. Individual control measures could result in impacts on individual companies. Competitiveness at the company level will be further considered during individual rulemaking procedures, to the extent feasible.

| The actual effects of the Draft [Final](#) 2012 AQMP (including control measures and benefits) on regional competitiveness could deviate from the projected effects. The analysis assumes that air quality in other regions would remain unchanged. This ignores the fact that competing regions tend to follow the District's lead and adopt control measures with objectives similar to those proposed in the District or at a minimum have some level of control with its consequent costs. For example, a number of eastern states have adopted the California vehicle exhaust standards. To the extent that other regions implement similar air quality controls, the competitiveness edge that the region is projected to command due to increases in amenity from cleaner air would become smaller since other regions would also incur improvements in air quality.

CHAPTER 7

ASSESSMENT OF CEQA ALTERNATIVES

Introduction

Alternative 1—No Project (2007 AQMP)

Alternative 2—Localized PM Control

Alternative 3—Greater Reliance on NO_x Reductions

Alternative 4—PM_{2.5} Strategy Only

Comparison of Socioeconomic Impacts

Summary

INTRODUCTION

The California Environmental Quality Act (CEQA) requires that the District propose alternatives to the Draft [Final](#) 2012 AQMP. These alternatives should include realistic measures to attain the basic objectives of the proposed project and provide the means for evaluating the comparative merits of each alternative. The range of alternatives must be sufficient to permit a reasonable choice but need not include every conceivable project alternative. The CEQA Alternatives to the Draft 2012 AQMP are Alternative 1 (No Project, which is the 2007 AQMP), Alternative 2 (Localized PM Control), Alternative 3 (Greater Reliance on NO_x Reductions), and Alternative 4 (PM_{2.5} Strategy Only). The Draft [Final](#) Socioeconomic Report herein evaluates those alternatives that meet attainment of the air quality standards.

ALTERNATIVE 1—NO PROJECT (2007 AQMP)

Alternative 1 is continuation of the 2007 AQMP. It is assumed that all the short-term emission reduction targets outlined in the 2007 AQMP have been achieved so far. The only remaining measures to be implemented are the black box measures in the Clean Air Act Section 182(e)(5) and three off-road measures for marine vessel engines, locomotives, and recreational boats, as well as one on-road measure on smog check enhancements. According to the CEQA analysis, Alternative 1 will fall short of attaining the PM_{2.5} standard by 2014.

ALTERNATIVE 2—LOCALIZED PM CONTROL

Mira Loma monitoring station in western Riverside County is the only station that violates the federal 24-hour PM_{2.5} standard in the Basin. This alternative targets sources near the station in hopes of bringing the Basin into compliance. Three PM_{2.5} measures are proposed for this purpose and they would be implemented sequentially and only around the Mira Loma area. Control Measure ONRD-04 (Accelerated Retirement of Older On-road Heavy-duty Vehicles) under the Draft [Final](#) Plan will be implemented first, followed by Control Measure BCM-01 (Residential Wood Burning Devices), and Control Measure BCM-04 (Ammonia from Livestock Waste). Compared to the Draft [Final](#) 2012 AQMP, Alternative 2 also excludes Control Measure BCM-02 (Further Reductions from Opening Burning).

In terms of the socioeconomic analysis herein, the cost of Control Measure BCM-01 under Alternative 2 is assumed to be one-half of that under the Draft [Final](#) Plan as fewer and smaller rounds of media campaigns would be launched to alert residents about the high PM_{2.5} days under Alternative 2. The total cost of ONRD-04 would be the same between the Draft [Final](#) Plan and Alternative 2, but the distribution of the cost among sub-regions would vary. Control Measure ONRD-04 is part of the ozone strategy under the Draft [Final](#) Plan and would be implemented across the District. On the other hand, Control Measure ONRD-04 becomes a PM_{2.5} control measure under Alternative 2 with a more focused implementation surrounding the Mira Loma Station area. There are two phases of implementation for Control Measure BCM-04. Technology assessment is proposed for the first phase under the Draft [Final](#) Plan. The cost of reducing ammonia from livestock is proposed for Phase II under Alternative 2. Implementation of Phase I was assumed to have

no costs. The cost of implementing Phase II is projected to be \$2.2 million annually, on average, from 2016 to 2035 and is included in the cost of Alternative 2.

ALTERNATIVE 3—GREATER RELIANCE ON NO_x REDUCTIONS

This alternative relies more heavily on reducing NO_x emissions to achieve the PM_{2.5} standard. Since NO_x is a precursor to both PM_{2.5} and ozone, greater reductions in NO_x emissions would also lead to faster progress toward achieving the ozone standard. Compared to the Draft [Final](#) 2012 AQMP, CEQA Alternative 3 excludes Control Measure BCM-01 (Further Emissions Reductions from Wood Burning Devices), and accelerates the implementation of the CARB's statewide truck and bus regulation from 2014-2022 to 2014-2018 and that of the CARB's in-use off-road diesel vehicle regulation from 2014-2023 to 2014-2018.

ALTERNATIVE 4—PM_{2.5} STRATEGY ONLY

Alternative 4 is the same as the PM_{2.5} strategy portion of the Draft [Final](#) 2012 AQMP, which does not include any ozone measures. Under this alternative, the ozone SIP portion of the 2007 AQMP would not be affected nor would ozone measures be included in the Draft [Final](#) 2012 AQMP.

COMPARISON OF SOCIOECONOMIC IMPACTS

Table 7-1 compares the direct costs, direct air quality benefits related to PM_{2.5} compliance, and job impacts of the Localized PM Control, Greater Reliance on NO_x Reductions, and PM_{2.5} Strategy Only Alternatives to the Draft [Final](#) 2012 AQMP. [The comparisons were based on the congestion relief benefit for all the TCMs in the 2012 RTP. Comparisons based on the corresponding congestion benefit for the SIP-committed TCMs \(\\$519 million annually\) are in Appendix H—TCM Benefit at 2014 Level.](#) Appendix D has a detailed breakdown of annual costs, clean air benefits, and job impacts for the Draft [Final](#) Plan and alternatives. The No Project Alternative will not attain the PM_{2.5} standard until 2019. As such, the No Project Alternative may not be SIP approvable as it does not attain the standard as expeditiously as practicable. The cost of this alternative includes the cost of the black box and that of some additional ozone measures for compliance with the ozone standard. On the other hand, the Draft [Final](#) 2012 AQMP will meet the PM_{2.5} standard in 2014 and the ozone measures under the Draft [Final](#) 2012 AQMP represent only a partial implementation of the black box. For this reason, the No Project Alternative cannot be meaningfully compared with the Draft [Final](#) 2012 AQMP, as it includes all of the “black box.”

TABLE 7-1
Average Annual (2013-2035) Impacts of AQMP and CEQA Alternatives

CEQA Alternatives*	Costs		PM _{2.5} Benefits**		Jobs for Combined Costs & Benefits**
	Millions of 2005 Dollars	Jobs	Millions of 2005 Dollars	Jobs	
Draft Final 2012 AQMP	\$448	-3,257	\$10,670	42,174	37,043
Alt 2—Localized PM Control	450	-3,334	9,526	37,088	32,104
Alt 3—Greater Reliance on NO _x Reductions	495	-4,715	11,141	44,408	37,709
Alt 4—PM _{2.5} Strategy Only	\$327	-1,620	<\$10,670	<42,174	<37,043

*TCM cost = \$326 million.

**Based on all the TCMs in the 2012 RTP.

Except for the PM_{2.5} Strategy Only Alternative, the costs of the Draft [Final](#) 2012 AQMP, and the Localized PM Control and Greater Reliance on NO_x Reductions Alternatives reflect both the PM_{2.5} compliance strategy and additional ozone measures for a partial implementation of the black box. The clean air benefit in Table 7-1, on the other hand, results from compliance with the PM_{2.5} standard, which includes measures under the PM_{2.5} strategy and ozone measures listed in Table 7-2.

TABLE 7-2
Ozone Measures Included in the PM_{2.5} Benefit Assessment

Measure No.	Title	Draft Final Plan	Alternative 2	Alternative 3
CMB-01	RECLAIM-Phase II	X		
CMB-03	Commercial Space Heating [NO _x]	X	X	X
CTS-01	Architectural Coatings [VOC]	X	X	X
CTS-02	Misc. Coatings, Adhesives, Solvents & Lubricants [VOC]	X	X	X
CTS-03	Mold Release Products	X	X	X
FUG-02	LPG Transfer & Dispensing--Phase II [VOC]	X	X	X
FUG-03	Fugitive VOC Emissions	X	X	X
OFFRD-01	SOON for Construction & Industrial Equipment [NO _x]	X	X	X
OFFRD-02	Freight Locomotives [NO _x , PM _{2.5}]	X	X	X
OFFRD-03	Passenger Locomotives [NO _x , PM _{2.5}]	X	X	X
A1-ON1	Accelerated CARB Truck & Bus Regulation			X
A1-OFF1	Accelerated CARB Off-road Regulation			X

Both the Localized PM Control and Greater Reliance on NO_x Reductions Alternatives have higher costs than the Draft [Final](#) 2012 AQMP and the PM Strategy Only Alternative. The Localized PM Control Alternative has lower benefit than the Draft [Final](#) 2012 AQMP. The PM_{2.5} Strategy Only Alternative has the lowest cost, but would result in fewer benefits than the Draft [Final](#) 2012 AQMP due to the absence of ozone measures.

The Localized PM Control Alternative is projected to have lower air quality benefits than the Draft [Final](#) 2012 AQMP and the Greater Reliance on NOx Reductions Alternative. Both the Localized PM Control and Greater Reliance on NOx Reductions Alternatives will not meet the federal PM_{2.5} standard until 2017. Although benefits may start to occur prior to 2017, it was assumed that in the analysis herein, benefits would not start until 2017. The Greater Reliance on NOx Reductions Alternative would benefit broader areas than the Draft [Final](#) Plan as NOx is more prevalent than PM_{2.5}. Therefore, the Greater Reliance on NOx Reductions Alternative has the highest benefit among all the alternatives. The congestion relief benefit is associated with SCAG’s transportation control measures. These measures do not vary by alternative; therefore, the congestion relief benefit is the same among all the alternatives. Table 7-3 shows the distribution of PM_{2.5} compliance benefits for all the alternatives among different benefit categories.

TABLE 7-3
Average Annual Quantified Benefits by Category by Alternative
(millions of 2005 dollars)

CEQA Alternatives	Total*	Health	Visibility	Congestion Relief*	Material
Draft Final 2012 Plan	\$10,670	\$2,247	\$696	\$7712	\$14
Alt 2—Localized PM Control	9,526	1,370	438	7,712	7
Alt 3—Greater Reliance on NOx Reductions	11,141	2,430	988	7,712	11
Alt 4—PM _{2.5} Strategy Only	<\$10,670	<\$2,247	<\$696	\$7,712	<\$14

**Based on all the TCMs in the 2012 RTP. The sum of individuals may not equal to the total due to rounding.*

SUMMARY

The Draft [Final](#) socioeconomic analysis can affect the selection of alternatives to the proposed Plan as identified in the Environmental Assessment for the Draft [Final](#) 2012 AQMP. In considering whether to adopt the Draft [Final](#) Plan or one of the alternatives, the District Governing Board will seek the best balance of greatest socioeconomic and environmental benefits and least adverse environmental and socioeconomic impacts, while meeting all legal requirements and attaining the NAAQS as expeditiously as practicable.

The No Project Alternative, which is the 2007 AQMP, cannot be meaningfully compared with the Draft [Final](#) Plan since the No Project Alternative would not comply with the PM_{2.5} standard until 2019 and is designed for the compliance of the ozone standard as well while the Draft [Final](#) Plan would comply with the PM_{2.5} standard in 2014 and implement part of the black box.

[The comparisons among all the alternatives were based on the congestion relief benefit for all the TCMs in the 2012 RTP. Comparisons based on the corresponding congestion benefit for the SIP-committed TCMs \(\\$519 million annually\) are in Appendix H—TCM Benefit at 2014 Level.](#) The Localized PM Control and Greater Reliance on NOx Reductions Alternatives would not comply with the PM_{2.5} standard until 2017. Although the Draft [Final](#)

Plan has a higher cost than the PM_{2.5} strategy Only Alternative, the Draft [Final](#) Plan would have higher benefits due to the co-benefit from the ozone measures.

CHAPTER 8

RECENT REFINEMENTS, UNCERTAINTY, AND FUTURE ACTIONS

Introduction

Recent Refinements

Uncertainty and Caveats

Future Enhancements

INTRODUCTION

The District's socioeconomic analysis has evolved over the years. The Draft [Final](#) Socioeconomic Report for the Draft [Final](#) 2012 AQMP identified key areas for recent refinements. Despite the use of a variety of tools and the inclusion of these refinements in assessing the socioeconomic impacts of the Draft [Final](#) 2012 AQMP, the socioeconomic analysis herein could not address all issues. The assessment of some of these issues requires linking information from multiple fields and using data that is currently unavailable. Overcoming these constraints will require interdisciplinary research, data collection, and a combination of approaches. The District plans to continue to work with the Scientific, Technical and Modeling Peer Review Advisory Group (STMPRAG) and other interested parties to improve its socioeconomic analysis.

Issues that are not addressed in the Draft [Final](#) 2012 AQMP socioeconomic report will be pursued for future AQMP revisions. Described below are recent refinements, uncertainty of the current analysis, and recommended actions for the future.

RECENT REFINEMENTS

Recent refinements to the socioeconomic analysis cover the following areas: benefits and costs of clean air, distributional impacts on sub-regions and industries, and impacts on local competitiveness.

Benefits of Clean Air

The Draft [Final](#) Socioeconomic Report for the Draft [Final](#) 2012 AQMP further refines health benefit assessments for PM_{2.5} through the use of BenMAP. Concentration-response relationships between health effects and PM_{2.5} from recent literature were selected. The adult mortality estimate was based on a study for the Los Angeles Metro Area (Krewski et al., 2009). Compared to the 2007 AQMP, the chronic bronchitis effect of PM_{2.5} was dropped from the analysis while asthma attacks were added. Sensitivity tests were performed to examine adult mortality resulting from PM_{2.5} exposure relative to the federal standard (threshold) as opposed to no concentration (no threshold). More recent research (Kochi et al., 2006) was used for the value of a statistical life. Multiple health functions were employed for a single health effect to arrive at a range of avoided cases and associated monetary values. The health effect of non-fatal heart attacks was expanded from a single study (Peters et al., 2001) in the 2007 AQMP to also include four newer studies.

Distributional Impacts

A finer sub-region geography is used for the cost and benefit analysis herein. The four-county area is now divided into 21 sub-regions. The eastern part of Los Angeles County is split into the east and west San Gabriel Valley. Riverside and San Bernardino Counties now have three sub-regions each to reflect increased economic activities in new developments. Catalina Island is merged with the southwestern beach community in Los Angeles County. The refined geography allows for more detailed analysis of impacts at the community level.

The American Community Survey (ACS) 5-year estimates at the census tract level provide an important pillar for many segments in the analysis herein. Data on race and ethnicity of population presents an important backdrop of the current economy on which the analysis is based upon. Information on households, educational attainment, income, and housing costs was essential for the assessment of visibility and material benefits.

UNCERTAINTY AND CAVEATS

As with any complex analysis, some uncertainty is inherent in the methodology employed. Consequently, caveats need to be applied in interpreting the results. The key areas of uncertainty and caveats in this socioeconomic assessment are in estimating emission reductions, costs, air quality changes, and health benefits, among others.

Data

The cost analysis includes PM_{2.5} and ozone control measures. The former are for the demonstration of meeting the PM_{2.5} federal standard in 2014 and the latter show an interim progress toward meeting the ozone standard.

The projected costs of control measures could differ from the actual costs due to advancement of innovative technologies and unexpected modifications to existing plant structure to accommodate control devices. In the past, the District has worked with the CARB to examine actual costs during rule implementation. On the other hand, achieving the final increment towards attainment might result in higher costs as suggested by the STMPRAG.

The benefit analysis focused on reductions in exposure to PM_{2.5}. The co-benefits from reductions in ozone and nitrogen dioxides are not included. As such, the benefit assessment may be underestimated. The health benefit analysis in this report is limited by the availability of health studies that quantify health effects associated with exposure to various pollutants and their economic valuation. Not all the known adverse health effects caused by air pollution have been quantified. Similarly, not all other clean air benefits such as congestion relief related to personal trips are quantifiable at this time.

Exposure estimates are based on extrapolations to census boundaries. There is uncertainty in how well this captures actual population exposures.

There are several health effects estimates of dose-response functions in the literature for a given health effects. There are uncertainties and variability in these estimates. For example, the premature mortality estimate used in this analysis was taken from a study conducted in Southern California. Using the mortality function from this study gives estimates of premature mortality that are somewhat higher than those based on national multi-city studies.

The rapidly-changing structure of population and workforce in the four-county area makes uncertain the projection of distribution of job impacts in the long run.

Air Quality Models

Air quality modeling used the most current estimates of emissions, prognostic meteorological models, multilayered dispersion platforms (i.e., CMAQ), and sophisticated chemistry modules. Chapter 1 of Appendix V of the Draft [Final](#) 2012 AQMP provides a summary of the impacts of uncertainty for the various inputs and models used in an air quality simulation. The key areas of uncertainty impacting the estimation of future year health benefits arise from emission estimates, model layer structure, boundary specifications, and dispersion assumptions.

REMI Model

The REMI model, which was used to analyze the impacts of the Draft [Final](#) 2012 AQMP, projects possible impacts on jobs, distribution of jobs, income, cost of production, relative delivered prices, exports, and imports based upon cost data for control measures and the benefit data for each effect of clean air. The projections are based on national and local statistics for a cluster of economic actors such as industries and population by age and cohort. These statistics reflect the net changes of all the events on these actors and cannot be segregated into gross changes of individual events.

Due to data limitations the REMI analysis herein does not include permit costs associated with control devices and other costs that may be more applicable to individual facilities. During rule development more detailed industry- or facility-specific socioeconomic analysis will be performed to the extent feasible before the District or CARB adopts a regulation.

Because of cleaner air, economic migrants are willing to move into the Basin in exchange for lower earnings (wage and salary) than otherwise. Currently, there is no systematic approach to evaluating migration of retired persons as they do not belong to the labor force. Therefore, their willingness-to-pay (and non-wage generated income stream) for avoided morbidity and mortality is not accounted for in the migration functions that were used only for economic migrants in the labor force.

The actual effects of the Draft [Final](#) 2012 AQMP on regional competitiveness could deviate from the projected effects of quantified measures and benefits since the analysis assumes that all control costs are "extra" costs when compared to air pollution control costs in other regions, and underestimates the clean air benefits that would increase regional attractiveness. This ignores the fact that competing regions often adopt control measures similar to the District's or at least impose some level of control with additional costs.

FUTURE ENHANCEMENTS

Previous AQMPs have identified actions that would further enhance the ability to quantify and evaluate the benefits and costs of the proposed Plan. This Socioeconomic Report has accomplished several of these actions and identified others for future assessments. Enhancements to this Socioeconomic Report include finer geography for more detailed assessments of distributional impacts, incorporation of new concentration and response health functions for a range of health effects, and greater use of the ACS 5-year estimates from the U.S. Census Bureau.

The following enhancements are recommended for future AQMPs:

- Conduct a review of the District's socioeconomic analysis to update methods and approaches, as appropriate;
- Quantification of uncertainty through sensitivity analysis and/or probabilistic confidence intervals;
- Include the value of a statistical life (VSL) related to health risks in future years of an individual's life and illness-specific VSLs;
- Incorporate health benefits resulting from reductions in air toxic pollutants such as diesel particulates;
- Expand sub-regional analyses to include environmental justice (EJ) areas. These areas may be classified by income or race;
- Evaluate potential social ramifications of migration and job losses;
- Analyze the impact of highly polluted areas on property values and rents and the ensuing impacts on the concentration of lower-income households; ~~and~~
- Perform a periodic assessment of projections relative to reality to track the performance of various models that are used for socioeconomic analyses; and-
- Explore scenarios where other regions may adopt controls similar to AQMD's for the competitive analysis.

Furthermore, future enhancements to health benefit assessments would include the impact of exposure to pollutants on life expectancy, differential impacts on various segments of the population, and identification of significant pollutant thresholds.

The socioeconomic analysis will continue to evolve to reflect changes in regulatory structure such as greater reliance on incentive programs and public financing strategy. Building a time series database would enhance the assessment on specific segments of an industry, facilitate the alignment with published governmental statistics, and strengthen the analysis on competitiveness impacts. To this end, future efforts may include the use of different databases to track existing facilities and new facilities, review of inspectors' reports for annotated information on firm turnover and closure, and identification of start-up companies in high tech disciplines.

APPENDIX A

ASSESSMENT METHODOLOGY

Introduction

Costs

Benefits

Other Socioeconomic Impacts

INTRODUCTION

The socioeconomic assessment of the Draft [Final](#) 2012 AQMP is divided into three segments: costs, benefits, and employment and other impacts. The following describes how each segment is assessed.

COSTS

Table A-1 lists the 33 stationary and mobile measures in the Draft [Final](#) 2012 AQMP for PM_{2.5} and ozone strategies, respectively, as well as the average annual costs of each control measure. There are nine PM_{2.5} measures and another 24 ozone measures. Six PM_{2.5} measures were quantified with costs. The remaining PM_{2.5} measures are ongoing programs with no additional projected costs. Two ongoing PM_{2.5} measures are also ozone measures. There is another incentive measure for stationary sources under the ozone strategy. All the mobile measures are voluntary and incentive programs, most of which are quantified.

TABLE A-1
Draft [Final](#) 2012 AQMP Control Measures

Measure No.	Control Measure Title	Average Annual [#]	No Cost Data ^{**}
PM_{2.5} MEASURES			
BCM-01	Further Reductions from Residential Wood Burning Devices [PM2.5]	\$0.123	
BCM-02	Further Reductions from Open Burning [PM2.5]	\$0	
BCM-03	Emission Reductions from Under-Fired Charbroilers [PM2.5]	\$0	
BCM-04	Further Ammonia Reductions from Livestock Waste [NH3]	\$0	
CMB-01*	Further NO _x Reductions from RECLAIM [NO _x] –Phase I	\$0	
EDU-01	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]		X
IND -01	Backstop Measures for Indirect Sources of Emissions from Ports and Port-Related Sources [NO _x , SO _x , PM2.5]		X
MCS-01	Application of All Feasible Measures Assessment [All Pollutants]		X
SCAG TCM	Transportation Control Measures	\$326.435	
OZONE MEASURES			
<i>Stationary</i>			
CMB-01 [#]	Further NO _x Reductions from RECLAIM [NO _x] – Phase II	\$10.126	
CMB-02	NO _x Reductions from Biogas Flares [NO _x]	\$1.966	
CMB-03	Reductions from Commercial Space Heating [NO _x] -- Phase II	\$1.848	
CTS-01	Further VOC Reductions from Architectural Coatings (R1113) [VOC]	\$7.702	
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants [VOC]	\$5.013	
CTS-03	Further VOC Reductions from Mold Release Products [VOC]	\$2.958	
CTS-04	Further VOC Reductions from Consumer Products [VOC]	\$2.282	

TABLE A-1 (Continued)

Measure No.	Control Measure Title	Cost Data Available [#]	No Cost Data ^{**}
EDU-01	Further Criteria Pollutant Reductions from Education, Outreach and Incentives [All Pollutants]		X
FUG-01	Further VOC Reductions from Vacuum Trucks [VOC]	\$1.678	
FUG-02	Emission Reduction from LPG Transfer and Dispensing [VOC] – Phase II	\$1.497	
FUG-03	Further VOC Reductions from Fugitive VOC Emissions [VOC]	\$2.417	
INC-01	Economic Incentive Programs to Adopt Zero and Near-Zero Technologies [NOx]		X
INC-02	Expedited Permitting and CEQA Preparation Facilitating the Manufacturing of Zero and Near-Zero Technologies [All Pollutants]		X
MCS-01	Application of All Feasible Measures Assessment [All Pollutants]		X
MCS-02	Further Emission Reductions from Green Waste Processing [VOC]	\$2.107	
MCS-03	Improved Start-up, Shutdown and Turnaround Procedures [All Pollutants]	\$0.001	
<i>Mobile^{&}</i>			
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles [VOC, NOx, PM]	-\$0.940	
ONRD-02	Accelerated Retirement of Older Light- and Medium-Duty Vehicles [VOC, NOx, PM]	\$2.113	
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero-Emission Light-Heavy- and Medium-Heavy-Duty Vehicles [NOx, PM]	\$43.773	
ONRD-04	Accelerated Retirement of Older On-Road Heavy-Duty Vehicles [NOx, PM]	\$15.678	
ONRD-05 ^{**}	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards [NOx, PM]		X
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment [NOx]	\$14.023	
OFFRD-02	Further Emission Reductions from Freight Locomotives [NOx, PM]		X
OFFRD-03	Further Emission Reductions from Passenger Locomotives [NOx, PM]	\$7.354	
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels While at Berth [NOx, PM]		X
OFFRD-05	Emission Reductions from Ocean-Going Marine Vessels [NOx]		X

*Based on average RTC trading price of \$7,950/ton/day in 2011. Impacts on sellers and buyers are analyzed in REMI.

[#]BARCT costs are applied to Phase I and II for three tons per day reductions.

[&]All measures are voluntary/incentive programs.

[#]Millions of 2005 dollars (2013-2035).

^{**}Please refer to Table 6-4 in the 2012 AQMP and respective measures in appendices IV (A) and IV (B) to the 2012 AQMP for additional information on measures without cost data.

Cost data have been developed for each of the 20 control measures listed in Table A-1. Direct costs from complying with the requirements of control measures include capital expenditures on control equipment, annual operating and maintenance costs for the equipment, costs of low-polluting (e.g., reformulated) materials, and potential savings related to new requirements. Investments in transportation projects, their annual operating and maintenance costs, and public funding from various sources such as gasoline and sales taxes are also included. Capital costs are annualized based on a 4 percent real interest rate and the economic life of the equipment or project. Costs from each measure are allocated to the 21 sub-region geography depicted in

Figure A-1 based on emission reductions at a point source or gridded emission reductions (with each grid measured by 16 square kilometers) aggregated to the sub-region level.

FIGURE A-1
21 Sub-region Geography



Cost estimates for SCAG transportation control measures were provided by SCAG. Assumptions from CARB current regulations were used for cost quantification of mobile source measures. Control cost estimates for all other measures were based on information from equipment vendors, raw material manufacturers, and affected industries.

BENEFITS

Better air quality will reduce adverse impacts to human health and building materials, and improve visibility. Some of these effects can be measured and are quantified in monetary terms relative to the baseline “no additional control” scenario for key benchmark years.

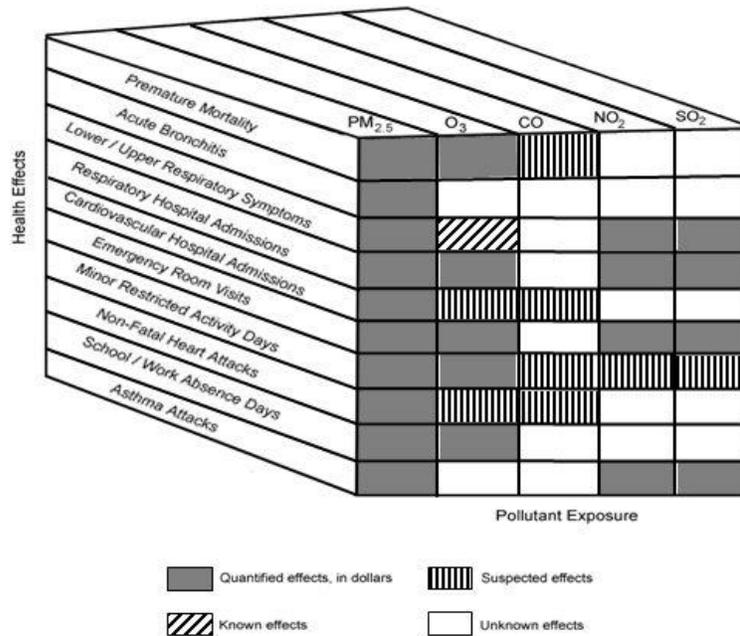
Quantifiable Benefits

The benefits of better air quality in terms of improved human health, reduced damage to building materials, and improved visibility were estimated based on previously published studies. Transportation control measures would improve traffic flow, resulting in reductions in vehicle miles and hours travelled.

Health

Based on numerous published epidemiology studies, observed health effects have been linked with the exposure to ambient PM_{2.5}, ozone, and NO₂. Epidemiology studies use data on the reported incidence of disease and attempt to discern an association with the concentration of ambient air pollutants measured at the time. Figure A-2 shows the correspondence between pollutants and adverse health effects. The greater breadth of the recent epidemiology literature allows for a refined characterization health effects than was possible in the past. A new concentration-response relationship between asthma attacks and and PM_{2.5} has been established. There have also been additional PM_{2.5} mortality studies specific to the Los Angeles area since the 2007 AQMP.

FIGURE A-2
Health Effects of Criteria Pollutants



The health benefit analysis was performed via the U.S. EPA approved BenMAP model (Version 4.0.52), which is an integration of air quality data, epidemiological studies, population and demographic data, and valuation of health effects. The modeling results from the CMAQ Model (Community Multiscale Air Quality Model) were used to show the ambient concentration changes of PM_{2.5} from implementation of PM_{2.5} and ozone measures (see Appendix V of the Draft Final 2012 AQMP). The CMAQ model projects air quality improvements at each grid cell from implementing the Draft [Final](#) 2012 AQMP as compared to the baseline conditions absent such additional control. To estimate health benefits, the results from the CMAQ model were fed into the BenMAP model. The BenMAP model then calculates the increased or decreased exposure of the four-county area's population to PM_{2.5} from the Draft [Final](#) 2012 AQMP, compared to baseline

projections of these pollutants. These comparisons were made for the years 2014 and 2023 for PM_{2.5}, using projected population by age cohort and gender from REMI (adjusted to the SCAG forecast) for 18 sub-regions and demographic distributions between 16 square kilometer grids and census tracts based on the 2010 Census. The projected change in exposure to PM_{2.5} brought about by implementing the Draft [Final](#) 2012 AQMP was then used in the concentration-response functions for changes in specific health effects, including mortality. Finally, dollar values in terms of willingness to pay to avoid a health effect or cost of treating an illness were used to estimate monetary value for health effects. It was assumed that future years beyond 2023 would have the same health benefits as 2023.

It should be noted that reductions in PM_{2.5} and NO_x from control measures would reduce exposure to ozone and NO₂ related health effects.

Visibility

The benefits associated with improved visibility were estimated by using a percentage of the public's willingness to pay for improved visibility as determined through housing prices (Beron et al., 2001). The Beron et al. study was conducted at the census tract level and based on matching housing sales data with air quality data and neighborhood statistics in the 2000 Census in the four-county area. The average willingness to pay per household for visibility improvements reflects the household income net of housing cost, education, and visibility improvements in each tract.

For the Draft [Final](#) 2012 AQMP, the willingness to pay for visibility improvement was calculated at the sub-county region level for the benchmark years 2014, 2023, 2030, and 2035. The empirical visibility models developed for four locations (Rubidoux, Long Beach, Ontario, and Burbank) in the Basin for the 1991 AQMP were used to estimate future year visibility for the 21 sub-regions. Empirical equations that relate visibility to concentrations of visibility reducing particulate chemical species were used. To estimate future year visibility for each sub-region, average sub-regional chemical species concentrations were calculated for sulfate, nitrate, organic and elemental carbon, respectively. The chemical species concentrations for future year base and control scenarios were taken from the results of the CMAQ modeling analysis. The visibility data at the sub-region level for 2014, 2023, and 2030 was developed by summing the multiplication of the predicted PM_{2.5} concentration at each grid by the total light extinction coefficient (in 10⁻⁴m⁻¹) at the nearest airport for that grid across all the grids within a sub-region. The 2035 visibility data was assumed to be the same as the 2030 visibility data. The trend in household income and education between the American Community Survey (ACS) 2005-2009 estimates at the sub-region level was used to develop the values for these two variables for 2014, 2023, 2030, and 2035.¹ The projected number of households at the county level from the SCAG forecast was distributed to sub-regions according to the 2006-2010 ACS household counts for each sub-region to calculate the total willingness to pay for each sub-region.

¹ If the growth rates are negative in a given sub-region between the two periods of ACS estimates, respective county weighted averages were used for trend projections.

The public's willingness to pay as determined through housing prices reflects the value of many benefits including improved health and reduced damage to materials and property as well as improved visibility. In an effort to avoid the double counting of those other benefits and account for the visibility aesthetics only, this analysis attributes only 45 percent of the total willingness to pay factor to visibility. The determination to use a 45 percent factor was based upon a 1994 study prepared by Loehman et al.

Materials

The material benefit assessment was made at the county level and allocated to sub-regions based on the proportions of household counts in various sub-regions in the ACS 2006-2010 estimate. PM_{2.5} concentration data for 2014, 2023, and 2030 at seven locations was used to estimate the decreased costs of repainting wood and stucco (Murray et al., 1985) and cleaning indoor surfaces (Cummings et al., 1985). It was assumed that the 2035 PM_{2.5} concentrations at these stations would be the same as those in 2030. The 4.81 ratio of the total suspended particulate matter (TSP) to PM_{2.5} was used to convert PM_{2.5} to TSP, which was used in the original material benefit assessment by Murray et al. (1985). Reductions in cleaning and repainting costs were assessed for the benchmark years 2014, 2023, 2030, and 2035 based on the projected households that were converted to housing units via the ratio of the two in the ACS 2006-2010 estimate at the county level. Results for interim years were interpolated.

Traffic Congestion Relief

Congestion reduces operating speeds of vehicles, thus resulting in travel delays and increased shipping and storage costs for businesses. Congestion also prevents vehicles from operating under their optimum conditions and thereby increases the operating and maintenance costs of vehicles. Using various studies on congestion costs (SCAG 2004 and Association of Bay Area Governments 2002) and potential reductions in VMT and VHT, congestion benefits in the form of reduced vehicle operating and maintenance expenditures and value of lost time due to the Draft Final 2007 AQMP were assessed at the sub-region level. Data on reductions in VMT and VHT were provided by SCAG.

Unquantifiable Benefits

Full quantification of health effects is hindered by the lack of known quantitative relationships between pollutant concentrations and the incidence of health effects. In some cases, these quantitative relationships may be known, but the air quality data needed to perform the calculations may be uncertain.

Further establishment of relationships between poor air quality and its damages, as well as the measurement of ~~these~~ damages, is key to quantifying the benefits from improved air quality in the areas of plant life, livestock, building materials, and human health effects. Inadequate data does not allow full assessments to be made at this time. Benefit assessments which incorporate only quantified benefits

significantly underestimate the total benefits as a result of implementing the Draft [Final](#) 2012 AQMP.

OTHER SOCIOECONOMIC IMPACTS

The four-county economy will be affected as control measures in the Draft [Final](#) 2012 AQMP are implemented, industries spend resources to comply with new requirements, and transportation infrastructure is built. Implementation of the Draft [Final](#) 2012 AQMP could lead to differential impacts on industries at different times.

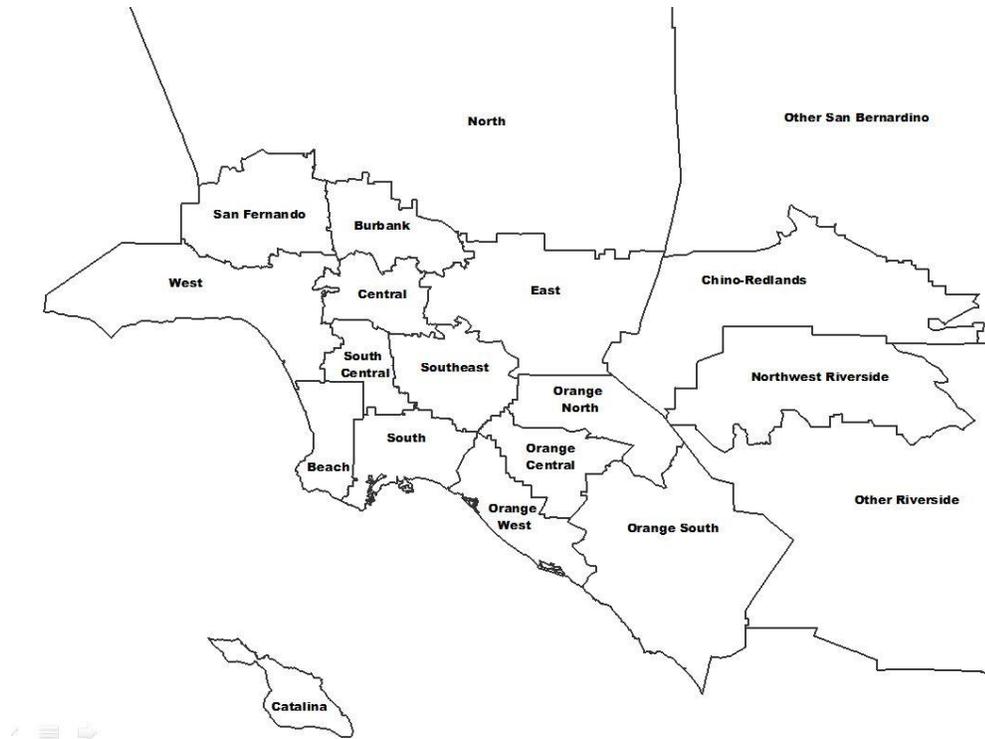
REMI Model

District staff relies on the REMI (Regional Economic Models, Inc.) model to estimate potential employment impacts and other socioeconomic impacts (e.g., product prices, cost of production, and income) of quantified measures and benefits. The REMI model is widely used by the U.S. EPA, CARB, SCAG, other state and local agencies, academicians, and consultants. The REMI model incorporates state-of-the-art modeling techniques and the most recent economic data. The REMI model has been independently evaluated and found to be "technically sound" by the Massachusetts Institute of Technology (Polenske et al., 1992).

The REMI model is built on published data from 1969 to the present with econometrically estimated parameters and can be used to simulate the impact of public policies on the economy of Los Angeles, Orange, Riverside, and San Bernardino Counties. The REMI model allows an assessment of the economic impacts that a policy (such as an AQMP revision or a proposed rule) may cause to each sub-region economy (Figure A-3) for 70 private and public sectors which correspond to three-digit NAICS codes in most cases. The REMI model for the Draft [Final](#) 2012 AQMP combines the San Gabriel Valley East and West into one sub-region, and the San Bernardino City and San Bernardino Southwest areas into another sub-region. The Riverside Southwest and other Riverside areas are combined into one sub-region. Economic impacts include those on jobs, costs of inputs in the production process, personal income, gross regional product, and product prices. A detailed description of the REMI model is provided in Appendix B—The REMI Model.

Impact analyses in the REMI model follow a two-step process. First, the national economic projection provided by the Bureau of Labor Statistics (BLS) is used to determine the local baseline economic forecast without any policy change. Second, the direct costs and benefits of a policy are input to the REMI model to generate an alternative forecast for the local economy with the policy. The difference between the baseline and alternative forecasts gives the total effects of the policy. The baseline forecast is recalibrated to ensure consistency with SCAG's population and employment forecasts. Appendix C—Adjustment of the REMI Control Forecast—provides a detailed description of the recalibration process.

FIGURE A-3
Analysis Domain



The assessment of job and other socioeconomic impacts was performed for all control measures under the PM2.5 and ozone strategies, clean air benefits, and PM2.5 control measures and associated clean air benefits, respectively.

Input to REMI

To estimate employment impacts from quantified measures, direct costs associated with each of the control measures were utilized as inputs into the model. Implementation costs of measures were distributed in two ways. First, they were distributed to the regulated industries based on the proportion of emission reductions of these industries by geographic location, as proposed in the Draft [Final 2012 AQMP](#). These costs are the additional cost of doing business. Second, these costs are additional sales to industries which supply necessary equipment and services. These sales were assumed to occur where the regulated industries are or where emission reductions would take place. The analysis is performed from the implementation year of a control measure to the year 2035.

In addition to the categories already described, a number of benefits from clean air were quantified and input into the REMI model. These benefits are estimated for those benchmark years when air quality data was available. To provide continuous forecast estimates, estimates for years between benchmark years were interpolated

linearly. Quantifiable benefits include improved visibility, reduced damages to materials and health, and relief from traffic congestion. Visibility improvements and reductions in mortality and morbidity in terms of the willingness to pay and the present value of the future income stream were translated into additional amenities to the four-county area via the migration equation for economic migrants age 65 and below. Reductions in morbidity would lead to reduced health care expenditures by the general public and employers (the cost of illness portion only). It was assumed that 60 percent of the reduced expenditures would benefit the employers as a reduction in the cost of doing business and the remaining 40 percent would flow back to the economy in the form of additional spending on all consumption categories. Congestion relief benefits were input as a decrease in the cost of doing business for the trucking and warehousing industry and a decrease in sales for auto repair services. Better traffic flow would result in reduced demand for transportation services. Consumers were assumed to re-spend the savings from vehicle operation and maintenance on all consumer goods. The congestion relief benefit to the owners of light-duty/passenger vehicles and commuters and the material benefit accrued to residents were translated into additional amenity benefits.

Output from REMI

To assess the impacts on socioeconomic groups, the impacts on product prices identified by the REMI model were overlaid on consumption patterns of various income groups to examine the changes in consumer price indexes of these income groups. The data on consumption patterns are from the Bureau of Labor Statistics' Consumer Expenditure Survey.

To assess the impacts of a policy on the competitiveness of the four-county region, the following factors were evaluated: the region's share of national jobs in those industries whose products are also sold in the national market, the impacts on product prices and cost of production by industry, and the changes in imports and exports. These factors were selected based on a review of effects of past public policies on a region's competitiveness.

APPENDIX B

THE REMI MODEL

Introduction

Framework of the REMI Model

Economic Geography Linkage

Assumptions of the REMI Model

Verification of the Model

Enhancements to the Model

INTRODUCTION

In an effort to expand socioeconomic impact assessments for proposed rules and AQMP revisions, the District has been using a computerized economic model from Regional Economic Models, Inc. (REMI) to assess the socioeconomic impacts on the four-county economy since 1990. The REMI covers the geographic area within the counties of Los Angeles, Orange, Riverside, and San Bernardino. The structure and assumptions of the model are briefly described below.

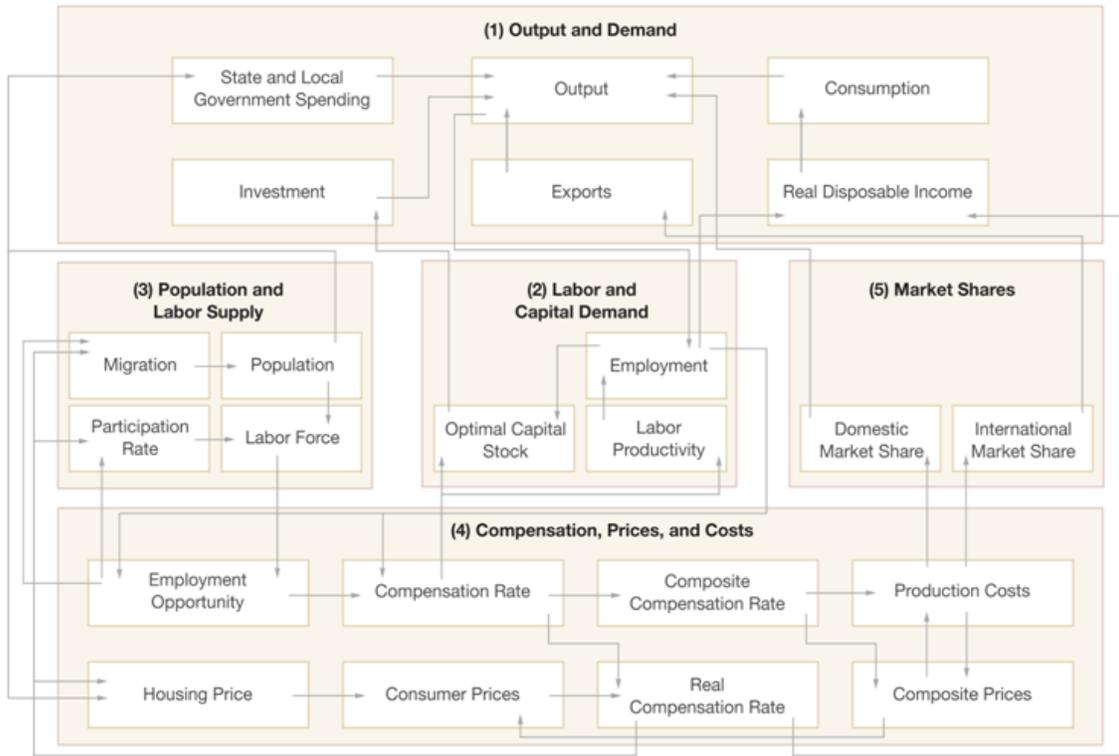
FRAMEWORK OF THE REMI MODEL

The District's REMI model links the economic activities in the counties of Los Angeles, Orange, Riverside, and San Bernardino. The model used for the 2012 AQMP assessment is unique in that each county is further divided to account for the politically, socially, economically, and geographically diversified structure of the Southern California economy. There are 10 sub-county regions in Los Angeles County, four in Orange County, two in Riverside County, and two in San Bernardino County. The divisions of the sub-regions were originally developed in 1996 and have been updated to reflect the 2000 Census.

The REMI model for each sub-region is comprised of a five block structure that includes (1) output and demand, (2) labor and capital, (3) population and labor force, (4) compensation, prices and costs, and (5) market shares. These five blocks are interrelated and the linkages are shown in Figure B-1. Each block is built upon a two-step process. First, producers and consumers throughout all regions of the country are assumed to have similar behavioral characteristics. Because of these similarities, statistical techniques are used to estimate economic responses based on studies performed throughout the U. S. The second step of the modeling process is region specific, and involves calibration of the model based on region-specific historical data.

The standard structure has 66 private non-farm industries (3-digit NAICS), three government sectors and a farm sector, 94 occupations, and 88 final demand sectors. The demographic/migration component captures population changes due to births, deaths, migration, and changes to special population (e.g., prisoners and college students); and has 808 ages/gender/race/ethnicity cohorts. The input-output module contains detailed inter-industry relationships for 403 sectors and is used to assess the detailed inter-industry effect of a policy change. Results from the input-output module are fed through population, price and economic geography equations to produce a complete economic and demographic assessment.

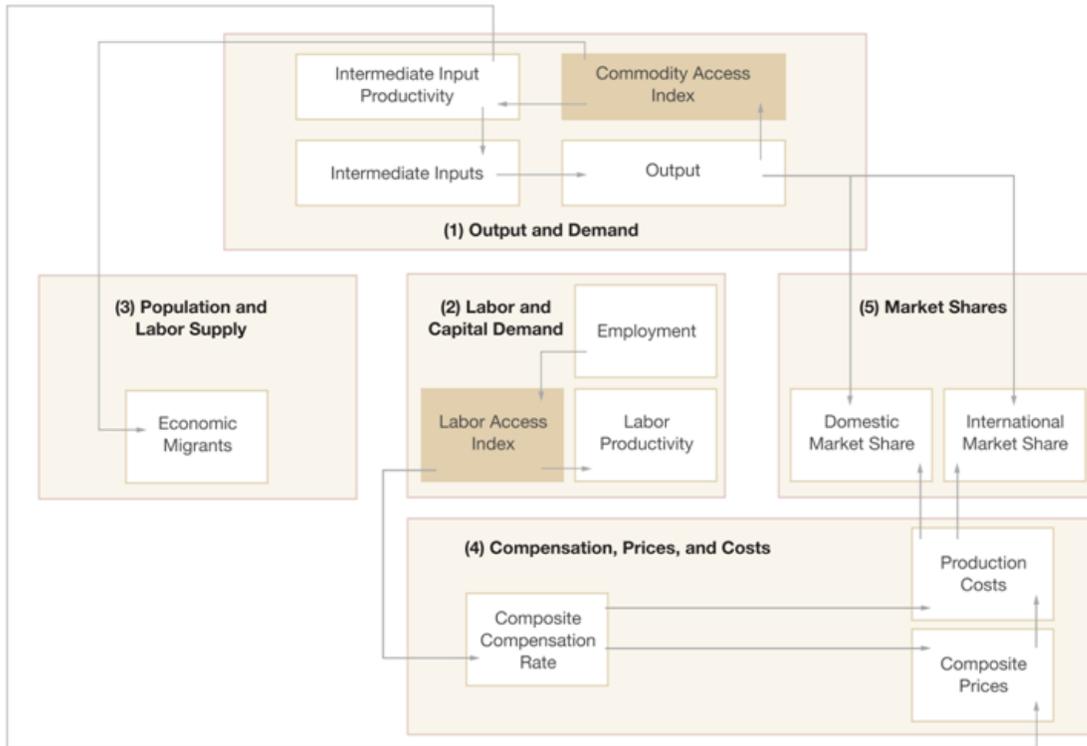
FIGURE B-1
Components of REMI Model



ECONOMIC GEOGRAPHY LINKAGE

The economic geography module (Figure B-2) explains dispersion and agglomeration effects among competing factors in urban and regional economics through two indexes in the model. The commodity index assesses the impact of increased access to intermediate inputs on increased productivity and thus a reduction in production cost. Consumers would benefit as well due to the increased access to goods and services. The labor index captures the positive impact on labor productivity and cost as access to labor with a mix of skills expands. As land price rises and congestion sets in, economic activities tend to disperse.

FIGURE B-2
Economic Geography Linkage



ASSUMPTIONS OF THE REMI MODEL

The REMI model has been built based on well-established economic theory and is updated regularly to incorporate new findings in economic theory and new historical data. Major assumptions behind the REMI model fall into the following three categories: overall, production, and population and labor. The major assumptions behind the REMI model are as follows.

Overall

1. Production costs, such as capital equipment, labor and fuel, are allowed to be substituted based on the changes in relative costs of these inputs to those in the United States. Total production costs are the sum of input costs weighted by their usage.
2. Location of a firm is driven by profitability.
3. All industries sell to both local and national markets. The model calculates the proportions of local demand that an industry can satisfy and its export share. Exports are divided into shipments from one sub-county region to the remaining regions (18 regions altogether) and sales outside of the four counties (Los Angeles, Orange, Riverside, and San Bernardino).

4. The economic geography module accounts for productivity and corresponding price effects due to access to labor and other production inputs. The labor access index (Block 2 in Figure B-2) as well as the nominal wage rate determines the composite wage rate, which, in turn, affects the cost of production along with prices of other inputs. The delivered price of a good or service is based on the cost of the commodity at the production site and the cost of delivering the commodity to the destination place. This price weights the delivered prices from all locations that ship to the home region and is calculated relative to the delivered prices in all other regions.
5. The REMI model consists of exogenous and endogenous economic variables. Values of exogenous variables are determined outside of the model. Exogenous variables are a driving force of change in the regional economy. The resulting changes are reflected in the values of endogenous variables calculated by the model. Therefore, policy changes can be simulated by changing exogenous variables whose values are developed by AQMD staff as input to the REMI model. For example, increases in demand for control equipment due to a rule can be simulated by increasing the sales of the supplier of control equipment. The impact of such a policy change includes changes in employment, among others.
6. There will be two avenues for market expansion. First, as the cost of production decreases, firms become more competitive in the export market and more competitive with imports. Second, markets are assumed to expand as a region's economy grows.

Production

1. Production costs affect regional competitiveness which impacts the shares of local and export markets. As the relative production costs increase, there will be a reduction in the proportion of local demand which can be satisfied locally as imported goods are substituted for local goods.
2. Production levels drive labor demand which interacts with labor supply to determine wage rates. Combined with other production costs, e.g., capital and fuel costs, wages determine relative production costs in the four-county region compared to the rest of the United States.
3. Production levels are determined by the total demand which consists of consumption, investment, government spending, and net exports. Employment is determined by the level of production and labor intensity, i.e., number of employees per unit of production.
4. An increase in demand will increase production by a factor greater than one because of indirect impacts.

Population and Labor

1. There are four types of migrants: international migrants, retired migrants, former military personnel, and economic migrants. These economic migrants are individuals

moving to the region for employment opportunities. They respond to both economic and amenity factors.

2. The demographic section of the model predicts the number of births and deaths that occur in the population. Labor supply is derived from the indigenous labor force and potential job migrants.
3. Labor is segmented by occupation as well as by industry. Employment within an industry is translated to occupation level employment through the use of occupational skill requirements by industry.

VERIFICATION OF THE MODEL

The REMI model for the Southern California geography was independently evaluated by the University of Pittsburgh in 1989 to determine its forecasting and simulation capabilities. The model's performance was judged to meet accepted standards of practice (Cassing and Giarratani, 1992).

ENHANCEMENTS TO THE MODEL

The District's socioeconomic assessment process is an evolving one. The assessment has expanded from impacts on directly affected industries to include employment impacts on all industries with the use of the REMI model. In 1992, enhancements were made to the REMI model to allow the assessment of impacts on different income groups and on low- versus high-wage groups.

Using the nationwide median weekly earnings of full-time workers from the 2010 Bureau of Labor Statistics (BLS) Current Population Survey (CPS), 94 occupations in the REMI model were ranked in ascending order of earnings and divided into five equal (quintile) groups. Table B-1 shows how the 94 civilian occupations were ranked.

TABLE B-1
Ranking of Occupational Earnings

Occupation	Median Weekly Earnings	Quintile Group
Other food preparation and serving related workers	\$352	1
Entertainment attendants and related workers	\$369	1
Cooks and food preparation workers	\$391	1
Other transportation workers	\$393	1
Agricultural workers	\$400	1
Textile, apparel, and furnishings occupations	\$401	1
Food and beverage serving workers	\$405	1
Fishing and hunting workers	\$416	1
Forest, conservation, and logging workers	\$416	1
Other personal care and service workers	\$419	1
Grounds maintenance workers	\$433	1
Building cleaning and pest control workers	\$444	1
Funeral service workers	\$455	1
Personal appearance workers	\$455	1
Nursing, psychiatric, and home health aides	\$457	1
Retail sales workers	\$470	1
Food processing occupations	\$476	1
Material moving occupations	\$495	1
Assemblers and fabricators	\$517	1
Other healthcare support occupations	\$520	2
Helpers, construction trades	\$521	2
Supervisors, food preparation and serving workers	\$522	2
Other protective service workers	\$528	2
Other education, training, and library occupations	\$545	2
Animal care and service workers	\$572	2
Information and record clerks	\$584	2
Woodworkers	\$599	2
Water transportation occupations	\$599	2
Financial clerks	\$601	2
Other production occupations	\$601	2
Communications equipment operators	\$619	2
Other office and administrative support workers	\$621	2
Occupational and physical therapist assistants and aides	\$622	2
Supervisors, personal care and service workers	\$622	2
Printing occupations	\$625	2
Material recording, scheduling, dispatching, and distributing occupations	\$635	2
Transportation, tourism, and lodging attendants	\$640	2

TABLE B-1 (Continued)

Occupation	Median Weekly Earnings	Quintile Group
Secretaries and administrative assistants	\$659	2
Motor vehicle operators	\$661	3
Supervisors, building and grounds cleaning and maintenance workers	\$664	3
Construction trades and related workers	\$675	3
Metal workers and plastic workers	\$694	3
Supervisors, farming, fishing, and forestry workers	\$719	3
Miscellaneous community and social service specialists	\$740	3
Supervisors, transportation and material moving workers	\$743	3
Vehicle and mobile equipment mechanics, installers, and repairers	\$744	3
Supervisors, sales workers	\$749	3
Health technologists and technicians	\$757	3
Supervisors, office and administrative support workers	\$761	3
Other teachers and instructors	\$789	3
Other sales and related workers	\$791	3
Supervisors, production workers	\$800	3
Counselors, Social workers	\$803	3
Legal support workers	\$806	3
Life, physical, and social science technicians	\$820	3
Other installation, maintenance, and repair occupations	\$820	3
Other construction and related workers	\$821	4
Media and communication equipment occupations	\$848	4
Electrical and electronic equipment mechanics, installers, and repairers	\$855	4
Librarians, curators, and archivists	\$863	4
Religious workers	\$878	4
Plant and system operators	\$881	4
Law enforcement workers	\$891	4
Drafters, engineering, and mapping technicians	\$895	4
Sales representatives, services	\$899	4
Art and design occupations	\$912	4
Primary, secondary, and special education teachers	\$918	4
Entertainers and performers, sports and related occupations	\$950	4
Supervisors, construction and extraction workers	\$955	4
First-line supervisors/managers, protective service workers	\$956	4
Media and communication occupations	\$957	4
Sales representatives, wholesale and manufacturing	\$958	4
Supervisors of installation, maintenance, and repair workers	\$964	4
Life scientists	\$968	4
Extraction workers	\$996	4

TABLE B-1 (Continued)

Occupation	Median Weekly Earnings	Quintile Group
Business operations specialists	\$1,027	5
Fire fighting and prevention workers	\$1,044	5
Other healthcare practitioners and technical occupations	\$1,078	5
Financial specialists	\$1,083	5
Health diagnosing and treating practitioners	\$1,092	5
Other management occupations	\$1,125	5
Social scientists and related occupations	\$1,144	5
Postsecondary teachers	\$1,166	5
Architects, surveyors, and cartographers	\$1,209	5
Physical scientists	\$1,225	5
Rail transportation occupations	\$1,234	5
Operations specialties managers	\$1,289	5
Computer specialists	\$1,289	5
Advertising, marketing, promotions, public relations, and sales managers	\$1,300	5
Mathematical science occupations	\$1,339	5
Air transportation occupations	\$1,365	5
Engineers	\$1,381	5
Top executives	\$1,621	5
Lawyers, judges, and related workers	\$1,729	5

The percentage changes of a policy on each quintile of earnings can thus be reported for occupational wage rate, employment, and wage bill.

The Quarterly Census of Employment and Wages (QCEW), formerly ES-202 data (excluding self-employment), from the BLS for the four-county area provides the average annual wage per worker (full-time and part-time) for the 66 private non-farm industries in the REMI model. By ranking the 66 industries in ascending order of average annual wages per worker, we can divide them into five equal groups, as shown in Table B-2:

TABLE B-2
Ranking of Compensation Rates by Sector

Sector	Average Annual Wages	Quintile Group
Private households	\$7,387	1
Real estate	\$11,125	1
Forestry and logging; Fishing, hunting, and trapping	\$14,882	1
Food services and drinking places	\$18,204	1
Personal and laundry services	\$19,147	1
Performing arts and spectator sports	\$19,239	1
Social assistance	\$20,153	1
Agriculture and forestry support activities; Other	\$21,058	1
Amusement, gambling, and recreation	\$21,730	1
Transit and ground passenger transportation	\$23,453	1
Repair and maintenance	\$25,242	1
Retail trade	\$27,135	1
Administrative and support services	\$27,785	1
Accommodation	\$30,897	2
Nursing and residential care facilities	\$31,614	2
Oil and gas extraction	\$32,075	2
Museums, historical sites, zoos, and parks	\$34,177	2
Educational services	\$34,490	2
Rental and leasing services; Lessors of nonfinancial intangible assets	\$35,172	2
Membership associations and organizations	\$37,384	2
Leather and allied product manufacturing	\$37,914	2
Truck transportation; Couriers and messengers	\$37,931	2
Construction	\$39,803	2
Apparel manufacturing	\$40,176	2
Warehousing and storage	\$41,030	2
Textile product mills	\$42,795	2
Furniture and related product manufacturing	\$42,883	3
Wood product manufacturing	\$43,528	3
Food manufacturing	\$47,928	3
Textile mills	\$48,014	3
Printing and related support activities	\$48,941	3
Scenic and sightseeing transportation; support activities	\$50,252	3
Securities, commodity contracts, investments	\$51,548	3
Ambulatory health care services	\$53,143	3
Waste management and remediation services	\$54,920	3
Professional and technical services	\$56,553	3
Plastics and rubber products manufacturing	\$56,879	3

TABLE B-2 (Continued)

Sector	Average Annual Wages	Quintile Group
Fabricated metal product manufacturing	\$57,869	3
Motion picture and sound recording industries	\$59,544	3
Nonmetallic mineral product manufacturing	\$60,007	4
Monetary authorities	\$61,682	4
Hospitals	\$63,453	4
Miscellaneous manufacturing	\$64,847	4
Wholesale trade	\$66,672	4
Insurance carriers and related activities	\$66,838	4
Mining (except oil and gas)	\$68,291	4
Machinery manufacturing	\$70,295	4
Support activities for mining	\$71,093	4
Beverage and tobacco product manufacturing	\$72,929	4
Paper manufacturing	\$73,520	4
Primary metal manufacturing	\$73,525	4
Broadcasting, except Internet; Telecommunications	\$75,030	4
Electrical equipment and appliance manufacturing	\$75,388	5
Air transportation	\$76,238	5
Publishing industries, except Internet	\$76,806	5
Motor vehicle manufacturing	\$77,869	5
Internet services and data processing; Other information services	\$79,517	5
Water transportation	\$80,369	5
Transportation equipment mfg. excl. motor vehicles	\$94,053	5
Rail transportation	\$100,255	5
Chemical manufacturing	\$103,237	5
Computer and electronic product manufacturing	\$104,116	5
Management of companies and enterprises	\$108,279	5
Utilities	\$111,659	5
Pipeline transportation	\$115,724	5
Petroleum and coal products manufacturing	\$151,997	5

The percentage change in employment, wage bill, and wage rate resulting from a policy can thus be reported for each quintile of wages, by sector.

The 2010 Consumer Expenditure Survey (CEX), published by the BLS, provides a continuous flow of information on the buying habits of American households. The CEX reports average annual expenditures and characteristics of households by income group. There are five income groups: from the households earning the top 20 percent of income to those earning the bottom 20 percent of income.

By linking consumption expenditures in the REMI model with spending patterns of the eight income groups in the CEX, we can then develop a composite price change for consumer goods for each income group.

In 1996, the REMI model for the South Coast economy had expanded from a county-based model with four counties to a sub-county model with 19 sub-county regions as Los Angeles and Orange Counties have grown denser and Riverside and San Bernardino Counties have sprawled to accommodate economic migrants. Catalina Island had since been merged with the Los Angeles Beach sub-region. The resulting 18 sub-region geography provided opportunities for the integration of economic and air quality data, resulting in a more balanced outlook of socioeconomic impacts of public policy.

APPENDIX C

**ADJUSTMENT OF THE REMI CONTROL
FORECAST**

The [Draft Final](#) 2012 AQMP uses SCAG's forecasts on population, employment, and other economic variables for future emission projections (Health and Safety Code Section 40460). The REMI model is used in the AQMP to generate a baseline forecast from which the effects of a policy are evaluated. The REMI and SCAG forecasts use different data inputs and assumptions.

The REMI model uses employment data published by the Bureau of Economic Analysis (BEA) while SCAG uses data published by the Bureau of Labor Statistics (BLS). Employment statistics released by the BLS and BEA differ because they contain different data sources and estimation procedures. BLS employment statistics are the product of the Quarterly Census of Employment and Wages (QCEW) Program, which is based on workers covered by the state unemployment insurance (UI) and unemployment compensation for federal employees (UCFE). The BEA data includes more complete coverage of employees who are not covered by the UI and UCFE and uses additional data sources to estimate employment in the farm sector, private households, private elementary and secondary schools, non-profit organizations, and so on. The BEA data is also adjusted to account for misreporting under the UI and UCFE. The BEA data include federal military jobs and a much higher estimate of the self-employed than the BLS data. The self-employed are embedded in the estimates of sectoral employment in the BEA but are listed separately from the sectoral employment in the BLS.

An audit of the District's socioeconomic analysis methods by Massachusetts Institute of Technology recommended further evaluation of the inconsistency between the REMI and SCAG forecasts (Polenske et al., 1992). The District and SCAG commissioned the Center for the Continuing Study of the California Economy (CCSCE, 1994) to determine the sources of inconsistency between these forecasts. The CCSCE recommended a three-step process to ensure consistency between REMI and SCAG forecasts:

- REMI and SCAG should use the same U.S. projections for population and employment;
- REMI and SCAG should use the same birth rates by age cohort; and
- REMI and SCAG models should use similar rates of growth for employment projections.

The 2012 release of the 70-sector REMI model was adjusted in 2012 in preparation for work on the 2012 AQMP. This version of the REMI model has the same U.S. population projections as the SCAG model (Census, 2008). REMI's U.S. employment growth is based on the BLS 2018 employment projection, which is the same data source as SCAG's employment projection. Therefore, no further adjustment to the REMI U.S. forecast is needed.

SCAG's birth rates for four race/ethnicity groups (White, Black, Hispanic, Asian & Other) and eight age cohorts for each of the four counties in a five-year interval were incorporated into the REMI model from 2008 to 2035. The five-year interval fertility rate targets were interpolated for in-between years to ensure smooth birth rate patterns. Birth rates for a particular county were used for its subregions.¹ Specifically, the percentage differences between SCAG and

¹ There are 10 subregions for Los Angeles County, four for Orange County, and two each for Riverside and San Bernardino Counties, respectively, in the REMI model.

REMI's birth rates were calculated and applied to the model using the birth rate variable within the model. The resultant birth rates are within 0.5percent of the target birth rates.

After the above adjustments the REMI and SCAG models continued to display different growth rates of employment. SCAG has employment projections at a higher aggregate industry level than REMI's. Therefore, for each five-year interval (beginning in 2008), employment by REMI industry by sub-region was calculated as a percentage of the total employment of the SCAG industry within that county where the subregions belong. Based on SCAG employment growth rates for each five-year interval, the corresponding REMI target growth rates were derived using the 2008 REMI employment data as a starting point. A trend function was developed to interpolate values for intervening years (2008-2020 and 2020-2035). The annual growth rates by industry by sub-region were entered into REMI using the Employment Update function via a multiplicative adjustment to ensure that the adjusted forecasts reflect SCAG growth rates and are incorporated into the baseline.

Additionally, REMI adjusted the population growth trends using the International Migration variable, which affects the most likely source of discrepancies in demographic estimates within California. Population of each sub-region was calculated as a share of the corresponding county. Based on the 2008 population data and projected 2020 and 2035 REMI population, and population growth rates from SCAG, a county population growth pattern was created. As with the employment adjustment, the 5-year interval population growth targets were linearly interpolated for interim years. The data was entered in a control forecast as changes to the population between 2008 and 2035.

Adjustments to the employment growth rates and population were carried out iteratively to ensure that the percentage change in employment and population for the periods of 2008-2020 and 2020-2035 was consistent between the two models at the county level.

Table C-1 shows the region-wide difference in population between 2008-2020 and 2020-2035 for the unadjusted and adjusted REMI and SCAG forecasts. Table C-2 compares the employment growth rates between the unadjusted and adjusted REMI and SCAG forecasts for the periods of 2008-2020 and 2020-2035. The difference of the employment growth rates of the two forecasts is less than one percentage point for the four-county region.

Table C-1
Unadjusted and Adjusted REMI versus SCAG Population Comparison
(in percent growth rate)

	2008-2020			2020-2035		
	Unadjusted REMI	Adjusted REMI	SCAG	Unadjusted REMI	Adjusted REMI	SCAG
Los Angeles	8.60%	6.80%	6.40%	10.30%	9.10%	9.10%
Orange	13.50%	9.50%	9.30%	13.60%	5.00%	4.60%
Riverside	28.70%	23.50%	23.00%	22.90%	29.10%	29.20%
San Bernardino	11.50%	12.90%	13.20%	13.40%	20.60%	20.50%
4-County Total	12.30%	10.10%	9.80%	13.10%	12.50%	12.60%

TABLE C-2
 Unadjusted and Adjusted REMI versus SCAG Employment Comparison
 (in percent growth rate)

	2008-2020			2020-2035		
	Unadjusted REMI	Adjusted REMI	SCAG	Unadjusted REMI	Adjusted REMI	SCAG
Los Angeles	17.70%	5.30%	5.00%	13.90%	6.20%	5.90%
Orange	18.70%	0.10%	0.10%	14.90%	8.80%	9.40%
Riverside	24.20%	39.10%	40.20%	20.60%	33.20%	32.80%
San Bernardino	16.30%	17.20%	16.90%	14.60%	28.60%	29.30%
4-County Total	18.40%	8.40%	8.20%	14.80%	12.10%	12.20%

APPENDIX D

| ANNUAL COST, BENEFIT AND JOB IMPACTS

Costs of Measures (in millions of 2005\$)*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Avg Ann (2013- 2035)	
All Draft Plan Measures	359	1246	1114	1119	510	766	787	566	381	462	481	330	331	357	294	253	1763	227	214	209	204	205	205	231	206	206	448	
PM _{2.5} Measures	359	1246	1114	1096	484	720	727	478	263	318	319	159	154	150	118	90	1626	90	90	90	90	90	90	90	90	90	90	327
Ozone Measures	0	0	0	23	26	46	61	88	119	144	161	172	177	207	175	163	138	137	124	119	115	115	115	141	116	116	122	
Alt 2	359	1246	1114	1119	510	765	791	570	384	465	484	333	333	359	296	255	1765	229	216	211	206	206	206	232	207	207	450	
Alt 3	359	1246	1114	1119	557	860	929	755	617	640	601	392	335	357	294	253	1763	227	214	209	204	205	205	231	206	206	495	

Job Impacts of Measures (in number of jobs)*

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Avg Ann (2013- 2035)
All Draft Plan Measures	15916	-4428	-7594	-14093	731	-3582	-3770	1639	1891	-4855	-5042	15999	-2800	-1929	-5557	-5423	-17913	-4561	-4131	-3438	-2936	-3157	-3040	-3030	-2952	-2955	-3257
PM _{2.5} Measures	15916	-4428	-7594	-14193	706	-4271	-4219	1150	1387	-4659	-4269	17722	-717	527	-1982	-1785	-14369	-1266	-1229	-837	-632	-946	-883	-842	-834	-820	-1620
Ozone Measures	0	0	0	100	26	690	447	488	504	-197	-776	-1721	-2084	-2457	-3576	-3640	-3549	-3299	-2903	-2604	-2307	-2215	-2161	-2192	-2124	-2142	-1639
Alt 2	15916	-4428	-7594	-14087	734	-3651	-3887	1511	1759	-4990	-5125	15906	-2903	-2041	-5611	-5495	-18001	-4660	-4234	-3527	-2998	-3209	-3083	-3068	-2988	-3026	-3334
Alt 3	15916	-4428	-7594	-14081	828	-4431	-5699	-1474	-2449	-11163	-10709	11419	-6051	-3518	-5087	-4748	-17152	-3803	-4422	-4265	-3704	-3865	-3682	-3605	-3416	-3359	-4715

*Cost and job impacts prior to 2013 reflect TCM projects that took place at the time.

DRAFT FINAL 2012 AQMP SOCIOECONOMIC REPORT

Clean Air Benefits (in millions of 2005\$)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Avg Annual (2014-2035)		
Health Benefits																									
Draft Plan	4120	3851	3582	3312	3043	2774	2504	2235	1966	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	2247	
Alt2				1098	1198	1298	1397	1497	1597	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1370	
Alt3				7761	6750	5739	4729	3718	2707	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	1696	2430	
Visibility Benefits																									
Draft Plan	1274	1204	1135	1065	996	926	857	787	718	649	613	578	542	506	471	435	400	411	422	432	443	454	454	696	
Alt2				277	385	493	601	709	817	649	613	578	542	506	471	435	400	411	422	432	443	454	454	438	
Alt3				2294	2402	2510	2618	2726	2834	649	613	578	542	506	471	435	400	411	422	432	443	454	454	988	
Material Benefits																									
Draft Plan	35	33	30	32	25	23	20	18	15	13	12	10	9	8	6	5	4	4	4	4	3	3	3	14	
Alt2				3	10	11	11	12	12	13	12	10	9	8	6	5	4	4	4	4	4	3	3	7	
Alt3				14	38	33	28	23	18	13	12	10	9	8	6	5	4	4	4	4	3	3	11		
Congestion Total																									
VMT	519	1200	1882	2563	3245	3926	4608	5296	5984	6673	7361	8050	8738	9426	10115	10803	11491	12180	12868	13557	14245	14933	14933	7712	
VMT	161	242	323	404	484	565	646	727	808	889	970	1051	1132	1213	1294	1375	1456	1537	1618	1699	1780	1861	1942	1942	739
VHT	358	958	1559	2160	2760	3361	3962	4619	5276	5933	6591	7248	7905	8562	9220	9877	10534	11191	11849	12506	13163	13820	13820	6973	
Total Benefit																									
Draft Plan	5948	6288	6628	6973	7309	7649	7989	8336	8683	9031	9682	10334	10985	11637	12288	12940	13592	14291	14990	15689	16388	17087	17087	10670	
Alt2	519	1200	1882	3941	4838	5728	6617	7514	8411	9031	9682	10334	10985	11637	12288	12940	13592	14291	14990	15689	16388	17087	17087	9526	
Alt3	519	1200	1882	12632	12435	12208	11982	11763	11544	9031	9682	10334	10985	11637	12288	12940	13592	14291	14990	15689	16388	17087	17087	11141	

Job Impacts of Clean Air Benefits (in number of jobs)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Avg Annual (2014-2035)	
Health Benefits																								
Draft Plan	774	1314	1809	2279	2714	3132	3456	3736	3968	4146	4319	4471	4602	4721	4833	4933	5002	5072	5133	5183	5200	5214	5214	3910
Alt2	0	0	0	205	368	545	723	918	1127	1347	1560	1764	1960	2147	2333	2514	2677	2845	3008	3162	3304	3438	3438	1634
Alt3	0	0	0	1464	2384	3155	3729	4192	4533	4739	4966	5157	5310	5431	5540	5638	5717	5804	5879	5932	5955	5963	5963	4159
Visibility Benefits																								
Draft Plan	1008	1628	2206	2769	3305	3846	4278	4674	5021	5313	5579	5799	5979	6130	6257	6350	6388	6436	6468	6487	6470	6445	6445	4947
Alt2	0	0	0	204	430	713	1032	1407	1836	2131	2432	2711	2965	3196	3405	3589	3734	3895	4048	4192	4323	4445	4445	2304
Alt3	0	0	0	1666	2882	4173	5445	6811	8251	9242	10648	12021	13144	14025	14663	15073	15353	15597	15797	15953	16065	16133	16163	6898
Material Benefits																								
Draft Plan	133	139	143	146	153	164	173	182	188	191	196	200	201	202	201	199	195	194	191	189	185	181	181	179
Alt2	0	0	0	26	32	42	49	58	66	75	82	85	88	90	91	93	93	95	97	99	100	102	102	67
Alt3	0	0	0	115	122	133	140	146	150	152	158	162	164	166	167	166	165	165	165	166	163	162	162	133
Congestion																								
Draft Plan	348	804	1761	3186	4973	7266	9806	12938	16469	20371	24604	29081	33776	38754	44088	49676	55267	61464	67791	74314	81011	87843	87843	32986
Total Clean Air Benefit																								
Draft Plan	2262	3889	5933	8404	11181	14458	17783	21617	25748	30146	34839	39705	44730	49999	55592	61386	67202	73432	79864	86467	93180	100016	100016	42174
Alt2	348	804	1761	3622	5809	8572	11628	15351	19540	23982	28750	33731	38896	44313	50062	56029	62048	68490	75149	81987	88977	96080	96080	37088
Alt3	348	804	1761	6438	10397	14796	19234	24250	29619	33742	38635	43696	48857	54188	59790	65573	71370	77596	84019	90581	97260	104016	104016	44408

Job Impacts for Combined Costs & Benefits

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	AVG (2013-2035)
Draft Plan	15799	-4554	-7634	-13964	2988	300	2150	10021	13047	9576	12710	37561	22922	28187	29250	34246	26788	45368	51390	57872	64188	70194	76740	83354	90138	96968	37043
Alternative 2	15799	-4555	-7634	-13958	1080	-2851	-2132	5124	7553	3563	6480	31216	16616	21914	23110	28204	20866	39585	45755	52424	58969	65199	71981	78833	85899	92961	32104
Alternative 3	15799	-4555	-7634	-13952	1174	-3631	-3943	4947	7921	3600	8480	35586	23519	30170	33493	38892	31659	50295	55278	61214	67568	73633	80235	86874	93738	100548	37709

APPENDIX E

SCAG TRANSPORTATION CONTROL MEASURES

TABLE E-1
TCM Committed or TCM Project Listing Report for 2011 FTIP

county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 17	12/31/2011	207838	TCRF	2003/2004	10136	5028	0
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 1	12/31/2011	207838	STCASHR	2004/2005	4440	13685	0
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 1	12/31/2011	207838	TCRF	2006/2007	0	25087	0
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 1	12/31/2011	207838	PC25	2007/2008	2238	0	0
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 17	12/31/2011	207838	STPL-R	2007/2008	9133	0	0
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 1	12/31/2011	207838	AR-RSTP	2008/2009	0	0	15420
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 1	12/31/2011	207838	CMAQ	2008/2009	0	0	27360
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 1	12/31/2011	207838	PC25	2008/2009	0	11000	11837
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 17	12/31/2011	207838	SLP	2008/2009	0	0	25075
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 17	12/31/2011	207838	STCASHR	2008/2009	1929	0	41801
LA	LA000357	LA000357	CALTRANS	0	TCM Committed	CAR62	5	Route 005: --- FROM ROUTE 17	12/31/2011	207838	STPL-R	2008/2009	650	0	3019
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	PC25	2001/2002	1269	0	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	STCASHI	2001/2002	211	0	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	STCASHR	2002/2003	16171	0	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	STCASHI	2003/2004	822	0	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	PC25	2004/2005	12424	0	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	STCASHI	2005/2006	9203	0	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	STCASHR	2006/2007	3000	850	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	PC25	2007/2008	0	21710	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	STCASHI	2007/2008	0	2780	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	STCASHR	2007/2008	0	1060	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	CMAQ	2008/2009	0	0	13289
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	DEMOSTL	2008/2009	0	0	400
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	PC25	2008/2009	16000	2895	65815
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	AR-RSTP	2009/2010	0	0	25000
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	CMAQ	2009/2010	0	0	69000
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	STPL-R	2009/2010	0	0	40000
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	PC25	2010/2011	8000	30905	3700
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	STC-RIPP	2010/2011	0	35440	0
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	CMIA	2011/2012	0	0	73000
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	PC25	2011/2012	0	0	117522
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	SLP	2011/2012	0	0	20000
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 13	12/31/2014	712274	STIPACIP	2011/2012	350	780	2185
LA	LA000358	LA000358	CALTRANS	6	TCM Committed	CAN69	5	Route 005: --- FROM ROUTE 1	12/31/2014	712274	STIPACRP	2011/2012	2000	80	116413
LA	LA000548	LA000548	CALTRANS	17	TCM Committed	CAN69	10	Route 10: FROM PUENTE TO C	2/12/2016	184522	TCRF	2001/2002	157	0	0
LA	LA000548	LA000548	CALTRANS	17	TCM Committed	CAN69	10	Route 10: FROM PUENTE TO C	2/12/2016	184522	STCASGI	2004/2005	1228	0	0
LA	LA000548	LA000548	CALTRANS	17	TCM Committed	CAN69	10	Route 10: FROM PUENTE TO C	2/12/2016	184522	STCASHI	2009/2010	0	304	0
LA	LA000548	LA000548	CALTRANS	17	TCM Committed	CAN69	10	Route 10: FROM PUENTE TO C	2/12/2016	184522	STCASHP	2009/2010	12500	22000	0
LA	LA000548	LA000548	CALTRANS	17	TCM Committed	CAN69	10	Route 10: FROM PUENTE TO C	2/12/2016	184522	CMAQ	2011/2012	0	0	45000

DRAFT FINAL 2012 AQMP SOCIOECONOMIC REPORT

county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LA000548	LA000548	CALTRANS	17	TCM Committed	CAN69	10	Route 10: FROM PUENTE TO C	2/12/2016	184522	CMIA	2011/2012	0	0	26100
LA	LA000548	LA000548	CALTRANS	17	TCM Committed	CAN69	10	Route 10: FROM PUENTE TO C	2/12/2016	184522	STIPACIP	2011/2012	0	0	5691
LA	LA000548	LA000548	CALTRANS	17	TCM Committed	CAN69	10	Route 10: FROM PUENTE TO C	2/12/2016	184522	STIPACRP	2011/2012	0	0	3642
LA	LA000548	LA000548	CALTRANS	17	TCM Committed	CAN69	10	Route 10: FROM PUENTE TO C	2/12/2016	184522	CMAQ	2013/2014	0	0	67900
LA	LA002738	LA002738	LOS ANGELE	0	TCM Committed	NCR26	0	BIKEWAY/PEDESTRIAN BRIDGE	7/31/2015	5000	LTF	2006/2007	149	0	0
LA	LA002738	LA002738	LOS ANGELE	0	TCM Committed	NCR26	0	BIKEWAY/PEDESTRIAN BRIDGE	7/31/2015	5000	STPE-R	2006/2007	744	0	0
LA	LA002738	LA002738	LOS ANGELE	0	TCM Committed	NCR26	0	BIKEWAY/PEDESTRIAN BRIDG	7/31/2015	5000	LTF	2010/2011	0	0	351
LA	LA002738	LA002738	LOS ANGELE	0	TCM Committed	NCR26	0	BIKEWAY/PEDESTRIAN BRIDG	7/31/2015	5000	STPE-P	2010/2011	0	0	3756
LA	LA01342	LA01342	CALTRANS	0	TCM Committed	CAN69	10	Route 010: RT 10 FROM RT 60	10/28/2013	200064	PC25	2004/2005	960	0	0
LA	LA01342	LA01342	CALTRANS	0	TCM Committed	CAN69	10	Route 010: RT 10 FROM RT 60	10/28/2013	200064	STCASHR	2005/2006	12848	25453	0
LA	LA01342	LA01342	CALTRANS	0	TCM Committed	CAN69	10	Route 010: RT 10 FROM RT 60	10/28/2013	200064	TCRF	2005/2006	2749	25100	0
LA	LA01342	LA01342	CALTRANS	0	TCM Committed	CAN69	10	Route 010: RT 10 FROM RT 60	10/28/2013	200064	CMAQ	2007/2008	0	0	61851
LA	LA01342	LA01342	CALTRANS	0	TCM Committed	CAN69	10	Route 010: RT 10 FROM RT 60	10/28/2013	200064	STCASHR	2007/2008	0	5210	0
LA	LA01342	LA01342	CALTRANS	0	TCM Committed	CAN69	10	Route 010: RT 10 FROM RT 60	10/28/2013	200064	STCASHP	2008/2009	0	0	65893
LA	LA0B311	LA0B311	FOOTHILL TR	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	5307LA	2007/2008	0	0	1800
LA	LA0B311	LA0B311	FOOTHILL TR	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	5309c	2007/2008	0	0	5267
LA	LA0B311	LA0B311	FOOTHILL T	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	PC5	2008/2009	0	0	500
LA	LA0B311	LA0B311	FOOTHILL T	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	STA	2008/2009	0	0	200
LA	LA0B311	LA0B311	FOOTHILL T	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	5309c	2010/2011	0	0	2635
LA	LA0B311	LA0B311	FOOTHILL TR	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	GEN	2010/2011	0	0	2500
LA	LA0B311	LA0B311	FOOTHILL TR	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	PTMISEA	2010/2011	0	0	3272
LA	LA0B311	LA0B311	FOOTHILL TR	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	TDA	2010/2011	0	0	1613
LA	LA0B311	LA0B311	FOOTHILL TR	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	5307LA	2011/2012	0	0	16365
LA	LA0B311	LA0B311	FOOTHILL T	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	GEN	2011/2012	0	0	1000
LA	LA0B311	LA0B311	FOOTHILL T	24	TCM	TDN64	0	Park and Ride Facilities (Transi	12/31/2013	42175	PTMISEA	2011/2012	0	0	7023
LA	LA0B7330	1NL04	LOS ANGELE	0	TCM Committed	NCR26	0	SAN FERNANDO RD ROW BIKE	11/30/2011	10198	5307LA	2003/2004	0	0	2302
LA	LA0B7330	1NL04	LOS ANGELE	0	TCM Committed	NCR26	0	SAN FERNANDO RD ROW BIKE	11/30/2011	10198	LTF	2005/2006	0	0	575
LA	LA0B7330	1NL04	LOS ANGELE	0	TCM Committed	NCR26	0	SAN FERNANDO RD ROW BIKE	11/30/2011	10198	LTF	2006/2007	0	0	881
LA	LA0B7330	1NL04	LOS ANGELE	0	TCM Committed	NCR26	0	SAN FERNANDO RD ROW BIKE	11/30/2011	10198	STPL-R	2007/2008	0	0	3524
LA	LA0B7330	1NL04	LOS ANGELE	0	TCM Committed	NCR26	0	SAN FERNANDO RD ROW BIKE	11/30/2011	10198	LTF	2009/2010	0	0	2916
LA	LA0B875	LA0B875	CALTRANS	17	TCM Committed	CAN69	10	Route 10: HOV LANES FROM C	3/15/2016	192643	TCRF	2001/2002	143	0	0
LA	LA0B875	LA0B875	CALTRANS	17	TCM Committed	CAN69	10	Route 10: HOV LANES FROM C	3/15/2016	192643	CMAQ	2004/2005	500	0	0
LA	LA0B875	LA0B875	CALTRANS	17	TCM Committed	CAN69	10	Route 10: HOV LANES FROM C	3/15/2016	192643	STCASHR	2007/2008	14500	0	0
LA	LA0B875	LA0B875	CALTRANS	17	TCM Committed	CAN69	10	Route 10: HOV LANES FROM C	3/15/2016	192643	STC-RIPP	2010/2011	0	9500	0
LA	LA0B875	LA0B875	CALTRANS	17	TCM Committed	CAN69	10	Route 10: HOV LANES FROM C	3/15/2016	192643	PC40	2011/2012	0	0	40000
LA	LA0B875	LA0B875	CALTRANS	17	TCM Committed	CAN69	10	Route 10: HOV LANES FROM C	3/15/2016	192643	PC40	2012/2013	0	0	75000
LA	LA0B875	LA0B875	CALTRANS	17	TCM Committed	CAN69	10	Route 10: HOV LANES FROM C	3/15/2016	192643	PC40	2013/2014	0	0	29941
LA	LA0B875	LA0B875	CALTRANS	17	TCM Committed	CAN69	10	Route 10: HOV LANES FROM C	3/15/2016	192643	STIPACRP	2014/2015	0	0	23059
LA	LA0B951	LA0B951	CALTRANS	17	TCM Committed	CAR62	71	Route 71: ROUTE 10 TO ROUT	10/24/2023	250000	TCRF	2004/2005	4800	0	0
LA	LA0B951	LA0B951	CALTRANS	17	TCM Committed	CAR62	71	Route 71: ROUTE 10 TO ROUT	10/24/2023	250000	NH	2005/2006	1592	0	0
LA	LA0B951	LA0B951	CALTRANS	17	TCM Committed	CAR62	71	Route 71: ROUTE 10 TO ROUT	10/24/2023	250000	TCRF	2012/2013	7000	0	0
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	CMAQ	2005/2006	8300	7300	0

Appendix E SCAG Transportation Control Measures

county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	TCRF	2005/2006	0	0	249800
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	AGENCY	2006/2007	0	14900	10000
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	AGENCY	2007/2008	0	0	11200
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	PTA-RIP	2007/2008	0	0	314653
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	PTMISEA	2007/2008	0	0	58500
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	5309c	2008/2009	0	0	475
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	LTF	2008/2009	0	0	7525
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	CMAQ	2009/2010	0	0	30000
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	LTF	2009/2010	0	0	68009
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	PTMISEA	2009/2010	0	0	63126
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	STPL-R	2009/2010	0	0	70000
LA	LA0C10	LA0C10	LOS ANGELE	8	TCM Committed	LRN92	0	MID-CITY/EXPOSITION CORRID	12/31/2012	930562	PTMISEA	2011/2012	0	0	16774
LA	LA0C57	LA0C57	PICO RIVERA	0	TCM Committed	CAN61	0	ACE/GATEWAY CITIES-CONSTR	12/31/2010	44530	TCRF	2007/2008	0	16200	0
LA	LA0C57	LA0C57	PICO RIVERA	0	TCM Committed	CAN61	0	ACE/GATEWAY CITIES-CONSTR	12/31/2010	44530	CITY	2008/2009	0	0	2170
LA	LA0C57	LA0C57	PICO RIVERA	0	TCM Committed	CAN61	0	ACE/GATEWAY CITIES-CONSTR	12/31/2010	44530	DEMOTL	2008/2009	0	0	2960
LA	LA0C57	LA0C57	PICO RIVERA	0	TCM Committed	CAN61	0	ACE/GATEWAY CITIES-CONSTR	12/31/2010	44530	TCRF	2008/2009	0	0	3500
LA	LA0C8114	LA0C8114	LOS ANGELE	0	TCM Committed	TDM20	0	LA CNTY RIDESHARE SERVICES	12/30/2016	82560	PC25	2004/2005	0	0	5300
LA	LA0C8114	LA0C8114	LOS ANGELE	0	TCM Committed	TDM20	0	LA CNTY RIDESHARE SERVICES	12/30/2016	82560	ST-CASH	2005/2006	0	0	4900
LA	LA0C8114	LA0C8114	LOS ANGELE	0	TCM Committed	TDM20	0	LA CNTY RIDESHARE SERVICES	12/30/2016	82560	PC25	2007/2008	0	0	5400
LA	LA0C8114	LA0C8114	LOS ANGELE	0	TCM Committed	TDM20	0	LA CNTY RIDESHARE SERVICES	12/30/2016	82560	PC25	2008/2009	0	0	5400
LA	LA0C8114	LA0C8114	LOS ANGELE	0	TCM Committed	TDM20	0	LA CNTY RIDESHARE SERVICES	12/30/2016	82560	PC25	2009/2010	0	0	4561
LA	LA0C8114	LA0C8114	LOS ANGELE	0	TCM Committed	TDM20	0	LA CNTY RIDESHARE SERVICES	12/30/2016	82560	PC25	2010/2011	0	0	4999
LA	LA0C8164	LA0C8164	LOS ANGELE	12	TCM Committed	NCN26	0	EXPOSITION BLVD RIGHT-OF-W	2/2/2012	14710	LTF	2005/2006	26	0	199
LA	LA0C8164	LA0C8164	LOS ANGELE	12	TCM Committed	NCN26	0	EXPOSITION BLVD RIGHT-OF-W	2/2/2012	14710	STPE-R	2006/2007	110	0	0
LA	LA0C8164	LA0C8164	LOS ANGELE	12	TCM Committed	NCN26	0	EXPOSITION BLVD RIGHT-OF-W	2/2/2012	14710	LTF	2008/2009	39	0	0
LA	LA0C8164	LA0C8164	LOS ANGELE	12	TCM Committed	NCN26	0	EXPOSITION BLVD RIGHT-OF-W	2/2/2012	14710	5307-TR	2011/2012	300	0	0
LA	LA0C8164	LA0C8164	LOS ANGELE	12	TCM Committed	NCN26	0	EXPOSITION BLVD RIGHT-OF-W	2/2/2012	14710	LTF	2011/2012	0	0	2808
LA	LA0C8164	LA0C8164	LOS ANGELE	12	TCM Committed	NCN26	0	EXPOSITION BLVD RIGHT-OF-W	2/2/2012	14710	STPE-R	2011/2012	0	0	11228
LA	LA0C8237	LA0C8237	LONG BEAC	24	TCM	TDR64	0	LONG BEACH PARK AND RIDE	6/30/2014	3902	AGENCY	2010/2011	76	89	604
LA	LA0C8237	LA0C8237	LONG BEAC	24	TCM	TDR64	0	LONG BEACH PARK AND RIDE	6/30/2014	3902	PC10	2010/2011	305	354	2474
LA	LA0C8380	LA0C8380	LOS ANGELE	0	TCM Committed	TRRH6	0	CHINATOWN/COLLEGE STREET	12/31/2012	18190	5309c	2005/2006	0	0	1500
LA	LA0C8380	LA0C8380	LOS ANGELE	0	TCM Committed	TRRH6	0	CHINATOWN/COLLEGE STREE	12/31/2012	18190	CITY	2005/2006	1000	0	0
LA	LA0C8380	LA0C8380	LOS ANGELE	0	TCM Committed	TRRH6	0	CHINATOWN/COLLEGE STREE	12/31/2012	18190	DEMOT21	2005/2006	0	0	1500
LA	LA0C8380	LA0C8380	LOS ANGELE	0	TCM Committed	TRRH6	0	CHINATOWN/COLLEGE STREE	12/31/2012	18190	FEE	2005/2006	0	0	3500
LA	LA0C8380	LA0C8380	LOS ANGELE	0	TCM Committed	TRRH6	0	CHINATOWN/COLLEGE STREE	12/31/2012	18190	LTF	2005/2006	0	0	4600
LA	LA0C8380	LA0C8380	LOS ANGELE	0	TCM Committed	TRRH6	0	CHINATOWN/COLLEGE STREET	12/31/2012	18190	PVT	2005/2006	0	3000	0
LA	LA0C8380	LA0C8380	LOS ANGELE	0	TCM Committed	TRRH6	0	CHINATOWN/COLLEGE STREET	12/31/2012	18190	STPL-R	2005/2006	0	0	3090
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	5339	2009/2010	1200	0	0
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	5309c	2009/2010	7113	0	0
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	MEA_R	2009/2010	4100	0	0
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	PC25	2009/2010	1937	0	0
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	STP-RIP	2009/2010	142	0	0

DRAFT FINAL 2012 AQMP SOCIOECONOMIC REPORT

county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	MEA_R	2010/2011	13300	0	0
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	PC25	2010/2011	18100	0	0
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	STP-RIP	2010/2011	2200	0	0
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	TIGER	2010/2011	20000	0	0
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	MEA_R	2011/2012	9800	0	20700
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	PTMISEA	2011/2012	7300	21000	0
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	PC25	2012/2013	3200	0	47500
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	PTMISEA	2012/2013	64800	108000	0
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	MEA_R	2013/2014	0	0	258400
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	CMAQ	2014/2015	0	0	14200
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	MEA_R	2014/2015	0	0	260400
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	CITY	2015/2016	0	0	51400
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	CMAQ	2015/2016	0	0	74000
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	MEA_R	2015/2016	0	0	94400
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	PC25	2015/2016	0	0	63000
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	PC25	2016/2017	0	0	10000
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	TIFIA	2016/2017	0	0	545900
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	PC25	2017/2018	0	0	9700
LA	LA0D198	LA0D198	LOS ANGELE	6	TCM Committed	LRN92	0	CRENSHAW/LAX TRANSIT COR	12/31/2018	1733188	PC25	2018/2019	0	0	1396
LA	LA0D206	REG0702	COVINA	7	TCM Committed	PLN40	0	METROLINK PEDESTRIAN BRID	12/31/2012	469	DEMOT21	2010/2011	375	0	0
LA	LA0D206	REG0702	COVINA	7	TCM Committed	PLN40	0	METROLINK PEDESTRIAN BRID	12/31/2012	469	PVT	2010/2011	94	0	0
LA	LA0D372	LA0D372	PASADENA	0	TCM Committed	CANT4	0	SOUTH ACCESS PEDESTRIAN B	9/30/2012	8000	CITY	2003/2004	610	0	0
LA	LA0D372	LA0D372	PASADENA	0	TCM Committed	CANT4	0	SOUTH ACCESS PEDESTRIAN B	9/30/2012	8000	CITY	2004/2005	100	0	0
LA	LA0D372	LA0D372	PASADENA	0	TCM Committed	CANT4	0	SOUTH ACCESS PEDESTRIAN B	9/30/2012	8000	CITY	2008/2009	390	800	0
LA	LA0D372	LA0D372	PASADENA	0	TCM Committed	CANT4	0	SOUTH ACCESS PEDESTRIAN B	9/30/2012	8000	5309c	2010/2011	0	0	1600
LA	LA0D372	LA0D372	PASADENA	0	TCM Committed	CANT4	0	SOUTH ACCESS PEDESTRIAN B	9/30/2012	8000	AGENCY	2010/2011	0	0	2400
LA	LA0D372	LA0D372	PASADENA	0	TCM Committed	CANT4	0	SOUTH ACCESS PEDESTRIAN B	9/30/2012	8000	CITY	2010/2011	0	0	600
LA	LA0D372	LA0D372	PASADENA	0	TCM Committed	CANT4	0	SOUTH ACCESS PEDESTRIAN B	9/30/2012	8000	PC40	2010/2011	0	0	1500
LA	LA0D47	1ITS04	PASADENA	0	TCM Committed	ITS14	0	SR 710 MITIGATION PROJECT-	12/30/2008	9575	5394	2003/2004	1272	0	7205
LA	LA0D47	1ITS04	PASADENA	0	TCM Committed	ITS14	0	SR 710 MITIGATION PROJECT-	12/30/2008	9575	CITY	2003/2004	21	0	119
LA	LA0D47	1ITS04	PASADENA	0	TCM Committed	ITS14	0	SR 710 MITIGATION PROJECT-	12/30/2008	9575	PC25	2003/2004	144	0	814
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	STCASGI	2003/2004	42654	15115	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWAL	12/1/2016	1241757	STCASHI	2003/2004	12599	0	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	STCASHR	2005/2006	1068	408	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	TCRF	2005/2006	6000	0	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	PC25	2006/2007	7213	1589	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWAL	12/1/2016	1241757	CMIA	2010/2011	0	0	72291
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWAL	12/1/2016	1241757	DEMOSTL	2010/2011	0	832	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWAL	12/1/2016	1241757	PC25	2010/2011	3480	134456	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	PC40	2010/2011	0	0	11400
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWAL	12/1/2016	1241757	STIPACRP	2010/2011	0	135804	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWAL	12/1/2016	1241757	TCRF	2010/2011	0	18200	0

Appendix E SCAG Transportation Control Measures

county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	CMIA	2011/2012	0	0	314709
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	STCASHI	2011/2012	1233	0	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWAL	12/1/2016	1241757	TCRF	2011/2012	0	21468	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWAL	12/1/2016	1241757	CMAQ	2012/2013	0	0	36039
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	PC25	2012/2013	0	0	118942
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	SLP	2012/2013	0	0	62656
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	STIPACIP	2012/2013	0	0	22784
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWAL	12/1/2016	1241757	STIPACRP	2012/2013	0	89757	1728
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	TCRF	2012/2013	0	19833	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	CMAQ	2013/2014	0	0	30000
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWA	12/1/2016	1241757	TCRF	2013/2014	0	19833	0
LA	LA0D73	LA0D73	CALTRANS	17	TCM Committed	CAN69	5	Route 5: LA MIRADA, NORWAL	12/1/2016	1241757	TCRF	2014/2015	0	39666	0
LA	LA0F096	1NLO4	SANTA FE SP	11	TCM Committed	TDR64	0	NORWALK SANTA FE SPRINGS	8/23/2011	4057	5309c	2007/2008	0	1226	0
LA	LA0F096	1NLO4	SANTA FE SP	11	TCM Committed	TDR64	0	NORWALK SANTA FE SPRINGS	8/23/2011	4057	PC10	2007/2008	0	400	0
LA	LA0F096	1NLO4	SANTA FE SP	11	TCM Committed	TDR64	0	NORWALK SANTA FE SPRINGS	8/23/2011	4057	CITY	2008/2009	0	306	0
LA	LA0F096	1NLO4	SANTA FE SP	11	TCM Committed	TDR64	0	NORWALK SANTA FE SPRINGS	8/23/2011	4057	PC10	2008/2009	0	0	672
LA	LA0F096	1NLO4	SANTA FE SP	11	TCM Committed	TDR64	0	NORWALK SANTA FE SPRINGS	8/23/2011	4057	5309c	2010/2011	475	0	0
LA	LA0F096	1NLO4	SANTA FE SP	11	TCM Committed	TDR64	0	NORWALK SANTA FE SPRINGS	8/23/2011	4057	PC10	2010/2011	0	0	978
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	CITY	2009/2010	3800	0	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	FEE	2009/2010	200	0	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	STP-RIP	2009/2010	1900	0	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	CITY	2010/2011	27500	0	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	STAL-S	2010/2011	11100	0	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	5309b	2011/2012	51800	0	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	CITY	2011/2012	10000	0	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	PTMISEA	2011/2012	24300	0	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	STAL-S	2011/2012	200	0	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	5309b	2012/2013	0	0	71800
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	CITY	2012/2013	0	3600	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	STAL-S	2012/2013	0	44300	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	5309b	2013/2014	0	0	67900
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	CITY	2013/2014	0	0	3400
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	PTMISEA	2013/2014	0	0	35400
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	STAL-S	2013/2014	0	6400	0
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	5309b	2014/2015	0	0	148900
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	CITY	2014/2015	0	0	7400
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	MEA_R	2014/2015	0	0	73100
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	PTMISEA	2014/2015	0	0	14100
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	STAL-S	2014/2015	0	0	4700
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	5309b	2015/2016	0	0	170200
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	CITY	2015/2016	0	0	8500
LA	LA0G010	1TRO404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	MEA_R	2015/2016	0	0	74300

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county	project_id	RTP	agency	amendment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LA0G010	1TR0404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	PTMISEA	2015/2016	0	0	7900
LA	LA0G010	1TR0404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	STAL-S	2015/2016	0	0	22700
LA	LA0G010	1TR0404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	5309b	2016/2017	0	0	309100
LA	LA0G010	1TR0404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	CITY	2016/2017	0	0	55600
LA	LA0G010	1TR0404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	MEA_R	2016/2017	0	0	12600
LA	LA0G010	1TR0404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	PTMISEA	2016/2017	0	0	67900
LA	LA0G010	1TR0404	LOS ANGELE	1	TCM Committed	RAN92	0	Regional Connector - Light Rai	12/31/2019	1366100	STAL-S	2016/2017	0	0	25500
LA	LA0G139	1HL08D01	LOS ANGELE	3	TCM Committed	CAX69	10	LACRD - Expand capacity of th	12/31/2011	3200	CRD	2010/2011	0	0	3200
LA	LA0G142	LA0G142	FOOTHILL TR	24	TCM	BUN94	0	LACRD - 12 buses for the I-10	12/31/2012	8500	5307LA	2010/2011	0	0	6240
LA	LA0G142	LA0G142	FOOTHILL T	24	TCM	BUN94	0	LACRD - 12 buses for the I-10	12/31/2012	8500	AGENCY	2010/2011	0	0	1560
LA	LA0G145	1TR204	TORRANCE	0	TCM Committed	BUN94	0	LACRD - 4 Expansion Buses for	12/31/2010	2800	5307LA	2008/2009	0	0	2324
LA	LA0G145	1TR204	TORRANCE	0	TCM Committed	BUN94	0	LACRD - 4 Expansion Buses for	12/31/2010	2800	PC20	2008/2009	0	0	476
LA	LA0G147	1TR204	GARDENA	6	TCM Committed	BUO00	0	LACRD - I-110 HOT lane operat	12/31/2011	600	CMAQ	2010/2011	0	0	600
LA	LA0G148	1TR204	TORRANCE	6	TCM Committed	BUO00	0	LACRD - I-110 HOT lane operat	12/31/2011	1200	CMAQ	2010/2011	0	0	1200
LA	LA0G149	1OM08D02	FOOTHILL T	6	TCM Committed	BUO00	0	LACRD - I-10 HOT lane operatio	12/31/2011	3634	CMAQ	2011/2012	0	0	3200
LA	LA0G150	1TR08D7B	LOS ANGELE	18	TCM Committed	BUO00	0	LACRD - I-10 and I-110 Express	12/31/2011	4201	CMAQ	2010/2011	0	0	4201
LA	LA0G154	1TR08D7A	LOS ANGELE	18	TCM Committed	TRRH6	0	LACRD - El Monte Transit Cent	12/31/2012	76909	5307LA	2008/2009	3360	0	0
LA	LA0G154	1TR08D7A	LOS ANGELE	18	TCM Committed	TRRH6	0	LACRD - El Monte Transit Cent	12/31/2012	76909	PC40	2008/2009	840	0	0
LA	LA0G154	1TR08D7A	LOS ANGELE	18	TCM Committed	TRRH6	0	LACRD - El Monte Transit Cent	12/31/2012	76909	5307LA	2009/2010	0	0	11445
LA	LA0G154	1TR08D7A	LOS ANGELE	18	TCM Committed	TRRH6	0	LACRD - El Monte Transit Cent	12/31/2012	76909	PC40	2009/2010	0	0	2861
LA	LA0G154	1TR08D7A	LOS ANGELE	18	TCM Committed	TRRH6	0	LACRD - El Monte Transit Cent	12/31/2012	76909	5307LA	2010/2011	0	0	22435
LA	LA0G154	1TR08D7A	LOS ANGELE	18	TCM Committed	TRRH6	0	LACRD - El Monte Transit Cent	12/31/2012	76909	PC40	2010/2011	0	0	7284
LA	LA0G154	1TR08D7A	LOS ANGELE	18	TCM Committed	TRRH6	0	LACRD - El Monte Transit Cent	12/31/2012	76909	5307LA	2011/2012	0	0	5660
LA	LA0G154	1TR08D7A	LOS ANGELE	18	TCM Committed	TRRH6	0	LACRD - El Monte Transit Cent	12/31/2012	76909	5309c	2011/2012	0	0	9679
LA	LA0G154	1TR08D7A	LOS ANGELE	18	TCM Committed	TRRH6	0	LACRD - El Monte Transit Cent	12/31/2012	76909	LTF	2011/2012	0	0	11930
LA	LA0G154	1TR08D7A	LOS ANGELE	18	TCM Committed	TRRH6	0	LACRD - El Monte Transit Cent	12/31/2012	76909	PC40	2011/2012	0	0	1415
LA	LA0G155	1TR08D7B	LOS ANGELE	2	TCM Committed	ITS10	0	LACRD - Transit signal priority	12/31/2011	1000	CRD	2008/2009	200	0	0
LA	LA0G155	1TR08D7B	LOS ANGELE	2	TCM Committed	ITS10	0	LACRD - Transit signal priority	12/31/2011	1000	CRD	2010/2011	0	0	800
LA	LA0G194	1TL104	LOS ANGELE	0	TCM Committed	BUN94	0	Acquire alternate four (4) fuel	10/31/2011	1029	5309c	2010/2011	0	0	588
LA	LA0G194	1TL104	LOS ANGELE	0	TCM Committed	BUN94	0	Acquire alternate four (4) fuel	10/31/2011	1029	CITY	2010/2011	0	0	441
LA	LA0G196	1TL204	LOS ANGELE	0	TCM Committed	BUN94	0	Acquire alternate fuel buses fo	10/31/2011	613	5309c	2010/2011	0	0	490
LA	LA0G196	1TL204	LOS ANGELE	0	TCM Committed	BUN94	0	Acquire alternate fuel buses fo	10/31/2011	613	GEN	2010/2011	0	0	123
LA	LA0G227	LA0G227	SANTA CLAR	24	TCM	BUN94	0	Purchase 2 buses for Route 75	12/31/2012	1081	5307LA	2010/2011	0	0	805
LA	LA0G227	LA0G227	SANTA CLAR	24	TCM	BUN94	0	Purchase 2 buses for Route 75	12/31/2012	1081	LTF	2010/2011	0	0	276
LA	LA0G257	LA0G257	WHITTIER	24	TCM	NCN25	0	Whittier Greenway Trailhead P	9/30/2014	650	PC40	2008/2009	15	0	0
LA	LA0G257	LA0G257	WHITTIER	24	TCM	NCN25	0	Whittier Greenway Trailhead P	9/30/2014	650	PC40	2009/2010	0	0	285
LA	LA0G257	LA0G257	WHITTIER	24	TCM	NCN25	0	Whittier Greenway Trailhead P	9/30/2014	650	CITY	2011/2012	0	0	350
LA	LA0G268	1TL104	LOS ANGELE	0	TCM Committed	BUN94	0	Purchase clean air buses for se	6/30/2012	250	5309c	2008/2009	0	0	143
LA	LA0G268	1TL104	LOS ANGELE	0	TCM Committed	BUN94	0	Purchase clean air buses for se	6/30/2012	250	PROPA	2008/2009	0	0	107
LA	LA0G270	1TDL04	LOS ANGELE	0	TCM Committed	TDR64	0	Expansion and Improvement to	9/30/2012	360	5309c	2010/2011	0	0	260
LA	LA0G270	1TDL04	LOS ANGELE	0	TCM Committed	TDR64	0	Expansion and Improvement to	9/30/2012	360	PROPA	2010/2011	0	0	100
LA	LA0G354	1TDL04	MONTEBELL	0	TCM Committed	TDR64	0	Construction of transit center a	12/31/2010	325	5307LA	2009/2010	25	0	300

Appendix E SCAG Transportation Control Measures

county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LA0G358	1RL04	TORRANCE	19	TCM Committed	TDN64	0	South Bay Regional Intermoda	12/31/2015	21000	PTMISEA	2010/2011	0	0	2500
LA	LA0G358	1RL04	TORRANCE	19	TCM Committed	TDN64	0	South Bay Regional Intermoda	12/31/2015	21000	CITY	2011/2012	0	0	400
LA	LA0G358	1RL04	TORRANCE	19	TCM Committed	TDN64	0	South Bay Regional Intermoda	12/31/2015	21000	MR20H	2011/2012	1000	0	0
LA	LA0G358	1RL04	TORRANCE	19	TCM Committed	TDN64	0	South Bay Regional Intermoda	12/31/2015	21000	MR20H	2012/2013	0	0	10500
LA	LA0G358	1RL04	TORRANCE	19	TCM Committed	TDN64	0	South Bay Regional Intermoda	12/31/2015	21000	MR20H	2013/2014	0	0	6600
LA	LA0G406	LA0G406	GLENDALE	24	TCM	TDN64	0	Fairmont Ave. Park-N-Ride fac	12/30/2014	3000	MR20H	2009/2010	0	0	400
LA	LA0G406	LA0G406	GLENDALE	24	TCM	TDN64	0	Fairmont Ave. Park-N-Ride fac	12/30/2014	3000	MR20H	2010/2011	130	0	1050
LA	LA0G406	LA0G406	GLENDALE	24	TCM	TDN64	0	Fairmont Ave. Park-N-Ride fac	12/30/2014	3000	MR02	2011/2012	170	0	1125
LA	LA0G406	LA0G406	GLENDALE	24	TCM	TDN64	0	Fairmont Ave. Park-N-Ride fac	12/30/2014	3000	MR02	2012/2013	0	0	125
LA	LA0G431	1TL204	LOS ANGELE	0	TCM Committed	TRNH6	0	Multi-modal transit center at C	10/1/2012	492	5309c	2010/2011	0	0	392
LA	LA0G431	1TL204	LOS ANGELE	0	TCM Committed	TRNH6	0	Multi-modal transit center at C	10/1/2012	492	GEN	2010/2011	0	0	100
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	LTF	2011/2012	0	16000	0
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2012/2013	0	88700	11300
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	LTF	2012/2013	0	34300	13821
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2012/2013	0	0	10400
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2013/2014	0	0	100000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2013/2014	0	0	10900
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2014/2015	0	0	100000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2014/2015	0	0	233200
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2015/2016	0	0	100000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	CITY	2015/2016	0	0	34200
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2015/2016	0	0	190400
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2016/2017	0	0	100000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	CITY	2016/2017	0	0	29400
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	CMAQ	2016/2017	0	0	4400
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2016/2017	0	0	8500
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	TIFIA	2016/2017	0	0	282000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2017/2018	0	0	100000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	CITY	2017/2018	0	0	6300
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	CMAQ	2017/2018	0	0	45700
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2017/2018	0	0	7300
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	TIFIA	2017/2018	0	0	182000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2018/2019	0	0	100000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	CMAQ	2018/2019	0	0	12100
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2018/2019	0	0	6100
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	TIFIA	2018/2019	0	0	113300
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2019/2020	0	0	100000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	CMAQ	2019/2020	0	0	19800
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2019/2020	0	0	4800
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	TIFIA	2019/2020	0	0	63500
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2020/2021	0	0	100000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2020/2021	0	0	14200

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LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2021/2022	0	0	100000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2021/2022	0	0	10100
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2022/2023	0	0	100000
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2022/2023	0	0	6100
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	5309b	2023/2024	0	0	50400
LA	LA0G447	LA0G447	LOS ANGELE	24	TCM	RAN92	0	Metro Purple Line Westside Su	12/31/2023	2511121	MEA_R	2023/2024	0	0	1900
LA	LA0G558	LA29212XY	METRO GOL	12	TCM Committed	LRN92	0	Gold Line Foothill LRT Extensio	12/31/2017	847000	MR35	2009/2010	10000	0	0
LA	LA0G558	LA29212XY	METRO GOL	12	TCM Committed	LRN92	0	Gold Line Foothill LRT Extensio	12/31/2017	847000	MR35	2010/2011	10000	0	0
LA	LA0G558	LA29212XY	METRO GOL	12	TCM Committed	LRN92	0	Gold Line Foothill LRT Extensio	12/31/2017	847000	MR35	2011/2012	74400	8000	0
LA	LA0G558	LA29212XY	METRO GOL	12	TCM Committed	LRN92	0	Gold Line Foothill LRT Extensio	12/31/2017	847000	MR35	2013/2014	154600	5000	0
LA	LA0G558	LA29212XY	METRO GOL	12	TCM Committed	LRN92	0	Gold Line Foothill LRT Extensio	12/31/2017	847000	MR35	2014/2015	0	2000	198000
LA	LA0G558	LA29212XY	METRO GOL	12	TCM Committed	LRN92	0	Gold Line Foothill LRT Extensio	12/31/2017	847000	MR35	2015/2016	0	0	200000
LA	LA0G558	LA29212XY	METRO GOL	12	TCM Committed	LRN92	0	Gold Line Foothill LRT Extensio	12/31/2017	847000	MR35	2016/2017	0	0	185000
LA	LA0G626	1TR0704	LOS ANGELE	24	TCM	RAN92	0	Eastside Transit Corridor Phas	9/14/2035	2490000	PROPA	2010/2011	5000	0	0
LA	LA0G626	1TR0704	LOS ANGELE	24	TCM	RAN92	0	Eastside Transit Corridor Phas	9/14/2035	2490000	STPL	2010/2011	800	0	0
LA	LA0G626	1TR0704	LOS ANGELE	24	TCM	RAN92	0	Eastside Transit Corridor Phas	9/14/2035	2490000	5309b	2025/2026	1138500	0	0
LA	LA0G626	1TR0704	LOS ANGELE	24	TCM	RAN92	0	Eastside Transit Corridor Phas	9/14/2035	2490000	MEA_R	2025/2026	1345700	0	0
LA	LA0G632	1TR0101	LOS ANGELE	12	TCM Committed	RAN92	0	South Bay Green Line Extensio	9/21/2035	555000	LTF	2010/2011	4500	0	0
LA	LA0G632	1TR0101	LOS ANGELE	12	TCM Committed	RAN92	0	South Bay Green Line Extensio	9/21/2035	555000	STPL	2010/2011	500	0	0
LA	LA0G632	1TR0101	LOS ANGELE	12	TCM Committed	RAN92	0	South Bay Green Line Extensio	9/21/2035	555000	MEA_R	2025/2026	328200	0	0
LA	LA0G632	1TR0101	LOS ANGELE	12	TCM Committed	RAN92	0	South Bay Green Line Extensio	9/21/2035	555000	PROPA	2025/2026	187500	0	0
LA	LA0G632	1TR0101	LOS ANGELE	12	TCM Committed	RAN92	0	South Bay Green Line Extensio	9/21/2035	555000	STPL-R	2025/2026	34300	0	0
LA	LA0G668	1NL04	TEMPLE CITY	18	TCM Committed	NCN26	0	Rosemead Blvd Safety Enhanc	10/31/2013	6376	CITY	2011/2012	200	0	3483
LA	LA0G668	1NL04	TEMPLE CIT	18	TCM Committed	NCN26	0	Rosemead Blvd Safety Enhanc	10/31/2013	6376	CMAQ	2011/2012	0	0	2250
LA	LA0G668	1NL04	TEMPLE CIT	18	TCM Committed	NCN26	0	Rosemead Blvd Safety Enhanc	10/31/2013	6376	LTF	2011/2012	0	0	443
LA	LA29202U1	LA29202U1	LOS ANGELE	0	TCM Committed	CAX62	0	SAN FERNANDO VALLEY E/W B	4/30/2010	21129	5309c	2003/2004	0	0	492
LA	LA29202U1	LA29202U1	LOS ANGELE	0	TCM Committed	CAX62	0	SAN FERNANDO VALLEY E/W B	4/30/2010	21129	AGENCY	2003/2004	0	0	17500
LA	LA29202U1	LA29202U1	LOS ANGELE	0	TCM Committed	CAX62	0	SAN FERNANDO VALLEY E/W B	4/30/2010	21129	5309c	2006/2007	0	0	1179
LA	LA29202U1	LA29202U1	LOS ANGELE	0	TCM Committed	CAX62	0	SAN FERNANDO VALLEY E/W B	4/30/2010	21129	AGENCY	2006/2007	0	0	295
LA	LA29202U1	LA29202U1	LOS ANGELE	0	TCM Committed	CAX62	0	SAN FERNANDO VALLEY E/W B	4/30/2010	21129	5309c	2007/2008	0	0	652
LA	LA29202U1	LA29202U1	LOS ANGELE	0	TCM Committed	CAX62	0	SAN FERNANDO VALLEY E/W B	4/30/2010	21129	AGENCY	2007/2008	0	0	163
LA	LA29202U1	LA29202U1	LOS ANGELE	0	TCM Committed	CAX62	0	SAN FERNANDO VALLEY E/W B	4/30/2010	21129	5309c	2008/2009	0	0	678
LA	LA29202U1	LA29202U1	LOS ANGELE	0	TCM Committed	CAX62	0	SAN FERNANDO VALLEY E/W B	4/30/2010	21129	AGENCY	2008/2009	0	0	170
LA	LA29202U3	LA29202U3	LOS ANGELE	24	TCM	TRNH6	0	SAN FERNANDO VALLEY NORT	12/31/2013	11702	PC40	2004/2005	990	0	0
LA	LA29202U3	LA29202U3	LOS ANGELE	24	TCM	TRNH6	0	SAN FERNANDO VALLEY NORT	12/31/2013	11702	PC40	2005/2006	2710	0	3500
LA	LA29202U3	LA29202U3	LOS ANGELE	24	TCM	TRNH6	0	SAN FERNANDO VALLEY NORT	12/31/2013	11702	5309c	2006/2007	0	0	235
LA	LA29202U3	LA29202U3	LOS ANGELE	24	TCM	TRNH6	0	SAN FERNANDO VALLEY NORT	12/31/2013	11702	5309c	2007/2008	0	0	131
LA	LA29202U3	LA29202U3	LOS ANGELE	24	TCM	TRNH6	0	SAN FERNANDO VALLEY NORT	12/31/2013	11702	PC40	2009/2010	0	0	4000
LA	LA29202U3	LA29202U3	LOS ANGELE	24	TCM	TRNH6	0	SAN FERNANDO VALLEY NORT	12/31/2013	11702	5309c	2010/2011	0	0	136
LA	LA29202W	LA29202W	LOS ANGELE	24	TCM	NCRT2	0	Wilshire Blvd BRTPhase I: 12.5	12/31/2013	80610	AGENCY	2003/2004	0	2200	0
LA	LA29202W	LA29202W	LOS ANGELE	24	TCM	NCRT2	0	Wilshire Blvd BRTPhase I: 12.5	12/31/2013	80610	CMAQ	2003/2004	0	16300	4900
LA	LA29202W	LA29202W	LOS ANGELE	24	TCM	NCRT2	0	Wilshire Blvd BRTPhase I: 12.5	12/31/2013	80610	AGENCY	2004/2005	0	0	600

Appendix E SCAG Transportation Control Measures

county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LA29202W	LA29202W	LOS ANGELE	24	TCM	NCRT2	0	Wilshire Blvd BRTPhase I: 12.5	12/31/2013	80610	5309b	2010/2011	0	0	9759
LA	LA29202W	LA29202W	LOS ANGELE	24	TCM	NCRT2	0	Wilshire Blvd BRTPhase I: 12.5	12/31/2013	80610	LTF	2010/2011	0	0	3429
LA	LA29202W	LA29202W	LOS ANGELE	24	TCM	NCRT2	0	Wilshire Blvd BRTPhase I: 12.5	12/31/2013	80610	STA-1B	2010/2011	15	0	0
LA	LA29202W	LA29202W	LOS ANGELE	24	TCM	NCRT2	0	Wilshire Blvd BRTPhase I: 12.5	12/31/2013	80610	5309b	2011/2012	0	0	13558
LA	LA29202W	LA29202W	LOS ANGELE	24	TCM	NCRT2	0	Wilshire Blvd BRTPhase I: 12.5	12/31/2013	80610	LTF	2011/2012	0	0	4764
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	AB2766	2004/2005	0	0	800
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	AB2766	2005/2006	0	0	854
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	STPL-R	2005/2006	0	0	12510
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	5307LA	2007/2008	0	0	12071
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	5309c	2007/2008	0	0	5000
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	5307LA	2008/2009	0	0	28449
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	5309c	2008/2009	0	0	5000
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	AR-5307	2008/2009	0	0	84000
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	CMAQ	2008/2009	0	0	45059
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	PC40	2008/2009	0	0	180000
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	STA-1B	2008/2009	0	0	20000
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	PC40	2009/2010	0	0	43956
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	PC40	2011/2012	0	0	194
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	PC40	2012/2013	0	0	2397
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	STPL-R	2012/2013	0	0	28900
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	PC40	2013/2014	0	0	1930
LA	LA963542	1TL104	LOS ANGELE	17	TCM Committed	BUN94	0	ACQUISTION REVENUE VEHIC	6/30/2014	619858	STPL-R	2013/2014	0	0	6000
LA	LA974165	LA974165	LOS ANGELE	17	TCM Committed	TRRH6	0	MACARTHUR PARK STATION I	12/30/2011	1931	CO	2007/2008	399	0	0
LA	LA974165	LA974165	LOS ANGELE	17	TCM Committed	TRRH6	0	MACARTHUR PARK STATION I	12/30/2011	1931	LTF	2011/2012	0	0	386
LA	LA974165	LA974165	LOS ANGELE	17	TCM Committed	TRRH6	0	MACARTHUR PARK STATION IM	12/30/2011	1931	STPE-P	2011/2012	0	0	229
LA	LA974165	LA974165	LOS ANGELE	17	TCM Committed	TRRH6	0	MACARTHUR PARK STATION IM	12/30/2011	1931	STPE-R	2011/2012	0	0	917
LA	LA996134	LA996134	CALTRANS	0	TCM Committed	CAN71	5	Route 5: RTE. 5/14 INTERCHAN	5/24/2013	161100	PC25	2004/2005	0	2000	0
LA	LA996134	LA996134	CALTRANS	0	TCM Committed	CAN71	5	Route 5: RTE. 5/14 INTERCHA	5/24/2013	161100	STCASHR	2005/2006	6372	1776	0
LA	LA996134	LA996134	CALTRANS	0	TCM Committed	CAN71	5	Route 5: RTE. 5/14 INTERCHA	5/24/2013	161100	PC25	2006/2007	4006	0	0
LA	LA996134	LA996134	CALTRANS	0	TCM Committed	CAN71	5	Route 5: RTE. 5/14 INTERCHAN	5/24/2013	161100	STCASHR	2006/2007	3744	0	29208
LA	LA996134	LA996134	CALTRANS	0	TCM Committed	CAN71	5	Route 5: RTE. 5/14 INTERCHAN	5/24/2013	161100	CMAQ	2007/2008	0	0	109494
LA	LA996134	LA996134	CALTRANS	0	TCM Committed	CAN71	5	Route 5: RTE. 5/14 INTERCHAN	5/24/2013	161100	CMAQ	2008/2009	0	0	4500
LA	LAE0001A	LAE0001A	GLENDALE	0	TCM Committed	BUN94	0	PURCHASE OF 2 CNG BUSES F	12/1/2011	786	5309c	2010/2011	0	0	386
LA	LAE0001A	LAE0001A	GLENDALE	0	TCM Committed	BUN94	0	PURCHASE OF 2 CNG BUSES FO	12/1/2011	786	PC25	2010/2011	0	0	400
LA	LAE0036	LAE0036	LOS ANGELE	0	TCM Committed	NCR27	0	WILSHIRE/ VERMONT PEDEST	10/1/2011	1960	5309c	2006/2007	0	0	1123
LA	LAE0036	LAE0036	LOS ANGELE	0	TCM Committed	NCR27	0	WILSHIRE/ VERMONT PEDEST	10/1/2011	1960	AGENCY	2006/2007	0	0	281
LA	LAE0036	LAE0036	LOS ANGELE	0	TCM Committed	NCR27	0	WILSHIRE/ VERMONT PEDEST	10/1/2011	1960	5309c	2007/2008	0	0	218
LA	LAE0036	LAE0036	LOS ANGELE	0	TCM Committed	NCR27	0	WILSHIRE/ VERMONT PEDEST	10/1/2011	1960	AGENCY	2007/2008	0	0	55
LA	LAE0036	LAE0036	LOS ANGELE	0	TCM Committed	NCR27	0	WILSHIRE/ VERMONT PEDEST	10/1/2011	1960	5309c	2008/2009	0	0	226
LA	LAE0036	LAE0036	LOS ANGELE	0	TCM Committed	NCR27	0	WILSHIRE/ VERMONT PEDEST	10/1/2011	1960	AGENCY	2008/2009	0	0	57
LA	LAE0039	LAE0039	MONROVIA	24	TCM	NCRT2	0	TRANSIT VILLAGE - PROVIDE A	12/31/2012	3026	5309c	2010/2011	0	0	1909
LA	LAE0039	LAE0039	MONROVIA	24	TCM	NCRT2	0	TRANSIT VILLAGE - PROVIDE A	12/31/2012	3026	CITY	2010/2011	0	0	179

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county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LAE0039	LAE0039	MONROVIA	24	TCM	NCRT2	0	TRANSIT VILLAGE - PROVIDE A	12/31/2012	3026	5309c	2011/2012	0	0	750
LA	LAE0039	LAE0039	MONROVIA	24	TCM	NCRT2	0	TRANSIT VILLAGE - PROVIDE A	12/31/2012	3026	CITY	2011/2012	0	0	188
LA	LAE0076	LAE0076	BALDWIN PA	1	TCM Committed	NCN25	0	CONSTRUCT ADD'L VEHICLE PA	12/31/2014	2085	5309c	2010/2011	518	0	1150
LA	LAE0076	LAE0076	BALDWIN PA	1	TCM Committed	NCN25	0	CONSTRUCT ADD'L VEHICLE P	12/31/2014	2085	CITY	2010/2011	130	0	287
LA	LAE0132	LAE0132	CARSON, CIT	0	TCM Committed	BUN93	0	PURCHASE A NEW ALTERNATE	12/31/2011	250	5309c	2006/2007	0	0	48
LA	LAE0132	LAE0132	CARSON, CIT	0	TCM Committed	BUN93	0	PURCHASE A NEW ALTERNATE	12/31/2011	250	CITY	2006/2007	0	0	25
LA	LAE0132	LAE0132	CARSON, CIT	0	TCM Committed	BUN93	0	PURCHASE A NEW ALTERNATE	12/31/2011	250	5309c	2007/2008	0	0	50
LA	LAE0132	LAE0132	CARSON, CIT	0	TCM Committed	BUN93	0	PURCHASE A NEW ALTERNATE	12/31/2011	250	CITY	2007/2008	0	0	8
LA	LAE0132	LAE0132	CARSON, CIT	0	TCM Committed	BUN93	0	PURCHASE A NEW ALTERNATE	12/31/2011	250	5309c	2010/2011	0	0	111
LA	LAE0132	LAE0132	CARSON, CIT	0	TCM Committed	BUN93	0	PURCHASE A NEW ALTERNATE	12/31/2011	250	CITY	2010/2011	0	0	8
LA	LAE0195	LAE0195	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	10/1/2014	4049	5309c	2006/2007	0	0	394
LA	LAE0195	LAE0195	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	10/1/2014	4049	BONDL	2006/2007	0	0	99
LA	LAE0195	LAE0195	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	10/1/2014	4049	5309c	2007/2008	0	0	218
LA	LAE0195	LAE0195	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	10/1/2014	4049	BONDL	2007/2008	0	0	55
LA	LAE0195	LAE0195	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	10/1/2014	4049	BONDL	2008/2009	0	0	111
LA	LAE0195	LAE0195	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	10/1/2014	4049	CITY	2009/2010	0	0	257
LA	LAE0195	LAE0195	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	10/1/2014	4049	5309c	2010/2011	0	0	443
LA	LAE0195	LAE0195	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	10/1/2014	4049	CITY	2010/2011	0	0	294
LA	LAE0195	LAE0195	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	10/1/2014	4049	CITY	2012/2013	0	0	969
LA	LAE0195	LAE0195	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	10/1/2014	4049	CMAQ	2012/2013	0	0	1208
LA	LAE0332	LAE0332	LONG BEAC	6	TCM Committed	TDN64	0	LONG BEACH PARK AND RIDE	10/1/2011	1002	5309c	2011/2012	0	0	836
LA	LAE0332	LAE0332	LONG BEAC	6	TCM Committed	TDN64	0	LONG BEACH PARK AND RIDE	10/1/2011	1002	PROPA	2011/2012	0	0	166
LA	LAE0364	LAE0364	SANTA MON	24	TCM	TDR64	0	Santa Monica's Big Blue Bus/Sa	12/31/2013	2000	5309c	2010/2011	0	0	836
LA	LAE0364	LAE0364	SANTA MON	24	TCM	TDR64	0	Santa Monica's Big Blue Bus/Sa	12/31/2013	2000	AGENCY	2010/2011	0	0	1164
LA	LAE0388A	LAE0388A	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	12/31/2010	263	5309c	2007/2008	0	0	153
LA	LAE0388A	LAE0388A	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	12/31/2010	263	BONDL	2007/2008	0	0	39
LA	LAE0388A	LAE0388A	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	12/31/2010	263	5309c	2010/2011	0	0	56
LA	LAE0388A	LAE0388A	LOS ANGELE	0	TCM Committed	TRNH6	0	DESIGN AND CONSTRUCT IMP	12/31/2010	263	BONDL	2010/2011	0	0	15
LA	LAE0396	LAE0396	BURBANK	1	TCM Committed	TRRH6	0	CONSTRUCTION OF EMPIRE AR	12/31/2011	1723	5309c	2007/2008	776	0	0
LA	LAE0396	LAE0396	BURBANK	1	TCM Committed	TRRH6	0	CONSTRUCTION OF EMPIRE A	12/31/2011	1723	CITY	2008/2009	189	0	0
LA	LAE0396	LAE0396	BURBANK	1	TCM Committed	TRRH6	0	CONSTRUCTION OF EMPIRE A	12/31/2011	1723	5309c	2010/2011	50	0	556
LA	LAE0396	LAE0396	BURBANK	1	TCM Committed	TRRH6	0	CONSTRUCTION OF EMPIRE A	12/31/2011	1723	CITY	2010/2011	12	0	140
LA	LAE1296	LAE1296	LONG BEACH	0	TCM Committed	ITS12	0	LONG BEACH INTELLIGENT TR	9/30/2012	2880	DEMOSTL	2010/2011	480	0	1920
LA	LAE1296	LAE1296	LONG BEACH	0	TCM Committed	ITS12	0	LONG BEACH INTELLIGENT TR	9/30/2012	2880	LTF	2010/2011	96	0	384
LA	LAE2932	LAE2932	CARSON, CIT	0	TCM Committed	NCR27	0	213TH ST. PEDESTRIAN SIDEW	12/31/2012	2200	AGENCY	2009/2010	200	0	0
LA	LAE2932	LAE2932	CARSON, CIT	0	TCM Committed	NCR27	0	213TH ST. PEDESTRIAN SIDEW	12/31/2012	2200	AGENCY	2010/2011	0	0	1200
LA	LAE2932	LAE2932	CARSON, CIT	0	TCM Committed	NCR27	0	213TH ST. PEDESTRIAN SIDEW	12/31/2012	2200	DEMOSTL	2010/2011	0	0	800
LA	LAE3790	LAE3790	PASADENA	0	TCM Committed	ITS08	0	THE PASADENA ITS INTEGRATE	6/30/2011	3545	5309c	2008/2009	0	0	226
LA	LAE3790	LAE3790	PASADENA	0	TCM Committed	ITS08	0	THE PASADENA ITS INTEGRATE	6/30/2011	3545	DEMOSTL	2008/2009	200	0	0
LA	LAE3790	LAE3790	PASADENA	0	TCM Committed	ITS08	0	THE PASADENA ITS INTEGRAT	6/30/2011	3545	LTF	2008/2009	40	0	57
LA	LAE3790	LAE3790	PASADENA	0	TCM Committed	ITS08	0	THE PASADENA ITS INTEGRATE	6/30/2011	3545	DEMOSTL	2009/2010	0	0	1800
LA	LAE3790	LAE3790	PASADENA	0	TCM Committed	ITS08	0	THE PASADENA ITS INTEGRATE	6/30/2011	3545	LTF	2009/2010	0	0	431

Appendix E SCAG Transportation Control Measures

county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LAF1424	LAF1424	SANTA CLAR	24	TCM	TDN64	0	McBean Regional Transit Cente	10/1/2013	5868	AR-5307	2008/2009	300	0	1136
LA	LAF1424	LAF1424	SANTA CLAR	24	TCM	TDN64	0	McBean Regional Transit Cente	10/1/2013	5868	PROPALR	2008/2009	23	730	709
LA	LAF1424	LAF1424	SANTA CLAR	24	TCM	TDN64	0	McBean Regional Transit Cent	10/1/2013	5868	CMAQ	2009/2010	200	0	2770
LA	LAF1450	1TL104	LOS ANGELE	0	TCM Committed	TDR64	0	Encino Park-and-Ride Facility R	10/1/2013	1295	CMAQ	2008/2009	0	0	1036
LA	LAF1450	1TL104	LOS ANGELE	0	TCM Committed	TDR64	0	Encino Park-and-Ride Facility R	10/1/2013	1295	LTF	2009/2010	0	0	92
LA	LAF1450	1TL104	LOS ANGELE	0	TCM Committed	TDR64	0	Encino Park-and-Ride Facility R	10/1/2013	1295	LTF	2010/2011	0	0	167
LA	LAF1455	LAF1455	BURBANK	24	TCM	BUN94	0	Cross-Town Transit Connector	10/1/2015	811	CITY	2012/2013	0	0	162
LA	LAF1455	LAF1455	BURBANK	24	TCM	BUN94	0	Cross-Town Transit Connector	10/1/2015	811	CMAQ	2012/2013	0	0	649
LA	LAF1501	1NL04	AVALON	0	TCM Committed	NCR31	0	County Club Drive Bikeway Imp	10/1/2013	1802	CITY	2008/2009	0	0	280
LA	LAF1501	1NL04	AVALON	0	TCM Committed	NCR31	0	County Club Drive Bikeway Imp	10/1/2013	1802	CITY	2010/2011	0	0	153
LA	LAF1501	1NL04	AVALON	0	TCM Committed	NCR31	0	County Club Drive Bikeway Imp	10/1/2013	1802	CMAQ	2010/2011	0	0	1369
LA	LAF1502	1NL04	BURBANK	12	TCM Committed	NCN26	0	San Fernando Bikeway. Imple	6/30/2014	8239	CITY	2010/2011	190	54	150
LA	LAF1502	1NL04	BURBANK	12	TCM Committed	NCN26	0	San Fernando Bikeway. Imple	6/30/2014	8239	CMAQ	2010/2011	761	216	1000
LA	LAF1502	1NL04	BURBANK	12	TCM Committed	NCN26	0	San Fernando Bikeway. Imple	6/30/2014	8239	CITY	2011/2012	0	0	552
LA	LAF1502	1NL04	BURBANK	12	TCM Committed	NCN26	0	San Fernando Bikeway. Imple	6/30/2014	8239	CMAQ	2011/2012	0	0	4618
LA	LAF1502	1NL04	BURBANK	12	TCM Committed	NCN26	0	San Fernando Bikeway. Imple	6/30/2014	8239	CITY	2012/2013	0	0	698
LA	LAF1503	1NL04	SAN DIMAS	3	TCM Committed	NCR26	0	Bikeway Improvements on Fo	12/1/2013	2390	CITY	2010/2011	18	0	0
LA	LAF1503	1NL04	SAN DIMAS	3	TCM Committed	NCR26	0	Bikeway Improvements on Fo	12/1/2013	2390	STPE-R	2010/2011	30	0	0
LA	LAF1503	1NL04	SAN DIMAS	3	TCM Committed	NCR26	0	Bikeway Improvements on Fo	12/1/2013	2390	CITY	2011/2012	372	95	0
LA	LAF1503	1NL04	SAN DIMAS	3	TCM Committed	NCR26	0	Bikeway Improvements on Foc	12/1/2013	2390	STPE-R	2011/2012	75	0	0
LA	LAF1503	1NL04	SAN DIMAS	3	TCM Committed	NCR26	0	Bikeway Improvements on Foc	12/1/2013	2390	CITY	2012/2013	300	0	411
LA	LAF1503	1NL04	SAN DIMAS	3	TCM Committed	NCR26	0	Bikeway Improvements on Fo	12/1/2013	2390	STPE-R	2012/2013	0	0	1089
LA	LAF1504	1NL04	EL MONTE	0	TCM Committed	NCR26	0	El Monte: Transit Cycle Friendl	10/1/2013	167	CITY	2010/2011	0	0	56
LA	LAF1504	1NL04	EL MONTE	0	TCM Committed	NCR26	0	El Monte: Transit Cycle Friendl	10/1/2013	167	CMAQ	2010/2011	0	0	111
LA	LAF1506	1NL04	RANCHO PA	0	TCM Committed	NCR26	0	Bike Compatible Rdwy Safety	10/9/2014	788	CITY	2008/2009	14	0	0
LA	LAF1506	1NL04	RANCHO PA	0	TCM Committed	NCR26	0	Bike Compatible Rdwy Safety	10/9/2014	788	CITY	2009/2010	0	0	144
LA	LAF1506	1NL04	RANCHO PA	0	TCM Committed	NCR26	0	Bike Compatible Rdwy Safety	10/9/2014	788	CMAQ	2010/2011	56	0	0
LA	LAF1506	1NL04	RANCHO PA	0	TCM Committed	NCR26	0	Bike Compatible Rdwy Safety a	10/9/2014	788	CMAQ	2011/2012	0	0	574
LA	LAF1507	1NL04	PALMDALE	0	TCM Committed	NCR26	0	Avenue S Bikeway Phase 2. Cla	10/1/2014	1733	CITY	2008/2009	22	31	0
LA	LAF1507	1NL04	PALMDALE	0	TCM Committed	NCR26	0	Avenue S Bikeway Phase 2. Cla	10/1/2014	1733	CITY	2009/2010	25	30	0
LA	LAF1507	1NL04	PALMDALE	0	TCM Committed	NCR26	0	Avenue S Bikeway Phase 2. Cla	10/1/2014	1733	CITY	2010/2011	0	123	636
LA	LAF1507	1NL04	PALMDALE	0	TCM Committed	NCR26	0	Avenue S Bikeway Phase 2. Cla	10/1/2014	1733	CMAQ	2010/2011	48	183	0
LA	LAF1507	1NL04	PALMDALE	0	TCM Committed	NCR26	0	Avenue S Bikeway Phase 2. Cla	10/1/2014	1733	CMAQ	2011/2012	0	0	635
LA	LAF1510	1NL04	CLAREMONT	4	TCM Committed	NCR26	0	Claremont Portion of the Citru	10/1/2012	1794	CITY	2008/2009	0	0	99
LA	LAF1510	1NL04	CLAREMONT	4	TCM Committed	NCR26	0	Claremont Portion of the Citru	10/1/2012	1794	CITY	2010/2011	0	0	447
LA	LAF1510	1NL04	CLAREMONT	4	TCM Committed	NCR26	0	Claremont Portion of the Citru	10/1/2012	1794	CMAQ	2010/2011	0	0	1248
LA	LAF1513	1NL04	LOS ANGELE	4	TCM Committed	NCR26	0	Fiji Way Bicycle Lane Project.	10/9/2014	1007	CMAQ	2009/2010	236	0	0
LA	LAF1513	1NL04	LOS ANGELE	4	TCM Committed	NCR26	0	Fiji Way Bicycle Lane Project.	10/9/2014	1007	CO	2010/2011	59	0	0
LA	LAF1513	1NL04	LOS ANGELE	4	TCM Committed	NCR26	0	Fiji Way Bicycle Lane Project. W	10/9/2014	1007	CITY	2012/2013	0	0	143
LA	LAF1513	1NL04	LOS ANGELE	4	TCM Committed	NCR26	0	Fiji Way Bicycle Lane Project. W	10/9/2014	1007	CMAQ	2012/2013	0	0	569
LA	LAF1524	1NL04	LOS ANGELE	0	TCM Committed	NCN26	0	San Fernando Rd. Bike Path Ph	10/1/2015	10463	LTF	2011/2012	0	0	2093
LA	LAF1524	1NL04	LOS ANGELE	0	TCM Committed	NCN26	0	San Fernando Rd. Bike Path Ph	10/1/2015	10463	STPE-R	2011/2012	0	0	8370

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county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LAF1529	1NL04	ROLLING HIL	1	TCM Committed	NCR26	0	Palos Verdes Drive North Bike	12/31/2012	2574	CITY	2009/2010	6	0	0
LA	LAF1529	1NL04	ROLLING HIL	1	TCM Committed	NCR26	0	Palos Verdes Drive North Bike	12/31/2012	2574	CITY	2010/2011	44	0	465
LA	LAF1529	1NL04	ROLLING HIL	1	TCM Committed	NCR26	0	Palos Verdes Drive North Bike	12/31/2012	2574	STPE-P	2010/2011	232	0	0
LA	LAF1529	1NL04	ROLLING HIL	1	TCM Committed	NCR26	0	Palos Verdes Drive North Bike	12/31/2012	2574	STPE-R	2011/2012	0	0	1803
LA	LAF1530	1NL04	LONG BEAC	0	TCM Committed	NCR26	0	Bicycle System Gap Closures &	10/1/2014	1231	CMAQ	2010/2011	103	0	0
LA	LAF1530	1NL04	LONG	0	TCM Committed	NCR26	0	Bicycle System Gap Closures &	10/1/2014	1231	LTF	2010/2011	45	0	286
LA	LAF1530	1NL04	LONG	0	TCM Committed	NCR26	0	Bicycle System Gap Closures &	10/1/2014	1231	CMAQ	2011/2012	0	0	759
LA	LAF1530	1NL04	LONG	0	TCM Committed	NCR26	0	Bicycle System Gap Closures &	10/1/2014	1231	LTF	2011/202	0	0	38
LA	LAF1534	1NL04	SANTA MON	1	TCM Committed	NCR26	0	Bike Technology Demonstratio	6/30/2015	399	CITY	2008/2009	5	0	0
LA	LAF1534	1NL04	SANTA MON	1	TCM Committed	NCR26	0	Bike Technology Demonstratio	6/30/2015	399	CMAQ	2008/2009	52	0	0
LA	LAF1534	1NL04	SANTA MON	1	TCM Committed	NCR26	0	Bike Technology Demonstratio	6/30/2015	399	PC10	2008/2009	17	0	0
LA	LAF1534	1NL04	SANTA MON	1	TCM Committed	NCR26	0	Bike Technology Demonstratio	6/30/2015	399	CITY	2009/2010	6	0	0
LA	LAF1534	1NL04	SANTA MON	1	TCM Committed	NCR26	0	Bike Technology Demonstratio	6/30/2015	399	CMAQ	2009/2010	59	0	0
LA	LAF1534	1NL04	SANTA MON	1	TCM Committed	NCR26	0	Bike Technology Demonstratio	6/30/2015	399	PC10	2009/2010	0	0	56
LA	LAF1534	1NL04	SANTA MON	1	TCM Committed	NCR26	0	Bike Technology Demonstratio	6/30/2015	399	CITY	2010/2011	0	0	17
LA	LAF1534	1NL04	SANTA MON	1	TCM Committed	NCR26	0	Bike Technology Demonstratio	6/30/2015	399	CMAQ	2010/2011	0	0	168
LA	LAF1534	1NL04	SANTA MON	1	TCM Committed	NCR26	0	Bike Technology Demonstratio	6/30/2015	399	PC10	2010/2011	19	0	0
LA	LAF1605	1NL04	RANCHO PA	0	TCM Committed	NCR27	0	Pedestrian Safe Bus Stop Linka	12/9/2013	1544	CITY	2009/2010	25	0	115
LA	LAF1605	1NL04	RANCHO PA	0	TCM Committed	NCR27	0	Pedestrian Safe Bus Stop Linka	12/9/2013	1544	CITY	2010/2011	25	0	262
LA	LAF1605	1NL04	RANCHO PA	0	TCM Committed	NCR27	0	Pedestrian Safe Bus Stop Linka	12/9/2013	1544	CMAQ	2010/2011	40	0	0
LA	LAF1605	1NL04	RANCHO PA	0	TCM Committed	NCR27	0	Pedestrian Safe Bus Stop Linka	12/9/2013	1544	CMAQ	2011/2012	0	0	1077
LA	LAF1607	1NL04	ARTESIA	0	TCM Committed	NCR31	0	South Street Pedestrian,	10/1/2014	1457	CITY	2009/2010	49	0	0
LA	LAF1607	1NL04	ARTESIA	0	TCM Committed	NCR31	0	South Street Pedestrian,	10/1/2014	1457	CMAQ	2009/2010	195	0	0
LA	LAF1607	1NL04	ARTESIA	0	TCM Committed	NCR31	0	South Street Pedestrian,	10/1/2014	1457	CITY	2012/2013	0	0	242
LA	LAF1607	1NL04	ARTESIA	0	TCM Committed	NCR31	0	South Street Pedestrian,	10/1/2014	1457	CMAQ	2012/2013	0	0	971
LA	LAF1615	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Eastside Light Rail Pedestrian	6/29/2012	2990	CITY	2008/2009	80	0	0
LA	LAF1615	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Eastside Light Rail Pedestrian	6/29/2012	2990	CMAQ	2008/2009	320	0	0
LA	LAF1615	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Eastside Light Rail Pedestrian	6/29/2012	2990	CITY	2009/2010	0	0	518
LA	LAF1615	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Eastside Light Rail Pedestrian	6/29/2012	2990	CMAQ	2009/2010	0	0	2072
LA	LAF1635	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Florence Avenue Pedestrian	10/1/2014	7988	CO	2008/2009	0	0	668
LA	LAF1635	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Florence Avenue Pedestrian	10/1/2014	7988	STPE-R	2009/2010	0	0	3994
LA	LAF1635	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Florence Avenue Pedestrian	10/1/2014	7988	CO	2011/2012	0	0	3326
LA	LAF1654	1NL04	BALDWIN P	0	TCM Committed	NCN27	0	Baldwin Park Metrolink Pedest	10/1/2015	1810	CITY	2012/2013	0	0	905
LA	LAF1654	1NL04	BALDWIN P	0	TCM Committed	NCN27	0	Baldwin Park Metrolink Pedest	10/1/2015	1810	CMAQ	2012/2013	0	0	905
LA	LAF1657	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Los Angeles Valley College	10/1/2013	2959	BONDL	2008/2009	0	0	335
LA	LAF1657	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Los Angeles Valley College (LA	10/1/2013	2959	5309c	2010/2011	0	0	1625
LA	LAF1657	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Los Angeles Valley College (LA	10/1/2013	2959	CITY	2010/2011	0	0	574
LA	LAF1657	1NL04	LOS ANGELE	0	TCM Committed	TRRH6	0	Los Angeles Valley College (LA	10/1/2013	2959	CMAQ	2010/2011	0	0	425
LA	LAF1659	1NL04	CULVER CITY	2	TCM Committed	TRRH6	0	Pedestrian Improvements for I	6/30/2013	1066	CITY	2010/2011	32	0	0
LA	LAF1659	1NL04	CULVER CITY	2	TCM Committed	TRRH6	0	Pedestrian Improvements for I	6/30/2013	1066	STPE-R	2010/2011	59	0	0
LA	LAF1659	1NL04	CULVER CITY	2	TCM Committed	TRRH6	0	Pedestrian Improvements for I	6/30/2013	1066	CITY	2011/2012	0	0	341
LA	LAF1659	1NL04	CULVER CITY	2	TCM Committed	TRRH6	0	Pedestrian Improvements for I	6/30/2013	1066	STPE-R	2011/2012	0	0	634

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county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
LA	LAF141	1TL0703	BALDWIN P	4	TCM Committed	TRRH6	0	Baldwin Park Metrolink Transp	11/1/2012	8046	PC25	2010/2011	0	0	794
LA	LAF141	1TL0703	BALDWIN PA	4	TCM Committed	TRRH6	0	Baldwin Park Metrolink Transp	11/1/2012	8046	PC10	2011/2012	0	0	3009
LA	LAF141	1TL0703	BALDWIN P	4	TCM Committed	TRRH6	0	Baldwin Park Metrolink Transp	11/1/2012	8046	PC25	2011/2012	0	0	2801
LA	LAOB416	REG0701	LOS ANGELE	0	TCM Committed	NCR27	101	Route 101: IN LOS ANGELES - D	6/30/2010	3916	LTF	2002/2003	0	0	2696
LA	LAOB416	REG0701	LOS ANGELE	0	TCM Committed	NCR27	101	Route 101: IN LOS ANGELES - D	6/30/2010	3916	STPE-I	2005/2006	0	0	1220
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEEN	12/31/2020	351111	PVT	2006/2007	540	0	0
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEEN	12/31/2020	351111	PVT	2007/2008	960	0	3440
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEE	12/31/2020	351111	PVT	2008/2009	540	0	5460
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEEN	12/31/2020	351111	PVT	2009/2010	90	0	5308
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEEN	12/31/2020	351111	PVT	2010/2011	60	0	0
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEEN	12/31/2020	351111	PVT	2011/2012	0	0	7713
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEE	12/31/2020	351111	PVT	2014/2015	900	0	0
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEE	12/31/2020	351111	PVT	2015/2016	0	0	8100
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEE	12/31/2020	351111	PVT	2017/2018	31800	0	0
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEEN	12/31/2020	351111	PVT	2018/2019	0	0	143100
ORA	10254	10254	TCA	0	TCM Committed	CAR63	73	SJHC, 15 MI TOLL RD BETWEE	12/31/2020	351111	PVT	2019/2020	0	0	143100
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	DEMOT21	2004/2005	0	6333	0
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	CITY	2006/2007	857	5050	0
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	ORA-RIP	2006/2007	0	598	0
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	CITY	2007/2008	938	0	0
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	ORA-RIP	2007/2008	0	7000	0
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	STPL-R	2007/2008	0	17000	0
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	ORA-RIP	2008/2009	0	1003	0
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	STPL-R	2008/2009	0	0	14155
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	CITY	2009/2010	0	0	3900
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	DEMISTE	2009/2010	0	3550	0
ORA	ORA000100	ORA000100	ANAHEIM	2	TCM Committed	CAXT8	5	GENE AUTRY WAY WEST @ I-5	2/28/2012	70984	STPL-R	2009/2010	0	0	10600
ORA	ORA000193	ORA000193	CALTRANS	3	TCM Committed	CAR62	22	HOV connectors from SR-22 to	9/1/2013	119625	CMAQ	2006/2007	12000	0	0
ORA	ORA000193	ORA000193	CALTRANS	3	TCM Committed	CAR62	22	HOV connectors from SR-22 to	9/1/2013	119625	CMAQ	2007/2008	0	12200	0
ORA	ORA000193	ORA000193	CALTRANS	3	TCM Committed	CAR62	22	HOV connectors from SR-22 to	9/1/2013	119625	CMAQ	2008/2009	0	0	25016
ORA	ORA000193	ORA000193	CALTRANS	3	TCM Committed	CAR62	22	HOV connectors from SR-22 to	9/1/2013	119625	AR-RSTP	2009/2010	0	0	49624
ORA	ORA000193	ORA000193	CALTRANS	3	TCM Committed	CAR62	22	HOV connectors from SR-22 to	9/1/2013	119625	CMAQ	2009/2010	0	0	20785
ORA	ORA000194	ORA000193	CALTRANS	3	TCM Committed	CAR62	405	HOV connectors from I-405 to	9/1/2013	159630	CMAQ	2006/2007	14000	0	0
ORA	ORA000194	ORA000193	CALTRANS	3	TCM Committed	CAR62	405	HOV connectors from I-405 to	9/1/2013	159630	CMAQ	2007/2008	0	5000	0
ORA	ORA000194	ORA000193	CALTRANS	3	TCM Committed	CAR62	405	HOV connectors from I-405 to	9/1/2013	159630	CITY	2009/2010	0	0	5200
ORA	ORA000194	ORA000193	CALTRANS	3	TCM Committed	CAR62	405	HOV connectors from I-405 to	9/1/2013	159630	CMIA	2009/2010	0	0	135430
ORA	ORA020113	ORA020113	FULLERTON	10	TCM Committed	TRRH6	0	FULLERTON TRAIN STATION - P	5/31/2012	33385	PTA-IIP	2006/2007	1000	0	0
ORA	ORA020113	ORA020113	FULLERTON	10	TCM Committed	TRRH6	0	FULLERTON TRAIN STATION - P	5/31/2012	33385	CITY	2007/2008	0	0	1500
ORA	ORA020113	ORA020113	FULLERTON	10	TCM Committed	TRRH6	0	FULLERTON TRAIN STATION - P	5/31/2012	33385	PTA-IIP	2007/2008	0	4250	0
ORA	ORA020113	ORA020113	FULLERTON	10	TCM Committed	TRRH6	0	FULLERTON TRAIN STATION - P	5/31/2012	33385	PTA-RIP	2007/2008	0	3250	0
ORA	ORA020113	ORA020113	FULLERTON	10	TCM Committed	TRRH6	0	FULLERTON TRAIN STATION - P	5/31/2012	33385	ORA-TRN	2008/2009	0	3150	0
ORA	ORA020113	ORA020113	FULLERTON	10	TCM Committed	TRRH6	0	FULLERTON TRAIN STATION - P	5/31/2012	33385	ORA-TRN	2009/2010	0	0	7576

Appendix E SCAG Transportation Control Measures

county	project_id	RTP	agency	amendment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
ORA	ORA020113	ORA020113	FULLERTON	10	TCM Committed	TRRH6	0	FULLERTON TRAIN STATION -	5/31/2012	33385	P116	2009/2010	0	0	10772
ORA	ORA020113	ORA020113	FULLERTON	10	TCM Committed	TRRH6	0	FULLERTON TRAIN STATION -	5/31/2012	33385	PTA-IIP	2009/2010	0	0	1887
ORA	ORA030612	ORA030612	ORANGE CO	17	TCM Committed	TRNH6	0	PLACENTIA TRANSIT STATION	12/1/2014	23420	AGENCY	2005/2006	650	3500	0
ORA	ORA030612	ORA030612	ORANGE CO	17	TCM Committed	TRNH6	0	PLACENTIA TRANSIT STATION	12/1/2014	23420	STIPACRP	2006/2007	2500	0	0
ORA	ORA030612	ORA030612	ORANGE CO	17	TCM Committed	TRNH6	0	PLACENTIA TRANSIT STATION	12/1/2014	23420	AGENCY	2010/2011	20	0	0
ORA	ORA030612	ORA030612	ORANGE CO	17	TCM Committed	TRNH6	0	PLACENTIA TRANSIT STATION	12/1/2014	23420	CMAQ	2011/2012	50	0	8300
ORA	ORA030612	ORA030612	ORANGE CO	17	TCM Committed	TRNH6	0	PLACENTIA TRANSIT STATION	12/1/2014	23420	PTMISEA	2011/2012	100	0	8300
ORA	ORA041501	ORA041501	ORANGE CO	3	TCM Committed	BUR17	0	PURCHASE (71) STANDARD 30	6/30/2016	8998	TDA	2010/2011	0	0	5351
ORA	ORA041501	ORA041501	ORANGE CO	3	TCM Committed	BUR17	0	PURCHASE (71) STANDARD 30	6/30/2016	8998	TDA	2011/2012	0	0	3647
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2000/2001	4	0	0
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2001/2002	1	0	0
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2004/2005	16	0	0
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2005/2006	7	0	0
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2006/2007	574	0	0
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2007/2008	1700	0	3300
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2008/2009	1500	0	4100
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2009/2010	652	0	3356
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2010/2011	72985	2000	0
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2011/2012	0	0	220954
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2012/2013	0	0	235949
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2015/2016	0	0	86333
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2017/2018	0	0	53667
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2018/2019	0	0	53667
ORA	ORA050	ORA050	TCA	0	TCM Committed	CAR63	241	ETC (RTE 241/261/133) (RTE 9	12/31/2020	1156097	PVT	2019/2020	0	0	70000
ORA	ORA051	ORA051	TCA	0	TCM Committed	CAR63	241	(FTC-N) (OSO PKWY TO ETC) (1	12/31/2020	143517	PVT	2006/2007	700	0	0
ORA	ORA051	ORA051	TCA	0	TCM Committed	CAR63	241	(FTC-N) (OSO PKWY TO ETC) (1	12/31/2020	143517	PVT	2007/2008	1850	0	100
ORA	ORA051	ORA051	TCA	0	TCM Committed	CAR63	241	(FTC-N) (OSO PKWY TO ETC) (1	12/31/2020	143517	PVT	2008/2009	1570	0	6000
ORA	ORA051	ORA051	TCA	0	TCM Committed	CAR63	241	(FTC-N) (OSO PKWY TO ETC) (1	12/31/2020	143517	PVT	2009/2010	313	0	0
ORA	ORA051	ORA051	TCA	0	TCM Committed	CAR63	241	(FTC-N) (OSO PKWY TO ETC) (1	12/31/2020	143517	PVT	2010/2011	0	0	34492
ORA	ORA051	ORA051	TCA	0	TCM Committed	CAR63	241	(FTC-N) (OSO PKWY TO ETC) (1	12/31/2020	143517	PVT	2011/2012	0	0	34492
ORA	ORA051	ORA051	TCA	0	TCM Committed	CAR63	241	(FTC-N) (OSO PKWY TO ETC) (1	12/31/2020	143517	PVT	2012/2013	6400	0	0
ORA	ORA051	ORA051	TCA	0	TCM Committed	CAR63	241	(FTC-N) (OSO PKWY TO ETC) (1	12/31/2020	143517	PVT	2013/2014	0	0	28800
ORA	ORA051	ORA051	TCA	0	TCM Committed	CAR63	241	(FTC-N) (OSO PKWY TO ETC) (1	12/31/2020	143517	PVT	2015/2016	0	0	28800
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2005/2006	5000	0	0
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2006/2007	20000	35000	0
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2007/2008	10000	0	80000
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2008/2009	0	0	100000
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2009/2010	0	0	8000
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2010/2011	925	32190	340506
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	DEMOSTL	2011/2012	0	8000	0
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2011/2012	0	0	348506
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2012/2013	0	0	348506

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county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2016/2017	0	0	17250
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2017/2018	0	0	51750
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2018/2019	0	0	51750
ORA	ORA052	ORA052	TCA	9	TCM Committed	CAN67	241	(FTC-S) (I-5 TO OSO PKWY) (15	6/15/2030	1509133	PVT	2019/2020	0	0	51750
ORA	ORA081618	2TR0704	ORANGE CO	0	TCM Committed	RAO00	0	Metrolink Commuter Rail Prog	5/11/2015	15000	AGENCY	2009/2010	0	0	9432
ORA	ORA081619	2TR0704	ORANGE CO	0	TCM Committed	CON07	0	Station Improvments - suppor	5/11/2015	250	AGENCY	2009/2010	0	0	226
ORA	ORA081622	2TR0712	ORANGE CO	1	TCM Committed	TRRH6	0	Irvine Transit Station - Expansi	5/11/2015	2660	ORA-TRN	2009/2010	310	0	0
ORA	ORA081622	2TR0712	ORANGE CO	1	TCM Committed	TRRH6	0	Irvine Transit Station - Expansi	5/11/2015	2660	STPL-R	2009/2010	2350	0	0
ORA	ora0826016	2TR0703	ORANGE CO	3	TCM Committed	PAN93	0	Purchase (72) Paratransit Expa	6/30/2016	7641	TDA	2009/2010	0	0	1941
ORA	ora0826016	2TR0703	ORANGE CO	3	TCM Committed	PAN93	0	Purchase (72) Paratransit Expa	6/30/2016	7641	TDA	2010/2011	0	0	5700
ORA	ORA082618	2TR0703	ORANGE CO	3	TCM Committed	PAN93	0	Purchase Paratransit vehicles	6/30/2030	3384	TDA	2009/2010	0	0	1059
ORA	ORA082618	2TR0703	ORANGE CO	3	TCM Committed	PAN93	0	Purchase Paratransit vehicles	6/30/2030	3384	TDA	2010/2011	0	0	2325
ORA	ORA085004	2TR0704	ORANGE CO	18	TCM Committed	TRRH6	0	Anaheim Canyon Station proje	6/1/2014	22050	DEV FEE	2009/2010	0	2000	0
ORA	ORA085004	2TR0704	ORANGE CO	18	TCM Committed	TRRH6	0	Anaheim Canyon Station proje	6/1/2014	22050	CMAQ	2010/2011	1250	0	0
ORA	ORA085004	2TR0704	ORANGE CO	18	TCM Committed	TRRH6	0	Anaheim Canyon Station proje	6/1/2014	22050	CMAQ	2011/2012	0	2750	0
ORA	ORA085004	2TR0704	ORANGE CO	18	TCM Committed	TRRH6	0	Anaheim Canyon Station proje	6/1/2014	22050	PTMISEA	2011/2012	0	4000	0
ORA	ORA085004	2TR0704	ORANGE CO	18	TCM Committed	TRRH6	0	Anaheim Canyon Station proje	6/1/2014	22050	CMAQ	2013/2014	0	0	6050
ORA	ORA085004	2TR0704	ORANGE CO	18	TCM Committed	TRRH6	0	Anaheim Canyon Station proje	6/1/2014	22050	PTMISEA	2013/2014	0	0	6000
ORA	ORA110633	ORA110633	ORANGE CO	0	TCM Committed	TDM20	0	RIDESHARE VANPOOL PROGR	9/30/2012	2197	AGENCY	2008/2009	0	0	130
ORA	ORA110633	ORA110633	ORANGE CO	0	TCM Committed	TDM20	0	RIDESHARE VANPOOL PROGR	9/30/2012	2197	LTF	2008/2009	0	0	17
ORA	ORA110633	ORA110633	ORANGE CO	0	TCM Committed	TDM20	0	RIDESHARE VANPOOL PROGRA	9/30/2012	2197	AGENCY	2009/2010	0	0	1800
ORA	ORA110633	ORA110633	ORANGE CO	0	TCM Committed	TDM20	0	RIDESHARE VANPOOL PROGRA	9/30/2012	2197	LTF	2009/2010	0	0	250
ORA	ORA120318	ORA120318	ANAHEIM	21	TCM Committed	TRR14	0	ANAHEIM REGIONAL TRANS IN	6/30/2018	183864	2008EAR	2009/2010	588	0	0
ORA	ORA120318	ORA120318	ANAHEIM	21	TCM Committed	TRR14	0	ANAHEIM REGIONAL TRANS IN	6/30/2018	183864	2009EAR	2009/2010	2613	0	0
ORA	ORA120318	ORA120318	ANAHEIM	21	TCM Committed	TRR14	0	ANAHEIM REGIONAL TRANS IN	6/30/2018	183864	5309a	2009/2010	725	0	0
ORA	ORA120318	ORA120318	ANAHEIM	21	TCM Committed	TRR14	0	ANAHEIM REGIONAL TRANS IN	6/30/2018	183864	ORA-TRN	2009/2010	38080	0	0
ORA	ORA120318	ORA120318	ANAHEIM	21	TCM Committed	TRR14	0	ANAHEIM REGIONAL TRANS IN	6/30/2018	183864	5309c	2010/2011	0	0	5000
ORA	ORA120318	ORA120318	ANAHEIM	21	TCM Committed	TRR14	0	ANAHEIM REGIONAL TRANS IN	6/30/2018	183864	ORAM2TR	2010/2011	0	1129	90571
ORA	ORA120318	ORA120318	ANAHEIM	21	TCM Committed	TRR14	0	ANAHEIM REGIONAL TRANS IN	6/30/2018	183864	ORA-TRN	2010/2011	0	5820	0
ORA	ORA120318	ORA120318	ANAHEIM	21	TCM Committed	TRR14	0	ANAHEIM REGIONAL TRANS IN	6/30/2018	183864	STCASHR	2010/2011	0	0	29219
ORA	ORA120318	ORA120318	ANAHEIM	21	TCM Committed	TRR14	0	ANAHEIM REGIONAL TRANS IN	6/30/2018	183864	5309a	2011/2012	2619	0	0
ORA	ORA120318	ORA120318	ANAHEIM	21	TCM Committed	TRR14	0	ANAHEIM REGIONAL TRANS IN	6/30/2018	183864	5309c	2011/2012	0	0	7500
ORA	ORA120357	ORA120357	ORANGE CO	1	TCM Committed	ITS02	0	ORANGE COUNTY. Traffic Sign	6/15/2012	14673	STP-RIP	2005/2006	3573	0	0
ORA	ORA120357	ORA120357	ORANGE CO	1	TCM Committed	ITS02	0	ORANGE COUNTY. Traffic Sign	6/15/2012	14673	STP-RIP	2007/2008	8310	0	0
ORA	ORA120357	ORA120357	ORANGE CO	1	TCM Committed	ITS02	0	ORANGE COUNTY. Traffic Sign	6/15/2012	14673	5309c	2008/2009	1485	0	0
ORA	ORA120357	ORA120357	ORANGE CO	1	TCM Committed	ITS02	0	ORANGE COUNTY. Traffic Sign	6/15/2012	14673	TDA	2008/2009	305	0	0
ORA	ORA120357	ORA120357	ORANGE CO	1	TCM Committed	ITS02	0	ORANGE COUNTY. Traffic Sign	6/15/2012	14673	CMAQ	2010/2011	0	0	1000
ORA	ORA65002	ORA65002	ORANGE CO	17	TCM Committed	TDM20	0	RIDESHARE SERVICES RIDEGUI	6/30/2016	5223	5307-TR	2007/2008	0	0	735
ORA	ORA65002	ORA65002	ORANGE CO	17	TCM Committed	TDM20	0	RIDESHARE SERVICES RIDEGUI	6/30/2016	5223	CMAQ	2008/2009	0	0	2244
ORA	ORA65002	ORA65002	ORANGE CO	17	TCM Committed	TDM20	0	RIDESHARE SERVICES RIDEGUI	6/30/2016	5223	CMAQ	2012/2013	0	0	2244
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	CITY	2004/2005	17	0	689
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	STPE-R	2004/2005	52	0	2066

Appendix E SCAG Transportation Control Measures

county	project_id	RTP	agency	amendment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	CITY	2005/2006	0	0	605
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	STPE-R	2005/2006	0	0	4361
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	CITY	2006/2007	0	0	369
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	STPE-R	2006/2007	0	0	1151
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	CITY	2007/2008	0	0	3028
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	STPE-R	2007/2008	0	0	2254
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	CITY	2008/2009	0	0	6433
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	STPE-R	2008/2009	0	0	1092
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	TDA3	2008/2009	0	0	3987
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	CITY	2009/2010	0	0	384
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	STPE-R	2009/2010	0	0	1144
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	TDA3	2009/2010	0	0	1033
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	5307LA	2010/2011	0	0	1500
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	CITY	2010/2011	0	0	473
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	STPE-R	2010/2011	0	0	227
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	5307LA	2011/2012	0	0	500
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	CITY	2011/2012	0	0	867
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	STPE-R	2011/2012	0	0	481
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	CITY	2012/2013	0	0	592
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	STPE-R	2012/2013	0	0	2527
ORA	ORA990906	ORA990906	VARIOUS AG	17	TCM Committed	NCN25	0	Grouped Projects for Bicycle a	12/30/2014	35834	STPE-R	2013/2014	0	0	2
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	NH-IIP	1998/1999	2101	0	0
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	NH-RIP	1998/1999	2081	165	0
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	STP-GR	1998/1999	14148	36549	0
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	NH-RIP	1999/2000	4604	747	0
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	CMAQ	2002/2003	0	0	15042
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	STPL	2002/2003	0	0	13327
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-STP	2003/2004	0	45215	0
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	NH-IIP	2003/2004	0	0	9634
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	NH-RIP	2003/2004	0	1085	33105
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	STP-GR	2003/2004	0	0	18913
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	TCRF	2003/2004	0	0	35274
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	XRIV	2003/2004	0	0	26061
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2004/2005	0	0	26304
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-STP	2004/2005	0	23115	42631
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2005/2006	0	0	26305
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-STP	2005/2006	0	0	70000
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2006/2007	0	0	25349
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-STP	2006/2007	0	0	51219
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2007/2008	0	0	26600
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	NH-IIP	2007/2008	0	0	8170
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	STPL	2007/2008	0	0	8853

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RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	CMAQ	2008/2009	0	0	8960
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2008/2009	0	0	26600
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	STCASHI	2008/2009	0	0	3932
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	STPL	2008/2009	0	0	8860
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2009/2010	0	0	26659
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-STP	2009/2010	0	0	4721
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2010/2011	0	0	26658
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-STP	2010/2011	0	0	1800
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2011/2012	0	0	26658
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-STP	2011/2012	0	0	1299
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2012/2013	0	0	26658
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2013/2014	0	0	26658
RIV	0121D	0121D	CALTRANS	0	TCM Committed	CAX62	215	ON I-215/SR91/SR60, RIV I215	12/30/2012	782720	GRV-NH	2014/2015	0	0	26660
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	TCRF	2003/2004	3193	0	0
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	AGENCY	2004/2005	1694	0	0
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	CMAQ	2004/2005	13070	0	0
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	AGENCY	2007/2008	0	17587	0
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	CMAQ	2007/2008	0	20000	0
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	STCASHR	2007/2008	0	24263	0
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	TCRF	2007/2008	0	507	0
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	AGENCY	2008/2009	998	0	0
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	AGENCY	2009/2010	516	900	0
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	CMAQ	2009/2010	3984	0	0
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	CMAQ	2010/2011	0	0	34546
RIV	RIV010212	RIV010212	CALTRANS	17	TCM Committed	CAX62	91	ON SR91 - ADAMS TO 60/215 I	8/3/2015	278456	CMIA	2010/2011	0	0	157198
RIV	RIV010214	RRC0703	SOUTHERN C	0	TCM Committed	CON93	0	RCTC SHARE OF PURCHASE OF	12/30/2012	15448	5307	2004/2005	0	0	7573
RIV	RIV010214	RRC0703	SOUTHERN	0	TCM Committed	CON93	0	RCTC SHARE OF PURCHASE OF	12/30/2012	15448	5309a	2005/2006	0	0	6300
RIV	RIV010214	RRC0703	SOUTHERN C	0	TCM Committed	CON93	0	RCTC SHARE OF PURCHASE OF	12/30/2012	15448	TDA4	2005/2006	0	0	1575
RIV	RIV010227	RIV010227	CORONA	0	TCM Committed	ITS14	0	CORONA ADVANCED TRAFFIC	12/31/2010	6011	CITY	2008/2009	500	0	0
RIV	RIV010227	RIV010227	CORONA	0	TCM Committed	ITS14	0	CORONA ADVANCED TRAFFIC	12/31/2010	6011	CITY	2009/2010	0	0	1023
RIV	RIV010227	RIV010227	CORONA	0	TCM Committed	ITS14	0	CORONA ADVANCED TRAFFIC	12/31/2010	6011	TLSP	2009/2010	0	0	4488
RIV	RIV011242	RIV011242	SOUTHERN	0	TCM Committed	CON93	0	PURCHASE EXPANSION ROLLIN	12/30/2012	19693	AGENCY	2002/2003	0	0	2693
RIV	RIV011242	RIV011242	SOUTHERN	0	TCM Committed	CON93	0	PURCHASE EXPANSION ROLLIN	12/30/2012	19693	STP-IIP	2006/2007	0	0	17000
RIV	RIV041029	RIV041029	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN RIVERSIDE - CONSTRUCT NE	12/30/2012	7510	TDA4	2004/2005	27	0	96
RIV	RIV041029	RIV041029	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN RIVERSIDE - CONSTRUCT NE	12/30/2012	7510	5309c	2006/2007	742	0	0
RIV	RIV041029	RIV041029	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN RIVERSIDE - CONSTRUCT NE	12/30/2012	7510	WRVTUMF	2006/2007	159	2500	27
RIV	RIV041029	RIV041029	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN RIVERSIDE - CONSTRUCT NE	12/30/2012	7510	WRVTUMF	2007/2008	0	1500	0
RIV	RIV041029	RIV041029	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN RIVERSIDE - CONSTRUCT NE	12/30/2012	7510	5307	2008/2009	0	0	216
RIV	RIV041029	RIV041029	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN RIVERSIDE - CONSTRUCT NE	12/30/2012	7510	5309c	2008/2009	0	0	1806
RIV	RIV041029	RIV041029	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN RIVERSIDE - CONSTRUCT NE	12/30/2012	7510	STA	2008/2009	0	0	54
RIV	RIV041029	RIV041029	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN RIVERSIDE - CONSTRUCT NE	12/30/2012	7510	WRVTUMF	2008/2009	0	0	377
RIV	RIV041029	RIV041029	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN RIVERSIDE - CONSTRUCT NE	12/30/2012	7510	5309c	2009/2010	0	0	5

Appendix E SCAG Transportation Control Measures

county	project_id	RTP	agency	amendment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
RIV	RIV041029	RIV041029	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN RIVERSIDE - CONSTRUCT NE	12/30/2012	7510	WRVTUMF	2009/2010	0	0	1
RIV	RIV041030	3TC04TR6	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN THE CITY OF HEMET - CONS	6/30/2012	1442	5309c	2004/2005	303	0	0
RIV	RIV041030	3TC04TR6	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN THE CITY OF HEMET - CONS	6/30/2012	1442	WRVTUMF	2004/2005	76	0	638
RIV	RIV041030	3TC04TR6	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN THE CITY OF HEMET - CONS	6/30/2012	1442	5309c	2006/2007	340	0	0
RIV	RIV041030	3TC04TR6	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN THE CITY OF HEMET - CONS	6/30/2012	1442	WRVTUMF	2006/2007	85	0	0
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	5309c	2005/2006	1165	0	0
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	WRVTUMF	2005/2006	292	0	24
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	5309c	2006/2007	0	0	95
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	WRVTUMF	2006/2007	0	0	24
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	5307	2007/2008	0	0	6
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	5309c	2007/2008	0	0	100
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	STA	2007/2008	0	0	2
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	WRVTUMF	2007/2008	0	0	25
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	5309c	2008/2009	0	0	109
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	WRVTUMF	2008/2009	0	0	27
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	5309c	2009/2010	0	0	113
RIV	RIV050553	RIV050553	RIVERSIDE T	0	TCM Committed	TRNH6	0	IN TEMECULA - CONSTRUCT N	6/30/2013	8000	WRVTUMF	2009/2010	0	0	28
RIV	RIV051201	RIV051201	RIVERSIDE C	0	TCM Committed	TDN64	0	IN CORONA - CONTINUE THE I	6/30/2013	40	XRIV	2005/2006	0	0	5
RIV	RIV051201	RIV051201	RIVERSIDE C	0	TCM Committed	TDN64	0	IN CORONA - CONTINUE THE I	6/30/2013	40	XRIV	2006/2007	0	0	5
RIV	RIV051201	RIV051201	RIVERSIDE C	0	TCM Committed	TDN64	0	IN CORONA - CONTINUE THE I	6/30/2013	40	XRIV	2007/2008	0	0	5
RIV	RIV051201	RIV051201	RIVERSIDE C	0	TCM Committed	TDN64	0	IN CORONA - CONTINUE THE I	6/30/2013	40	XRIV	2008/2009	0	0	5
RIV	RIV051201	RIV051201	RIVERSIDE C	0	TCM Committed	TDN64	0	IN CORONA - CONTINUE THE I	6/30/2013	40	XRIV	2009/2010	0	0	5
RIV	RIV051201	RIV051201	RIVERSIDE C	0	TCM Committed	TDN64	0	IN CORONA - CONTINUE THE I	6/30/2013	40	XRIV	2010/2011	0	0	5
RIV	RIV051201	RIV051201	RIVERSIDE C	0	TCM Committed	TDN64	0	IN CORONA - CONTINUE THE I	6/30/2013	40	XRIV	2011/2012	0	0	5
RIV	RIV051201	RIV051201	RIVERSIDE C	0	TCM Committed	TDN64	0	IN CORONA - CONTINUE THE I	6/30/2013	40	XRIV	2012/2013	0	0	5
RIV	RIV070303	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN NW RIV CO: CONT	12/30/2010	751	AGENCY	2006/2007	0	0	37
RIV	RIV070303	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN NW RIV CO: CONT	12/30/2010	751	ST-CASH	2006/2007	0	0	148
RIV	RIV070303	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN NW RIV CO: CONT	12/30/2010	751	AGENCY	2007/2008	0	0	37
RIV	RIV070303	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN NW RIV CO: CONT	12/30/2010	751	ST-CASH	2007/2008	0	0	147
RIV	RIV070303	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN NW RIV CO: CONT	12/30/2010	751	AGENCY	2008/2009	0	0	37
RIV	RIV070303	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN NW RIV CO: CONT	12/30/2010	751	ST-CASH	2008/2009	0	0	147
RIV	RIV070303	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN NW RIV CO: CONT	12/30/2010	751	AGENCY	2009/2010	0	0	40
RIV	RIV070303	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN NW RIV CO: CONT	12/30/2010	751	ST-CASH	2009/2010	0	0	158
RIV	RIV070304	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	215	ON I-215 IN SW RIV CO: CONT	12/30/2010	791	AGENCY	2006/2007	0	0	40
RIV	RIV070304	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	215	ON I-215 IN SW RIV CO: CONT	12/30/2010	791	ST-CASH	2006/2007	0	0	158
RIV	RIV070304	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	215	ON I-215 IN SW RIV CO: CONT	12/30/2010	791	AGENCY	2007/2008	0	0	40
RIV	RIV070304	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	215	ON I-215 IN SW RIV CO: CONT	12/30/2010	791	ST-CASH	2007/2008	0	0	158
RIV	RIV070304	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	215	ON I-215 IN SW RIV CO: CONT	12/30/2010	791	AGENCY	2008/2009	0	0	39
RIV	RIV070304	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	215	ON I-215 IN SW RIV CO: CONT	12/30/2010	791	ST-CASH	2008/2009	0	0	158
RIV	RIV070304	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	215	ON I-215 IN SW RIV CO: CONT	12/30/2010	791	AGENCY	2009/2010	0	0	40
RIV	RIV070304	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	215	ON I-215 IN SW RIV CO: CONT	12/30/2010	791	ST-CASH	2009/2010	0	0	158
RIV	RIV070307	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN MORENO VALLEY:	12/30/2010	791	AGENCY	2006/2007	0	0	40

DRAFT FINAL 2012 AQMP SOCIOECONOMIC REPORT

county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
RIV	RIV070307	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN MORENO VALLEY:	12/30/2010	791	ST-CASH	2006/2007	0	0	158
RIV	RIV070307	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN MORENO VALLEY:	12/30/2010	791	AGENCY	2007/2008	0	0	40
RIV	RIV070307	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN MORENO VALLEY:	12/30/2010	791	ST-CASH	2007/2008	0	0	158
RIV	RIV070307	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN MORENO VALLEY:	12/30/2010	791	AGENCY	2008/2009	0	0	39
RIV	RIV070307	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN MORENO VALLEY:	12/30/2010	791	ST-CASH	2008/2009	0	0	158
RIV	RIV070307	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN MORENO VALLEY:	12/30/2010	791	AGENCY	2009/2010	0	0	40
RIV	RIV070307	30M0701	RIVERSIDE C	0	TCM Committed	TDM24	60	ON SR60 IN MORENO VALLEY:	12/30/2010	791	ST-CASH	2009/2010	0	0	158
RIV	RIV090609	3TL807	RIVERSIDE T	0	TCM Committed	ITS01	0	IN WESTERN RIVERSIDE COUN	12/30/2011	612	5309c	2004/2005	0	0	73
RIV	RIV090609	3TL807	RIVERSIDE T	0	TCM Committed	ITS01	0	IN WESTERN RIVERSIDE COUN	12/30/2011	612	WRVTUMF	2004/2005	0	0	18
RIV	RIV090609	3TL807	RIVERSIDE T	0	TCM Committed	ITS01	0	IN WESTERN RIVERSIDE COUN	12/30/2011	612	5309c	2006/2007	0	0	95
RIV	RIV090609	3TL807	RIVERSIDE T	0	TCM Committed	ITS01	0	IN WESTERN RIVERSIDE COUN	12/30/2011	612	WRVTUMF	2006/2007	0	0	24
RIV	RIV090609	3TL807	RIVERSIDE T	0	TCM Committed	ITS01	0	IN WESTERN RIVERSIDE COUN	12/30/2011	612	5309c	2007/2008	0	0	100
RIV	RIV090609	3TL807	RIVERSIDE T	0	TCM Committed	ITS01	0	IN WESTERN RIVERSIDE COUN	12/30/2011	612	WRVTUMF	2007/2008	0	0	25
RIV	RIV090609	3TL807	RIVERSIDE T	0	TCM Committed	ITS01	0	IN WESTERN RIVERSIDE COUN	12/30/2011	612	5309c	2008/2009	0	0	109
RIV	RIV090609	3TL807	RIVERSIDE T	0	TCM Committed	ITS01	0	IN WESTERN RIVERSIDE COUN	12/30/2011	612	WRVTUMF	2008/2009	0	0	27
RIV	RIV090609	3TL807	RIVERSIDE T	0	TCM Committed	ITS01	0	IN WESTERN RIVERSIDE COUN	12/30/2011	612	5309c	2009/2010	0	0	113
RIV	RIV090609	3TL807	RIVERSIDE T	0	TCM Committed	ITS01	0	IN WESTERN RIVERSIDE COUN	12/30/2011	612	WRVTUMF	2009/2010	0	0	28
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	5307	2004/2005	3657	0	0
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	CMAQ	2004/2005	2907	0	0
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	5307	2006/2007	2500	0	0
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	XRIV	2006/2007	8075	0	0
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	5309b	2007/2008	1960	0	0
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	STPL	2007/2008	500	0	0
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	5307	2009/2010	10000	0	0
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	CMAQ	2009/2010	0	0	4298
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	XRIV	2009/2010	8891	0	0
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	5307	2010/2011	10000	0	0
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	PTA-RIP	2010/2011	0	0	52978
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	5309b	2011/2012	0	0	73040
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	AGENCY	2011/2012	0	0	15000
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	CMAQ	2011/2012	0	0	11450
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	XRIV	2011/2012	0	18814	16753
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	CMAQ	2012/2013	0	0	3128
RIV	RIV520109	RIV520109	RIVERSIDE C	24	TCM	RAN92	0	RECONSTRUCT & UPGRADE SA	6/1/2014	246827	CMAQ	2013/2014	0	0	2876
RIV	RIV520111	RIV520111	RIVERSIDE C	0	TCM Committed	TDM20	0	REGIONAL RIDESHARE - CONT	12/30/2011	10157	STP-RIP	2003/2004	0	0	1220
RIV	RIV520111	RIV520111	RIVERSIDE C	0	TCM Committed	TDM20	0	REGIONAL RIDESHARE - CONT	12/30/2011	10157	XRIV	2004/2005	0	0	1600
RIV	RIV520111	RIV520111	RIVERSIDE C	0	TCM Committed	TDM20	0	REGIONAL RIDESHARE - CONT	12/30/2011	10157	XRIV	2005/2006	0	0	1449
RIV	RIV520111	RIV520111	RIVERSIDE C	0	TCM Committed	TDM20	0	REGIONAL RIDESHARE - CONT	12/30/2011	10157	STPL	2006/2007	0	0	820
RIV	RIV520111	RIV520111	RIVERSIDE C	0	TCM Committed	TDM20	0	REGIONAL RIDESHARE - CONT	12/30/2011	10157	XRIV	2006/2007	0	0	1591
RIV	RIV520111	RIV520111	RIVERSIDE C	0	TCM Committed	TDM20	0	REGIONAL RIDESHARE - CONT	12/30/2011	10157	XRIV	2007/2008	0	0	1559
RIV	RIV520111	RIV520111	RIVERSIDE C	0	TCM Committed	TDM20	0	REGIONAL RIDESHARE - CONT	12/30/2011	10157	XRIV	2008/2009	0	0	1884
RIV	RIV520111	RIV520111	RIVERSIDE C	0	TCM Committed	TDM20	0	REGIONAL RIDESHARE - CONT	12/30/2011	10157	XRIV	2009/2010	0	0	30

Appendix E SCAG Transportation Control Measures

county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
RIV	RIV520111	RIV520111	RIVERSIDE C	0	TCM Committed	TDM20	0	REGIONAL RIDESHARE - CONTI	12/30/2011	10157	XRIV	2010/2011	0	0	4
RIV	RIV62029	RIV62029	TEMECULA	24	TCM	TDN64	79	AT HWY 79 SO AND LA PAZ ST	12/31/2015	2374	AB2766	2008/2009	59	0	0
RIV	RIV62029	RIV62029	TEMECULA	24	TCM	TDN64	79	AT HWY 79 SO AND LA PAZ ST	12/31/2015	2374	CITY	2008/2009	85	188	0
RIV	RIV62029	RIV62029	TEMECULA	24	TCM	TDN64	79	AT HWY 79 SO AND LA PAZ ST	12/31/2015	2374	AB2766	2009/2010	70	0	0
RIV	RIV62029	RIV62029	TEMECULA	24	TCM	TDN64	79	AT HWY 79 SO AND LA PAZ ST	12/31/2015	2374	AB2766	2014/2015	0	0	338
RIV	RIV62029	RIV62029	TEMECULA	24	TCM	TDN64	79	AT HWY 79 SO AND LA PAZ ST	12/31/2015	2374	CITY	2014/2015	0	0	1634
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	STP-RIP	1998/1999	14052	0	0
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	STP-RIP	2002/2003	0	42651	0
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	CMAQ	2003/2004	0	14018	0
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	CMAQ	2004/2005	0	3763	0
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	STCASHP	2004/2005	0	38348	0
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	XSBD	2004/2005	27594	0	0
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	CMAQ	2005/2006	0	21096	0
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	CMAQ	2006/2007	0	0	13638
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	PNRS	2006/2007	0	17095	4975
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	STCASHR	2006/2007	0	0	57096
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	STPL	2006/2007	0	0	29307
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	TCRF	2006/2007	0	0	19483
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	XSBD	2006/2007	0	23646	3291
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	STCASHP	2007/2008	5390	0	0
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	STP-RIP	2007/2008	0	23939	0
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	ARRA-TE	2008/2009	0	0	1732
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	AR-RSTP	2008/2009	0	0	77212
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	AR-STP	2008/2009	0	0	49120
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	CMAQ	2008/2009	0	0	50185
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	CMIA	2008/2009	0	0	59000
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	DEMOT21	2008/2009	0	0	2063
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	PNRS	2008/2009	0	0	33930
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	STCASHR	2008/2009	0	0	38853
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	STPL	2008/2009	0	0	34850
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN SA	12/1/2010	718586	TCRF	2008/2009	0	0	5517
SBD	713	713	VARIOUS AG	0	TCM Committed	CAX69	215	I-215 CORRIDOR NORTH - IN S	12/1/2010	718586	XSBD	2008/2009	0	0	6742
SBD	20620	20620	VARIOUS AG	0	TCM Committed	CAX68	210	UPLAND TO SAN BERNARDINO	12/1/2010	482339	CMAQ	2003/2004	0	0	19241
SBD	20620	20620	VARIOUS AG	0	TCM Committed	CAX68	210	UPLAND TO SAN BERNARDINO	12/1/2010	482339	NH-IIP	2003/2004	0	0	2889
SBD	20620	20620	VARIOUS AG	0	TCM Committed	CAX68	210	UPLAND TO SAN BERNARDINO	12/1/2010	482339	STPL	2003/2004	0	0	1393
SBD	20620	20620	VARIOUS AG	0	TCM Committed	CAX68	210	UPLAND TO SAN BERNARDINO	12/1/2010	482339	STP-RIP	2003/2004	5931	111729	121206
SBD	20620	20620	VARIOUS AG	0	TCM Committed	CAX68	210	UPLAND TO SAN BERNARDINO	12/1/2010	482339	XSBD	2004/2005	15636	0	44347
SBD	20620	20620	VARIOUS AG	0	TCM Committed	CAX68	210	UPLAND TO SAN BERNARDINO	12/1/2010	482339	CMIA	2008/2009	0	0	22000
SBD	20620	20620	VARIOUS AG	0	TCM Committed	CAX68	210	UPLAND TO SAN BERNARDINO	12/1/2010	482339	STCASHR	2008/2009	0	0	57967
SBD	200074	200074	SANBAG	0	TCM Committed	NCN25	0	GROUPED PROJECTS FOR TRA	12/1/2011	4071	STPE-R	2004/2005	61	0	2294
SBD	200074	200074	SANBAG	0	TCM Committed	NCN25	0	GROUPED PROJECTS FOR TRA	12/1/2011	4071	STPE-R	2005/2006	690	0	366
SBD	200074	200074	SANBAG	0	TCM Committed	NCN25	0	GROUPED PROJECTS FOR TRA	12/1/2011	4071	STPE-R	2006/2007	0	0	660

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county	project_id	RTP	agency	amend-ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
SBD	200431	200431	FONTANA	0	TCM Committed	NCN26	0	INLAND PACIFIC ELECTRIC TRA	12/1/2011	3054	CITY	2004/2005	670	0	0
SBD	200431	200431	FONTANA	0	TCM Committed	NCN26	0	INLAND PACIFIC ELECTRIC TRA	12/1/2011	3054	LTF	2006/2007	0	0	338
SBD	200431	200431	FONTANA	0	TCM Committed	NCN26	0	INLAND PACIFIC ELECTRIC TRA	12/1/2011	3054	STPE-PR	2006/2007	0	0	1796
SBD	200431	200431	FONTANA	0	TCM Committed	NCN26	0	INLAND PACIFIC ELECTRIC TRA	12/1/2011	3054	1112	2008/2009	0	0	250
SBD	200450	200450	RIALTO	3	TCM Committed	TDR64	0	RIALTO METROLINK STATION -	12/1/2011	3356	5307	2009/2010	38	0	0
SBD	200450	200450	RIALTO	3	TCM Committed	TDR64	0	RIALTO METROLINK STATION -	12/1/2011	3356	5307	2010/2011	0	0	2400
SBD	200450	200450	RIALTO	3	TCM Committed	TDR64	0	RIALTO METROLINK STATION -	12/1/2011	3356	5309a	2010/2011	0	0	285
SBD	200450	200450	RIALTO	3	TCM Committed	TDR64	0	RIALTO METROLINK STATION -	12/1/2011	3356	LTF	2010/2011	0	0	633
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	PTA-RIP	2007/2008	5000	0	0
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	5307	2008/2009	0	0	33076
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	5307	2009/2010	0	0	7661
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	LTF	2009/2010	0	0	13397
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	PTMISEA	2009/2010	0	0	7473
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	STA	2009/2010	0	0	10095
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	XSBD	2009/2010	0	0	483
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	5307	2010/2011	0	0	6178
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	5307-TR	2010/2011	0	0	21000
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	5309a	2010/2011	0	0	32370
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	PTMISEA	2010/2011	0	0	6864
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	STA	2010/2011	0	0	1007
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	XSBD	2010/2011	0	0	1640
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	5309a	2011/2012	0	0	42630
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	XSBD	2011/2012	0	0	1664
SBD	200625	200625	OMNITRANS	8	TCM Committed	RAN92	0	E STREET TRANSIT CORRIDOR-	1/1/2014	192236	XSBD	2012/2013	0	0	1698
SBD	981118	981118	OMNITRANS	24	TCM	TRNH6	0	BUS SYSTEM - PASSENGER FA	8/31/2012	1244	STA	2004/2005	0	0	200
SBD	981118	981118	OMNITRANS	24	TCM	TRNH6	0	BUS SYSTEM - PASSENGER FA	8/31/2012	1244	5309c	2010/2011	0	0	191
SBD	981118	981118	OMNITRANS	24	TCM	TRNH6	0	BUS SYSTEM - PASSENGER FA	8/31/2012	1244	STA	2010/2011	0	0	48
SBD	981118	981118	OMNITRANS	24	TCM	TRNH6	0	BUS SYSTEM - PASSENGER FA	8/31/2012	1244	5309c	2011/2012	0	0	201
SBD	981118	981118	OMNITRANS	24	TCM	TRNH6	0	BUS SYSTEM - PASSENGER FA	8/31/2012	1244	STA	2011/2012	0	0	50
SBD	981118	981118	OMNITRANS	24	TCM	TRNH6	0	BUS SYSTEM - PASSENGER FA	8/31/2012	1244	5309c	2012/2013	0	0	217
SBD	981118	981118	OMNITRANS	24	TCM	TRNH6	0	BUS SYSTEM - PASSENGER FA	8/31/2012	1244	STA	2012/2013	0	0	54
SBD	981118	981118	OMNITRANS	24	TCM	TRNH6	0	BUS SYSTEM - PASSENGER FA	8/31/2012	1244	5309c	2013/2014	0	0	226
SBD	981118	981118	OMNITRANS	24	TCM	TRNH6	0	BUS SYSTEM - PASSENGER FA	8/31/2012	1244	STA	2013/2014	0	0	57
SBD	20020802	100705	SAN BERNA	0	TCM Committed	TDR64	0	METROLINK ADD'L PARKING S	6/30/2009	11064	CMAQ	2004/2005	531	0	0
SBD	20020802	100705	SAN BERNAR	0	TCM Committed	TDR64	0	METROLINK ADD'L PARKING S	6/30/2009	11064	LTF	2004/2005	69	0	0
SBD	20020802	100705	SAN BERNAR	0	TCM Committed	TDR64	0	METROLINK ADD'L PARKING S	6/30/2009	11064	CMAQ	2008/2009	0	0	6608
SBD	20020802	100705	SAN BERNAR	0	TCM Committed	TDR64	0	METROLINK ADD'L PARKING S	6/30/2009	11064	LTF	2008/2009	0	0	856
SBD	20020802	100705	SAN BERNA	0	TCM Committed	TDR64	0	METROLINK ADD'L PARKING S	6/30/2009	11064	PVT	2008/2009	0	0	3000
SBD	20061012	4TR0101	SANBAG	18	TCM Committed	RAN92	0	DOWNTOWN SAN BERNARDIN	10/10/2014	66021	5307	2007/2008	800	0	0
SBD	20061012	4TR0101	SANBAG	18	TCM Committed	RAN92	0	DOWNTOWN SAN BERNARDIN	10/10/2014	66021	LTF	2007/2008	200	0	0
SBD	20061012	4TR0101	SANBAG	18	TCM Committed	RAN92	0	DOWNTOWN SAN BERNARDIN	10/10/2014	66021	LTF	2011/2012	0	6587	0
SBD	20061012	4TR0101	SANBAG	18	TCM Committed	RAN92	0	DOWNTOWN SAN BERNARDIN	10/10/2014	66021	XSBD	2011/2012	5331	0	0

Appendix E SCAG Transportation Control Measures

county	project_id	RTP	agency	amend ment	conformity category	program code	route	project description	completion date	total project cost	fund type	fiscal year	eng	row	con
SBD	20061012	4TR0101	SANBAG	18	TCM Committed	RAN92	0	DOWNTOWN SAN BERNARDIN	10/10/2014	66021	5307	2012/2013	0	0	12000
SBD	20061012	4TR0101	SANBAG	18	TCM Committed	RAN92	0	DOWNTOWN SAN BERNARDINO	10/10/2014	66021	CMAQ	2012/2013	0	0	10306
SBD	20061012	4TR0101	SANBAG	18	TCM Committed	RAN92	0	DOWNTOWN SAN BERNARDINO	10/10/2014	66021	CTSGP	2012/2013	0	0	3389
SBD	20061012	4TR0101	SANBAG	18	TCM Committed	RAN92	0	DOWNTOWN SAN BERNARDINO	10/10/2014	66021	LTF	2012/2013	0	0	7997
SBD	20061012	4TR0101	SANBAG	18	TCM Committed	RAN92	0	DOWNTOWN SAN BERNARDINO	10/10/2014	66021	PTMISEA	2012/2013	0	0	5000
SBD	20061012	4TR0101	SANBAG	18	TCM Committed	RAN92	0	DOWNTOWN SAN BERNARDINO	10/10/2014	66021	XSBD	2012/2013	0	0	14411
SBD	SBD031505	SBD031505	SANBAG	0	TCM Committed	NCN25	0	GROUPED PROJECTS FOR LTF	12/1/2010	7900	TDA3	2005/2006	0	0	4900
SBD	SBD031505	SBD031505	SANBAG	0	TCM Committed	NCN25	0	GROUPED PROJECTS FOR LTF	12/1/2010	7900	TDA3	2006/2007	0	0	3000

Numbers in the last three columns of the table are in thousands of nominal dollars.

TABLE E-2**SCAG TCM Funding Sources**

Fund Name	Jurisdiction	Remarks
1112	Federal	Federal
5307	Federal	Gas Tax
5339	Federal	Gas Tax
5394	Federal	
2008EAR	Federal	
2009EAR	Federal	
5307LA	Federal	It is a formula-based allocation to urban areas - thus LA/LB/SA is one of the areas in the SCAG region; Gas Tax
5307-TR	Federal	Gas Tax
5309a	Federal	Gas Tax
5309b	Federal	Gas Tax
5309c	Federal	Gas Tax
AB2766	State	Vehicle Registration Surcharge
AGENCY	Local	Various - use local agency general funds
AR-5307	State	Gas Tax
ARRA-TE	State	Gas Tax
AR-RSTP	Federal	
AR-STP	Federal	
BONDL	Local	Local bonds
CITY	Local	Local agency general funds
CMAQ	Federal	
CMIA	State	State bonds - Prop 1B
CO	Local	Various - use local agency general funds
CRD	State	Gas Tax
CTSGP	State	General Fund-California Transit Security Grant Program
DEMISTE	Federal	
DEMOSTL	Federal	
DEMOT21	Federal	
DEV FEE	Local	Developer Fees--land subdividers
FEE	Local	Developer Impact Fee
GEN	Local	Local agency general funds
GRV-NH	Federal	Federal GARVEE
GRV-STP	Federal	
LTF	Local	Sales Tax-0.025 cent
MEA_R	Local	Sales Tax 0.5 cent
MR02	Local	Measure R Sales Tax 0.5 cent
MR20H	Local	Measure R Sales Tax 0.5 cent
MR35	Local	Measure R Sales Tax 0.5 cent
NH	Federal	
NH-IIP	Federal	
NH-RIP	Federal	
ORAM2TR	Local	Orange County Measure M2 Sales Tax 0.5 cent
ORA-RIP	Local	Orange County Measure M2 Sales Tax 0.5 cent
ORA-TRN	Local	Orange County Measure M2 Sales Tax 0.5 cent
P116	State	State Bond
PC10	Local	Propositions Sales Tax Los Angeles County Metro
PC20	Local	Propositions Sales Tax Los Angeles County Metro
PC25	Local	Propositions Sales Tax Los Angeles County Metro
PC40	Local	Propositions Sales Tax Los Angeles County Metro
PC5	Local	Propositions Sales Tax Los Angeles County Metro
PNRS	Federal	
PORT	Local	Port of LA or LB - general funds

SCAG TCM Funding Sources TABLE E-2 (Continued)

Fund Name	Jurisdiction	Remarks
PROPA	Local	Sales Tax 0.5 cent
PROPALR	Local	Prop A Local Return Sales Tax 0.5 cent
PTA-IIP	State	Sales Tax on Diesel Fuel
PTA-RIP	State	Sales Tax on Diesel Fuel
PTMISEA	State	State bonds - Prop 1B
PVT	Private Funds	Private source Development Agreements
SLP	State	State bonds - Prop 1B
STA	State	Sales Tax on Diesel Fuel
STA-1B	State	Bond
STA-BLA	Local	Sales Tax on Diesel Fuel
STAL-S	State	Gas Tax
STCASGI	State	Gas Tax
ST-CASH	State	Gas Tax
STCASHI	State	Gas Tax
STCASHP	State	Gas Tax
STCASHR	State	Gas Tax
STC-RIPP	State	Gas Tax
STIPACIP	State	Gas Tax
STIPACRP	State	Gas Tax
STPE-I	Federal	
STPE-P	Federal	
STPE-PR	Federal	
STPE-R	Federal	
STP-GR	Federal	
STP-IIP	Federal	
STPL	Federal	
STPL-R	Federal	
STP-RIP	Federal	
TCIF	State	State bonds - Prop 1B
TCRF	State	State general fund
TDA	Local	Sales Tax and Sales Tax on Diesel Fuel
TDA3	Local	Sales Tax and Sales Tax on Diesel Fuel
TDA4	Local	Sales Tax and Sales Tax on Diesel Fuel
TIFIA	Local	Federal low-interest loans
TIGER	Federal	
TIGGER	Federal	
TLSP	State	State bonds - Prop 1B
UNIV	State	State general fund
WRVTUMF	Local	Regional development impact fees
XRIV	Local	Riverside Co Sales Tax
XSBD	Local	San Bernardino Measure I Sales Tax

APPENDIX F

COMMENTS FROM PEER REVIEW ECONOMISTS

Introduction

Biographies

Professor J. R. DeShazo, UCLA

Professor Gloria Gonzalez-Rivera, UC Riverside

Professor Lisa Grobar, California State University, Long Beach

Professor Emeritus Jane Hall, California State University, Fullerton

Stephen Levy, CCSCE

Professor Paul Ong, UCLA

Dr. Fred Treyz, CEO, REMI

Professor Karen Polenske, MIT

AQMD Responses to Comments from Economists

INTRODUCTION

Several economists have peer-reviewed the District's Draft Socioeconomic Report. Specifically, Professor J.R. DeShazo assisted in reviewing the value of a statistical life used for the PM2.5 mortality assessment. Professor Gloria González-Rivera, Professor Lisa M. Grobar, Professor Emeritus Jane Hall, Mr. Stephen Levy, Professor Paul Ong, Dr. Frederick R. Treyz, and Professor Karen R. Polenske have reviewed the entire Draft report. All of their comments received as of the publication date of the Draft Report are included in their entirety in this appendix.

BIOGRAPHIES

Professor **J.R. DeShazo** is Professor Public Policy, Vice Chair of the Department of Public Policy, and Director of the Luskin Center for Innovation at UCLA. His expertise includes public finance, organizational governance, and the willingness-to-pay for health risk reductions. He has several recent peer-reviewed publications on the willingness-to-pay subject. His other research covers environmental issues such as greenhouse gases and solar power. Professor DeShazo holds a Ph.D. in Urban Planning from Harvard University. He was a Rhodes Scholar while completing his M.Sc. at Oxford University.

Professor **Gloria González-Rivera** is Professor of Economics at the University of California Riverside. Professor González-Rivera is a Fulbright Scholar. Her research focuses on the development of econometric and forecasting methodology with applications in financial markets, volatility forecasting, risk management, and agricultural markets. She is Associate Editor for the International Journal of Forecasting, and has been elected to the Board of Directors of the International Institute of Forecasters. Professor González-Rivera received her Ph.D. in economics from the University of California, San Diego where she wrote her dissertation under the tutelage of 2003 Nobel Laureate Professor Robert F. Engle.

Professor **Lisa M. Grobar** is Professor of Economics at California State University, Long Beach and serves as Director of the CSULB Economic Forecast Project. She is a regional economist with specialization in southern California economy. Dr. Grobar has co-run the annual forecasting conference for the Long Beach economy and southern California counties since 1990. Her recent research focuses on the various sectors in the Long Beach economy, including Long Beach airport, nonprofits, overnight tourism, and downtown Long Beach. Professor Grobar received her Ph.D. in economics from the University of Michigan.

Professor Emeritus **Jane Hall** of California State University, Fullerton has performed extensive research on the economics of regulation and the environment. Her research covers a broad range of topics, including national economic policy, the Asian economic crisis, and the economic costs of pollution. She has conducted studies on the valuation of health effects of ozone and particulates for various regions in California, including southern California, the San Joaquin Valley, and the Bay Area. Professor Hall earned her Ph.D. in energy and resources from the University of California, Berkeley.

Mr. **Stephen Levy** is Director and Senior Economist of the Center for Continuing Study of the California Economy (CCSCE) in Palo Alto. CCSCE provides an independent assessment of economic and demographic trends in California. Mr. Levy works with public institutions and

private companies on various issues (such as long-term planning challenges) related to the California growth trends, including county and sectoral projections. Mr. Levy is the principal author of CCSCE's annual report series on the California economy. Mr. Levy has a master's degree in economics from the Massachusetts Institute of Technology (MIT).

Professor **Paul Ong** is Professor of Urban Planning and Social Welfare at the University of California, Los Angeles. Professor Ong has conducted studies based on sub-county demographic statistics from the census data. The study subjects include differential impacts on race and ethnicity of various events such as job and industry turnover, urban traffic, and other social issues. He served as an advisor to the U.S. Bureau of the Census, the California Department of Social Services, and the California Department of Employment Development. Professor Ong earned his Ph.D. in economics from the University of California, Berkeley.

Dr. **Frederick R. Treyz** is CEO of Regional Economic Models, Inc. (REMI). As CEO of REMI, Dr. Treyz is responsible for research, development, consultation, and management of regional forecasting and policy analyses with clients across U.S. and Europe. During his time as CEO, Dr. Treyz has overseen the annual data update and delivery of over 100 economic models that are used for energy, environmental, economic development, and other policies that affect various economies. Dr. Treyz holds a Ph.D. in Regional Science from the University of Pennsylvania.

Professor **Karen R. Polenske** is Professor of Regional Political Economy and Planning at MIT. She has performed numerous researches on using input-output models for economic impact analyses. Her current research includes comparative analyses of energy use, pollution generation, and industrial-technology options in the People's Republic of China (China), Brazil, and India; and regional implications of fuel use on food security in the United States. She is a past President of the International Input-Output Association. She won the 1996 North American Regional Science Distinguished Scholar Award. Professor Polenske holds a Ph.D. in economics from Harvard University and worked under the tutelage of 1973 Nobel Laureate Professor Wassily W. Leontief.

AQMD RESPONSES TO COMMENTS FROM ECONOMISTS

Table F-1 has a summary of major comments from the peer-review economists and AQMD responses.

TABLE F-1
AQMD Responses to Comments from Peer-Review Economists

Peer Review Economists	Comments	Responses
Professor J. R. DeShazo, UCLA	<ol style="list-style-type: none"> 1. Support Dr. Deck’s recommendation of the value of a statistical life (VSL) estimate based on Kochi et al. (2006). 2. Consider VSLs associated with health risks in future years of a person’s life. 3. Include illness-specific VSLs. 	<ol style="list-style-type: none"> 1. The comment is noted. 2. The recommendation will be one of the future enhancements as indicated on pp. 8-3 to 8-4 in Chapter 8. 3. Please see the response to Comment 2 above.
Professor Gloria Gonzalez-Rivera, UC Riverside	<ol style="list-style-type: none"> 1. Recommend sensitivity analyses for different scenarios and/or the use of probabilistic confidence intervals. 2. Recommend uniformity in table presentation; clarify the concept of job impacts; and include more disaggregated numbers in the presentation of CEQA alternatives. 3. Recommend monitoring of projections from models such as REMI, BenMAP, and CMAQ 4. Report trends for industries other than manufacturing and include more discussions on why other regions are more successful in achieving standards. 	<ol style="list-style-type: none"> 1. Sensitivity analyses performed in the Draft Socioeconomic Report included premature deaths relative to the federal PM_{2.5} standard, avoided cases of non-fatal heart attacks, VHT reduction benefit associated with personal trips, and CEQA alternatives in Chapter 7. Many of the model applications for the clear air benefit assessment were based on peer-reviewed publications where confidence intervals were available for probabilistic models. These publications are cited in the reference section of the Report. The District applications, in many cases, reflect the middle estimates. This recommendation is also listed as one of the future enhancements in Chapter 8. 2. Appendix D has been added to provide annual costs and benefits from 2013 to 2035 for major components of clean air benefits and costs, as well as jobs impacts. An average annual line has been added to the time-series charts in Chapters 3 and 4. A paragraph below Figure 4-1 has been added to clarify the concept of jobs. 3. This recommendation is also listed as one of the future enhancements in Chapter 8. 4. The 1st paragraph on p. 2-5 and the last sentence in the 1st paragraph on p. 2-10 have been added as a result.

**TABLE F-1
(Continued)**

Peer Review Economists	Comments	Responses
Professor Gloria González-Rivera, (cont'd)	5. Add the attractiveness of clean air to high wage earners and provide explanations on why certain sectors in Tables 6-2 and 6-3 in Chapter 6 are more or less impacted.	5. Please see the last sentence in the 1 st paragraph on p. 6-1 and the revised last paragraph on p. 6-2.
Professor Lisa Grobar, Cal State Long Beach	<ol style="list-style-type: none"> 1. Examine possible feedback effects of clean air on population, jobs, and congestion. 2. Check the GDP number of \$768 billion for South Coast in 2010 & include details on regional differences between LA-OR & RS-SB. 3. An average annual job gain of 37,043 from 2013 to 2035 is not an insignificant number in light of the increase in baseline jobs of 90,240. 4. Include leisure trips in the VHT benefit calculation and add it to the total VHT benefit; and provide justifications on why one-half of wage rate was used to monetarily quantify reductions in VHT from commute trips. 5. Include a table showing health benefit by age cohort. Health benefits may benefit low income households more. 	<ol style="list-style-type: none"> 1. The baseline economic forecast provided by SCAG already assumed that the region would continue to make necessary investments in air quality. For this reason, the baseline forecast includes the 2012 AQMP. Please see the discussion on p. 1-6. 2. The \$768 billion number is in 2005 constant dollars. The 2nd paragraph on p. 2-5 noted that there would be differences in regional economies. 3. A paragraph below Figure 4-1 has been added to clarify the concept of job impacts, which is a reference to the difference between two different projections as opposed to baseline jobs in one projection. Also, please refer to the summary section on p. 4-7 for a more refined presentation. 4. On p. 3-14, the District made an attempt to quantify the VHT reduction benefit associated with personal trips. However, the District has elected to present a more conservative estimate for this segment by not including it in the total congestion relief benefit. 5. The 2nd to the last paragraph on p. 3-8 noted that the elderly are more susceptible to premature deaths. Table 2-2 has a distribution of the elderly by sub-region. By and large, health effect functions do not vary by age group except for a few categories. The last two sentences in the 2nd paragraph on p. 3-9 addressed the potential for more benefits to low income households resulting from reductions in morbidity.

TABLE F-1
(Continued)

Peer Review Economists	Comments	Responses
Professor Lisa Grobar, (cont'd)	<p>6. The government sectors would also be beneficiaries of reduced health expenditures. Include more details on simulation methodologies of health benefits in REMI in Chapter 4. Provide citations on the migration functions used to capture the amenity effect.</p> <p>7. Revise the disposable income section to make it more readable. Provide more discussions on Tables 5-5 and 5-6 regarding the lowest earning group and the lowest quintile of households. Also, clarify the significant level of these impacts.</p> <p>8. Include the effect of air pollution on property values & concentration of low-income households in the environmental justice (EJ) analysis.</p>	<p>6. The government sector's beneficiary role in reduced health expenditures is discussed in the footnote on p. 4-3. The 1st paragraph on p. 4-3 has more details on the simulation methodologies of health benefits. Please see the reference section and p. 4-1 for the citation on migration functions.</p> <p>7. The Report has noted the slight differences across different income groups from year to year. Also, in the summary section of Chapter 6, the Report noted the small magnitude of these metrics given the size of South Coast economy and additional analyses may be required during rulemaking when control measures are moved to the rule development phase.</p> <p>8. The recommendation on EJ analysis is included as one of the future enhancements in Chapter 8.</p>
Professor Emeritus Jane Hall, Cal State Fullerton	<p>1. Include benefits to agriculture and horticulture.</p> <p>2. Include ozone-related morbidity and mortality effects.</p> <p>3. Clarify the basis for PM2.5 mortality value (VSL) and specific refinements to the selection of health effects.</p> <p>4. Discuss distributional effects on ethnic group.</p> <p>5. Report distributional impact by sub-region on a per-capita basis.</p>	<p>1. Reductions in damages to plants due to cleaner air are mostly related to ozone. These reductions will be assessed in 2015 when the ozone attainment plan is due.</p> <p>2. See discussions in Paragraph 3 on p. 1-1 and the response to Comment 1 above.</p> <p>3. Please see additional discussions in the 2nd to the last paragraph on p. 3-8 and 2nd to the last paragraph on p. 8-1.</p> <p>4. Due to resource constraints, health effects on ethnic population will be conducted for the next AQMP, as stated in Chapter 8.</p> <p>5. Please see per capita clean air benefit and cost in Table 5-4.</p>

**TABLE F-1
(Continued)**

Peer Review Economists	Comments	Responses
<p>Mr. Steven Levy, CCSCE</p>	<ol style="list-style-type: none"> <li>Request that the District make a comparison between 2007 and 2012 AQMP Socioeconomic Reports because of the differences in major components of costs and benefits. <li>Question the large size of the congestion relief benefit and the small size of the health benefit. <li>Recommend that the District reduce references to REMI model descriptions of the economy; question the District’s description of data sources of SCAG’s population projections; and dispute the District’s characterization of the BEA/BLS employment concepts. 	<ol style="list-style-type: none"> <li>1. <u>District staff strengthened the discussion of the Draft 2012 AQMP on the 2nd to the last paragraph on p. ES-1, added Footnote 4 on p. 3-2 regarding the relationship between Regional Transportation Plan (RTP) and TCMs, and provided a list of TCMs along with its costs, project life, and funding sources in Appendix E. The magnitude of costs and benefits depends on the emission reductions required to achieve the federal clean air standards. PM_{2.5} levels have improved dramatically over the past two decades. In 2011, both the annual PM_{2.5} standard and the 24-hour PM_{2.5} standard were exceeded at only one air monitoring station, Mira Loma, in northwestern Riverside County. As such, compared with the 2007 AQMP, the 2012 AQMP requires much smaller emission reductions beyond today’s control level in order to achieve the PM_{2.5} standard in 2014, thus leading to smaller costs and benefits than the 2007 AQMP when only non-TCMs are considered.</u> <li>2. <u>The VMT and VHT data came from the SCAG transportation model as stated in Chapter 3. Assumptions used to calculate the monetary benefit of this segment was described on pp. 3-11 to 3-13. District and SCAG worked closely to verify the validity of VMT and VHT data. The relationship between the VMT and VHT monetary benefits in the Draft socioeconomic report was also supported in the SCAG analysis of its 2012 RTP. The congestion relief benefit in the September 2012 release of the Draft Socioeconomic Report was for all the TCMs in the 2012 RTP. The SIP-committed TCMs in the 2012 AQMP has an estimated benefit of \$519 million annually, which is incorporated in Appendix H. The size of health benefit is reflected by the amount of controls required to attain the federal PM_{2.5} standard, which was discussed in Table 3-1.</u> <li>3. SCAG uses the BLS employment concept for economic projections. In presenting the economic analysis of the 2012 RTP, SCAG used IMPLAN (https://implan.com/v4/index.php?option=com_multicategories&view=article&id=634:634&Itemid=71) and REMI, both of which are based on the BEA employment concept. Mixing BLS/BEA concepts in one presentation will create inconsistency.

**TABLE F-1
(Continued)**

Peer Review Economists	Comments	Responses
		<p>SCAG uses multiple data sources and procedures to fine-tune its populations and employment projections. The intent of the Report was not to follow all the steps that SCAG had taken, but rather to focus on SCAG’s starting and ending points, which was verified by SCAG staff.</p> <p>For differences between BEA and BLS employment, please refer to http://www.bea.gov/faq/index.cfm?faq_id=104. The major source of the BLS employment statistics is the Quarterly Census of Employment and Wages (QCEW) Program. According to http://www.bls.gov/cew/cewfaq.htm#Q14, “Because the QCEW data is based on an establishment census which counts only filled jobs, it is likely that a multi-job holder will be counted two or more times in QCEW data.” Also refer to http://www.bea.gov/regional/pdf/spi2006/11%20Employment.pdf for the relationship between the BLS and BEA employment statistics.</p>
Mr. Steven Levy (cont’d)	<p>4. Include impacts of the 2012 AQMP on population and unemployment rate.</p> <p>5. Add a caveat on the cost distribution to reflect that costs may be borne by company headquarters located elsewhere.</p> <p>6. Which parts of the AQMP create competitiveness changes?</p>	<p>4. The baseline economic-demographic forecast provided by SCAG assumed that the region would continue to make necessary investments in air quality continuation of federal highway funding that would be necessary for the four-county area to make the infrastructure investments for implementation of the 2012 RTP in order to keep the region competitive nationally and globally. For this reason, the baseline forecast includes-reflects the full implementation of the 2012 AQMPRTP. Please see the discussion on p. 1-6. Population changes are already reflected in the baseline forecast. Job impacts in REMI are job counts, not head counts. The unemployment rate has to be calculated based on head counts.</p> <p>5. Please see Footnote 2 on p. 3-1. In cases where company headquarters (located elsewhere) pay for control costs, the costs in the Report would be more conservative.</p> <p>6. Please refer to pp. A-8 to A-9 in Appendix A, Footnote 2 on p. 4-1, and Footnote 4 on p. 4-3 for the competitiveness impact.</p>

**TABLE F-1
(Continued)**

Peer Review Economists	Comments	Responses
Professor Paul Ong	<ol style="list-style-type: none"> 1. Provide ex post evaluation of REMI projections. 2. Define race and ethnicity used in Chapter 2 and include a discussion on a lag in job recovery after the Great Recession. 3. Transportation mode shifts may reduce congestion relief benefits. 4. Clarify work versus residence site in Table 5-4 5. Discuss why the biggest reduction in relative prices would occur in the transportation and warehousing sector. 6. Expand EJ analysis. 	<ol style="list-style-type: none"> 1. This recommendation is one of the future enhancements, as stated in Chapter 8. 2. The 2nd sentence in the last paragraph on p. 2-1 defines race and ethnicity concepts used to compile estimates in Table 2-1 and Figure 2-1. The lag in job recovery is noted in the 1st paragraph on p. 2-11. 3. <u>TCM and TCM-like projects have led to overall reductions in trips, including very small amount of reductions in transit and non-motorized trips. Thus, potential risk from increases in journey time of other modes is minimal. Additionally, extra wait time or inconvenience due to carpool is considered in mode choice utility equations. Relative to the overall journey time, carpool wait time tends to be relatively small. Finally, the estimated PHT (person hours travelled) reductions from modeling results are higher than the VHT (vehicle hours travelled) reductions. The District will work with SCAG to ascertain whether mode shift impacts were incorporated in its transportation model.</u> 4. Please refer to the last paragraph on work site on p. 5-6. 5. Please refer to the last paragraph on p. 6-2. 6. An EJ analysis of the PM2.5 concentration changes in 2014 is included on pp. 5-3 to 5-4. AQMD staff will continue to explore ways to further enhance the analysis.
Dr. Fred Treyz	<ol style="list-style-type: none"> 1. Include reductions in damage to plants and animals as well as the value of reduced vehicle hours. 	<ol style="list-style-type: none"> 1. Reductions in damages to plants due to cleaner air are mostly related to ozone. These reductions will be assessed in 2015 when the ozone attainment plan is due. The value of reduced vehicle hours is discussed on pp. 3-11 to 3-13.

Memorandum

To: Sue Lieu, PhD, Program Supervisor, Socioeconomic Section
South Coast Air Quality Management District

From: Dr. J.R. DeShazo, Professor and Research Center Director, UCLA

Date: 9/22/2012

Subject: Review of Dr. Leland Deck's Recommendation for the Value of a Statistical Life in the 2012 Air Quality Management Plan Analysis

The South Coast Air Quality Management District (AQMD) wishes to quantify the value of health improvements that individuals receive as a result improved air quality. Individuals may value improved air quality for a variety of reasons. However, the vast majority of the quantifiable benefits come from risk reductions that individuals will experience premature death from air-pollution related illnesses. The approach most frequently used by regulatory agencies, such EPA and DOT to value mortality risk reduction, is to estimate the value of a statistical life (VSL). The AQMD asked Dr. Leland Deck of Stratus Consulting Inc. to review and update the VSL estimate to be used in the 2012 Air Quality Management Plan (AQMP).

The purpose of this memorandum is to review Dr. Deck's recommendation of using the VSL approach and his more specific recommendation of employing an average estimated VSL of \$6,730,000 based on Kochi et al. (2006).

1. Understanding how the Value of Statistical Life (VSL) is constructed

The VSL is constructed by measuring the collective willingness to pay for small risk reductions for large numbers of people. A purely hypothetical example may help to illustrate this. If an air pollution policy reduces the probability of death for a group of a million people from 5 in 1,000,000 \rightarrow 4 in 1,000,000, then we would say that risk reduction of one in a million ($\Delta\Pi = 0.000005 - 0.000004 = 0.000001$). And it saves one "statistical life" with certainty among this group of one million people.

Next, we want to value of the collective risk reduction attributed to this policy. If these 1,000,000 people are each willing to pay \$6 for this policy that reduces the group's statistical risk by one in a million, then we can calculate a VSL of \$6,000,000 (i.e., $\$6 \times 1,000,000$). Critical to this VSL calculation is knowing that, in this hypothetical example, people were willing to pay an average of \$6 in return for a one in million risk reduction. Policy applications of the VSL typically involve one of two cases. In most policy evaluation contexts the VSL is multiplied by an expected overall number of "deaths avoided" to produce an estimate of overall expected benefits.

20 or even 30 years from the present. This period of time before the future health risk would be realized is called the latency period.

One important innovation in VSL studies since the publication of Kochi et al. (2006) has been their ability to accommodate latency and to measure the value of risk reductions in future years of the individuals' lives. The most systematic treatment of latency in VSL is by: Cameron, Trudy Ann and J.R. DeShazo. 2012. "Demand for Health Risk Reductions." Forthcoming. *Journal of Environmental Economics and Management*.

Table 1 below presents the latency results for Cameron and DeShazo (2012a). They explore the effect of illness latency (the time in the current health state before the illness or injury occurs) on *WTP* to avoid health risks for an individual with an assumed 0.05 discount rate, household income of \$42,000 and for whom the lifetime risk is to be reduced from 0.004 to 0.001. In this table, the authors array their five basic examples of different illness profiles across the top of the table. This study estimates the conventional VSL to be about \$6.7 million so it is in line with the current literature.

What is interesting is how the latency of the risk incidence affects willingness to pay for risk reductions. In the body of the table, they display sets of mean *WTP* estimates (and 90 percent ranges) for one individual aged 35 now, and for another individual aged 65 now. The age at onset of each illness is varied to include immediate onset, as well as onset at decade intervals starting five years from now.

Focusing first on the current period or "sudden death now" scenario in the first column of Table 1, their point estimates suggest that the 65-year-old has a considerably higher *WTP* (\$5.91)¹ to reduce the risk of sudden death now than the 35-year-old (\$0.72), although the 90 percent intervals overlap. Their results suggest that the sign and size of the difference depends greatly upon the specific age groups that one compares. In looking forward to future illnesses, however, as in the subsequent rows of Table 1, both 35-year-olds and 65-year-olds seem to have a lower *WTP* to avoid the same illness profile when symptoms commence at a later age.

Their selection of disease latency results can be compared to just a small number of extant empirical studies. Hammitt and Liu (2004) find that *WTP* declines at a 1.5 percent annual rate for a twenty-year latency period, while Hammitt and Haninger (2010) (p. 71) find that *WTP* does not vary significantly with latency. From our Table 4, delaying by twenty years the time at which sudden death might occur (from five years to 25 years hence) actually *increases* *WTP* by 96 percent for 35-year-olds. For 65-year-olds, however, a similar twenty-year delay (postponing the risk of sudden death from five years to 25 years hence) does reduce *WTP*, in this case from \$4.37 to essentially zero (not shown in the table). Comparing these results to the existing empirical literature on latency, Alberini et al. (2006) find that for respondents aged 40 to 60 years, delaying the "time at which the risk reduction occurs" from 10 years to 30 years reduces *WTP* by more than 60 percent in samples from both Canada and the U.S. This may reflect the fact that their youngest respondents are forty years old, whereas ours range down to 25 years of age.

¹ Their micro-risk results can be converted to VSLs by multiplying by 1,000,000.

An entire sub-field within environmental economics is devoted to trying to provide valid and accurate estimates of people's willingness to pay for mortality reductions for use in VSL estimates. Dr. Deck's memo provides a useful review of the history of studies upon which regulators have relied in the past. The EPA's 1997 VSL estimate was based on an average individual willingness to pay of \$7.88 for a one in a million risk reduction for VSL of 7.87 million (2005\$ and 2010Y) (U.S. EPA, 2010). This estimate of willingness to pay came from Viscusi's (1992) survey of 26 studies, including 21 wage hedonic studies, and 5 stated preference (contingent valuation method) studies published between 1974 and 1991.

2. Dr. Deck's recommended VSL

Dr. Deck recommends rejecting the EPA's proposed approach in favor of a meta-analysis performed by Kochi et al. (2006). Dr. Deck argues that the advantages of relying on Kochi et al.'s VSL estimate of \$6,730,000 involve the "simplicity" of choosing only one study, and that it lies in the middle of the other meta VSL estimates. While I do not find these convincing advantages, I do agree with him that it is a well done meta-study and has several advantages over the EPA's approach. First, the Kochi et al. study contains many more published studies. Second, it includes more recent studies that have been able to utilize much better valuation methods and techniques than studies completed before 1991. Third, Kochi et al. includes studies that valued risk reductions from a wider array of health hazards, beyond only workplace injuries which comprised the majority of studies used by EPA.

Thus, if AQMD wants an average VSL estimate based broadly on a set of studies that is both reasonably contemporary, diverse methodologically and diverse across types of mortality risk, the Kochi et al. estimate is a very reasonable choice. This diversity does have a small drawback in that the variance of estimated mean VSL in Kochi et al. is slightly larger and produces slightly wider confidence intervals, which generally is less desirable. However, the study's other noted strengths outweigh this one small less desirable aspect of their VSL estimate.

3. AQMD Plan for coming refinements in health risk valuation

The U.S. EPA is actively grappling with how to better refine its own use of the VSL. In order to help AQMD anticipate some of these changes for the future, I briefly discuss the role of latency in VSL analysis and illness-specific VSLs.

A. Incorporating health risks latencies into VSLs

All of the studies upon which Kochi et al. is based estimate the individuals' willingness to pay for risk reduction in the current period only. For example, wage-risk studies estimate the individuals' willingness to pay to reduce their risk of death during that current year of employment. When AQMD achieves a reduction in air pollution exposures, it benefits some individuals (especially children and elderly) in the current period as well individuals in future years. Indeed, most individuals (children, adults and seniors) benefit by reducing their risk of illness onset in future years of their life. For example, many will benefit from lower risk by avoiding or deferring the onset of respiratory illnesses, heart disease or lung cancer 5, 10,

TABLE 1
VSL (IN \$MILLIONS) FOR DIFFERENT DISEASE LATENCIES
(BASE ON TABLE 4. CAMERON AND DESHAZO, 2012)

<i>Illness profile:</i>	1.	2.	3.	4.	5.
<i>Age no; onset</i>	Sudden death	1 years sick, nonfatal	5 years sick, nonfatal	1 year sick, then die	5 years sick, then die
<i>Now 35 years old – symptoms start:</i>					
now	\$ 0.72 (-4.30, 5.92) ^a	\$ 1.92 (-0.29, 4.27)	\$ 2.68 (0.50, 4.89)	\$ 4.47 (-0.13, 9.06)	\$ 9.66 (5.12, 14.86)
at age 40	1.17 (-2.79, 5.14)	1.74 (-0.30, 3.87)	2.42 (0.44, 4.41)	4.07 (0.55, 7.65)	8.49 (4.88, 12.61)
at age 50	1.91 (-0.61, 4.44)	1.38 (-0.26, 3.11)	1.92 (0.35, 3.49)	3.55 (1.52, 5.79)	6.48 (4.46, 8.88)
at age 60	2.30 (0.32, 4.37)	1.06 (-0.17, 2.35)	1.45 (0.34, 2.59)	3.13 (1.46, 5.01)	4.77 (3.22, 6.60)
at age 70	2.19 (0.43, 4.00)	0.77 (-0.05, 1.62)	1.01 (0.33, 1.72)	2.54 (0.87, 4.28)	3.10 (1.67, 4.67)
at age 80	1.40 (0.21, 2.63)	0.47 (0.11, 0.86)	0.60 (0.31, 0.90)	1.42 (0.34, 2.53)	1.04 (0.47, 1.63)
<i>Now 65 years old – symptoms start:</i>					
Now	\$ 5.91 (1.61, 10.24)	\$ 3.83 (1.70, 6.24)	\$ 3.85 (1.77, 6.07)	\$ 3.67 (-0.45, 8.06)	\$ 0.15 (-4.45, 4.52)
at age 70	4.37 (1.40, 7.29)	3.33 (1.42, 5.44)	3.28 (1.51, 5.16)	2.73 (-0.04, 5.45)	-0.05 ^a (-2.98, 2.90)
at age 80	1.73 (-0.07, 3.49)	2.14 (0.86, 3.52)	1.81 (0.77, 2.90)	.98 (-0.51, 2.54)	-0.28 (-1.78, 1.16)

Notes: See notes to Table 2. Assumes discount rate = 0.05, income = \$42,000. Signs of parameter estimates are unconstrained.
^a Negative simulated values of the *WTP* for a micro-risk reduction can be interpreted as zero. Negative values can result when there is a random draw from the fitted distribution of the marginal utility of income that is negative, or for the marginal (dis)utility of an adverse health state that is positive. The quadratic-in-age forms for marginal (dis)utilities of adverse health states also do not preclude negative draws for extreme values of age. To keep the estimation algorithm simple, we do not attempt to impose sign restrictions on the utility parameters (many of which are systematically varying).

B. Illness-specific VSLs

Dr. Deck's proposed approach is to use the average of many studies, most of which focus estimating individual willingness to pay to avoid a current period risk in dying at work. However, reducing individuals' air pollution exposures reduces their risk of dying of respiratory diseases, lung cancers and heart disease. There is no reason to expect that people's willingness to pay to avoid a death on job to be same as their willingness to pay to reduce of risk of dying from one of these three broad types of illnesses.

It should not be surprising that individuals value different illness risk reductions differently. These estimates of *WTP* are simply measures of individuals' inverse demands for different "goods." Each illness represents a different prospective illness profile that involves a sequence of future health states including pre-illness years, sick-years, potential recovered years, and potential lost life-years. Massive strokes or heart attacks and major accidents may involve no morbidity and sudden mortality. In contrast, the vast majority of cancers, heart diseases, respiratory illnesses and other threats, as targeted by health and environmental policies, involve systematically differing health states: the individual's status quo health state before illness onset, some number of partial or whole sick-years, potential recovered/remission years and lost life-years if the illness or injury leads to premature mortality.²

Several authors have estimated specific illness VSLs³, however, the following paper provided the most comprehensive and consistent comparison across illnesses.

Willingness to Pay for Health Risk Reductions: Differences by Type of Illness." (2012 b) T.A. Cameron and J.R. DeShazo. *Journal of Health Economics*.

Cameron and DeShazo (2012) provide estimates of VSLs associated with the prospect of dying from each of eleven major illnesses, plus traffic accidents, using a representative sample of the U.S. population and a common methodological framework. The results are presented below in Table 2.

For illness (respiratory disease, lung cancer and heart disease) that AQMD reduces the risks for, we see is very different magnitude of willingness to pay to reduce those illness specific risks among the U.S. population. These estimates range from a high of \$7.2-\$8.3 million of heart disease and heart attack, to \$3.4 and \$9.6 for lung cancer for non-smokers and smokers respectively and to a low of \$2 million for respiratory disease.

² Inverse demand for a given disease risk will also differ with the individual's ability to mitigate that particular risk as well as perceptions of the timing and size of competing health risks that might strike first.

³ Other researchers have provided single-illness estimates and a few have even valued two or more illnesses within a single study (Ian Savage (1993); James K. Hammitt and Jin-Tan Liu (2004); Sujitra Vassanadumrongdee and Shunji Matsuoka (2005); George Van Houtven et al. (2008)).

Table 2
VSL by Illness Type (Cameron and DeShazo, 2012b)

Disease	WTP by 45-year olds	Weighted average *
Heart Disease/ Heart Attack	\$7.02/\$8.28	
Breast Cancer	8.91	
Prostate Cancer	8.01	
Stroke	7.30	
Colon Cancer	5.03	
Lung Cancer	3.46	} \$5.02
- Smokers	9.07	
Traffic Accidents	1.53	
Skin Cancer	1.12	
Respiratory Disease	2.00	} 3.13
- Smokers	6.06	

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Kochi, Ikuho, Byran Hubbell and Randell Kramer. An empirical Bayes approach to combining and comparing estimates of the value of a statistical life for environmental policy analysis, *Environmental & Resource Economics*, 34 (2006) 385-406.

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Van Houtven, George; Melonie B. Sullivan and Chris Dockins. 2008. "Cancer Premiums and Latency Effects: A Risk Tradeoff Approach for Valuing Reductions in Fatal Cancer Risks." *Journal of Risk and Uncertainty*, 36(2), pp. 179-99.

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COMMENTS TO THE DRAFT 2012 AQMP

GENERAL ASSESSMENT

The Draft 2012 AQMP aims to achieve the federal PM_{2.5} standard by 2014 and partially implement state measures towards the 8-hour ozone standard by 2024. The Draft offers a detailed description and evaluation of the costs and benefits associated with the controls and measures to improve air quality in the South Coast Basin, which includes the four counties of Los Angeles, Orange, Riverside, and San Bernardino. In addition, it provides an assessment of the socioeconomic impacts as they relate to the creation/destruction of jobs, competitiveness of the local industries, production costs and production prices, and local imports and exports. Costs and benefits are projected over 22 years from 2013 to 2035.

The District should be praised for a superior execution of such a complex and important mandate. The evaluation of costs and benefits is a difficult exercise because of the inherent uncertainty that is involved in such a long term forecast which, in this particular case, is compounded by the absence of market prices for intangible goods such as human health, visibility, and relief of traffic congestion. Nevertheless, the analysis is sound as it relies on a set of cautious assumptions, state-of-the-art systems such as REMI, BenMAP, and CMAQ, official databases such as Census data, the ACS survey, BEA and BLS data, and access to experts in the local community and academic institutions. The Draft is subject to the limitations imposed by the current research frontier in engineering systems, medical science, and socioeconomic models, and by the current resources to construct extensive data sets. Given the geographical and economic heterogeneity of the Basin, it is noteworthy the effort to assess the economic impacts within a finer geography (21 sub-regions) than that of the county line.

I provide three general recommendations that aim to improve the understanding of projected costs and benefits and the uncertainty of these projections. I will follow with some specific comments for each chapter of the Draft.

R1. Quantification of uncertainty in the projections

The Draft provides estimates of costs and benefits. Since these estimates rely on a set of assumptions, it would be advisable to provide a measure of uncertainty. I would recommend two options: sensitivity analysis or/and probabilistic confidence intervals. With sensitivity analysis, it would be possible to create a set of scenarios. Three scenarios, e.g. conservative, average, liberal, could provide a range of costs and benefits, which is much more informative than a single figure.

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The benefits of such an approach are the provision of risk in the estimates, the attenuation of biases towards under or overestimated figures, and a better guide for monitoring the estimates over time. When possible, the range of estimates may be reported with a probability statement. This approach may not be feasible for all the components of the evaluation process given the nonlinear nature of the REMI model. However, some intermediate inputs, mainly those that rely in econometric analysis, e.g. MWTP, could be presented in a format such as 90% or 95% confidence intervals.

It seems that the REMI model could be exploited further to provide a range of socioeconomic impacts because the inputs to REMI would be also provided in a range format.

If it is not possible to implement the scenario approach in this Draft because of limited resources and time constraints, I will recommend implementing it in future AQMPs and listing it in the "Future Enhancements" section of the Draft 2012 AQMP.

R2. Time series information and averages

I would recommend providing time series plots from 2013 to 2035 for all the projections in the Draft. Figure 3-2 (Control Cost by Year) and Figure 4-1 (Job Impacts of Clean Air Benefits and Measures) are good examples. Similar figures for quantifiable benefits and other quantifiable impacts will be desirable as they will offer a more complete picture of the projections and an immediate visualization of trends, if any.

I would recommend uniformity in the tables of the Draft. Some tables contain figures for 2014 and 2023, some others add 2030 or 2035. All tables should contain information for the three benchmark years of 2014, 2023, and 2030 (or 2035).

Most tables contain a last column with average annual figures either for costs or benefits or other impacts. The Draft focuses the analysis on these annual averages. However, this average should be interpreted with care for those time series with an obvious trend (downward or upward). In the following figures, Figure 3-2 (downward trend) and Figure 4-1 (upward trend), I have plotted the annual averages provided in the Draft.

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FIGURE 3-2
 Control Cost by Year*

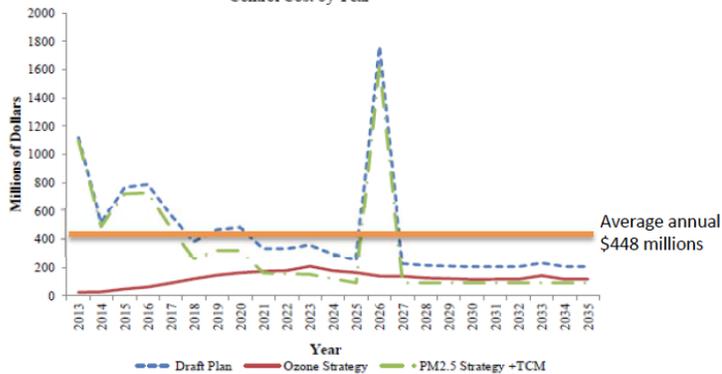
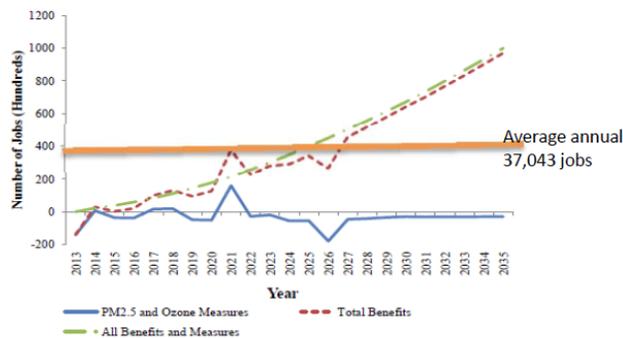


FIGURE 4-1
 Job Impacts of Clean Air Benefits and Measures



The reported average annual cost is \$448 million and the average annual number of jobs is 37,043. These numbers are not “average” in the statistical sense as they do not represent a measure of central tendency; over the forecasting period, they occur mostly once in time, i.e. the average cost happens in 2019-2020 (omitting the outlier year of 2026), and the average number of jobs happens around 2024. Given the trends in these time series, the costs will be much higher than the provided average before 2019 and much lower after 2020 (with the exception of those in 2026); and the job impact will be much lower than the provided average before 2024 and much larger after 2024. I would recommend explaining the meaning of these averages in the Draft, stating that the presence of trends implies that the reduction in costs or the benefits in job creation will accrue over time according to an estimated average annual growth rate.

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R.3 Monitoring of the projections

Since the forecasts span a long period of 22 years, it would be advisable to establish a dynamic monitoring mechanism to track the projections every few years. How often will be determined by the resources available but intervals of 2 years seem reasonable. Monitoring will bring more flexibility to the long-term forecast by making it adaptive to the ever-changing macroeconomic conditions, updated data sets, updating of models and econometric estimates, revision of assumptions, and advances in the engineering, medical, and economic sciences.

I would recommend a periodic assessment of the projections provided by the systems, i.e. REMI, BenMAP, and CMAQ models. It would be of interest to track the performance of these systems over time because they are fundamental tools in the analysis of the Draft AQMP. I also recommend including a small section in the Draft commenting on the projections and their corresponding realizations as well as achievements and disappointments of the previous 2007 AQMP.

SPECIFIC COMMENTS PER CHAPTER

Chapter 1. Introduction

Page 1-3. In Figure 1-1, the column for 2008-2012, item 21 should read 2000 and 2010 Census SF Data.

Page 1-4. There is political uncertainty about the future of the ACS survey; the House Budget Bill passed in May 2012 included the elimination of ACS. As a precautionary measure, the District should start thinking about a good substitute for the information provided by ACS.

Chapter 2. Economy and Air Quality

Page 2-1. Report the percentage of the four-county South Coast Basin GDP in relation to California GDP.

Page 2-5. Similar to Figure 2-2, it would be informative to report the trends in the largest industries in the Basin in addition to manufacturing: Real Estate, Government, Retail, and Information.

Page 2-7. The section "Other Economies" is very informative but it begs the question why these areas (Bay Area, San Diego, and Houston) have less severe air quality problems. This section needs more discussion on the differences/similarities among their economies and why they are more successful on achieving the standards of air quality. Roughly, it seems that there are two important factors: population and larger coastal areas (geography and topography). Regression

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models could help to understand the cross-sectional differences in air quality across different economies.

Page 2-10. In Figure 2-3, it seems that ozone changes stabilized after 1999. Some explanation is needed to understand whether this is somehow a technical barrier, or lack of measures, or unsuccessful initiatives aiming to lower ozone levels.

Page 2-11. In the last paragraph, first line, it should say “..... projected sectoral share of employment for 2020, and 2035.....” (remove 2008).

Chapter 3. Costs and Benefits

I would advise adding commentary on how plausible the assumptions are and whether they are more or less conservative. It will be helpful to explain the assumptions within some context such as standard practice or scientific literature.

Page 3-6. The information in Table 3-3 is too aggregated. I would recommend providing more detail on the large items “Reduction in Mortality” and “Congestion Relief”. These are huge benefits and it is difficult to judge how realistic these figures are. The average benefit over 2014-2035 may not be informative enough if all gains are projected to happen by the end of the forecasting period. Please provide a time series of these benefits to judge the accrual rate over time.

Page 3-10. In Table 3-10, the benefits figure for 2014 (\$948 millions) is not in agreement with the discussion in the chapter. In Chapter 4, page 4-1, the benefits are stated as \$5.95 billion in 2014.

Chapter 4. Employment Effects

Page 4-3. State the projection of total number of jobs from 2013 to 2035 due to clean air benefits. It seems that this figure is around 800,000. The REMI prediction is over 2.4 million net jobs created between 2009 and 2035. Given the actual state of the local and national economy, a figure of 800,000 (30% of REMI prediction) may be a bit optimistic. This is an instance where a range figure will make more sense.

Chapter 5. Impact on Economic Groups and Communities

The information provided in this chapter is too aggregated as it focuses only on average numbers. Please see my recommendation R2. There may be data limitations that preclude a more detailed assessment, if so please state it.

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Chapter 6. Impacts on Competitiveness

Clean air has also indirect effects on the quality of the work force. Good air quality will be attractive to highly qualified professionals, which in general are also high wage earners.

Pages 6-3 and 6-4. In Tables 6-2 and 6-3, explain in more detail why the Real Estate, Rental, and Leasing industry will be the most negatively impacted and the Transportation and Warehousing industry the most positively impacted.

Chapter 7. Assessment of CEQA Alternative

The analysis is too aggregated. Time series of impacts, costs, and benefits for each alternative will provide a better comparison among alternatives because we could evaluate intertemporal substitution effects.

Comments on the Draft Socioeconomic Report for the Draft 2012 AQMP
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I. General Comments

Page ES-2 of the report outlines the key results, including the annual benefits attributable to the Draft 2012 AQMP. Of the total \$10.7 billion in benefits, \$7.7 billion is attributable to congestion relief, \$2.2 billion is attributable to health impacts, \$0.7 billion is attributable to visibility improvements and \$0.014 billion to reduced damage to materials.

Given the overwhelming importance of the congestion relief estimate, I feel that the report should place more emphasis on the relatively important congestion and health benefits, and less on the relatively unimportant visibility and materials impacts.

For example, the report mentions a number of transportation projects, or transportation control measures (TCMs), embedded in the Draft 2012 AQMP that are designed to reduce congestion, including arterials, grade crossing improvements, high occupancy vehicle lanes, etc. These measures will serve to reduce congestion in the region.

However, one of the anticipated and estimated benefits of the cleaner air that will result from the AQMP will also be faster growth in regional population and jobs, as migration flows respond to the region's improved environment. In Chapter 4, these benefits are quantified as an incremental annual average net gain of 37,043 jobs from 2013-2035, a figure that is not insignificant given that the baseline projection is an annual gain of 90,240 jobs.

It does not appear that the report incorporates the incremental effect that this faster population growth and job growth would have on traffic congestion. Faster population and job growth would feed back into the congestion calculations, reducing the net congestion benefit. It would be interesting to know how much of the benefit might be offset by faster population and job growth in the region. Figure 1-3 on page 1-8 suggests there is not an attempt to capture this feedback effect.

On the other hand, congestion benefits may be significantly understated in the report for several reasons. First, benefits from congestion relief for leisure (or non-business) trips are not included. This seems no more difficult (and the methodologies no more controversial) than the efforts made in the report to estimate the value of improved visibility. I would urge the researchers to try to estimate the value of these benefits and add them to the net total.

Second, the value of reductions in daily vehicle hours traveled for commuting purposes is estimated at an hourly wage of half the average wage rate (EDD). There is no discussion of how this particular value was arrived at – for example, why only half of the average wage, versus the entire average wage? The value of reductions in daily vehicle hours traveled for business trips is estimated at an hourly wage rate of \$21.84 for truck drivers, but certainly there are drivers in many occupations that are driving for business purposes. Why choose that particular wage?

Given the importance of the congestion benefits in this report relative to the total estimated benefits, I think that their measurement deserves more sophisticated analysis and a better justification for the underlying assumptions.

By contrast, the health benefits attributable to the Draft 2012 AQMP are analyzed using sophisticated modeling techniques (the BenMAP model).

One suggestion I have in this area would be to include a table showing the health impacts by age cohort. On page A-5, the report mentions that these calculations were made in the process of generating the report. It might be helpful for policy-makers to see these results as they might, for example, place a higher weight on health benefits to children than for other age groups. An examination of impacts on children might also help to differentiate between some of the alternative measures discussed in Chapter 7.

The report mentions that efforts will be taken in the future to refine the Socioeconomic Report. One enhancement is to expand sub-regional analysis to include environmental justice (EJ) areas classified by income or race. I would suggest a slightly different but related approach. The report could attempt to break out areas of the region that suffer particularly high levels of baseline pollution, and then analyze the benefits of the proposed projects to these areas. These areas will be highly correlated with income, because the high baseline pollution will make these areas less attractive, driving down home values and rents.

An example of this can be found in my research (Grobar (2008))¹, that analyzed the characteristics of the populations residing within 7.5 miles of the 10 largest US container ports. I found that in these “port districts,” poverty and unemployment rates were significantly higher than in the surrounding metropolitan areas. This suggests that the negative externalities generated by the ports, such as pollution and congestion, have driven down property values and rents in these areas so that they attract more low-income households.

This is also likely to be true of the corridors running along the busiest freeways, and other pockets of real estate that are unusually impacted by pollution from other local transportation or manufacturing activities. Once a large set of these areas are identified within the region, the differential impact of projects in the AQMP on these areas could be analyzed.

With regard to Chapter 4:

In this section, the report identifies the two main ways in which cleaner air will generate expanded economic activity in the region. The first is a switch in consumer expenditures from health care (100% local production) to general consumer purchases (which includes expenditures on goods imported into the region). The second is the improved quality of life, which will lead to increased migration into the region, increasing the labor supply and local demand.

Regarding the first channel, I think the discussion in Chapter 4 is incomplete. On page 4-2, it states that “reductions in out-of-pocket health expenditures are used as a proxy for the quality-of-life value of morbidity benefits (reduced illness).” This suggests that the measured impact of health improvements is limited to the reduced out-of-pocket costs that consumers will pay for health care in an environment with better air quality.

However, in the methodology explained in Appendix A on page A-9, the report states that “it was assumed that reductions in morbidity would lead to reduced health care expenditures by the general public and employers. It was assumed that 60 percent of the reduced expenditures would benefit the employers as a reduction

¹ Grobar, L. “The Economic Status of Areas Surrounding Major US Container Ports: Evidence and Policy Issues,” *Growth and Change*, Vol. 29, No. 3, 2008, pp. 497-516.

in the cost of doing business and the remaining 40 percent would flow back to the economy in the form of additional spending on all consumption categories.” If, in fact, this does describe how these impacts are calculated, then the impact to businesses from reduced morbidity should be discussed and explained in Chapter 4.

Another problem is that the report ignores the potential benefits to the government sector resulting from decreased healthcare costs. The National Health Expenditure Accounts break out US health care expenditures by payer. For 2010, total health expenditures were \$2.6 trillion, and these expenditures were made by the following payers²:

Payer	Percent of Total Health Consumption Expenditures
Households	28%
Private Businesses	21%
Federal Government	29%
State & Local Government	16%
Other	6%

Thus, private businesses and the government sectors would be the main beneficiaries of the reduced health care expenditures resulting from reduced morbidity and mortality attributable to cleaner air, whereas the impact on consumers would be relatively small.

Taking this into account, it is likely that the draft report is overestimating the “expenditure switching” impacts of the 2012 AQMP. As federal, state and local governments experience a reduction in health care costs, they could allocate those resources in other ways (for example, increase spending on local education, or on local infrastructure). Thus, employment might be reallocated from one local use (health care) to another (schools).

It is possible that the government might rebate the savings back to taxpayers in the form of a tax cut, which would then cycle back into consumer expenditures.

² Source: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/tables.pdf>

However, if even part of the government savings on health care is reallocated to other local government activities, the result will be a greater net positive impact on jobs than is described in the Draft Socioeconomic Report.

Another interesting issue to explore is the potential impact that this reduction in health care costs could have on different income groups. A study by Holahan and Zedlewski (1992)³ explores this topic. They find that persons in the lowest income deciles devote nearly 20% of cash income to health expenditures, compared to about 8% for persons in the highest income decile. Higher income households consume more health care, but much of their care is paid for by private insurance that is paid for by their employers.

Since this article was published some time ago, these figures may not represent the current reality. But the article does suggest that the burden of household health care expenditures falls disproportionately on the poor. Thus, improvements in air quality that reduce health care spending might be expected to have a progressive impact, by easing the health expenditure burden on poor households.

In terms of the second channel of job benefits stemming from greater migration into the region, the report is short on specifics, even in the methodology appendix. It references “migration functions” used in the generation of the estimates. But these functions are never explained. It would be useful to provide some detail on the way that these functions are constructed, at least in Appendix A.

II. Specific Comments

Page 2-4 For some reason, the report cites a four-county GDP of \$768 billion in 2010, where the BEA is reporting \$845 billion. Perhaps the report is citing an older number for private industries that got slightly revised, because the BEA currently reports private industry GDP at \$762 billion. But given that the text and Table 2-3 report the contribution to the economy of the government sector, it seems that the \$845 billion should be reported as the total GDP.

Also, I get slightly different GDP shares than Table 2-3, possibly for this reason. Based on the latest numbers, the government share should be 10% of GDP, the real estate, rental and leasing share should be 18%, the wholesale share should be 7%,

³ Holahan, J. and S. Zedlewski, “Who Pays for Health Care in the United States? Implications for Health System Reform,” *Inquiry*, Vol. 29, No. 2, (1992), pp. 231-48.

and the accommodation and food services share should be 3%. I'm also wondering why the construction and transportation/warehousing sectors are left off of the table, since employment and output numbers are available for both of these sectors.

In addition, I think it would be useful to break out Table 2-3 into LA-Orange and Riverside-San Bernardino, because the results are quite different. Compared to LA/Orange, the GDP of Riverside-San Bernardino is much more concentrated in areas such as retail, transportation & warehousing, and government, and less concentrated in areas such as real estate renting and leasing, professional/scientific & technical services, and finance.

I find the section of Chapter 2 entitled "Other Economies" to be a bit perplexing. There are a lot numbers presented here, but not much analysis, and I'm not sure what point is trying to be made here. I guess we could conclude that it is reassuring that these other areas also have a high proportion of their workforce in the government sector, although San Diego is a special case with its high proportion of federal government workers.

Otherwise, the distribution of employment is quite different from area to area, and it's not clear how to assess the impact that air quality rules have had on these differences.

Page 5-6 - The discussion about disposable income is difficult to understand, and I would recommend that this segment be re-written for clarity. For example, I think the sentence:

"The decrease in per capita disposable income from cleaner air is because of the higher growth rate of population than that of total real disposable income. "

means to say that real disposable income is growing more slowly than the population. This would imply that the migrants attracted to the region have lower average incomes than the residents in the baseline plan. Why is this the case? Do we know anything about these migrants that would explain this result (perhaps they are younger than the residents in the baseline plan)? I think this section of the report needs to be better explained.

Page 5-8: Here it claims there are no significant differences in impacts expected for high versus low-paying jobs, and that the same is observed for impacts on the price of consumption goods from one household group to another.

Yet in Table 5-5, the lowest earning group suffers a net decline in employment in 2014 while all other groups experience a net gain. This seems to me to be an important difference.

Also, in Table 5-6 the lowest quintile of households (in terms of income) experiences the biggest increase in the price index of consumption goods as a result of the pass-through of additional control costs by industries affected by control measures, more than twice the impact on households in the 4th (next-to the top) quintile.

Perhaps what the authors want to convey is that none of the impacts in Tables 5-5 and 5-6 are significantly large to worry about. If so, they need to make a stronger case for this (at what point would the impacts be large enough to be considered “significant”?)

Page 6-1: This section on regional competitiveness looks at how these benefits and control measures will affect the region’s share of national jobs. It seems like the underlying assumption here is that air quality in the rest of the nation is held constant as regional air quality improves, thus causing an improvement in relative air quality for the region. This relative improvement drives the increase in economic migration into Southern California.

However, the end of the chapter acknowledges the possibility that other regions are moving forward with air pollution controls as well. If this is the case, the benefits to regional competitiveness may be even smaller than those estimated, as air quality will be improving in the rest of the nation as well as in the region. On the plus side, as noted, the extra costs may also have less impact on regional competitiveness because other regions will also be incurring these costs.

To the extent that other regions are implementing similar air quality controls, the impacts on relative competitiveness will be even smaller than those estimated in this chapter.

Page 8-4: I think the idea of trying to identify significant pollution thresholds could potentially be very useful in future modeling. It is likely that some of the impacts being estimated (such as the relationship of economic migration to regional pollution) are not linear. Understanding these thresholds could help policy-makers to better understand the trade-offs between costs and benefits of control measures.

Review of the *Draft Socioeconomic Report* for the Draft 2012 AQMP for the South Coast Air Quality Management District, 17 September 2012, Jane V. Hall, California State University, Fullerton.

In general the draft report is clearly written and presented. Most of the specific questions and comments that follow relate to chapters 3 and 5, which focus, respectively, on expected benefits and distributional impacts.

Specific questions and comments:

1. Page A-3: Since most of the quantifiable benefits of standard attainment are related to human health, it would make more sense to reorder this sentence and list that benefit first. Benefits to agriculture and horticulture should also be listed. (Also page 3-5.)
2. Table 3.3 appears to present results that do not always match those mentioned in the text. This might be the result of some estimates being reported for different years, some for specific years and others for annual averages across the time frame of the analysis.
3. Page 3-9: What does the first sentence mean? I think that it means the benefit was analyzed down to the level of the NAAQS rather than to the level of the stricter state standard. That is, the NAAQS is effectively the threshold. This should be clarified, and if the NAAQS is the threshold, why is that the case?
4. Ozone-related morbidity effects are omitted from the health benefits assessment, which is baffling given that such effects are well documented, can be quantified and impose significant detrimental impacts on exposed populations. No clear explanation for this is given in the Executive Summary, or in chapter 3. Nor is this point discussed in chapter 8 where it might be discussed as a future enhancement. Granted, PM 2.5-related effects are much more significant in economic terms, primarily because of the much larger mortality effect, but the ozone-related effects are not trivial in either economic or human terms. The USEPA 2011 draft RIA for the NAAQS ozone revision can be found at http://www.epa.gov/glo/pdfs/201107_OMBdraft-OzoneRIA.pdf

5. Ozone-related mortality is also omitted. It is possible to justify this based on how small the effect might be, but USEPA now includes this in its RIAs and the NRC report on ozone-related mortality recommended that it be included in benefit analyses. Some mention should be made that this is a potentially important effect, and why it is not included should be explained since it no longer fits into the cannot-be-quantified category. (National Research Council 2008. *Estimating Mortality Risk Reduction and Economic Benefits from Controlling Ozone Air Pollution*. National Academies Press. Washington, DC.)
6. What is the basis for the PM2.5 mortality value? What base value was used and how was it adjusted for income and inflation? I can assume this comes from Deck and Chestnut (2006), since that is the only likely source cited in the references. USEPA has done significant work since then that could be referred to (see point 8 below).
7. Similarly, I am unsure what RR factor was used for mortality, given that Laden et al. (2006) and Jerrett et al. (2005) are cited, but there is no discussion.
8. In line with point 7, was consideration given to using Krewski et al. (2009) which extended the time frame and updated the previous ACS studies? USEPA relied significantly on this in the 2012 RIA of the proposed PM2.5 NAAQS: *Regulatory Impact Analysis for the Proposed Revisions to the National Ambient Air Quality Standards for Particulate Matter* June 2012
http://www.epa.gov/ttn/ecas/regdata/RIAs/PMRIACombinedFile_Bookmarked.pdf
9. As far as I know, the most recent work on ozone and PM2.5-related health benefits in the SoCAB was published in 2011: "Valuing Health Effects: the Case of Ozone and Fine Particles in Southern California," Victor Brajer, Jane Hall, and Frederick Lurmann, 2011, *Contemporary Economic Policy*, 29(4), 524-535, based on a 2008 study *The Benefits of Meeting Federal Clean Air Standards in the South Coast and San Joaquin Air Basins*, 2008, with Victor Brajer and Frederick Lurmann, Institute for Economic and Environmental Studies at California State University Fullerton, research funded by the William and Flora Hewlett Foundation.

There are of course differences between the draft socio-economic assessment of the 2012 AQMP and that study since there are differences in assumptions, base years, etc. Nonetheless it might be useful to be familiar the study since comparisons could be made.

http://business.fullerton.edu/centers/iees/reports/Benefits_of_Meeting_Clean_Air_Standards_11-13-08.pdf

10. Chapter 8 indicates that since the last socioeconomic analysis several new approaches to health benefit assessment have been included, but again it is impossible to figure out what these are precisely, or how they were carried out. Generally, there is more precision in explaining how visibility and travel time benefits were assessed than is the case for health benefits.
11. The discussion and analysis of the potential distributional impacts of the AQMP does not address impacts by ethnic group. This is an important aspect of assessing potential effects on environmental justice and should be addressed. Chapter 8 notes that this is an enhancement to be considered in future assessments, but it would be helpful to include such an assessment sooner.
12. Distributional impacts by sub-region and income levels should also be reported as per-capita values.

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DATE: September 16, 2012
TO: Sue Lieu
FROM: Stephen Levy
SUBJECT: Review of Socioeconomic Report—Part One

The Draft Socioeconomic Report for the draft 2012 Air Quality Management Plan has two principal components:

- An analysis of the draft plan's costs and benefits
- An analysis of the economic impacts of the draft plan

This memo reviews the analysis of costs and benefits. A second memo will address the analysis of economic impacts.

Overview

The estimation of costs and benefits for the draft plan show a large difference between benefits and costs with the benefits much higher than the costs.

The cost-benefit analysis is comprehensive given the tools available to the District and should be the primary tool for assessing the overall impact of the plan on residents and the economy within the South Coast Air Quality Management District.

The economic impacts discussed in the second memo are small relative to the size of the economy (usually much less than 1%) and can guide the District in understanding how the plan affects jobs and income within different parts of the region and for different groups.

I have two principal recommendations for revising the discussion of costs and benefits of the draft 2012 AQMP:

- Include a discussion of the differences between the final 2007 socioeconomic report and the draft 2012 findings since the differences are

quite large for some components of costs and benefits. Explain the reasons for these differences.

- Provide a more complete discussion of how the SCAG Regional Transportation Plan (RTP) was used in the socioeconomic analysis including which components of the plan are included as TCMs in the socioeconomic analysis and how the cost estimates were developed. Collaborate with SCAG to ensure that the socioeconomic analysis of transportation measures is consistent with SCAG plans and findings.

Estimation of Total Costs and Benefits

Although both the 2007 Socioeconomic Report and the draft 2012 Socioeconomic Report show a large margin of total benefits to total costs, the composition of costs and benefits are quite different between analyses of the 2007 and 2012 AQMPs. The overall results are compared below after which I pose a number of questions seeking clarification of the methodologies and results.

Plan Costs

From the 2012 draft report:

The average annual control cost of all PM_{2.5} and ozone control measures is projected to be approximately \$448 million from 2013 to 2035, of which TCMs have an annualized cost of \$326 million.

From the 2007 report

The cost for implementing the Plan was estimated for both quantified and unquantified measures. The projected cost for 33 quantified short-term measures is approximately \$1.8 billion per year. Transportation control measures alone account for 24 percent of the total quantified cost. The cost of unquantified measures is projected to be approximately \$523 million per year.

This seems like a large difference in annual costs. Moreover, in the 2012 analysis the transportation control measures (TCMs) account for 73% of the annual costs while in the 2007 plan they account for 24% of quantified costs.

Are these cost differences the result of 2007 plan measures that have been adopted already, a difference in discounting the costs or the base year for converting to constant dollars or differences in cost estimation methodology.

TCM Costs

The SCAG Regional Transportation Plan identifies costs of \$524.7 billion or approximately \$21 billion per year while the draft report identifies \$326 million per year. The draft says that the TCMs include “large infrastructure projects”. If that is true, how can the annual costs be so much lower than the SCAG estimate even if one accounts for discounting into constant 2005 dollars?

Is it possible that the AQMD analysis did not include all of the TCM costs on the theory that they will not be paid directly by region residents and businesses? If so, that should be disclosed so readers can assess the reasonableness of such an assumption. This is an important area to relate to assumptions made by SCAG in developing cost estimates for their RTP.

It would be helpful to see a list of the SCAG RTP projects that were considered as relevant TCMs in the cost analysis. The gap between \$326 million and \$21 billion per year requires some explanation. Which parts of the SCAG RTP are included in the AQMP control measures and which are excluded and what are the relative costs.

Distribution of Costs

I would note more clearly in reference to Table 3-1 on annual costs by industry that in nearly all cases, the AQMP costs are less than one tenth of one percent of total industry costs. In addition I would add a caveat to the estimation of costs by county or sub-region. The methodology appears to allocate costs according to where facilities reducing emissions are located. Yet, many facilities are owned by companies headquartered elsewhere and the costs may not come directly from anyone in the county where the facility is located. As a result, I am not sure the geographical allocation of costs makes much sense to pursue as a socioeconomic indicator.

Plan Benefits

From the 2012 report:

TABLE 3-3
 Quantifiable Benefits of Draft 2012 AQMP
 (millions of 2005 dollars)

Benefit	Average Annual (2014 to 2035)
Reduction in Morbidity	\$23
Reduction in Mortality	2,225
Visibility Improvement	696
Reduced Materials Expenditures	14
Congestion Relief	7,712
Total	\$10,670

From the 2007 socioeconomic report:

The 2007 Plan is projected to comply with the federal PM_{2.5} and ozone standards with a quantified average annual benefit of \$14.6 billion between 2007 and 2025. The \$14.6 billion includes approximately \$9.8 billion for averted illness and higher survival rates, \$3.6 billion for visibility improvements, \$966 million for congestion relief, \$204 million for reduced damage to materials, and \$18 million for increased crop yields.

The overall magnitude of annual benefits (\$10.7 billion versus \$14.6 billion is somewhat similar **but the composition of total benefits between the 2007 and 2012 plan analyses is markedly different.**

The 2007 annual health benefits were estimated at \$9.8 billion compared to \$2.2 billion in the 2012 analysis while the congestion relief benefits were estimated at \$966 million per year in 2007 compared to \$7.7 billion per year in the 2012 analysis.

The report provides an excellent explanation of how the 2012 health benefits were derived. What were the changes in methodology or other factors that account for the much smaller annual benefit estimates in the current AQMP analysis?

Congestion Relief Benefits

The report provides a good explanation of how congestion relief benefits were calculated. They are the result of reduced driving (fewer vehicle miles traveled) and time savings from reduced congestion delays.

In the year 2014 an estimated \$161 million of savings on vehicle operation and maintenance is expected, as shown in Table 3-8. By the year 2035, the estimated savings would rise to \$739 million.

The operating and maintenance costs for passenger and light duty vehicles were assumed to be 19.6¢ per mile (AAA, 2012). Operating and maintenance costs for medium-duty and heavy-duty trucks were assumed to be 61¢ per mile (ATRI, 2011).

TABLE 3-8
Reduced Vehicle Operating and Maintenance Costs by Type of Vehicle
(millions of 2005 dollars)

Type of Vehicle	2014	2020	2035	Average Annual (2014-2035)
Autos	\$130	523	901	598
Trucks	31	123	212	141
Total	161	646	1,113	739

Daily VHT reductions associated with commute trips were multiplied by an annual conversion rate of 250 and an hourly wage rate of \$10.78, which is half of the average wage rate (EDD, 2012), to arrive at the annual benefit of spending less time on commuting. Daily VHT reductions from business trips were also multiplied by an annual conversion rate of 250 and an hourly wage rate of \$21.84 for truck drivers (ATRI, 2011) to arrive at the annual benefit from VHT reductions for business trips. Savings from reduced travel time for business and commute trips is estimated at \$358 million for 2014 and at \$13.8 billion for 2035, respectively, as shown in Table 3-9.

TABLE 3-9
Savings from Reduced Travel Time by Trip Type
(millions of 2005 dollars)

Type of Trip	2014	2020	2035	Average Annual (2014-2035)
Business	\$59	\$657	\$2,291	\$1,156
Commute	299	3,305	11,529	5,817
Total	\$358	\$3,962	\$13,820	\$6,973

I have several questions with regard to these estimates.

- Can the District and SCAG be more specific about what measures create the reductions in VMT and VHT? Is it infrastructure investment, people switching from driving to transit, more people living closer to work as a result of land use policies or other factors?
- The savings from VHT reduction are much larger than the savings from VMT reduction. What is the cause of these differences in terms of TCMs and/or behavior change?
- The congestion relief benefits (\$7.7 billion per year on average) are quite large compared to the estimated annual costs (\$326 million per year). Can you provide more explanation as to why this is so and why the ratios are so much different than in the 2007 analysis?

Four Final Thoughts

I would place the summary at the beginning of each chapter. The summaries are well written and help readers focus on the important results. Often large amounts of each section address impacts that are very small in relation to the size of the region. But the summaries focus attention on the big picture results.

In all relevant chapters I would strengthen the use of SCAG forecasts and findings. In many ways the AQMP rests on the SCAG economic and demographic forecasts and, in the case of costs and benefits, on the SCAG Regional Transportation Plan and Sustainable Communities Strategy.

Approximately 40% of the RTP funding is not in place currently. Although the SCAG RTP identifies potential sources for these funds as in Table 2 of the RTP executive summary, there is some uncertainty regarding these funds and I suggest including this uncertainty in the list of AQMP caveat and uncertainties, particularly since the congestion relief benefits are such a large portion of overall draft plan benefits.

I would consider addressing benefits before costs and perhaps placing Table 3-1 in an appendix or at the end of the chapter.

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DATE: September 18, 2012
TO: Sue Lieu
FROM: Stephen Levy
SUBJECT: Review of Draft Socioeconomic Report—Part Two

This memo focuses on the analysis of economic impacts discussed in Chapters 4, 5 and 6 and the issues in describing the economy between REMI and SCAG discussed in Chapter 2 and Appendix C.

Overview

I suggest major revisions to the framing of the economic impact findings and revisions to individual chapters.

My areas of concern at the big picture level are:

- Most reported impacts are tiny in comparison to the size of the economy, especially when you consider we are talking about impacts in 10 to 25 years from now. While in some cases impacts are compared to the size of the economy, this is not true consistently throughout the report. If you look carefully in the text (but not found in the executive summary) you can find that total changes in job levels from the AQMP are approximately .4% of the regional job total.

The negligible impact on the overall economy is the principal finding of the AQMP socioeconomic analysis as it was for AB 32 and the economic impact analysis by CCS of SCAG's emission reduction policies.

In addition the draft is clear in places that the REMI theory of added jobs is that they will induce population growth, which will also be tiny if you show the numbers. It is implicit but never stated that these jobs will not reduce unemployment or raise real income. In this context the 37,000 added jobs are even tinier. Read the discussion later in the memo about the report's disposable income findings.

1

Finally, there is a possible inconsistency between the job impact analysis of the 2012 RTP (174,500 jobs on average) and the socioeconomic report estimate. Is it true that the socioeconomic analysis included only approximately 25% of the RTP costs? I recommend that the District and SCAG discuss a consistent narrative about job impacts.

- The narrative goes back and forth between how SCAG describes the economy and how the REMI model describes the economy. Since the SCAG growth rates are used by AQMD and the SCAG actual job estimates and forecasts are used in the RTP analysis, which is the critical component of benefits and costs, using any REMI numbers to describe the economy is confusing and potentially misleading. I would sharply reduce any references to REMI model descriptions of the economy or forecast growth, especially since the REMI definition of jobs is not only different and confusing in the report context but basically out of sync with how other organizations describe the number of jobs.

See the discussion below of Chapter 2 and Appendix C.

- The discussion of the baseline is confusing. I believe the REMI baseline is the REMI forecast adjusted to reflect the SCAG growth forecast. Is that correct? And then the impacts of the AQMP would be the difference between if the control measures are adopted and if not—is this correct? On the other hand, I believe the position of the draft is that the SCAG growth forecast anticipated and incorporated the RTP and AQMP. Is this correct?

So, what exactly does it mean that the plan “creates” 37,000 jobs? Is this more than SCAG forecast or would it be less than the SCAG forecast if the plan were not adopted?

But the real challenge is that everything is **tiny at the aggregate regional level** and the report does not help readers to that conclusion. Moreover, the net benefits are also tiny compared to regional GDP which will be over \$1.5 trillion by 2035.

- There are a number of small mistakes and inconsistencies that, while they do not change any of the major findings, could damage the credibility of the report.

Now I go chapter by chapter.

Chapter 4 on Employment Impacts

It took me four times to read this paragraph below at the beginning of the chapter to see that the last date here was 2023, not 2035, and that is why both the benefit and cost estimates were different from the average annual estimates reported in Chapter 3. It is a confusing and perhaps unnecessary paragraph.

Implementation of the Draft 2012 AQMP will reduce morbidity and mortality; improve visibility; decrease expenditures on household cleaning and refurbishing building surfaces; and provide relief to congestion, as discussed in Chapter 3. The total quantifiable benefit of the Draft 2012 AQMP amounts to approximately \$5.95 billion in 2014 and \$9.1 billion in 2023. The PM_{2.5} and ozone measures would result in an annual cost of approximately \$510 million in 2014 and \$357 million in 2023. Both benefits and costs will affect the employment base in the four-county economy.

I would find a way to add a column for the percentage change in job levels in each time period. Is there some reason why you are not showing 2035 on Table 4-1 below?

Job Impacts of Quantified Clean Air Benefits and Measures			
Category	2014	2023	Average Annual
Clean Air Benefits & Measures (2013-2035)	2,988	28,187	37,043
Clean Air Benefits (2014-2035)	2,262	30,146	42,174
Congestion Relief	348	20,371	32,986
Visibility Improvements	1,008	5,313	4,947
Reduced Materials Expenditures	133	191	179
Health Benefits	774	4,146	3,910
Control Measures (2013-2035)	731	-1,929	-3,257
TCMs	715	537	-1,611
District PM _{2.5}	7	-10	-4
Ozone Strategy	26	-2,457	-1,639

Results from modeling all the categories are slightly different from the sum of results from modeling each category one at a time because of nonlinearity of the REMI model.

This paragraph from 4-3 will be confusing to readers trying to reconcile the AQMD reports to published SCAG growth forecasts.

According to the REMI baseline forecast (adjusted to reflect SCAG projections) there would be 11.5 million jobs in 2035 in the four-county area. There would be over 2.4 million net jobs created between 2009 and 2035 with an annual rate of growth at 0.92 percent.

When this summary section gets cleaned up, I would place it at the beginning of the chapter as I would with all summary sections.

It is important to note that the 90,240 jobs per year are NOT equivalent to the 37,043 jobs annually. The 90,240 jobs per year are cumulative while the 37,043

are not. A careful reader could figure this out from the comparison of growth rates but otherwise it is confusing since 37,043 looks like a big jump from 90,240.

Is there a way to turn the paragraph into a table? Again I don't like the reference to REMI's 11.5 million jobs. I would use the SCAG growth forecast numbers. While you have to use the REMI framework for analysis using their model, you do not have to use their numbers in the narrative.

Finally, at some point you should have a table that shows the population change associated with the job change. The draft mentions increased migration several times but never that I saw quantifies the population change. That would also be a good place to include the unemployment rate.

Without the 2012 AQMP, jobs in the four-county area are projected to grow at an annual rate of about 0.922 percent between 2009 and 2035, which would be approximately 90,240 jobs per year. Clean air benefits and control measures would result in a net gain of 37,043 jobs annually, which translates to an increase in the annual job growth rate by 0.033 percent relative to the baseline projected growth rate between 2009 and 2035. Cleaner air from the 2012 AQMP would result in an additional 42,714 jobs created per year. This would increase the job growth rate by 0.034 percent and bring it to an annual rate of 0.96 percent from 2009 to 2035. On the other hand, the quantified measures would result in 3,257 jobs forgone, thereby slowing down the job growth rate by 0.001 percent, to 0.921 percent. The four-county region is projected to have 11.5 million jobs in 2035. The jobs created from clean air benefits would amount to 0.4 percent of the baseline jobs, on average. The jobs forgone from control measures would be 0.03 percent of the baseline jobs, on average.

Chapter 5 on the Allocation of Economic Impacts to Communities and Groups.

In my opinion this chapter is misleading by not reminding readers that the impacts discussed are small compared to relevant regional totals. The draft takes pages and pages to disaggregate small numbers into even smaller numbers. See below for suggestions on how to clarify the relative magnitude of numbers.

TABLE 5-1
Cost Share by Sub-region for Control Measures

Sub-Region	PM _{2.5} Measures		Ozone Measures		All Measures	
	Millions \$	%	Millions \$	%	Millions \$	%
LA CO Beach & Catalina	\$16	5%	\$12	10%	\$28	6%
LA CO Burbank	16	5%	3	3%	19	4%
LA CO Central	32	10%	7	6%	39	9%
LA CO North	18	5%	4	3%	22	5%
LA CO San Fernando	32	10%	7	6%	39	9%
LA CO SG Valley East	17	5%	4	3%	21	5%

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LA CO SG Valley West	26	8%	5	4%	31	7%
LA CO South	23	7%	7	6%	30	7%
LA CO South Central	26	8%	5	4%	32	7%
LA CO Southeast	32	10%	7	6%	39	9%
LA CO West	23	7%	5	4%	29	6%
Orange Central	16	5%	7	6%	23	5%
Orange North	8	2%	4	3%	11	3%
Orange South	15	5%	6	5%	21	5%
Orange West	12	4%	5	4%	17	4%
Northwest Riverside	3	1%	8	6%	11	2%
Other Riverside	3	1%	4	3%	7	2%
Southwest Riverside	2	1%	4	4%	7	2%
San Bernardino City	3	1%	8	7%	11	2%
Other San Bernardino	2	1%	3	3%	5	1%
Southwest San Bernardino	2	1%	6	5%	8	2%
Total	\$327	100%	\$122	100%	\$448	100%

On the cost allocation to industry tables in Chapter 3, the draft helpfully adds a column that shows the impacts as a percent of total output. A similar column would be personal income of each sub-region.

I don't think the allocation of costs using the methodology in the text is either helpful or accurate. On the other hand the allocation of benefits by sub-region makes some sense.

If you are committed to publishing these numbers I would add a % of baseline jobs column to table 5-4.

I find the discussion of disposable income counterintuitive and confusing. At the very minimum if it is true, it wipes out any rationale for mentioning job gains as if they were a positive factor.

IMPACTS ON Disposable Income

Without the Draft 2012 AQMP, real disposable income is projected to grow at an annual rate of 2.245 percent between 2009 and 2035.¹ Clean air benefits of the Draft AQMP could bring the annual growth rate to 2.281 percent. Per capita real disposable income (total real disposable income divided by population) would decrease by \$891 in 2035 relative to the baseline projection. On the other hand, the PM2.5 and ozone measures would lower the projected growth rate of the real disposable income slightly to 2.244 percent annually relative to the baseline projection in 2035. This would result in a minor increase in per capita real disposable income by \$8 in 2035.

The decrease in per capita disposable income from cleaner air is because of the higher growth rate of population than that of total real disposable income. The annual population growth rate from 2009 to 2035 is projected to be 0.9 percent with clean air benefits alone as opposed to the baseline annual growth rate of 0.792 percent. Implementation of quantified control measures is projected to decrease the annual population growth rate to 0.79 percent.

Let's start with the population. I recommend a table that supports the final paragraph. I confirm that going from 16.9 million residents in 2008 to 20.9 million in 2035 is a 0.790% average annual growth rate (the 0.792% figure must use unrounded numbers??). So what is the population growth related to clean air benefits alone that gets you to .9%? I get 21.3 million people in 2035 to reach this percentage. Are you arguing that the approximately 120,000 added jobs in 2035 raise the population by 433,000 residents? That seems large.

I see the implication on population of the clean air measures and from the control measures but do not see the population impact of both combined. I really think a table would help that includes the 2035 population and 2008-2035 growth rates.

Then I would want to see and have explained why this relatively small increase in average population (probably less than 100,000 given the ratio of 2 people per job) would outweigh the gain in real disposable income.

For now the report is saying 1) there are net benefits, 2) there are small job increases and then 3) real income goes down. Is that really true?

The price index section illustrates the challenge of giving some context to the results. The first problem is that without a table it is hard to see how the two components—clean air benefit impacts and control measure impacts—add up. The paragraph starts by saying reduced prices then goes to increased prices. A table would help and the overall conclusion should be stated first and then the two components broken out.

But the real problem is that these are just difficult numbers to read without an example. For example, if an iPad cost \$500, then a .06 percent increase would increase the cost to \$500.30.

The change here is relative to the baseline index of consumption goods. The price of consumption goods is projected to decrease by 0.007 percent in 2014 across all household income groups and by 0.013 to 0.028 percent in 2023 due to the attainment of the PM_{2.5} standard. Implementation of control measures is projected to increase the price of consumption goods from 0.039 to 0.06 percent for these same years across all household income groups. All household groups would experience increases in prices of consumption goods resulting from combined impacts of control measures and clean air benefits. The projected increase in the price is due to the pass-through of additional control costs by industries that are affected by a number of control measures.

Before I do the competitiveness chapter, I want to review Chapter 2 and Appendix C as the report does not accurately characterize the differences between the SCAG and REMI forecasts and methodology.

Appendix C

The statement below is not accurate and will affect some other parts of the report such as the first table in Chapter 6.

This version of the REMI model has the same U.S. population projections as the SCAG model (Census, 2008). REMI’s U.S. employment growth is based on the BLS 2018 employment projection, which is the same data source as SCAG’s employment projection. Therefore, no further adjustment to the REMI U.S. forecast is needed.

SCAG did not use Census 2008 population while REMI did and, as a result, the initial forecast U.S. job levels in 2035 are not the same. SCAG used lower U.S. immigration and population projections, a result confirmed by Dowell Myers in newly released U.S. population projections based on the 2010 Census and lower immigration trends than were included in the 2008 Census baseline.

The statement below is technically not accurate but the important message is that most of the difference between the SCAG/BLS/EDD estimates and REMI job estimates are in the estimate of self employed.

The BEA data include federal military jobs and a much higher estimate of the self-employed than the BLS data.

This is technically inaccurate because the number of self employed people is not much, if any, higher in the REMI forecast but, rather, the number of Schedule C, form 1040 jobs per person is higher. If the number of self employed were higher in the REMI forecast, than the unemployment rate would be lower and the labor force participation rates would be higher—all of which is not true.

Here is another point.

Below are the adjustment tables from Appendix C. I believe the adjustment was done in accordance with CCSCE earlier suggestions but do note the large differences in pre-adjustment growth rates for population and employment. These would be worth discussing so if anyone asks, the District could have a better answer than “that’s what the models show”.

Table C-1
Unadjusted and Adjusted REMI versus SCAG Population Comparison
(in percent growth rate)

	2008-2020	2020-2035

	Unadjusted REMI	Adjusted REMI	SCAG	Unadjusted REMI	Adjusted REMI	SCAG
Los Angeles	8.60%	6.80%	6.40%	10.30%	9.10%	9.10%
Orange	13.50%	9.50%	9.30%	13.60%	5.00%	4.60%
Riverside	28.70%	23.50%	23.00%	22.90%	29.10%	29.20%
San Bernardino	11.50%	12.90%	13.20%	13.40%	20.60%	20.50%
4-County Total	12.30%	10.10%	9.80%	13.10%	12.50%	12.60%

TABLE C-2
Unadjusted and Adjusted REMI versus SCAG Employment Comparison
(in percent growth rate)

	2008-2020			2020-2035		
	Unadjusted REMI	Adjusted REMI	SCAG	Unadjusted REMI	Adjusted REMI	SCAG
Los Angeles	17.70%	5.30%	5.00%	13.90%	6.20%	5.90%
Orange	18.70%	0.10%	0.10%	14.90%	8.80%	9.40%
Riverside	24.20%	39.10%	40.20%	20.60%	33.20%	32.80%
San Bernardino	16.30%	17.20%	16.90%	14.60%	28.60%	29.30%
4-County Total	18.40%	8.40%	8.20%	14.80%	12.10%	12.20%

Now part of the answer is that REMI began with higher U.S. growth rates, which brings us to the first table in Chapter 6.

Chapter 6 on Competitiveness

There are two important positive contributions of the chapter. The first is the sentence below, which in my opinion, should be replicated throughout the report as in the executive summary and employment chapters.

Due to the extremely small values presented here, neither the quantified benefits nor the quantified measures are expected to result in discernible differences in the four-county region's share of national jobs over the analysis period.

The second contribution is

The actual effects of the Draft 2012 AQMP (including control measures and benefits) on regional competitiveness could deviate from the projected effects. First, the analysis assumes that all control costs are "extra" costs when compared to air pollution control costs in other regions. This ignores the fact that competing regions tend to follow the District's lead and adopt control measures with objectives similar to those proposed in the District or at a minimum have some level of control with its consequent costs. For example, a number of eastern states have adopted the California vehicle exhaust

standards. The Draft Socioeconomic Report underestimates the benefits from clean air that would increase regional attractiveness.

As in other chapters, the summary would be more helpful at the front.

Let's look now to Table 6-1. REMI has the region losing a share of national jobs.

SCAG has the region gaining a share of national jobs from 5.16% in 2010 to approximately 5.30% in 2035. This is just another example of why the REMI numbers should not be used in the report. In addition in the SCAG forecast manufacturing jobs rise from 5.6% of the national total to 5.7%. However the increase in the REMI forecast seems strange particularly since they have the regional share of total jobs declining. I don't think whether Imperial or Ventura counties are in or out will affect the results.

TABLE 6-1
Impacts on Region's Share of U.S. Jobs for
Clean Air Benefits and Control Measures (percent)

	Percent Share of U.S. Jobs for Benefits		Percent Share of U.S. Jobs for All Measures		Percent Share of U.S. Jobs for Combined Benefits & Measures	
	2014	2023	2014	2023	2014	2023
<u>Total Jobs</u>						
With Benefits & Measures					5.127	4.962
With Benefits	5.126	4.963				
With All Measures			5.126	4.948		
Without Draft 2012 AQMP	5.125	4.949	5.125	4.949	5.125	4.949
Difference	0.001	0.014	0.001	-0.001	0.002	0.013
<u>Manufacturing Jobs</u>						
With Benefits & Measures					5.654	7.305
With Benefits	5.656	7.306				
With All Measures			5.654	7.29		
Without Draft 2012 AQMP	5.655	7.292	5.655	7.292	5.655	7.292
Difference	0.001	0.014	-0.001	-0.002	-0.001	0.013

Some numbers are rounded.

I don't understand why the year 2035 never appears on tables and 2023 is usually the end date.

I don't understand the discussion of delivered prices. Are you arguing that the AQMP will reduce imports and therefore reduce the cost of goods sold in the region?

I would think the statement below might be controversial statement and might need some more explanation.

The combined impact of clean air benefits and control measures shows a downward trend in the cost of doing businesses for the majority of industries.

How does table 6-3 relate to the earlier table (5-6) on price impacts?

Finally, I could use more explanation of exactly what parts of the AQMP create competitiveness changes. For example, what is the relative weight of visibility impacts, congestion relief and control measure costs?

Chapter 2

You start out fine citing EDD, not REMI estimates of wage and salary jobs.

Los Angeles, Orange, Riverside, and San Bernardino Counties collectively constitute one of the largest regional economies in the United States. The jurisdiction of the SCAQMD includes all or the majority of the populated portions of these four counties. In 2010, the four-county area's gross domestic product (GDP) was \$768 billion (2005 dollars), which was 5.9 percent of the nation's gross domestic product (U. S. BEA, 2012). These counties had 17.1 million people in 2010, which was 45.8 percent of California's total population or 5.5 percent of the U.S. population. In addition, there were 6.3 million wage and salary workers in the four-county area in 2011, a 44 percent share of the state's total wage and salary workforce (EDD, 2012b).

There are numerous examples of potential confusion with the use of REMI job estimates and forecasts as opposed to the EDD/BLS data used by SCAG and every other major forecasting firm.

I understand the need to use REMI data to do the impact analysis but I recommend using plain vanilla SCAG/EDD/BLS data to describe the job base in the region.

More than 8.9 million jobs supported the \$768 billion GDP in 2010. The sectors that had the highest shares of jobs were government (12 percent), retail trade (10 percent), health care and social assistance (10 percent), professional, scientific, and technical services (8 percent), manufacturing (7 percent), accommodation and food services (7 percent), and administrative and waste management services (7 percent).

The paragraph below is good and would be helpful in clarifying and interpreting the baseline and resulting changes in job levels.

SCAG projections (which form the baseline projections for the Draft 2012 AQMP) assumed that the four-county area would continue making the necessary infrastructure investments in air quality and transportation improvements to keep it competitive nationally and globally. For this reason, SCAG projections reflect the full implementation of the 2012 RTP and the necessary air quality programs that would be in compliance with the federal Clean Air Act (CAA). In other words, the baseline forecast does not represent a scenario of no further air quality control regulations or programs beyond what is already adopted, or the potential consequences of not meeting the federal air quality standard (e.g., 2 to 1 offset ratio for new and modified major sources and withheld highway funding under the CAA).

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Evaluation of
“DRAFT SOCIOECONOMIC REPORT
FOR THE DRAFT 2012 AQMP”

Consulting Report For
South Coast Air Quality Management District

Paul Ong with assistance from Jonathan Ong¹

Ong and Associates Consulting

September 17, 2012

¹ Jonathan Ong extracted, assembled, verified and analyzed the data for Part III (Example of EJ Analysis), and contributed to the final writing of the report.

Evaluation of AQMD's Draft Socioeconomic Report by Paul Ong

Introduction

This report presents an assessment of "Draft Socioeconomic Report for the Draft 2012 AQMP," dated September 2012 and prepared by the South Coast Air Quality Management District (a.k.a. AQMD or District). For the purpose of this report, the District's draft will be referred as the DRAFT. The evaluation is conducted by Paul Ong, who has been contracted as a private consultant. Dr. Ong is a professor at UCLA's School of Public Affairs, trained as an economist and urban planner, and an expert on the study of socioeconomic inequality. He previously contributed to the District's socioeconomic analysis and served on several AQMD advisory committees. The author is solely responsible for all analyses, interpretations and opinions, and retains intellectual ownership of the ideas. As a product funded by a public agency, the content of this report is considered to be in the public domain. Due to limited resources and time, the assessment is not comprehensive. Instead, it focuses on key points identified by the by the author, with a focus on issues related to environmental justice.

AQMD is commended for conducting an extensive socioeconomic analysis of its 2012 Air Quality Management Plan (AQMP or Plan). The Plan will have significant impacts, and it is critically important to estimate the costs and benefits to the region's people and economy. It is equally important to estimate how those outcomes are distributed among groups of stakeholders, economic sectors and communities. The Plan is judged to achieve a greater degree of economic efficiency when the benefits outweigh costs, and this is achieved mainly by promoting collective action that reduces environmental externalities. The Plan projects a sizeable monetized net gain. Some estimates of individual components are problematic and perhaps overly optimistic, particularly regarding the benefit from congestion relief, which will be discussed later. Despite these potential flaws, the author's opinion is that the Plan would produce an overall improvement.

The distributional outcomes, however, are less obvious because AQMD's socioeconomic analysis has severe limitations in addressing equity. This is particularly true in the analysis of environmental justice (EJ), which revolves around environmental inequality along racial and economic lines, and policies and programs to redress differential burden. AQMD has made marginal improvements since 1989, but failed to incorporate analytical advances in the field, leading to an incomplete and imprecise EJ evaluation of the potential future impacts of AQMP.

The remainder of this report is divided into three parts. Part I contains general feedback in the form of comments, questions and recommendations on points identified by the author as being problematic, ambiguous or in need of further work. Again, this is not a comprehensive review of the entire report, only select items that stood out within the limited time available to conduct a review. Part II critiques the report in terms of its limited EJ analysis. It includes a discussion on EJ concepts and practices, which provide a framework to assess the Plan. Part III provides an example of how an EJ analysis could be conducted using data from the AQMP. For this report, more emphasis is placed on evaluating EJ related issues since others are able to cover the non-EJ elements. The report

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concludes with some recommendations, with the most important one being a rapid implementation of a full and detailed EJ analysis of the Plan.

Part I: General Feedback

This section contains comments, questions and recommendations on points that are deemed to be problematic, ambiguous or incomplete. Where appropriate, the location is identified.

Page ES-2 contains imbalanced handling of “unquantifiable” elements of costs and benefits due to omission. The DRAFT explicitly points out that there are “benefits which are still unaccounted.” This is true, but the DRAFT does not acknowledge there are likely unaccounted costs. This is a problem that also appears later in the DRAFT.

Page ES-3 uses the term “southwest” but this geographic area does not match any of the sub-regions used in the DRAFT.

Page 1-7 states that REMI was assessed as being “technically sound”, but that is based on a 1992 assessment. There should be an ex-post evaluation of previous projections to establish performance. Clearly, it is important to decompose any divergence between the projections and subsequent observed outcomes (job levels and growth) into at least three components: those due to unexpected exogenous changes (e.g., national economic driver taken from projections from other sources), assumptions about key inputs, and model parameters. This exercise would help understand REMI's overall performance, and gauge the District's overall confidence in relying on this tool for policy purposes.

Page 2-1 introduces the use of race and ethnicity as important categories but does not give a definition. The Census collects separate information on race and Hispanic origins, categories that can overlap. For example, there are African Americans who are of Hispanic origins, but it is unclear how they are classified in the DRAFT. It is also unclear how multi-racial individuals are classified, although I assume that they fall into the “other” category. The classification scheme should be made explicit.

Page 2-10 discusses the “great recession.” While it correctly states NBER's declaration of the recession ending in 2009HQ, it would be useful to acknowledge that there is a lag in the recovery of the job market. This is “normal” for most business cycles, but the lag in jobs creation and reduction in the unemployment rate is more pronounced and protracted this time. Moreover, it is important to point out that California and Southern California in particular lag the nation in both business and labor-market recovery, due in part to the drag from the severe housing foreclosure crisis.

Page 3-3 shows a sharp peak in costs. Please provide an explanation. Also, the overwhelming concentration of the project costs in a single year raises the questions about adjustments costs during and after the peak. Are there possible short-run price distortions in affected markets?

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Page 3-5 should include a section on unquantified costs, parallel to that on unaccounted benefits discussed in later sections of the DRAFT.

Page 3-5 contains Table 3-2, which should include a breakdown of costs by major program interventions (PM v. Ozone, or TCM v. other). Are all PM reductions related only to TCM?

Page 3-6 includes benefits from congestion relief from SCAG's TCM. TCM should also produce other benefits; therefore, it would be useful to have separate columns listing the benefits from TCM and the other proposed interventions.

Page 3-13 contains calculated benefits from congestion relief that appears problematic. There are two issues because of the proposed travel related interventions, which includes mode shift. One, the calculation does not account for non-travel times (wait time in particular, but also adjustment to schedule to coordinate joint travel), which increases if travel shifts from solo automobile travel to other modes. The second is that the appropriate travel time should be measured in hours of passenger travel and not VHT (vehicle hours traveled). The mode-shift interventions (to the degree that they effective) would increase average persons per vehicle, and the benefit calculations do not account for this, at least as far as I can figure. Both of the two mentioned factors would reduce the benefits.

Page 4-2 shows that a major source of projected job gains (89%) will come from congestion relief, and Page 4-3 claims that the improved environment "would induce in-migration." Pages 6-2 and 6-3 state that the biggest reduction in relative prices would occur in transportation and warehousing, but that sector only accounts for a small percent of the job gains. It is very difficult to judge the reasonableness of these projections (particularly induced in-migration) because there is not sufficient detail on how the estimates were generated. The appendices provide only a skeletal discussion on how inter-regional competition is modeled. There is also no information about the "baseline" for the rest of the nation, which should also have plans to improve air quality. There is too much of a black box. Moreover, there is also the potential problem of over estimating benefits from congestion relief mentioned above.

Finally, it is unclear if Table 5-4 is referring to jobs by work site or by residence of workers. This can make huge difference.

PART II: Evaluation of EJ Analysis

This section reviews the DRAFT's EJ analysis, or more correctly stated, this section comments on the DRAFT's neglect of this critical element. Environmental justice revolves around environmental inequality along racial and economic lines, and policies and programs to redress differential burden. Much of the early EJ battles were directed at the role of government in locating activities that place a greater burden on disadvantaged communities. In more recent years, public agencies have attempted to address this problem. At the federal level, President Clinton's 1994 Executive Order 12898 directed

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federal agencies to incorporate EJ in their programmatic activities, and there has been a proliferation of EJ related policies and programs at the state, regional and local levels, with California and its regional air districts being among the most active. EJ concerns at AQMD predated the Executive Order, and some progress has been made. This includes, for example, the establishment of an Ethnic Community Advisory Committee, which has been reconfigured as the Environmental Justice Committee.

Given this context, it is rather disappointing that the AQMP socioeconomic analysis is so limited, failing to incorporate analytical practices developed in recent years. The socioeconomic analysis fails to establish a baseline by not identifying EJ geographic areas, not determining the current and projected cumulative environmental (including health) burdens by EJ categories, and not fully estimating the EJ-related distribution of costs and benefits. The DRAFT implicitly acknowledges shortcomings in this area because it makes a vague recommendation to "Expand sub-regional analyses to include environmental justice (EJ) areas" that "may be classified by income or race." In other words, it is postponing a serious EJ analysis until some unspecified future time.

To better understand the reasoning for the above opinion, it is useful to offer a conceptual and analytical framework. For purposes of assessing the potential implication of the AQMP, the appropriate unit of analysis should be defined as geographic areas that have the following characteristics:

- (1) Socially and politically disadvantaged, specifically those who have relatively less influence in decision making, leading to being vulnerable to disproportionate adverse environmental impacts. In practice, the relevant populations are the racial and ethnic groups protected by civil rights laws.
- (2) Low economic status, which makes an area more susceptible to market forces, such as lower land values, less financial ability to "purchase" environmental amenities, and less able to overcome costly-information barriers.
- (3) Suffer from previous adverse environment related decisions, leading to higher cumulative negative health and other outcomes.

The geographic area is a spatial unit that is a "community of common interest," including traditional elements, such as common demographic and SES characteristics, shared localized institutions and networks, recognized as an identifiable place by internal stakeholders and external groups. This concept is used in political redistricting based on judicial rulings. For EJ purposes, CIC should also include common environmental liability. Observed spatial environmental inequality is the product of selective settlement patterns, that is, income constraints force disadvantaged households to purchase lower priced housing in environmentally degraded areas (compensating variation). Spatial environmental inequality also includes post-establishment actions, for example, when governments and firms target disadvantaged areas as dumping grounds.

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EJ policies and practices are designed to address the gap in environmental quality. This includes having a more inclusive decision-making process that provides meaningful participation for EJ communities. This can be accomplished through open public forums, active solicitation of input, establishment of EJ advisory committees, and representation on key committees. A second practice involves changing organizational practices that integrate explicit EJ concerns into policies and programs with quantifiable objectives. Technical capacity should be enhanced with EJ expertise through both internal staffing and consultation with external experts. Finally, the organization should actively monitor and evaluate its activities and efforts to refine policy and programmatic interventions, and to improve effectiveness in achieving EJ goals and objectives.

The fundamental EJ goal should be closing the absolute and relative gap in cumulative environmental burdens. Improving air quality for all is a desirable outcome, but is not sufficient to ensure progress toward environmental equity. For example, it is possible that an intervention could generate improvements for both EJ and non-EJ communities, but disproportionately benefit the latter. The consequence is that the environmental gap actually increases. This is analogous to the popular economic concept of a rising tide lifts all boats. If the more affluent vessels gain much more, then economic inequality will grow. A necessary criterion for promoting EJ is that net benefits should disproportionately favor the most disadvantaged. A possible operational definition for the most disadvantaged communities would be a category that includes neighborhoods that are among the top quintile in terms of overall environmental risk (due to the multiple factors described earlier). Moreover, EJ neighborhoods should be among the bottom third or quartile along individual dimensions denoting relative advantage.

The above framework can be used to evaluate the DRAFT AQMP and the associated process. In terms of EJ participation, AQMD has consulted its Ethnic Community Advisory Committee, which has been replaced by the Environmental Justice Committee. It is questionable whether the Committee has enough technical expertise to fully understand the nuances and complexities involved in conducting the socioeconomic analysis. This was the case for the Environmental Justice Committee based on the author's participation and observation of that group. Its members were mostly community representatives, advocates and laypersons; therefore, they were dependent on AQMD staff to inform them about the details. Without independent sources of expertise, it is difficult for the Committee to effectively question or challenge the staff. This can reduce participation to being merely token and symbolic. The author does not have any knowledge to whether the District consulted with external EJ experts during the analysis, but if that was done, it was not evident in the DRAFT.

The DRAFT does not contain EJ explicit goals and objectives. Their absence would make it difficult to assess whether AQMP would promote environmental justice. One could argue that EJ concerns are implicit since AQMD has expressed its support for the general principles through past statements by the Board and staff. However, broad principles need to be implemented concretely and integrated throughout the District's operation, including the Plan.

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The DRAFT fails to adequately operationalize the EJ concept into analytical units. The sub-areas do not have the spatial resolution to differentiate EJ neighborhoods from non-EJ neighborhoods within each sub-area and to identify localized hot-spots. Another problem is the set of criteria defining an EJ area. There is nothing stated in the DRAFT, but the District does have a definition used for other programs. One criterion that can be evaluated is the one related to economic status. According to AQMD, an EJ area should have a poverty rate (the percent of the population living under the federal poverty line) of at least 10%. This rate appears to be arbitrary and unrealistically low. When applied to the sub-areas listed in the DRAFT, 16 of 21 would qualify, accounting for 81% of the region's population. This may be an over estimate since the poverty rates reported in the DRAFT were rounded to whole percentage points. Even with a threshold of greater than 10%, 14 sub-areas would qualify, housing 73% of the population. This extraordinary high proportion of the total population certainly would not identify the truly disadvantaged.

Without a detailed technical analysis, it would be difficult to implement the EJ component of Figure 1-2, "Assessment Tool Kit," displayed on page 1-6. The available tools do not produce the information needed to reasonably estimate the "Ethnic and Community Impacts" in terms of environmental justice; consequently, any "policy consideration" would most likely be incomplete and imprecise, and possibly inappropriate.

PART III: Example of EJ Analysis

This report goes beyond a critique, which finds serious shortcomings in terms of addressing EJ concerns, by offering an example of how an EJ analysis could be implemented. It uses data from the DRAFT. It is important to note that the exercise is very partial due to limited information, inadequate spatial units, and simplifying assumptions. Moreover, the methods used are not definitive, and there can be other appropriate analytical approaches. There are two parts to the exercise. The first is to compare the proportionate share of the costs and benefits for geographic units defined by EJ-related. The second is a rough estimate of the proportionate share of the costs and benefits for "disadvantaged" and "advantaged" populations.

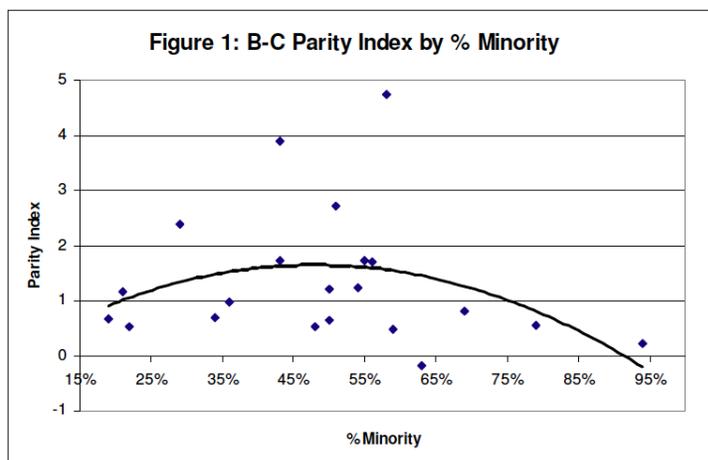
Since EJ is spatial (both the population and environmental risks are defined by location and place), a critical analytical technique is to examine the geographic distribution of environmental burdens and improvement relative to the distribution of the population. This is done by creating a modified benefit to cost ratio. More specifically, the index is defined as a sub-area's share of the estimated total benefits divided by its share of the estimated total costs. Using this index rather than a simple benefit-to-cost ratio has the advantage of not directly relying on the estimated dollar amounts (which may have some biases on the benefit side, as discussed earlier) and is easier to interpret. This modified ratio, a benefit-to-cost parity index, is consistent with the concept that disadvantaged areas should receive a disproportionately greater share of the outcomes of a policy and/or programmatic intervention. Values greater than one for EJ areas would indicate that the desired EJ objective is being achieved. Values of less than one indicate that the proposed

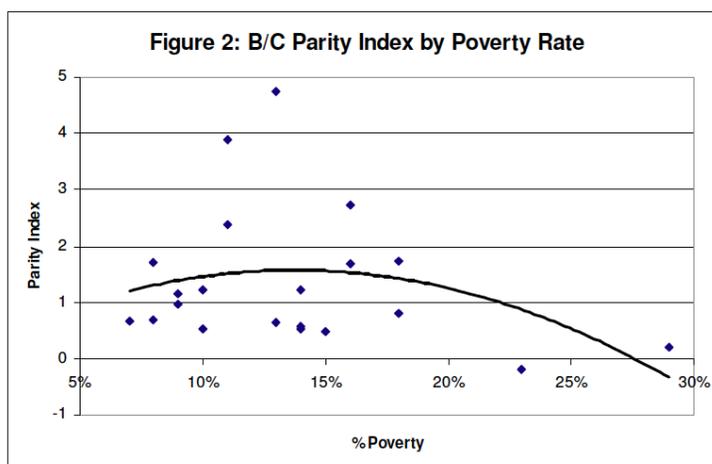
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action or actions could increase the gap, even if it improves environment quality in those areas. (Additional calculations are needed to determine how the outcome affects the absolute and relative cumulative environmental and health gap.)

The following two graphs plot the benefit-to-cost parity index against two criteria frequently used to identify possible EJ areas, the minority proportion of the population (minority defined as the combined total of African Americans and Latinos) and the poverty rate. The other major criterion is some measure of cumulative environmental risk, but the Plan does provide such data. It should be noted that the term "minority" refers to disadvantaged racial and ethnic groups rather than their numerical share of the population. Southern California has become a "majority minority" region, so the combined disadvantaged groups comprises a numerical majority.

Figures 1 and 2 summarize the results of the first part of the analytical exercise. To achieve positive EJ outcomes, the parity index should be relatively higher for disadvantaged areas. The points do not indicate a simple linear pattern, with the values in the middle being higher than at the two ends. Both graphs are fitted with a second-order curve, which indicates that the more disadvantaged sub-areas gain proportionately less from the Plan. Interestingly, the inflexion points are roughly at values equal to the minority share of the region's total population (52%) and average poverty rate (14%). The most disadvantaged sub-areas have indices of less than one. The results indicate that EJ objectives are not being met through the Plan.

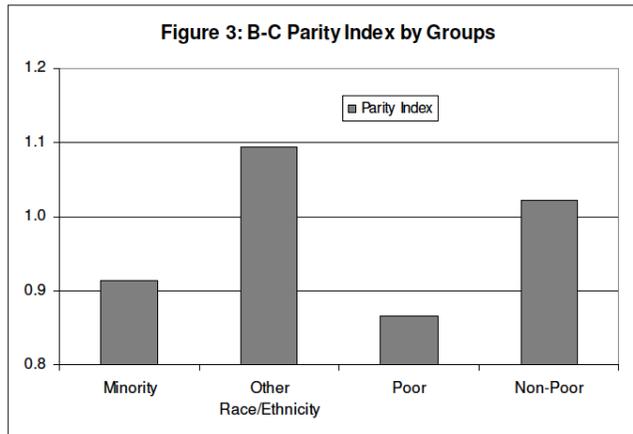


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The second part of the exercise is to construct a benefit-to-cost parity index for minorities and people below poverty, which can be defined as the ratio of a group's share population relative to the group's share of an outcome. The basic calculations are the same as those discussed for sub-areas, but we replace spatial units with socio-economic groups. The first step is to estimate a group's share of estimated benefits. This is done by multiplying the group's share of the population in a given sub-area times the estimated benefits for that sub-area. The second step is to sum across the 21 sub-areas to derive an estimated total benefit for the group. The group specific sum is then divided by the estimated total benefits for the District, resulting in the group's share. These steps are repeated on for estimated costs, and the two resulting group shares are used to calculate the benefit-to-cost parity index. This process is applied to all relevant groups (minority and non-minority, poor and non-poor). The interpretation of the index is the same as above, values greater than one for EJ areas would indicate that the desired EJ objective is being achieved.

Figure 3 reports the results of the second part of the analytical exercise. Overall, the outcomes are consistent with those from the first part of the analytical exercise, that is, EJ objectives are not being met. The index is lower than one for both minorities and poor people, indicating that disadvantaged populations gain less than advantaged populations, thus failing to close the environmental gap.

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Despite its crudeness, the analytical exercise in this section points to what is possible. The hope is that this example would serve as a rough roadmap for improving the socioeconomic analysis with respect to environmental justice.

CONCLUSION

The District is to be commended for undertaking an extensive assessment of the potential socioeconomic impacts of the Plan. In many areas, AQMD uses well established procedures and techniques within the profession. There is room for improvement, and many of my recommendations are listed in Part I. Of particular concern are the estimated benefits from congestion relief, both in terms of the calculations related time savings and job generations.

In my opinion, the major and most serious flaw is the lack of a systematic and detailed environmental-justice analysis. Given that various stakeholders have advocated for this for decades, it is disappointing (and frustrating) to see so little progress. In fact, there is only a vague commitment to possibly conducting such an analysis in some unspecified future. It is my strong recommendation that AQMD fast-track the integration of a sophisticated EJ analysis into the socioeconomic assessment of the AQMP.

Although there will be many challenges to implementing the recommendation, it is feasible. Given the critical importance of EJ in developing a fair plan that improves the region's air and redresses past inequalities, an EJ analysis should be a high priority in terms of allocating resources. Moreover, there appears to be good reason to conduct the analysis because the findings from Part III are troubling. Of course, they should not be considered definitive, and a more refined EJ analysis with appropriate geographic scale

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and data could produce different findings. But if the results hold, then the District should find ways to modify the Plan so it can achieve EJ goals and objectives, or develop other actions to offset any negative EJ outcomes. Sound decision making on this issue will require further analysis and better information.

Frederick R. Treyz, CEO of Regional Economic Models, Inc.

Useful extensions of the analysis would include consideration of reduction of illness, reduction of building deterioration, reduction of damage to plants and animals and the value of reduced vehicle hours. By not including these factors, the AQMP understates the benefits of the plan. Thus the economic study should be seen as a conservative estimate.

The most important extension would be inclusion of the value of reduced vehicle hours. Transportation improvements often have economic effects in terms of transportation-related issues such as businesses' access to employees with specialized skills and talents, and business transportation costs and competitiveness; and at the same time have environmental effects, in particular changes in vehicle hours travelled which changes the level of emissions and other factors.

Beyond this, no further comments are necessary.

APPENDIX G

NO TCM ~~BENEFIT~~ SCENARIO

No TCM Benefit Scenario

No TCM and Related Benefit Scenario

INTRODUCTION

The average annual congestion relief benefit of \$7.7 billion from 2014 to 2035 in the Draft Socioeconomic Report for the Draft 2012 AQMP is for all TCM-type projects in the 2012 Regional Transportation Plan (RTP). However, committed TCMs in the 2012 AQMP are comprised of only the first two years of TCM-type projects in the 2012 RTP. In response to stakeholders' comments, a No TCM Benefit Scenario was conducted. It excluded the potential commensurate congestion relief benefit associated with the committed TCMs in the 2012 AQMP.

Another scenario—No TCM and Related Benefit—removed costs of TCMs and related congestion benefits from the Draft Final 2012 AQMP. This scenario focused on the costs of District's measures and their related benefits.

NO TCM BENEFIT SCENARIO

~~The following~~All the tables related to control measures for this scenario show contribution of TCM projects to PM_{2.5} strategy in terms of costs and job impacts. Also, the \$7.7 billion congestion relief benefit is removed from the clean air benefit estimation in the Draft Final Socioeconomic Report. All other related tables that are affected by exclusion of the congestion relief benefit in the Draft Final Socioeconomic Report are updated ~~as attached~~below. All the table numbers are preceded with a "G" and end with an "A."

TABLE G-3-1A
Average Annual Control Cost by Industry in Millions of 2005 Dollars (2013-2035)

Industry	NAICS	PM _{2.5}		Ozone	All	
		District	TCM		Millions of \$	% of Output
Agriculture, Forestry, Fishing and Hunting	113-115	\$0.000	\$0.00	\$0.16	\$0.16	0.016%
Oil and Gas Extraction, Mining and Support	211-213	0.000	0.00	0.45	0.45	0.002%
Utilities	22	-0.191	0.00	7.01	6.82	0.027%
Construction	23	0.000	43.19	8.27	51.46	0.081%
Wood Product Mfg.	321	0.013	0.00	0.00	0.02	0.000%
Nonmetallic Mineral Product Mfg.	327	-0.148	0.00	1.79	1.64	0.039%
Primary Metal Mfg.	331	0.004	0.00	0.01	0.01	0.000%
Fabricated Metal Product Mfg.	332	0.024	0.00	2.47	2.50	0.011%
Machinery Mfg.	333	-0.007	0.00	0.01	0.01	0.000%
Computer and Electronic Product Mfg.	334	0.004	0.00	0.24	0.24	0.000%
Electrical Equipment and Appliance Mfg.	335	0.011	0.00	0.01	0.02	0.000%
Motor vehicle and Transportation Equipment Mfg.	3361-3369	-0.004	0.00	1.21	1.21	0.004%
Furniture and Related Product Mfg.	337	0.000	0.00	0.01	0.01	0.000%
Miscellaneous Mfg.	339	0.000	0.00	0.04	0.04	0.000%
Food Mfg.	311	0.004	0.00	0.03	0.04	0.000%
Beverage and Tobacco Product Mfg.	312	0.000	0.00	0.01	0.01	0.000%
Textile and Textile Products Mills	313-314	0.008	0.00	0.00	0.01	0.000%
Apparel Mfg.	315	0.000	0.00	0.01	0.01	0.000%
Leather and Allied Product Mfg.	316	0.000	0.00	0.00	0.00	0.000%
Paper Mfg.	322	0.044	0.00	0.01	0.05	0.001%
Printing and Related Support Activities	323	0.004	0.00	0.01	0.01	0.000%
Petroleum and Coal Products Mfg.	324	0.200	0.00	11.99	12.19	0.034%
Chemical Mfg.	325	0.019	0.00	0.14	0.16	0.001%
Plastics and Rubber Products Mfg.	326	0.001	0.00	2.30	2.31	0.016%
Wholesale Trade	42	-0.003	0.00	0.44	0.44	0.000%
Retail Trade	44-45	0.000	0.00	1.10	1.10	0.001%
Air Transportation	481	0.010	0.00	0.01	0.02	0.000%
Rail Transportation	482	0.000	0.00	7.36	7.36	0.298%
Water Transportation	483	0.000	0.00	0.00	0.00	0.000%
Truck Transportation, Couriers and Messengers	484,492	0.000	0.00	7.76	7.76	0.030%
Transit and Ground Passenger Transportation	485	0.000	0.00	6.82	6.82	0.319%
Pipeline Transportation	486	0.006	0.00	0.14	0.14	0.022%
Scenic and Sightseeing Transportation	487-488	0.000	0.00	6.83	6.83	0.107%
Warehousing and Storage	493	0.000	0.00	1.35	1.35	0.039%
Publishing Industries except Internet	511	0.000	0.00	0.02	0.02	0.000%
Motion Picture and Sound Recording Industries	512	0.000	0.00	0.07	0.07	0.000%
Internet Services and Data Processing	516,518,519	0.000	0.00	0.02	0.02	0.000%
Broadcasting except Internet; Telecomm.	515,517	0.000	0.00	0.06	0.06	0.000%
Monetary Authorities	521,522,525	0.000	0.00	0.08	0.08	0.000%

TABLE G-3-1A (Continued)

Industry	NAICS	PM _{2.5}		Ozone	All	
		District	TCM		Millions of \$	% of Output
Securities, Commodity Contracts, Investments	523	0.000	0.00	0.05	0.05	0.000%
Insurance Carriers and Related Activities	524	0.000	0.00	0.04	0.04	0.000%
Real Estate	531	0.001	0.00	0.26	0.26	0.000%
Rental and Leasing Services	532-533	0.000	0.00	0.68	0.68	0.002%
Professional and Technical Services	54	0.000	0.00	0.13	0.13	0.000%
Management of Companies and Enterprises	55	0.000	0.00	0.05	0.05	0.000%
Administrative and Support Services	561	0.002	0.00	1.52	1.52	0.003%
Waste Management and Remediation Services	562	0.000	0.00	2.40	2.40	0.041%
Educational Services	61	0.000	0.00	0.01	0.01	0.000%
Ambulatory Health Care Services	621	0.000	0.00	0.06	0.06	0.000%
Hospitals	622	0.000	0.00	0.04	0.04	0.000%
Nursing and Residential Care Facilities	623	0.000	0.00	0.01	0.01	0.000%
Social Assistance	624	0.000	0.00	0.01	0.01	0.000%
Performing Arts and Spectator Sports	711	0.000	0.00	0.02	0.02	0.000%
Museums, Historical Sites, Zoos and Parks	712	0.000	0.00	0.00	0.00	0.001%
Amusement, Gambling and Recreation	713	0.000	0.00	0.01	0.01	0.000%
Accommodation	721	0.001	0.00	0.01	0.01	0.000%
Food Services and Drinking Places	722	0.000	0.00	0.05	0.05	0.000%
Repair and Maintenance	811	0.000	0.00	0.02	0.02	0.000%
Personal and Laundry Services	812	0.016	0.00	0.01	0.03	0.000%
Membership Associations and Organizations	813	0.000	0.00	0.01	0.01	0.000%
Private Households	814	0.000	0.00	0.00	0.00	0.000%
Government	92	0.102	10.12	7.77	17.99	0.010%
Consumer		0.000	273.13	40.19	313.32	
Total		\$0.123	\$326.44	\$121.60	\$448.16	

TABLE G-3-3A
Quantifiable Benefits of Draft [Final](#) 2012 AQMP
(millions of 2005 dollars)

Benefit	Average Annual (2014 to 2035)
Reduction in Morbidity	\$23
Reduction in Mortality	2,225
Visibility Improvement	696
Reduced Materials Expenditures	14
Total	\$2,958

TABLE G-3-10A
 Total Costs and Benefits of the Draft [Final](#) Plan
 (millions of 2005 dollars)

	2014	2023	Average Annual
Total Costs	\$510	\$357	\$448
Total Benefits	\$5,429	\$2,358	\$2,958

TABLE G-4-1A
 Job Impacts of Quantified Clean Air Benefits and Measures

Category	2014	2023	2035	Average Annual
Clean Air Benefits & Measures (2013-2035)	2,641	7,717	8,873	5,378
Clean Air Benefits (2014-2035)	1,913	9,656	11,838	9,037
Visibility Improvements	1,008	5,313	6,445	4,947
Reduced Materials Expenditures	133	191	181	179
Health Benefits	774	4,146	5,214	3,910
Control Measures (2013-2035)	731	-1,929	-2,955	-3,257
TCMs	715	537	-813	-1,611
District PM _{2.5}	7	-10	-3	-4
Ozone Strategy	26	-2,457	-2,142	-1,639

Results from modeling all the categories are slightly different from the sum of results from modeling each category one at a time because of nonlinearity of the REMI model.

TABLE G-4-2A
Draft ~~Final~~ 2012 AQMP Employment Impacts by Industry for Clean Air Benefits

Industry	NAICS	2014	2023	Average Annual (2014-2035)	
				Jobs	% Baseline
Agriculture, Forestry, Fishing and Hunting	11	0	3	6	0.027%
Mining	21	5	29	29	0.065%
Utilities	22	10	50	47	0.147%
Construction	23	166	678	622	0.115%
Transportation Equipment Mfg.	336	0	8	7	0.009%
Petroleum and Coal Products Mfg.	324	1	5	5	0.069%
Other Manufacturing	31-33 ex. 324 & 336	29	306	271	0.041%
Wholesale Trade	42	40	281	269	0.057%
Retail Trade	44-45	163	1,120	1,057	0.105%
Truck Transportation	484, 492	7	63	61	0.036%
Transit Transportation	485	9	40	36	0.111%
Other Transportation and Warehousing	48-49 ex. 484-485 & 492	7	60	54	0.035%
Information	51	17	137	140	0.042%
Finance and Insurance	52	27	172	187	0.030%
Real Estate, Rental and Leasing	53	246	930	853	0.152%
Professional and Technical Services	54	93	510	488	0.060%
Management and Support Services	55-56	106	583	554	0.064%
Education, Health and Social Services	61-62	160	1,138	1,141	0.095%
Arts, Entertainment and Recreation	71	57	278	262	0.083%
Accommodation and Food Services	72	361	1,483	1,318	0.192%
Other Services	81	87	407	382	0.056%
Government	92	323	1,375	1,247	0.099%
Total		1,913	9,656	9,037	0.086%

TABLE G-4-3A

Draft [Final](#) 2012 AQMP Employment Impacts by Industry for Measures

Industry	NAICS	2014			2023			Average Annual (2013-2035)	
		PM _{2.5}		Ozone	PM _{2.5}		Ozone	Draft Final Plan	% Baseline
		District	TCM		District	TCM			
Agriculture, Forestry, Fishing and Hunting	11	0	-1	0	0	-3	-1	-4	-0.020%
Mining	21	0	-40	1	0	-12	-15	-35	-0.081%
Utilities	22	0	-15	10	0	-3	41	22	0.068%
Construction	23	1	4635	3	-2	1982	-205	1,357	0.253%
Transportation Equipment Mfg.	336	0	-23	24	0	-14	1	-7	-0.009%
Petroleum and Coal Products Mfg.	324	0	-6	0	0	-3	-5	-8	-0.122%
Other Manufacturing	31-33 ex. 324 & 336	-1	-203	12	-3	-103	-39	-153	-0.023%
Wholesale Trade	42	0	-183	13	0	-63	-57	-203	-0.043%
Retail Trade	44-45	1	-855	-118	-1	-196	-620	-1,010	-0.101%
Truck Transportation	484, 492	0	-17	4	0	-9	-44	-57	-0.034%
Transit Transportation	485	0	-22	20	0	-10	-84	-114	-0.350%
Other Transportation and Warehousing	48-49 ex. 484-485 & 492	0	-81	12	0	-45	-114	-153	-0.099%
Information	51	1	-114	1	0	-27	-21	-71	-0.021%
Finance and Insurance	52	0	-407	1	0	-95	-69	-257	-0.041%
Real Estate and Rental and Leasing	53	1	-143	-1	0	99	-134	-168	-0.030%
Professional and Technical Services	54	0	397	7	0	-216	-116	98	0.012%
Management and Support Services	55-56	1	-398	9	-1	-199	-220	-446	-0.052%
Education, Health and Social Services	61-62	1	-524	-4	-1	-171	-107	-531	-0.045%
Arts, Entertainment and Recreation	71	0	-85	0	0	-4	-28	-75	-0.024%
Accommodation and Food Services	72	0	-564	1	0	-193	-113	-440	-0.064%
Other Services	81	0	-228	-3	-1	-27	-166	-317	-0.047%
Government	92	2	-408	35	-1	-153	-343	-684	-0.055%
Total		6	715	26	-9	537	-2,457	-3,256	-0.031%

TABLE G-4-4A
Job Impact by Industry for Clean Air Benefits and Measures Combined

Industry	NAICS	2014	2023	Average Annual (2013-2035)	
				Jobs	% Baseline
Agriculture, Forestry, Fishing and Hunting	11	-1	-1	1	0.006%
Mining	21	-35	2	-8	-0.018%
Utilities	22	5	89	67	0.210%
Construction	23	4,805	2,454	1,951	0.364%
Transportation Equipment Mfg.	336	0	-5	0	0.000%
Petroleum and Coal Products Mfg.	324	-6	-2	-4	-0.056%
Other Manufacturing	31-33 ex. 324 & 336	-163	161	106	0.016%
Wholesale Trade	42	-131	161	54	0.011%
Retail Trade	44-45	-811	301	-1	0.000%
Truck Transportation	484, 492	-6	10	1	0.001%
Transit Transportation	485	7	-54	-80	-0.245%
Other Transportation and Warehousing	48-49 ex. 484-485 &	-63	-99	-101	-0.066%
Information	51	-96	88	63	0.019%
Finance and Insurance	52	-379	7	-78	-0.013%
Real Estate and Rental and Leasing	53	103	895	648	0.116%
Professional and Technical Services	54	496	177	564	0.070%
Management and Support Services	55-56	-284	164	84	0.010%
Education, Health and Social Services	61-62	-369	858	560	0.047%
Arts, Entertainment and Recreation	71	-28	246	176	0.056%
Accommodation and Food Services	72	-203	1,176	819	0.120%
Other Services	81	-146	213	47	0.007%
Government	92	-56	878	508	0.041%
Total		2,641	7,717	5,378	0.051%

TABLE G-5-1A
 Cost Share by Sub-region for Control Measures

Sub-Region	PM _{2.5} Measures				Ozone Measures		All Measures	
	District		TCM		Millions \$	%	Millions \$	%
	Millions \$	%	Millions \$	%				
LA CO Beach & Catalina	\$0.07	59%	\$15.7	5%	\$12	10%	\$28	6%
LA CO Burbank	0.02	20%	15.5	5%	3	3%	19	4%
LA CO Central	0.06	51%	31.9	10%	7	6%	39	9%
LA CO North	0.02	18%	17.7	5%	4	3%	22	5%
LA CO San Fernando	-0.32	-263%	32.7	10%	7	6%	39	9%
LA CO SG Valley East	-0.24	-197%	17.6	5%	4	3%	21	5%
LA CO SG Valley West	-0.01	-10%	25.6	8%	5	4%	31	7%
LA CO South	-0.08	-61%	23.4	7%	7	6%	30	7%
LA CO South Central	0.00	0%	26.4	8%	5	4%	32	7%
LA CO Southeast	-0.13	-102%	31.7	10%	7	6%	39	9%
LA CO West	0.04	36%	23.3	7%	5	4%	29	6%
Orange Central	0.06	51%	16.1	5%	7	6%	23	5%
Orange North	0.01	12%	7.8	2%	4	3%	11	3%
Orange South	0.08	63%	14.7	5%	6	5%	21	5%
Orange West	0.25	204%	11.9	4%	5	4%	17	4%
Northwest Riverside	0.05	38%	3.0	1%	8	6%	11	2%
Other Riverside	0.13	102%	2.5	1%	4	3%	7	2%
Southwest Riverside	0.01	11%	2.4	1%	4	4%	7	2%
San Bernardino City	0.09	76%	2.6	1%	8	7%	11	2%
Other San Bernardino	0.00	0%	1.9	1%	3	3%	5	1%
Southwest San Bernardino	-0.01	-5%	2.0	1%	6	5%	8	2%
Total	\$0.12	100%	\$326.4	100%	\$122	100%	\$448	100%

TABLE G-5-2A
Average Annual Benefits (2014-2035) by Sub-region

Sub-region	Health		Material		Visibility		Total	
	MM\$	%	MM\$	%	MM\$	%	MM\$	%
LA CO Beach & Catalina	78	3%	0.4	3%	26	4%	105	4%
LA CO Burbank	19	1%	0.4	3%	26	4%	46	2%
LA CO Central	145	6%	0.9	6%	37	5%	182	6%
LA CO North	44	2%	0.4	3%	9	1%	53	2%
LA CO San Fernando	157	7%	0.8	6%	41	6%	199	7%
LA CO SG Valley East	96	4%	0.4	3%	20	3%	117	4%
LA CO SG Valley West	81	4%	0.6	4%	33	5%	114	4%
LA CO South	145	6%	0.6	4%	21	3%	167	6%
LA CO South Central	16	1%	0.6	4%	13	2%	30	1%
LA CO Southeast	70	3%	0.6	5%	22	3%	92	3%
LA CO West	203	9%	0.8	5%	94	13%	297	10%
Orange Central	115	5%	0.8	6%	23	3%	139	5%
Orange North	118	5%	0.4	3%	22	3%	141	5%
Orange South	128	6%	0.9	7%	60	9%	188	6%
Orange West	202	9%	0.7	5%	41	6%	244	8%
Northwest Riverside	117	5%	1.0	7%	55	8%	173	6%
Other Riverside	116	5%	1.1	8%	29	4%	146	5%
Southwest Riverside	60	3%	0.8	5%	29	4%	90	3%
San Bernardino City	35	2%	0.8	6%	47	7%	82	3%
Other San Bernardino	180	8%	0.6	4%	10	1%	190	6%
Southwest San Bernardino	122	5%	0.6	4%	40	6%	163	6%
Total	2,247	100%	14.3	100%	696	100%	2,958	100%

TABLE G-5-4A
Per Capita Clean Air Benefit and Cost
by Sub-region (in 2005 dollars)

Sub-region	Clean Air Benefit	Cost
LA CO Beach & Catalina	\$162	\$43
LA CO Burbank	71	29
LA CO Central	134	29
LA CO North	90	37
LA CO San Fernando	141	28
LA CO East	131	30
LA CO South	169	30
LA CO South Central	28	30
LA CO Southeast	71	30
LA CO West	310	30
OR CO Central	121	20
OR CO North	307	24
OR CO South	203	23
OR CO West	317	22
Northwest Riverside	137	9
Other Riverside	152	9
Chino-Redlands	139	11
Other San Bernardino	296	8
Total Four Counties	\$153	\$23

TABLE G-5-5A
Average Annual Job Impacts by Sub-region for
Benefits, Control Measures and Draft [Final Plan](#)

Sub-region	Benefits (2014-2035)	Control Measures (2013-2035)	Draft Final Plan (2013-2035)	
			Jobs	% Baseline
LA CO Beach & Catalina	217	-35	172	0.04%
LA CO Burbank	200	17	209	0.05%
LA CO Central	416	66	463	0.06%
LA CO North	132	-87	39	0.01%
LA CO San Fernando	399	-200	181	0.02%
LA CO East	587	-230	330	0.03%
LA CO South	311	-147	150	0.03%
LA CO South Central	205	-117	80	0.02%
LA CO Southeast	326	14	327	0.05%
LA CO West	446	120	546	0.08%
OR CO Central	508	-528	-42	-0.01%
OR CO North	297	-234	50	0.02%
OR CO South	744	-941	-232	-0.04%
OR CO West	678	-687	-40	-0.01%
RV CO NW Riverside	798	9	773	0.13%
RV CO Other	1,277	-130	1,089	0.16%
Chino-Redlands	1,075	-121	907	0.11%
Other San Bernardino	422	-26	377	0.14%
Total	9,037	-3,256	5,378	0.05%

TABLE G-5-6A
Employment Impacts by Occupational Wage Group for
Clean Air Benefits and Control Measures

Group	Median Weekly Earnings	No. of Occupations	% Impact from Baseline								
			Clean Air Benefits			Control Measures			Benefits & Measures		
			2014	2023	2035	2014	2023	2035	2014	2023	2035
1	\$352-\$517	19	0.024	0.110	0.117	-0.055	-0.041	-0.029	-0.031	0.069	0.087
2	\$520-\$659	19	0.016	0.079	0.096	-0.008	-0.022	-0.024	0.009	0.057	0.071
3	\$661-\$820	18	0.022	0.098	0.109	0.138	0.027	-0.029	0.160	0.125	0.079
4	\$821-\$996	19	0.022	0.092	0.100	0.009	-0.016	-0.023	0.030	0.076	0.077
5	\$1,027-\$1,729	19	0.016	0.077	0.090	-0.008	-0.026	-0.021	0.008	0.051	0.069

TABLE G-5-7A
 Impacts on the Price of Consumption Goods for
 Clean Air Benefits and Control Measures
 (percent of baseline^{*})

Household Income	Clean Air Benefits			Control Measures			Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
1st Quintile	-0.003	0.004	0.007	0.060	0.040	0.015	0.057	0.045	0.022
2nd Quintile	-0.003	0.004	0.006	0.059	0.039	0.015	0.056	0.042	0.021
3rd Quintile	-0.003	0.004	0.006	0.058	0.039	0.015	0.056	0.043	0.021
4th Quintile	-0.003	0.004	0.006	0.058	0.038	0.015	0.056	0.042	0.021
5th Quintile	-0.003	0.004	0.006	0.060	0.038	0.015	0.057	0.043	0.021

^{*}Relative to the rest of the U.S.

TABLE G-6-1A
 Impacts on Region's Share of U.S. Jobs for
 Clean Air Benefits and Control Measures (percent)

	Percent Share of U.S. Jobs for Benefits			Percent Share of U.S. Jobs for All Measures			Percent Share of U.S. Jobs for Combined Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
<u>Total Jobs</u>									
With Benefits & Measures							5.129	4.952	4.935
With Benefits	5.126	4.953	4.936						
With All Measures				5.126	4.948	4.930			
Without Draft Final 2012 AQMP	5.125	4.949	4.931	5.125	4.949	4.931	5.125	4.949	4.931
Difference	0.001	0.004	0.005	0.001	-0.001	-0.001	0.004	0.003	0.004
<u>Manufacturing Jobs</u>									
With Benefits & Measures							5.654	7.293	6.907
With Benefits	5.655	7.295	6.908						
With All Measures				5.654	7.29	6.904			
Without Draft Final 2012 AQMP	5.655	7.292	6.905	5.655	7.292	6.905	5.655	7.292	6.905
Difference	0	0.003	0.003	-0.001	-0.002	-0.001	-0.001	0.001	0.002

Some numbers are rounded.

TABLE G-6-2A
Impacts on Cost of Production Relative to Those in the Rest of the U.S.
for Clean Air Benefits and Control Measures

Industry	Clean Air Benefits			Control Measures			Combined Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
Forestry, Fishing and Hunting	-0.005%	-0.012%	-0.007%	0.000%	0.007%	0.001%	-0.005%	-0.005%	-0.006%
Mining	-0.003%	0.027%	0.024%	-0.016%	0.018%	-0.001%	-0.019%	0.045%	0.023%
Utilities	-0.003%	0.020%	0.018%	-0.021%	0.045%	0.034%	-0.024%	0.065%	0.052%
Construction	-0.004%	-0.022%	-0.014%	0.060%	0.051%	0.012%	0.056%	0.030%	-0.003%
Manufacturing	-0.003%	-0.006%	-0.002%	-0.002%	0.021%	0.010%	-0.005%	0.015%	0.007%
Wholesale Trade	-0.004%	-0.012%	-0.006%	-0.004%	0.018%	0.008%	-0.007%	0.006%	0.002%
Retail Trade	-0.004%	-0.004%	0.001%	-0.005%	0.032%	0.020%	-0.009%	0.028%	0.021%
Transportation and Warehousing	-0.004%	-0.012%	-0.006%	-0.014%	0.096%	0.090%	-0.018%	0.084%	0.084%
Information	-0.004%	0.020%	0.020%	-0.003%	0.023%	-0.002%	-0.007%	0.043%	0.018%
Finance and Insurance	-0.004%	0.001%	0.004%	-0.007%	0.013%	0.001%	-0.011%	0.015%	0.006%
Real Estate, Rental and Leasing	-0.003%	0.044%	0.039%	-0.010%	0.019%	-0.003%	-0.013%	0.063%	0.036%
Professional and Technical Services	-0.004%	-0.010%	-0.004%	-0.004%	0.016%	0.003%	-0.008%	0.006%	-0.001%
Management of Companies and Enterprises	-0.004%	-0.015%	-0.008%	-0.004%	0.018%	0.004%	-0.009%	0.003%	-0.004%
Administrative and Waste Services	-0.004%	-0.013%	-0.007%	-0.003%	0.024%	0.007%	-0.007%	0.011%	0.000%
Educational Services	-0.004%	-0.011%	-0.004%	0.001%	0.017%	0.003%	-0.002%	0.006%	-0.001%
Health Care and Social Assistance	-0.004%	-0.018%	-0.009%	-0.002%	0.015%	0.003%	-0.006%	-0.003%	-0.006%
Arts, Entertainment and Recreation	-0.004%	0.010%	0.012%	-0.001%	0.024%	0.000%	-0.005%	0.034%	0.013%
Accommodation and Food Services	-0.003%	-0.001%	0.003%	-0.004%	0.014%	0.002%	-0.008%	0.012%	0.005%
Other Services (ex. Government)	-0.004%	0.000%	0.004%	-0.003%	0.017%	0.001%	-0.007%	0.017%	0.005%

TABLE G-6-3A
 Impacts on Delivered Prices Relative to Those in the Rest of the U.S.
 for Clean Air Benefits and Control Measures

Industry	Clean Air Benefits			Control Measures			Combined Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
Forestry, Fishing and Hunting	-0.001%	-0.001%	-0.001%	0.000%	0.001%	0.001%	-0.001%	-0.001%	0.000%
Mining	-0.001%	0.009%	0.008%	-0.006%	0.006%	0.000%	-0.007%	0.009%	0.008%
Utilities	-0.003%	0.017%	0.016%	-0.017%	0.040%	0.031%	-0.020%	0.017%	0.047%
Construction	-0.004%	-0.020%	-0.014%	0.058%	0.052%	0.013%	0.054%	-0.020%	0.000%
Manufacturing	-0.002%	-0.003%	-0.001%	-0.001%	0.011%	0.005%	-0.003%	-0.003%	0.004%
Wholesale Trade	-0.003%	-0.011%	-0.006%	-0.003%	0.018%	0.008%	-0.006%	-0.011%	0.002%
Retail Trade	-0.003%	-0.003%	0.001%	-0.004%	0.026%	0.016%	-0.007%	-0.003%	0.017%
Transportation and Warehousing	-0.002%	-0.005%	-0.003%	-0.009%	0.046%	0.048%	-0.010%	-0.005%	0.046%
Information	-0.003%	0.009%	0.010%	-0.003%	0.016%	0.000%	-0.006%	0.009%	0.011%
Finance and Insurance	-0.002%	0.001%	0.003%	-0.004%	0.009%	0.001%	-0.007%	0.001%	0.004%
Real Estate, Rental and Leasing	-0.003%	0.044%	0.039%	-0.004%	0.024%	0.002%	-0.008%	0.044%	0.041%
Professional and Technical Services	-0.004%	-0.009%	-0.004%	-0.004%	0.015%	0.003%	-0.007%	-0.009%	-0.001%
Management of Companies and Enterprises	-0.002%	-0.009%	-0.004%	-0.002%	0.011%	0.003%	-0.005%	-0.009%	-0.002%
Administrative and Waste Services	-0.004%	-0.012%	-0.006%	-0.003%	0.024%	0.007%	-0.007%	-0.012%	0.001%
Educational Services	-0.003%	-0.008%	-0.003%	0.001%	0.013%	0.002%	-0.002%	-0.008%	-0.001%
Health Care and Social Assistance	-0.003%	-0.012%	-0.006%	-0.001%	0.011%	0.003%	-0.004%	-0.012%	-0.004%
Arts, Entertainment and Recreation	-0.003%	0.007%	0.009%	-0.003%	0.019%	0.001%	-0.006%	0.007%	0.010%
Accommodation and Food Services	-0.003%	-0.001%	0.003%	-0.003%	0.012%	0.002%	-0.006%	-0.001%	0.005%
Other Services (ex. Government)	-0.003%	0.001%	0.004%	-0.002%	0.014%	0.001%	-0.005%	0.001%	0.005%

TABLE G-6-4A
 Impacts on Imports and Exports for Clean Air Benefits and Control Measures

	Clean Air Benefits			Control Measures			Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
Demand*	+	+	+	-	-	-	+	+	+
Imports	+	+	+	+	+	+	+	+	+
Self Supply*	+	+	+	-	-	-	-	+	+
Exports	+	-	-	-	-	-	-	-	-
Output (Production)	+	+	+	-	-	-	-	+	+
Delivered Price	-	+	+	-	+	+	-	+	+
Cost of Production	-	+	+	-	+	+	-	+	+

A plus or minus sign means that there is an increase or decrease in the value of that economic variable resulting from benefits, measures, or both of the Draft [Final](#) 2012 AQMP relative to the baseline economic activities.

*Includes changes in demand due to changes in control requirements.

TABLE G-7-1A
Average Annual Impacts of AQMP and CEQA Alternatives

CEQA Alternatives*	Costs		PM2.5 Benefits		Jobs for Combined Costs & Benefits
	Millions of 2005 Dollars	Jobs	Millions of 2005 Dollars	Jobs	
Draft Final 2012 AQMP	\$448	-3,257	\$2,958	9,037	5,378
Alt 2—Localized PM Control	450	-3,334	1,814	4,007	459
Alt 3—Greater Reliance on NOx Reductions	495	-4,715	3,429	11,209	5,994
Alt 4—PM _{2.5} Strategy Only	\$327	-1,620	<\$2,958	<9,037	<5,378

TABLE G-7-3A
Average Annual Quantified Benefits by Category by Alternative
(millions of 2005 dollars)

CEQA Alternatives	Total	Health	Visibility	Material
Draft Final 2012 Plan	\$2,958	\$2,247	\$696	\$14
Alt2—Localized PM Control	1,814	1,370	438	7
Alt 3—Greater Reliance on NOx Reductions	3,429	2,430	988	11
Alt 4—PM _{2.5} Strategy Only	<\$2,958	<\$2,247	<\$696	<\$14

NO TCM AND RELATED BENEFIT SCENARIO

Under this scenario, the cost of the Draft Final 2012 AQMP represents only those measures proposed by the AQMD. The cost of TCMs is excluded from the analysis. Consequently, the congestion relief benefit associated with the TCMs is also removed from the benefit of clean air. Under this scenario, the annual cost of the Draft Final Plan is projected to be \$122.7 million with a projected annual benefit of approximately \$3 billion. Relative to the No TCM Benefit Scenario, all the affected tables are updated and presented below. These table numbers are preceded with a “G” and end with a “B.”

TABLE G-3-1B
Average Annual Control Cost by Industry in Millions of 2005 Dollars (2013-2035)

Industry	NAICS	District PM _{2.5}	Ozone	All	
				Millions of \$	Percent of Output
Agriculture, Forestry, Fishing, and Hunting	113-115	\$0.000	\$0.160	\$0.160	0.016%
Oil and Gas Extraction, Mining and Support	211-213	0.000	0.454	0.454	0.002%
Utilities	22	-0.191	7.007	6.816	0.027%
Construction	23	0.000	8.268	8.268	0.013%
Wood Product Mfg.	321	0.013	0.004	0.017	0.000%
Nonmetallic Mineral Product Mfg.	327	-0.148	1.790	1.642	0.039%
Primary Metal Mfg.	331	0.004	0.008	0.012	0.000%
Fabricated Metal Product Mfg.	332	0.024	2.473	2.497	0.011%
Machinery Mfg.	333	-0.007	0.012	0.005	0.000%
Computer and Electronic Product Mfg.	334	0.004	0.241	0.245	0.000%
Electrical Equipment and Appliance Mfg.	335	0.011	0.006	0.017	0.000%
Motor vehicle and Transportation Equipment Mfg.	3361-3369	-0.004	1.211	1.207	0.004%
Furniture and Related Product Mfg.	337	0.000	0.010	0.010	0.000%
Miscellaneous Mfg.	339	0.000	0.043	0.044	0.000%
Food Mfg.	311	0.004	0.033	0.037	0.000%
Beverage and Tobacco Product Mfg.	312	0.000	0.012	0.012	0.000%
Textile and Textile Products Mills	313-314	0.008	0.004	0.012	0.000%
Apparel Mfg.	315	0.000	0.011	0.011	0.000%
Leather and Allied Product Mfg.	316	0.000	0.001	0.001	0.000%
Paper Mfg.	322	0.044	0.007	0.051	0.001%
Printing and Related Support Activities	323	0.004	0.008	0.013	0.000%
Petroleum and Coal Products Mfg.	324	0.200	11.991	12.191	0.034%
Chemical Mfg.	325	0.019	0.136	0.155	0.001%
Plastics and Rubber Products Mfg.	326	0.001	2.304	2.305	0.016%
Wholesale Trade	42	-0.003	0.439	0.435	0.000%
Retail Trade	44-45	0.000	1.101	1.101	0.001%
Air Transportation	481	0.010	0.009	0.019	0.000%
Rail Transportation	482	0.000	7.357	7.357	0.298%
Water Transportation	483	0.000	0.004	0.004	0.000%
Truck Transportation, Couriers and Messengers	484,492	0.000	7.764	7.764	0.030%
Transit and Ground Passenger Transportation	485	0.000	6.821	6.821	0.319%
Pipeline Transportation	486	0.006	0.136	0.142	0.022%
Scenic and Sightseeing Transportation	487-488	0.000	6.829	6.829	0.107%
Warehousing and Storage	493	0.000	1.349	1.349	0.039%
Publishing Industries except Internet	511	0.000	0.020	0.019	0.000%
Motion Picture and Sound Recording Industries	512	0.000	0.073	0.073	0.000%
Internet Services and Data Processing	516,518,519	0.000	0.015	0.016	0.000%
Broadcasting except Internet; Telecomm.	515,517	0.000	0.061	0.061	0.000%
Monetary Authorities	521,522,525	0.000	0.082	0.082	0.000%

TABLE G-3-1B
(Continued)

Industry	NAICS	District PM _{2.5}	Ozone	All	
				Millions of \$	Percent of Output
Securities, Commodity Contracts and Investments	523	0.000	0.046	0.046	0.000%
Insurance Carriers and Related Activities	524	0.000	0.042	0.042	0.000%
Real Estate	531	0.001	0.257	0.258	0.000%
Rental and Leasing Services	532-533	0.000	0.679	0.679	0.002%
Professional and Technical Services	54	0.000	0.134	0.134	0.000%
Management of Companies and Enterprises	55	0.000	0.050	0.050	0.000%
Administrative and Support Services	561	0.002	1.519	1.522	0.003%
Waste Management and Remediation Services	562	0.000	2.395	2.395	0.041%
Educational Services	61	0.000	0.014	0.014	0.000%
Ambulatory Health Care Services	621	0.000	0.061	0.061	0.000%
Hospitals	622	0.000	0.035	0.035	0.000%
Nursing and Residential Care Facilities	623	0.000	0.009	0.009	0.000%
Social Assistance	624	0.000	0.006	0.006	0.000%
Performing Arts and Spectator Sports	711	0.000	0.022	0.022	0.000%
Museums, Historical Sites, Zoos and Parks	712	0.000	0.003	0.003	0.001%
Amusement, Gambling, and Recreation	713	0.000	0.007	0.007	0.000%
Accommodation	721	0.001	0.011	0.012	0.000%
Food Services and Drinking Places	722	0.000	0.045	0.045	0.000%
Repair and Maintenance	811	0.000	0.017	0.017	0.000%
Personal and Laundry Services	812	0.016	0.012	0.028	0.000%
Membership Associations and Organizations	813	0.000	0.011	0.011	0.000%
Private Households	814	0.000	0.003	0.003	0.000%
Government	92	0.102	7.770	7.872	0.004%
Consumer		0.000	40.194	40.194	
Total		\$0.123	\$121.597	\$121.720	

TABLE G-3-10B
Total Costs and Benefits of the Draft [Final](#) Plan
(millions of 2005 dollars)

	2014	2023	Average Annual
Total Costs	\$27	\$207	\$122
Total Benefits	\$5,429	\$2,358	\$2,958

TABLE G-4-1B

Job Impacts of Quantified Clean Air Benefits and Measures

Category	2014	2023	2035	Average Annual
Clean Air Benefits & Measures (2013-2035)	1,931	7,187	9,688	6,994
Clean Air Benefits (2014-2035)	1,913	9,656	11,838	9,037
Visibility Improvements	1,008	5,313	6,445	4,947
Reduced Materials Expenditures	133	191	181	179
Health Benefits	774	4,146	5,214	3,910
Control Measures (2013-2035)	18	-2,465	-2,143	-1,646
District PM _{2.5}	7	-10	-3	-4
Ozone Strategy	26	-2,457	-2,142	-1,639

Results from modeling all the categories are slightly different from the sum of results from modeling each category one at a time because of nonlinearity of the REMI model.

TABLE G-4-3B

Draft [Final](#) 2012 AQMP Employment Impact by Industry for District Measures Only

Industry	NAICS	2014	2023	Average Annual (2013-2035)	
				Jobs	% Baseline
Agriculture, Forestry, Fishing and Hunting	11	0	-1	-1	-0.006%
Mining	21	1	-15	-14	-0.033%
Utilities	22	10	41	32	0.101%
Construction	23	3	-206	-98	-0.018%
Transportation Equipment Mfg.	336	24	1	8	0.010%
Petroleum & Coal Products Mfg.	324	0	-5	-3	-0.049%
Other Manufacturing	31-33 ex. 324 & 336	10	-42	-6	-0.001%
Wholesale Trade	42	13	-57	-36	-0.008%
Retail Trade	44-45	-118	-621	-411	-0.041%
Truck Transportation	484, 492	4	-44	-34	-0.020%
Transit Transportation	485	20	-84	-100	-0.308%
Other Transportation and Warehousing	48-49 ex. 484-485 & 492	12	-114	-107	-0.069%
Information	51	1	-21	-10	-0.003%
Finance and Insurance	52	1	-69	-32	-0.005%
Real Estate, Rental and Leasing	53	-1	-134	-81	-0.014%
Professional and Technical Services	54	7	-117	-77	-0.010%
Management and Support Services	55-56	9	-220	-154	-0.018%
Education, Health and Social Services	61-62	-4	-107	-61	-0.005%
Arts, Entertainment, and Recreation	71	0	-28	-17	-0.005%
Accommodation and Food Services	72	1	-113	-87	-0.013%
Other Services	81	-4	-166	-96	-0.014%
Government	92	30	-344	-259	-0.021%
Total		18	-2,465	-1,646	-0.016%

TABLE G-4-4B
Job Impact by Industry for Clean Air Benefits and Measures Combined

Industry	NAICS	2014	2023	Average Annual (2013-2035)	
				Jobs	% Baseline
Agriculture, Forestry, Fishing and Hunting	11	0	2	4	0.020%
Mining	21	5	14	13	0.031%
Utilities	22	20	92	77	0.243%
Construction	23	170	471	497	0.093%
Transportation Equipment Mfg.	336	23	9	15	0.019%
Petroleum and Coal Products Mfg.	324	1	1	1	0.017%
Other Manufacturing	31-33 ex. 324 & 336	40	264	253	0.039%
Wholesale Trade	42	53	224	222	0.047%
Retail Trade	44-45	45	499	600	0.060%
Truck Transportation	484, 492	11	19	25	0.015%
Transit Transportation	485	29	-44	-66	-0.202%
Other Transportation and Warehousing	48-49 ex. 484-485 & 492	18	-54	-55	-0.036%
Information	51	18	115	123	0.037%
Finance and Insurance	52	29	102	147	0.024%
Real Estate and Rental and Leasing	53	245	796	734	0.131%
Professional and Technical Services	54	100	393	389	0.048%
Management and Support Services	55-56	114	363	376	0.044%
Education, Health and Social Services	61-62	156	1,030	1,030	0.086%
Arts, Entertainment and Recreation	71	57	250	233	0.074%
Accommodation and Food Services	72	362	1,370	1,174	0.171%
Other Services	81	82	240	269	0.039%
Government	92	353	1,031	933	0.074%
Total		1,931	7,187	6,994	0.066%

TABLE G-5-1B
 Cost Share by Sub-region for District Control Measures

Sub-Region	District PM _{2.5} Measures		Ozone Measures		All District Measures	
	Millions \$	%	Millions \$	%	Millions \$	%
LA CO Beach & Catalina	\$0.07	59%	\$12	10%	\$12	10%
LA CO Burbank	\$0.02	20%	\$3	3%	\$3	3%
LA CO Central	\$0.06	51%	\$7	6%	\$7	6%
LA CO North	\$0.02	18%	\$4	3%	\$4	3%
LA CO San Fernando	-\$0.32	-263%	\$7	6%	\$7	5%
LA CO SG Valley East	-\$0.24	-197%	\$4	3%	\$4	3%
LA CO SG Valley West	-\$0.01	-10%	\$5	4%	\$5	4%
LA CO South	-\$0.08	-61%	\$7	6%	\$7	6%
LA CO South Central	\$0.00	0%	\$5	4%	\$5	4%
LA CO Southeast	-\$0.13	-102%	\$7	6%	\$7	6%
LA CO West	\$0.04	36%	\$5	4%	\$5	4%
Orange Central	\$0.06	51%	\$7	6%	\$7	6%
Orange North	\$0.01	12%	\$4	3%	\$4	3%
Orange South	\$0.08	63%	\$6	5%	\$6	5%
Orange West	\$0.25	204%	\$5	4%	\$5	4%
Northwest Riverside	\$0.05	38%	\$8	6%	\$8	6%
Other Riverside	\$0.13	102%	\$4	3%	\$4	4%
Southwest Riverside	\$0.01	11%	\$4	4%	\$4	4%
San Bernardino City	\$0.09	76%	\$8	7%	\$8	7%
Other San Bernardino	\$0.00	0%	\$3	3%	\$3	2%
Southwest San Bernardino	-\$0.01	-5%	\$6	5%	\$6	5%
Total	\$0.12	100%	\$122	100%	\$122	100%

TABLE G-5-4B
Per Capita Clean Air Benefit and Cost
by Sub-region (in 2005 dollars)

Sub-region	Clean Air Benefit	Cost
LA CO Beach & Catalina	\$162	\$19
LA CO Burbank	71	5
LA CO Central	134	5
LA CO North	90	7
LA CO San Fernando	141	5
LA CO East	131	5
LA CO South	169	7
LA CO South Central	28	5
LA CO Southeast	71	6
LA CO West	310	5
OR CO Central	121	6
OR CO North	307	8
OR CO South	203	6
OR CO West	317	6
Northwest Riverside	137	6
Other Riverside	152	6
Chino-Redlands	139	8
Other San Bernardino	296	5
Total Four Counties	\$153	\$6

TABLE G-5-5B
Average Annual Job Impacts by Sub-region for
Benefits, Control Measures and Draft [Final Plan](#)

Sub-region	Benefits (2014-2035)	Control Measures (2013-2035)	Draft Final Plan (2013-2035)	
			Jobs	% Baseline
LA CO Beach & Catalina	217	-54	153	0.04%
LA CO Burbank	200	-47	145	0.03%
LA CO Central	416	-105	293	0.04%
LA CO North	132	-38	88	0.03%
LA CO San Fernando	399	-96	285	0.03%
LA CO East	587	-127	434	0.04%
LA CO South	311	-77	220	0.04%
LA CO South Central	205	-69	127	0.03%
LA CO Southeast	326	-80	232	0.04%
LA CO West	446	-93	333	0.05%
OR CO Central	508	-104	382	0.06%
OR CO North	297	-41	244	0.08%
OR CO South	744	-102	609	0.10%
OR CO West	678	-78	570	0.11%
RV CO NW Riverside	798	-132	631	0.11%
RV CO Other	1,277	-172	1,047	0.15%
Chino-Redlands	1,075	-194	834	0.10%
Other San Bernardino	422	-36	367	0.14%
Total	9,037	-1,646	6,994	0.07%

TABLE G-5-6B
Employment Impacts by Occupational Wage Group for
Clean Air Benefits and Control Measures

Group	Median Weekly Earnings	No. of Occupations	% Impact from Baseline								
			Clean Air Benefits			Control Measures			Benefits & Measures		
			2014	2023	2035	2014	2023	2035	2014	2023	2035
1	\$352-\$517	19	0.024	0.110	0.117	-0.002	-0.028	-0.021	0.022	0.082	0.096
2	\$520-\$659	19	0.016	0.079	0.096	0.000	-0.022	-0.017	0.017	0.057	0.078
3	\$661-\$820	18	0.022	0.098	0.109	0.002	-0.029	-0.025	0.024	0.069	0.084
4	\$821-\$996	19	0.022	0.092	0.100	0.001	-0.018	-0.015	0.023	0.074	0.085
5	\$1,027-\$1,729	19	0.016	0.077	0.090	0.001	-0.017	-0.014	0.017	0.060	0.077

TABLE G-5-7B
Impacts on the Price of Consumption Goods for
Clean Air Benefits and Control Measures
(percent of baseline^{*})

Household Income	Clean Air Benefits			Control Measures			Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
1st Quintile	-0.003	0.004	0.007	0.003	0.019	0.006	0.001	0.024	0.013
2nd Quintile	-0.003	0.004	0.006	0.003	0.018	0.007	0.001	0.022	0.013
3rd Quintile	-0.003	0.004	0.006	0.003	0.018	0.007	0.001	0.022	0.013
4th Quintile	-0.003	0.004	0.006	0.003	0.018	0.007	0.001	0.021	0.012
5th Quintile	-0.003	0.004	0.006	0.004	0.018	0.006	0.001	0.022	0.013

^{*}Relative to the rest of the U.S.

TABLE G-6-1B
 Impacts on Region's Share of U.S. Jobs for
 Clean Air Benefits and Control Measures (percent)

	Percent Share of U.S. Jobs for Benefits			Percent Share of U.S. Jobs for All Measures			Percent Share of U.S. Jobs for Combined Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
<u>Total Jobs</u>									
With Benefits & Measures							5.126	4.952	4.936
With Benefits	5.126	4.953	4.936						
With All Measures				5.125	4.947	4.930			
Without Draft Final 2012 AQMP	5.125	4.949	4.931	5.125	4.949	4.931	5.125	4.949	4.931
Difference	0.001	0.004	0.005	0	-0.002	-0.001	0.001	0.003	0.005
<u>Manufacturing Jobs</u>									
With Benefits & Measures							5.656	7.294	6.908
With Benefits	5.655	7.295	6.908						
With All Measures				5.655	7.291	6.904			
Without Draft Final 2012 AQMP	5.655	7.292	6.905	5.655	7.292	6.905	5.655	7.292	6.905
Difference	0	0.003	0.003	0	-0.001	-0.001	0.001	0.002	0.003

Some numbers are rounded.

TABLE G-6-2B
Impacts on Cost of Production Relative to Those in the Rest of the U.S.
for Clean Air Benefits and Control Measures

Industry	Clean Air Benefits			Control Measures			Combined Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
Forestry, Fishing and Hunting	-0.005%	-0.012%	-0.007%	0.000%	0.004%	0.001%	-0.005%	-0.009%	-0.006%
Mining	-0.003%	0.027%	0.024%	-0.001%	0.012%	0.003%	-0.004%	0.039%	0.026%
Utilities	-0.003%	0.020%	0.018%	-0.016%	0.041%	0.036%	-0.019%	0.060%	0.054%
Construction	-0.004%	-0.022%	-0.014%	-0.001%	0.032%	0.007%	-0.005%	0.011%	-0.007%
Manufacturing	-0.003%	-0.006%	-0.002%	0.000%	0.012%	0.008%	-0.003%	0.006%	0.006%
Wholesale Trade	-0.004%	-0.012%	-0.006%	0.000%	0.008%	0.006%	-0.004%	-0.004%	-0.001%
Retail Trade	-0.004%	-0.004%	0.001%	0.000%	0.023%	0.019%	-0.004%	0.019%	0.020%
Transportation and Warehousing	-0.004%	-0.012%	-0.006%	-0.017%	0.086%	0.089%	-0.020%	0.074%	0.083%
Information	-0.004%	0.020%	0.020%	0.000%	0.007%	0.000%	-0.004%	0.027%	0.020%
Finance and Insurance	-0.004%	0.001%	0.004%	0.000%	0.005%	0.000%	-0.004%	0.006%	0.005%
Real Estate, Rental and Leasing	-0.003%	0.044%	0.039%	-0.001%	0.012%	-0.001%	-0.004%	0.056%	0.038%
Professional and Technical Services	-0.004%	-0.010%	-0.004%	0.000%	0.005%	0.002%	-0.004%	-0.005%	-0.003%
Management of Companies and Enterprises	-0.004%	-0.015%	-0.008%	0.000%	0.004%	0.001%	-0.004%	-0.011%	-0.007%
Administrative and Waste Services	-0.004%	-0.013%	-0.007%	0.000%	0.013%	0.005%	-0.004%	0.000%	-0.002%
Educational Services	-0.004%	-0.011%	-0.004%	0.000%	0.004%	0.001%	-0.004%	-0.007%	-0.003%
Health Care and Social Assistance	-0.004%	-0.018%	-0.009%	0.000%	0.003%	0.001%	-0.004%	-0.015%	-0.008%
Arts, Entertainment and Recreation	-0.004%	0.010%	0.012%	-0.001%	0.007%	0.001%	-0.004%	0.017%	0.013%
Accommodation and Food Services	-0.003%	-0.001%	0.003%	0.000%	0.005%	0.001%	-0.004%	0.004%	0.004%
Other Services (ex. Government)	-0.004%	0.000%	0.004%	0.000%	0.006%	0.001%	-0.004%	0.006%	0.005%

TABLE G-6-3B
Impacts on Delivered Prices Relative to Those in the Rest of the U.S.
for Clean Air Benefits and Control Measures

Industry	Clean Air Benefits			Control Measures			Combined Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
Forestry, Fishing and Hunting	-0.001%	-0.001%	-0.001%	0.000%	0.001%	0.000%	-0.001%	-0.001%	-0.001%
Mining	-0.001%	0.009%	0.008%	0.000%	0.004%	0.001%	-0.001%	0.014%	0.009%
Utilities	-0.003%	0.017%	0.016%	-0.013%	0.035%	0.031%	-0.016%	0.052%	0.047%
Construction	-0.004%	-0.020%	-0.014%	-0.001%	0.031%	0.007%	-0.004%	0.011%	-0.006%
Manufacturing	-0.002%	-0.003%	-0.001%	0.000%	0.007%	0.005%	-0.002%	0.004%	0.003%
Wholesale Trade	-0.003%	-0.011%	-0.006%	0.000%	0.008%	0.006%	-0.004%	-0.003%	0.000%
Retail Trade	-0.003%	-0.003%	0.001%	0.000%	0.019%	0.015%	-0.003%	0.015%	0.016%
Transportation and Warehousing	-0.002%	-0.005%	-0.003%	-0.010%	0.041%	0.048%	-0.012%	0.036%	0.045%
Information	-0.003%	0.009%	0.010%	0.000%	0.005%	0.000%	-0.003%	0.014%	0.010%
Finance and Insurance	-0.002%	0.001%	0.003%	0.000%	0.003%	0.000%	-0.002%	0.005%	0.003%
Real Estate, Rental and Leasing	-0.003%	0.044%	0.039%	-0.001%	0.012%	-0.001%	-0.004%	0.056%	0.038%
Professional and Technical Services	-0.004%	-0.009%	-0.004%	0.000%	0.004%	0.001%	-0.004%	-0.005%	-0.002%
Management of Companies and Enterprises	-0.002%	-0.009%	-0.004%	0.000%	0.002%	0.001%	-0.002%	-0.007%	-0.004%
Administrative and Waste Services	-0.004%	-0.012%	-0.006%	0.000%	0.013%	0.005%	-0.004%	0.001%	-0.001%
Educational Services	-0.003%	-0.008%	-0.003%	0.000%	0.003%	0.001%	-0.003%	-0.006%	-0.002%
Health Care and Social Assistance	-0.003%	-0.012%	-0.006%	0.000%	0.002%	0.001%	-0.003%	-0.010%	-0.006%
Arts, Entertainment and Recreation	-0.003%	0.007%	0.009%	-0.001%	0.006%	0.001%	-0.004%	0.013%	0.010%
Accommodation and Food Services	-0.003%	-0.001%	0.003%	0.000%	0.004%	0.001%	-0.003%	0.003%	0.003%
Other Services (ex. Government)	-0.003%	0.001%	0.004%	0.000%	0.005%	0.000%	-0.003%	0.006%	0.004%

TABLE G-6-4B
Impacts on Imports and Exports for Clean Air Benefits and Control Measures

	Clean Air Benefits			Control Measures			Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
Demand*	+	+	+	+	-	-	+	+	+
Imports	+	+	+	+	+	+	+	+	+
Self Supply*	+	+	+	+	-	-	+	+	+
Exports	+	-	-	+	-	-	+	-	-
Output (Production)	+	+	+	+	-	-	+	+	+
Delivered Price	-	+	+	-	+	+	-	+	+
Cost of Production	-	+	+	-	+	+	-	+	+

A plus or minus sign means that there is an increase or decrease in the value of that economic variable resulting from benefits, measures, or both of the Draft [Final](#) 2012 AQMP relative to the baseline economic activities.

*Includes changes in demand due to changes in control requirements.

TABLE G-7-1B
Average Annual Impacts of AQMP and CEQA Alternatives

CEQA Alternatives*	Costs		PM _{2.5} Benefits		Jobs for Combined Costs & Benefits
	Millions of 2005 Dollars	Jobs	Millions of 2005 Dollars	Jobs	
Draft Final 2012 AQMP	\$122.7	-1,646	\$2,958	9,037	5,378
Alt 2—Localized PM Control	123.6	-1,726	1,814	4,007	2,105
Alt 3—Greater Reliance on NO _x Reductions	168.3	-3,092	3,429	11,209	7,622
Alt 4—PM _{2.5} Strategy Only	\$0.1	-4	<\$2,958	<9,037	<5,378

APPENDIX H

TCM BENEFIT AT 2014 LEVEL

INTRODUCTION

The average annual congestion relief benefit of \$7.7 billion from 2014 to 2035 in the Draft Socioeconomic Report for the Draft 2012 AQMP is for all TCM-type projects in the 2012 Regional Transportation Plan (RTP). However, committed TCMs in the 2012 AQMP are comprised of only the first two years of TCM-type projects in the 2012 RTP. In order to analyze the benefit from the SIP-committed TCMs between 2014 and 2035 and due to the data constraint, it was assumed that the congestion relief benefit would stay constant at the 2014 level. This estimate is conservative because

- Only those projects that will be operational in the first two years are included in the 2014 benefit, and
- Some of the committed TCM projects will not be fully completed and operational in the first two years.

The 2014 congestion relief benefit from the SIP-committed TCMs is estimated to be \$519 million in 2014 and would continue from 2015 to 2035. The following tables corresponding to those in the Draft [Final](#) Socioeconomic Report have been updated to reflect the annual \$519 million congestion relief benefit. [All the table numbers are preceded with an “H.”](#)

TABLE H-3-3
 Quantifiable Benefits of Draft [Final](#) 2012 AQMP
 (millions of 2005 dollars)

Benefit	Average Annual (2014 to 2035)
Reduction in Morbidity	\$23
Reduction in Mortality	2,225
Visibility Improvement	696
Reduced Materials Expenditures	14
Congestion Relief	519
Total	\$3,477

TABLE H-3-10
 Total Costs and Benefits of the Draft [Final](#) Plan
 (millions of 2005 dollars)

	2014	2023	Average Annual
Total Costs	\$510	\$357	\$448
Total Benefits	\$5,948	\$2,672	\$3,477

TABLE H-4-1**Job Impacts of Quantified Clean Air Benefits and Measures**

Category	2014	2023	2035	Average Annual
Clean Air Benefits & Measures (2013-2035)	2,987	10,986	13,906	8,498
Clean Air Benefits (2014-2035)	2,261	12,931	16,876	12,299
Congestion Relief	348	3,254	5,017	3,245
Visibility Improvements	1,008	5,313	6,445	4,947
Reduced Materials Expenditures	133	191	181	179
Health Benefits	774	4,146	5,214	3,910
Control Measures (2013-2035)	731	-1,929	-2,955	-3,257
TCMs	715	537	-813	-1,611
District PM _{2.5}	7	-10	-3	-4
Ozone Strategy	26	-2,457	-2,142	-1,639

Results from modeling all the categories are slightly different from the sum of results from modeling each category one at a time because of nonlinearity of the REMI model.

TABLE H-4-2

Draft [Final](#) 2012 AQMP Employment Impacts by Industry for Clean Air Benefits

Industry	NAICS	Jobs		Average Annual (2014-2035)	
		2014	2023	Jobs	% Baseline
Agriculture, Forestry, Fishing and Hunting	11	1	5	10	0.046%
Mining	21	8	43	42	0.095%
Utilities	22	15	69	66	0.208%
Construction	23	235	927	864	0.160%
Transportation Equipment Mfg.	336	4	19	18	0.023%
Petroleum and Coal Products Mfg.	324	2	8	7	0.105%
Other Manufacturing	31-33 ex. 324 & 336	91	489	440	0.067%
Wholesale Trade	42	92	421	409	0.086%
Retail Trade	44-45	25	1,353	1,294	0.129%
Truck Transportation	484, 492	-81	122	109	0.065%
Transit Transportation	485	15	57	52	0.160%
Other Transportation and Warehousing	48-49 ex. 484-485 & 492	19	105	97	0.062%
Information	51	35	191	197	0.059%
Finance and Insurance	52	13	233	254	0.041%
Real Estate and Rental and Leasing	53	354	1,267	1,186	0.211%
Professional and Technical Services	54	153	721	701	0.086%
Management and Support Services	55-56	155	828	800	0.092%
Education, Health and Social Services	61-62	441	1,728	1,762	0.147%
Arts, Entertainment and Recreation	71	103	393	377	0.119%
Accommodation and Food Services	72	603	2,062	1,883	0.274%
Other Services	81	-461	33	10	0.002%
Government	92	440	1,858	1,721	0.137%
Total		2,261	12,931	12,299	0.116%

TABLE H-4-4
Job Impact by Industry for Clean Air Benefits and Measures Combined

Industry	NAICS	Jobs		Average Annual (2013-2035)	
		2014	2023	Jobs	% Baseline
Agriculture, Forestry, Fishing and Hunting	11	-1	1	5	0.025%
Mining	21	-32	15	5	0.012%
Utilities	22	11	108	85	0.269%
Construction	23	4,873	2702	2,184	0.407%
Transportation Equipment Mfg.	336	4	6	10	0.013%
Petroleum and Coal Products Mfg.	324	-5	1	-1	-0.021%
Other Manufacturing	31-33 ex. 324 & 336	-102	343	269	0.041%
Wholesale Trade	42	-79	300	189	0.040%
Retail Trade	44-45	-949	532	219	0.022%
Truck Transportation	484, 492	-95	69	43	0.026%
Transit Transportation	485	14	-37	-64	-0.197%
Other Transportation and Warehousing	48-49 ex. 484-485 & 492	-51	-54	-60	-0.039%
Information	51	-78	143	118	0.036%
Finance and Insurance	52	-393	69	-14	-0.002%
Real Estate and Rental and Leasing	53	210	1233	969	0.173%
Professional and Technical Services	54	556	388	769	0.095%
Management and Support Services	55-56	-234	408	320	0.037%
Education, Health and Social Services	61-62	-87	1447	1,162	0.098%
Arts, Entertainment and Recreation	71	19	361	287	0.091%
Accommodation and Food Services	72	39	1754	1,367	0.199%
Other Services	81	-694	-161	-328	-0.048%
Government	92	61	1360	963	0.077%
Total		2,987	10,986	8,498	0.081%

TABLE H-5-2
Average Annual Benefits (2014-2035) by Sub-region

Sub-region	Health		Congestion		Material		Visibility		Total	
	MM\$	%	MM\$	%	MM\$	%	MM\$	%	MM\$	%
LA CO Beach & Catalina	78	3%	28	5%	0.4	3%	26	4%	133	4%
LA CO Burbank	19	1%	53	10%	0.4	3%	26	4%	99	3%
LA CO Central	145	6%	-20	-4%	0.9	6%	37	5%	163	5%
LA CO North	44	2%	9	2%	0.4	3%	9	1%	62	2%
LA CO San Fernando	157	7%	45	9%	0.8	6%	41	6%	244	7%
LA CO SG Valley East	96	4%	25	5%	0.4	3%	20	3%	142	4%
LA CO SG Valley West	81	4%	18	3%	0.6	4%	33	5%	132	4%
LA CO South	145	6%	53	10%	0.6	4%	21	3%	220	6%
LA CO South Central	16	1%	7	1%	0.6	4%	13	2%	36	1%
LA CO Southeast	70	3%	19	4%	0.6	5%	22	3%	111	3%
LA CO West	203	9%	2	0%	0.8	5%	94	13%	300	9%
Orange Central	115	5%	30	6%	0.8	6%	23	3%	168	5%
Orange North	118	5%	10	2%	0.4	3%	22	3%	151	4%
Orange South	128	6%	30	6%	0.9	7%	60	9%	218	6%
Orange West	202	9%	46	9%	0.7	5%	41	6%	290	8%
Northwest Riverside	117	5%	62	12%	1.0	7%	55	8%	235	7%
Other Riverside	116	5%	19	4%	1.1	8%	29	4%	165	5%
Southwest Riverside	60	3%	29	6%	0.8	5%	29	4%	119	3%
San Bernardino City	35	2%	23	4%	0.8	6%	47	7%	105	3%
Other San Bernardino	180	8%	3	1%	0.6	4%	10	1%	193	6%
Southwest San Bernardino	122	5%	27	5%	0.6	4%	40	6%	190	5%
Total	2,247	100%	519	100%	14.3	100%	696	100%	3,477	100%

TABLE H-5-4
Per Capita Clean Air Benefit and Cost
by Sub-region (in 2005 dollars)

Sub-region	Clean Air Benefit	Cost
LA CO Beach & Catalina	\$204	\$43
LA CO Burbank	153	29
LA CO Central	120	29
LA CO North	105	37
LA CO San Fernando	173	28
LA CO East	155	30
LA CO South	223	30
LA CO South Central	34	30
LA CO Southeast	85	30
LA CO West	313	30
OR CO Central	146	20
OR CO North	329	24
OR CO South	235	23
OR CO West	377	22
Northwest Riverside	186	9
Other Riverside	183	9
Chino-Redlands	167	11
Other San Bernardino	301	8
Total Four Counties	\$180	\$23

TABLE H-5-5
Average Annual Job Impacts by Sub-region for
Benefits, Control Measures and Draft [Final Plan](#)

Sub-region	Benefits (2014-2035)	Control Measures (2013-2035)	Draft Final Plan (2013-2035)	
			Jobs	% Baseline
LA CO Beach & Catalina	325	-35	276	0.06%
LA CO Burbank	342	17	345	0.08%
LA CO Central	482	66	526	0.07%
LA CO North	188	-87	93	0.03%
LA CO San Fernando	602	-200	377	0.05%
LA CO East	844	-230	577	0.06%
LA CO South	526	-147	356	0.06%
LA CO South Central	280	-117	152	0.03%
LA CO Southeast	463	14	457	0.07%
LA CO West	547	120	644	0.09%
OR CO Central	777	-528	216	0.03%
OR CO North	390	-234	138	0.05%
OR CO South	1,015	-941	28	0.00%
OR CO West	999	-687	267	0.05%
RV CO NW Riverside	1,102	9	1,060	0.18%
RV CO Other	1,652	-130	1,447	0.21%
Chino-Redlands	1,316	-121	1,134	0.14%
Other San Bernardino	451	-26	404	0.15%
Total	12,299	-3,256	8,498	0.08%

TABLE H-5-6
Employment Impacts by Occupational Wage Group for
Clean Air Benefits and Control Measures

Group	Median Weekly Earnings	No. of Occupations	% Impact from Baseline								
			Clean Air Benefits			Control Measures			Benefits & Measures		
			2014	2023	2035	2014	2023	2035	2014	2023	2035
1	\$352-\$517	19	0.031	0.147	0.167	-0.055	-0.041	-0.029	-0.024	0.106	0.138
2	\$520-\$659	19	0.021	0.108	0.137	-0.008	-0.022	-0.024	0.013	0.086	0.113
3	\$661-\$820	18	0.013	0.123	0.149	0.138	0.027	-0.029	0.151	0.150	0.119
4	\$821-\$996	19	0.028	0.123	0.143	0.009	-0.016	-0.023	0.036	0.107	0.120
5	\$1,027-\$1,729	19	0.025	0.108	0.132	-0.008	-0.026	-0.021	0.017	0.082	0.111

TABLE H-5-7
Impacts on the Price of Consumption Goods for
Clean Air Benefits and Control Measures
(percent of baseline*)

Household Income	Clean Air Benefits			Control Measures			Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
1st Quintile	-0.007	0.002	0.006	0.060	0.040	0.015	0.052	0.043	0.022
2nd Quintile	-0.007	0.002	0.005	0.059	0.039	0.015	0.052	0.040	0.020
3rd Quintile	-0.007	0.002	0.005	0.058	0.039	0.015	0.052	0.040	0.020
4th Quintile	-0.007	0.002	0.005	0.058	0.038	0.015	0.052	0.039	0.020
5th Quintile	-0.007	0.002	0.006	0.060	0.038	0.015	0.052	0.041	0.021

*Relative to the rest of the U.S.

TABLE H-6-1
Impacts on Region's Share of U.S. Jobs for
Clean Air Benefits and Control Measures (percent)

	Percent Share of U.S. Jobs for Benefits			Percent Share of U.S. Jobs for All Measures			Percent Share of U.S. Jobs for Combined Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
<u>Total Jobs</u>									
With Benefits & Measures							5.127	4.954	4.937
With Benefits	5.126	4.955	4.939						
With All Measures				5.126	4.948	4.930			
Without Draft Final 2012 AQMP	5.125	4.949	4.931	5.125	4.949	4.931	5.125	4.949	4.931
Difference	0.001	0.006	0.008	0.001	-0.001	-0.001	0.002	0.005	0.006
<u>Manufacturing Jobs</u>									
With Benefits & Measures							5.654	7.295	6.910
With Benefits	5.656	7.297	6.910						
With All Measures				5.654	7.29	6.904			
Without Draft Final 2012 AQMP	5.655	7.292	6.905	5.655	7.292	6.905	5.655	7.292	6.905
Difference	0.001	0.005	0.005	-0.001	-0.002	-0.001	-0.001	0.003	0.005

Some numbers are rounded.

TABLE H-6-2
Impacts on Cost of Production Relative to Those in the Rest of the U.S.
for Clean Air Benefits and Control Measures

Industry	Clean Air Benefits			Control Measures			Combined Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
Forestry, Fishing and Hunting	-0.012%	-0.020%	-0.014%	0.000%	0.007%	0.001%	-0.012%	-0.014%	-0.013%
Mining	-0.001%	0.038%	0.038%	-0.016%	0.018%	-0.001%	-0.017%	0.056%	0.037%
Utilities	-0.004%	0.026%	0.026%	-0.021%	0.045%	0.034%	-0.025%	0.071%	0.060%
Construction	-0.013%	-0.034%	-0.026%	0.060%	0.051%	0.012%	0.047%	0.018%	-0.014%
Manufacturing	-0.010%	-0.013%	-0.008%	-0.002%	0.021%	0.010%	-0.013%	0.008%	0.001%
Wholesale Trade	-0.011%	-0.021%	-0.014%	-0.004%	0.018%	0.008%	-0.015%	-0.002%	-0.006%
Retail Trade	-0.010%	-0.010%	-0.003%	-0.005%	0.032%	0.020%	-0.015%	0.022%	0.017%
Transportation and Warehousing	-0.230%	-0.195%	-0.158%	-0.014%	0.096%	0.090%	-0.244%	-0.099%	-0.068%
Information	-0.006%	0.023%	0.025%	-0.003%	0.023%	-0.002%	-0.009%	0.046%	0.023%
Finance and Insurance	-0.005%	0.001%	0.006%	-0.007%	0.013%	0.001%	-0.013%	0.015%	0.007%
Real Estate, Rental and Leasing	-0.003%	0.055%	0.053%	-0.010%	0.019%	-0.003%	-0.012%	0.073%	0.050%
Professional and Technical Services	-0.008%	-0.015%	-0.008%	-0.004%	0.016%	0.003%	-0.012%	0.002%	-0.005%
Management of Companies and Enterprises	-0.009%	-0.022%	-0.014%	-0.004%	0.018%	0.004%	-0.013%	-0.004%	-0.010%
Administrative and Waste Services	-0.009%	-0.019%	-0.012%	-0.003%	0.024%	0.007%	-0.012%	0.005%	-0.006%
Educational Services	-0.008%	-0.016%	-0.008%	0.001%	0.017%	0.003%	-0.006%	0.001%	-0.005%
Health Care and Social Assistance	-0.009%	-0.025%	-0.016%	-0.002%	0.015%	0.003%	-0.011%	-0.010%	-0.012%
Arts, Entertainment and Recreation	-0.006%	0.011%	0.015%	-0.001%	0.024%	0.000%	-0.007%	0.034%	0.015%
Accommodation and Food Services	-0.008%	-0.004%	0.002%	-0.004%	0.014%	0.002%	-0.012%	0.009%	0.004%
Other Services (ex. Government)	-0.008%	-0.003%	0.003%	-0.003%	0.017%	0.001%	-0.011%	0.014%	0.004%

TABLE H-6-3
Impacts on Delivered Prices Relative to Those in the Rest of the U.S.
for Clean Air Benefits and Control Measures

Industry	Clean Air Benefits			Control Measures			Combined Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
Forestry, Fishing and Hunting	-0.002%	-0.003%	-0.002%	0.000%	0.001%	0.001%	-0.002%	-0.001%	-0.001%
Mining	0.000%	0.014%	0.013%	-0.006%	0.006%	0.000%	-0.006%	0.020%	0.013%
Utilities	-0.003%	0.022%	0.023%	-0.017%	0.040%	0.031%	-0.020%	0.063%	0.053%
Construction	-0.012%	-0.032%	-0.024%	0.058%	0.052%	0.013%	0.046%	0.020%	-0.011%
Manufacturing	-0.006%	-0.007%	-0.004%	-0.001%	0.011%	0.005%	-0.007%	0.004%	0.001%
Wholesale Trade	-0.011%	-0.020%	-0.013%	-0.003%	0.018%	0.008%	-0.014%	-0.002%	-0.005%
Retail Trade	-0.008%	-0.008%	-0.002%	-0.004%	0.026%	0.016%	-0.012%	0.018%	0.014%
Transportation and Warehousing	-0.118%	-0.100%	-0.082%	-0.009%	0.046%	0.048%	-0.127%	-0.054%	-0.034%
Information	-0.004%	0.010%	0.013%	-0.003%	0.016%	0.000%	-0.008%	0.026%	0.013%
Finance and Insurance	-0.003%	0.001%	0.004%	-0.004%	0.009%	0.001%	-0.008%	0.010%	0.005%
Real Estate, Rental and Leasing	-0.002%	0.055%	0.054%	-0.004%	0.024%	0.002%	-0.007%	0.079%	0.055%
Professional and Technical Services	-0.008%	-0.014%	-0.008%	-0.004%	0.015%	0.003%	-0.011%	0.001%	-0.005%
Management of Companies and Enterprises	-0.005%	-0.013%	-0.008%	-0.002%	0.011%	0.003%	-0.008%	-0.002%	-0.005%
Administrative and Waste Services	-0.008%	-0.017%	-0.011%	-0.003%	0.024%	0.007%	-0.011%	0.006%	-0.004%
Educational Services	-0.006%	-0.012%	-0.006%	0.001%	0.013%	0.002%	-0.005%	0.001%	-0.004%
Health Care and Social Assistance	-0.006%	-0.017%	-0.010%	-0.001%	0.011%	0.003%	-0.007%	-0.006%	-0.008%
Arts, Entertainment and Recreation	-0.006%	0.007%	0.011%	-0.003%	0.019%	0.001%	-0.009%	0.026%	0.012%
Accommodation and Food Services	-0.006%	-0.003%	0.002%	-0.003%	0.012%	0.002%	-0.009%	0.008%	0.004%
Other Services (ex. Government)	-0.007%	-0.001%	0.004%	-0.002%	0.014%	0.001%	-0.009%	0.013%	0.005%

TABLE H-6-4
Impacts on Imports and Exports for Clean Air Benefits and Control Measures

	Clean Air Benefits			Control Measures			Benefits & Measures		
	2014	2023	2035	2014	2023	2035	2014	2023	2035
Demand*	+	+	+	-	-	-	+	+	+
Imports	+	+	+	+	+	+	+	+	+
Self Supply*	+	+	+	-	-	-	-	+	+
Exports	+	+	+	-	-	-	-	-	-
Output (Production)	+	+	+	-	-	-	-	+	+
Delivered Price	-	-	+	-	+	+	-	+	+
Cost of Production	-	-	+	-	+	+	-	+	+

A plus or minus sign means that there is an increase or decrease in the value of that economic variable resulting from benefits, measures, or both of the Draft [Final 2012 AQMP](#) relative to the baseline economic activities.

*Includes changes in demand due to changes in control requirements.

TABLE H-7-1
Average Annual Impacts of AQMP and CEQA Alternatives

CEQA Alternatives*	Costs		PM2.5 Benefits		Jobs for Combined Costs & Benefits
	Millions of 2005 Dollars	Jobs	Millions of 2005 Dollars	Jobs	
Draft Final 2012 AQMP	\$448	-3,257	\$3,477	12,299	8,498
Alt 2—Localized PM Control	450	-3,334	2,333	7,260	3,407
Alt 3—Greater Reliance on NOx Reductions	495	-4,715	3,948	14,475	9,121
Alt 4—PM _{2.5} Strategy Only	\$327	-1,620	<\$3,477	<12,299	<8,498

TABLE H-7-3
Average Annual Quantified Benefits by Category by Alternative
(millions of 2005 dollars)

CEQA Alternatives	Total	Health	Visibility	Congestion Relief	Material
Draft Final 2012 Plan	\$3,477	\$2,247	\$696	\$519	\$14
Alt2—Localized PM Control	2,333	1,370	438	519	7
Alt 3—Greater Reliance on NOx	3,948	2,430	988	519	11
Alt 4—PM _{2.5} Strategy Only	<\$3,477	<\$2,247	<\$696	\$519	<\$14

APPENDIX I

CPI AND COST INDICES

**Table I-1
Price Indices**

Year	CPI for Los Angeles CMSA (1982 - 1984 = 100)*	CPI for Los Angeles CMSA (2005 = 100)	Marshall and Swift Index (1926 = 100)	Marshall and Swift Index (2005 = 100)
2005	201.800	100.000	1,244.5	100.000
2006	210.400	104.262	1,302.3	104.644
2007	217.338	107.700	1,373.3	110.350
2008	225.008	111.500	1,449.3	116.456
2009	223.219	110.614	1,468.6	118.007
2010	225.894	111.940	1,457.4	117.107
2011	231.928	114.930	1536.5**	123.463

*CMSA = Consolidated Metropolitan Statistical Areas.

** 4th quarter.

Sources:

http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_UseCPI.php

Chemical Engineering, Various Issues

Footnotes:

1. The Marshall and Swift (M & S) Indices were used to convert current dollars to 2005 dollars for all the control measures except TCMs.
2. Nominal dollars in TCMs were converted to 2005 dollars based on an annual compounded inflation rate of 3.2 percent.
3. CPIs were used for conversions to 2005 dollar in the assessment of all clean air benefits.

| **APPENDIX [GJ](#)**

GLOSSARY

American Community Survey (ACS): The ACS is an ongoing statistical survey that samples a small percentage of the population every year to provide up-to-date information about the social and economic needs of communities.

Acute Health Effect: An adverse health effect that occurs over a relatively short period of time (e.g., minutes or hours).

Acute Respiratory Symptoms: Any respiratory disease-related symptoms including chest discomfort, coughing, wheezing, sore throat, head cold, chest cold, sinus trouble, hay fever, headache and doctor-diagnosed flu.

Air Quality Simulation Model: A computer program that simulates the transport, dispersion, and transformation of compounds emitted into the air and can project the relationship between emissions and air quality.

Ambient Air: The air occurring at a particular time and place outside of structures. Often used interchangeably with “outdoor” air.

APCD (Air Pollution Control District): A county agency with authority to regulate stationary, indirect, and area sources of air pollution (e.g., power plants, highway construction, and housing developments) within a given county, and governed by a district air pollution control board composed largely of the elected county supervisors. (See AQMD).

AQMD (Air Quality Management District): A group of counties or portions of counties, or an individual county specified in law with authority to regulate stationary, indirect, and area sources of air pollution within the region and governed by a regional air pollution control board comprised mostly of elected officials from within the region. (See APCD).

AQMP (Air Quality Management Plan): A Plan prepared by an APCD/AQMD, for a county or region designated as a non-attainment area, for the purpose of bringing the area into compliance with the requirements of the national and/or California Ambient Air Quality Standards. AQMPs are incorporated into the State Implementation Plan (SIP).

Asthma Symptom Days: Days in which asthma symptoms are present in asthmatic individuals.

BenMAP Model (Environmental Benefits Mapping and Analysis Program): A computer model designed to estimate general population exposures to air pollutants. The model uses air quality data from the CAMx Model as inputs for exposure calculations. The model is structured in a manner that allows for consideration of spatial and temporal variations in concentrations, variations in human time activity, and mobility of the population.

CAA (Federal Clean Air Act): A federal law passed in 1970 and amended in 1977 and 1990 which forms the basis for the national air pollution control effort. Basic elements of the act include national ambient air quality standards for major air pollutants, air toxics standards, acid rain control measures, and enforcement provisions.

CARB (California Air Resources Board): The State's lead air quality agency consisting of a 11-member Governor-appointed board. It is responsible for attainment and maintenance of

the State and federal air quality standards, and is primarily responsible for motor vehicle pollution control. It oversees county and regional air pollution management programs.

CMAQ (Community Multiscale Air Quality Model): A three dimensional photochemical grid model used to simulate ozone and PM_{2.5} formation.

Cardiac Hospital Admissions: Hospital admissions due to heart-related ailments or disease.

CCAA (California Clean Air Act): A California law passed in 1988 which provides the basis for air quality planning and regulation independent of federal regulations. A major element of the Act is the requirement that local APCDs/AQMDs in violation of the CAAQS must prepare attainment plans which identify air quality problems, causes, trends, and the actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

CEQA (California Environmental Quality Act): A California law which sets forth a process for public agencies to make informed decisions on discretionary project approvals. The process aids decision makers to determine whether any environmental impacts are associated with a proposed project. It requires environmental impacts associated with a proposed project to be identified, disclosed, and mitigated to the maximum extent feasible.

Clean Air Benefits: These include reduced morbidity, avoided mortality, visibility improvements, increased crop yield, traffic congestion relief, reduced spending on refurbishing sensitive building materials, and less damage to plant life and livestock resulting from attaining federal and state air quality standards.

CO (Carbon Monoxide): A colorless, odorless gas resulting from the incomplete combustion of fossil fuels. Over 80% of the CO emitted in urban areas is contributed by motor vehicles. CO interferes with the blood's ability to carry oxygen to the body's tissues and results in numerous adverse health effects. CO is a criteria air pollutant.

Concentration-Response Function: A mathematical relationship derived to calculate the number of cases of a specific health effect expected in a population exposed to a given ambient concentration of an air pollutant.

Chronic Bronchitis: Chronic lung disease characterized by frequent coughing, increased sputum production, and interference with oxygen exchange between air and blood in the lungs of severely affected individuals.

Chronic Health Effect: An adverse health effect which occurs over a relatively long period of time (e.g., months or years).

Consumer Expenditure Survey (CES): The CES collects information on the buying habits of American consumers. The survey consists of two components: (1) a Diary survey completed by participating consumers for two consecutive 1-week periods; and (2) an Interview survey in which the expenditures of consumers are obtained in five interviews conducted every 3 months. Each component of the survey queries an independent sample of consumers which is representative of the U.S. population. Over 52 weeks of

the year, 5,000 consumers are sampled for the Diary survey. The Interview sample is selected on a rotating panel basis, targeted at 5,000 consumers each quarter.

Current Population Survey (CPS): The CPS provides monthly statistics that serve as measures of both current labor force utilization and overall performance of the U.S. economy. The information collected from a sample of 60,000 households relates to the employment status of the entire population. For the employed, there are data on hours worked, full-time and part-time status of workers, and usual weekly earnings. For the unemployed, data routinely are collected on duration of unemployment, the respondent's job status at the time that his or her jobless spell began, and job-seeking methods used. Among those not in the labor force, data are obtained for so-called discouraged workers, who have ceased active job hunting.

Discounted Cash Flow Method: A method to evaluate the present worth of a stream of expenditures in future years. Future expenditures are discounted based on the interest rate and the length of the period in which the expenditures are made.

Disposable Income: It is the sum of the incomes of all the individuals in the economy after all taxes have been deducted.

Dose-Response Function: A mathematical relationship which expresses the likelihood of a connection between exposure to a specific amount of an air pollutant (inhaled dose) and one or more responses elicited by exposure to the specific pollutant. For human health evaluations, responses are health effects, e.g., eye irritations and restricted activity days. For agriculture, the responses are changes in crop yields.

Emergency Room Visits: Visits to emergency rooms by individuals in need of urgent or immediate treatment.

Grid Cell: An area bound by evenly spaced horizontal and vertical bars or lines.

Episodic Model: A photochemical grid model that typically simulates air quality for a 3-5 day period, e.g., the CAMx Model used for the ozone attainment demonstration .

Hedonic Prices: Hedonic prices are a method to compute the price of a good that is not traded in the market based on the price of a traded good that has the attribute of the non-traded good. Based on the amount of the attribute, the imputed price of the non-traded good is a fraction of the price of the traded good. For example, air quality is an attribute of real estate.

Mobile Sources: Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats and airplanes. (Contrast with stationary sources.)

NAICS Code: The North American Industry Classification System (NAICS) has replaced the U.S. Standard Industrial Classification (SIC) system. NAICS was developed jointly by the U.S., Canada, and Mexico to provide new comparability in statistics about business activity across North America. Economic units that use like processes to produce goods or services are grouped together. NAICS reflects the structure of today's economy in the U.S., Canada, and Mexico, including the emergence and growth of the service sector and

new and advanced technologies. NAICS also provides for increased comparability with the International Standard Industrial Classification System (ISIC, Revision 3), developed and maintained by the United Nations.

Nitrogen Oxides (Oxides of Nitrogen, NO_x): A general term pertaining to compounds of nitric acid (NO), nitrogen dioxide (NO₂), and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO₂ is a criteria air pollutant, and may result in numerous adverse health effects.

Off-Road Mobile Sources: Mobile sources of air pollution (vehicles) which are not authorized to operate on streets and highways. Examples include trains, boats, aircraft, farm equipment, and earthmoving equipment.

On-Road Mobile Sources: Mobile sources of air pollution (vehicles) which are authorized to operate on streets and highways. Examples include passenger cars, trucks, and buses.

Ozone: A strong-smelling, pale blue, reactive toxic chemical gas consisting of three oxygen atoms. It is a product of the photochemical process involving the sun's energy. Ozone exists in the upper atmosphere ozone layer as well as at the earth's surface. Ozone at the earth's surface can cause numerous adverse health effects and is a criteria air pollutant. It is a major component of smog.

Ozone Precursors: Chemicals such as hydrocarbons and oxides of nitrogen, occurring either naturally or as a result of human activities, which contribute to the formation of ozone, a major component of smog.

PM_{2.5} (Particulate Matter): Major class of air pollutants consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and mists. The size of the particles (2.5 microns or smaller, about 0.0004 inches or less) allows them to enter the air sacs (gas exchange region) deep in the lungs where they may get deposited and result in adverse health effects. PM_{2.5} also causes reduced visibility and is a criteria air pollutant.

PM_{2.5} Model: Modeling approaches to assess contributions to primary and secondary PM_{2.5}. Primary PM_{2.5} source apportionment is accomplished by receptor models and secondary particles such as sulfate and nitrate are apportioned to their precursors utilizing the Particle-In-Cell (PIC) dispersion model.

Premature Mortality: Death before the term of life expectancy.

Quantifiable Clean Air Benefits: Clean air is not a commodity exchanged in a market. The contingency valuation method or the hedonic pricing is often used to assess the monetary benefit associated with clean air. There are instances where association between an effect and clean air (cause) cannot be quantitatively established or is unknown, thus precluding the application of the contingency valuation method or hedonic pricing. Quantifiable clean air benefits are those benefit categories where monetary values can be placed based on past literature.

Reactive Organic Gas (ROG): A reactive chemical gas, composed of hydrocarbons, which may contribute to the formation of smog. Also sometimes referred to as Non-Methane Organic Compounds (NMOCs) or volatile organic compounds (VOCs).

Regional Economic Models, Inc. (REMI) Model: The REMI model is an economic and demographic forecasting and simulation model designed to examine the economic and demographic effects resulting from policy initiatives or external events in a local economy. For the socioeconomic analysis of the 2007 AQMP, the REMI 8.0.9 70-sector model for the 19 sub-regions within the counties of Los Angeles, Orange, Riverside, and San Bernardino is used.

Respiratory Hospital Admissions: Hospital admissions due to respiratory illness.

Restricted Activity Days: Days when activities are either fully or partially restricted due to illness, which include days spent in bed and days missed from work.

Relative Response Factor (RRF): A measure of simulated concentrations in a future year compared to those in a historical year from an air quality model.

Smog: A combination of smoke, ozone, hydrocarbons, nitrogen oxides, and other chemically reactive compounds which, under certain conditions of weather and sunlight, may result in a murky brown haze that causes adverse health effects. The primary source of smog in California is motor vehicles.

Standard Industrial Classification (SIC) Code: The SIC code is used to classify all establishment-based federal economic statistics by industry. The SIC code facilitates the comparability of establishment data in the U.S. economy. The classification covers the entire range of economic activities and defines industries in accordance with the composition and structure of the economy.

State Implementation Plan (SIP): A document prepared by each state describing existing air quality conditions and measures which will be taken to attain and maintain national ambient air quality standards (see AQMP).

Stationary Sources: Non-mobile sources such as power plants, refineries, and manufacturing facilities which emit air pollutants. (Contrast with mobile sources.)

Sulfur Dioxide (SO₂): A strong smelling, colorless gas that is formed by the combustion of fossil fuels. Power plants which may use coal or oil high in sulfur content can be major sources of SO₂. SO₂ and other sulfur oxides contribute to the problem of acid deposition. SO₂ is a criteria pollutant.

Total Suspended Particulate Matter (TSP): Airborne particles that are less than 100 micrometers.

U.S. EPA (Environmental Protection Agency): The federal government agency charged with setting policy and guidelines, and carrying out legal mandates, for the protection of national interests in environmental resources.

VHT: Vehicle Hours Traveled.

VMT: Vehicle Miles Traveled.

Visibility: The distance that atmospheric conditions allow a person to see at a given time and location. Visibility reductions from air pollution are often due to the presence of sulfur and nitrogen oxides, as well as particulate matter.

Volatile Organic Compounds (VOCs): Hydrocarbon compounds which exist in the ambient air. VOCs contribute to the formation of smog and/or may themselves be toxic. VOCs often have an odor. Some examples of VOCs are gasoline, alcohol, and the solvents used in paints.

Willingness to Pay (WTP): WTP is an approach to measuring monetary values of benefits received from non-market goods such as environmental quality. The methods used to arrive at a WTP value include surveys and hedonic price functions.

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ATTACHMENT F

Changes To Control Measures IND-01, CMB-01, CTS-01, and CTS-04

IND-01: *The Ports of Los Angeles and Long Beach have provided comments on control measure IND-01: Backstop Measure for Indirect Sources of Emissions from Ports and Port Related Sources (Port Backstop Measure). Through the Clean Air Action Plan (CAAP), the Ports have voluntarily implemented programs to reduce emissions from a variety of port-related sources. The Ports have commented that the AQMD “reconsider its approach and allow the continuation of the successful collaborative work by the ports, regulatory agencies and other stakeholders under the voluntary Clean Air Action Plan and the San Pedro Bay Standards.” As a result, the Ports have requested that the Port Backstop Measure be removed from the 2012 AQMP. The Ports have commented that they “can’t accept any regulatory action by the AQMD that will result in AQMD oversight and approvals of port actions, or enforcement actions by the AQMD on the ports for failure of the port industry to meet the ports’ emission reduction goals.”*

The AQMD staff agrees that the Ports have made significant progress in reducing emissions. It still remains however, that the Ports of Los Angeles and Long Beach are collectively the single largest fixed source of air pollution in Southern California. Port sources such as marine vessels, locomotives, trucks, harbor craft and cargo handling equipment, continue to be the largest sources of NO_x, PM_{2.5} and PM_{2.5} precursors in the region. These sources play a major role in the Basin’s ability to achieve the national PM_{2.5} ambient air quality standards. The AQMD staff believes that it is appropriate and necessary to include a backstop measure to ensure that the Basin’s largest source of NO_x and PM_{2.5} emissions maintains its course of emission reductions.

In response to comments from the Ports, the AQMD staff has made revisions to the Port Backstop Measure that further clarifies the intent and rule development process. AQMD staff has clarified that a backstop rule will become effective only if emissions from port-related sources exceed targets for NO_x, SO_x, and PM_{2.5} in 2014. In addition, the measure has been revised to further clarify that if additional emission reductions are needed, the Ports would be required to submit a plan on only the emission reduction shortfall. The backstop rule would not require any strategy to be implemented that lacked legal authority, was not cost-effective, or was found to be infeasible. In addition, staff clarified that the backstop rule would include time extension to achieve the targets, if necessary. Lastly, language has been added to the measure regarding enforcement of the port backstop rule. The AQMD staff is committed to continue to work collaboratively with the Ports, agencies, environmental community groups, industry representatives, and other interested parties through the rule development process.

ATTACHMENT F

Changes To Control Measures IND-01, CMB-01, CTS-01, and CTS-04

IND-01: BACKSTOP MEASURE FOR INDIRECT SOURCES OF EMISSIONS FROM PORTS AND PORT-RELATED FACILITIES [NO_x, SO_x, PM_{2.5}]

CONTROL MEASURE SUMMARY

SOURCE CATEGORY:

IF THE BACKSTOP MEASURE BECOMES EFFECTIVE (I.E. IF EMISSIONS FROM PORT-RELATED SOURCES EXCEED TARGETS FOR NO_x, SO_x, AND PM_{2.5}), AFFECTED SOURCES WOULD BE PROPOSED BY THE PORTS AND COULD INCLUDE SOME OR ALL PORTS AND PORT-RELATED SOURCES (-(E.G., MARINE VESSELS, LOCOMOTIVES, TRUCKS, CARGO HANDLING EQUIPMENT, HARBOR CRAFT, MARINE VESSELS, LOCOMOTIVES, AND STATIONARY EQUIPMENT), TO THE EXTENT COST EFFECTIVE STRATEGIES ARE AVAILABLE)

CONTROL METHODS:

IF THE BACKSTOP MEASURE BECOMES EFFECTIVE, EMISSION REDUCTION METHODS WOULD BE PROPOSED BY THE PORTS AND POTENTIALLY COULD INCLUDE CLEAN TECHNOLOGY PORT AND PORT FACILITY EMISSION CONTROL PLANS, FUNDING PROGRAMS, CONTRACTUAL LEASE REQUIREMENTS PROVISIONS, PORT RULES, TARIFFS, AND/OR INCENTIVES/DISINCENTIVES TO IMPLEMENT MEASURES, TO THE EXTENT COST EFFECTIVE AND FEASIBLE STRATEGIES ARE AVAILABLE

EMISSIONS (TONS/DAY): *NO
CHANGE TO THIS SECTION*

DESCRIPTION OF SOURCE CATEGORY

This control measure is carried over from the 2007 AQMP/SIP. If the backstop measure goes into effect, affected sources would be proposed by the ports and could include some or all port-related sources (trucks, cargo handling equipment, harbor craft, marine vessels, locomotives, and stationary equipment), to the extent cost effective and feasible strategies are available.

Other sources—i.e. sources that are unrelated to the ports—would not in any way be subject to emission reductions under this measure (including through funding of emission reduction measures, or purchase of emission credits, by the ports or port tenants).

Background

Emissions and Progress. The ports of Los Angeles and Long Beach are the largest in the nation in terms of container throughput, and collectively are the single largest fixed sources of air

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pollution in Southern California. Emissions from port-related sources have been reduced significantly since 2006 through efforts by the ports and a wide range of stakeholders. In large part, these emission reductions have resulted from programs developed and implemented by the ports in collaboration with port tenants, marine carriers, trucking interests and railroads. Regulatory agencies, including EPA, CARB and SCAQMD, have participated in these collaborative efforts from the outset, and some measures adopted by the ports have led the way for adoption of analogous regulatory requirements that are now applicable statewide. These port measures include the Clean Truck Program and actions to deploy shore-power and low emission cargo handling equipment. The Ports of Los Angeles and Long Beach have also established incentive programs which have not subsequently been adopted as regulations. These include incentives for routing of vessels meeting IMO Tier 2 and 3 NOx standards, and vessel speed reduction. In addition, the ports are, in collaboration with the regulatory agencies, implementing an ambitious Technology Advancement Program to develop and deploy clean technologies of the future.

Port sources such as marine vessels, locomotives, trucks, harbor craft and cargo handling equipment, continue to be among the largest sources of PM_{2.5} and PM_{2.5} precursors in the region. Given the large magnitude of emissions from port-related sources, the substantial efforts described above play a critical part in the ability of the South Coast Air Basin to attain the national PM_{2.5} ambient air standard by federal deadlines. This measure provides assurance that emissions from the Basin's largest fixed emission source will continue to support attainment of the federal 24-hour PM_{2.5} standard. ~~such as marine vessels, locomotives, trucks, harbor craft and cargo handling equipment, adversely affect air quality in the local port area as well as regionally. Without substantial control of emissions from port-related sources, it will not be possible for this region to attain federal ambient air quality standards for ozone or PM_{2.5}. Reductions in PM_{2.5} emissions will also reduce cancer risks from diesel particulate matter. Port sources also contribute to cancer risks.~~

Clean Air Action Plan. The emission control efforts described above largely began in~~in~~ 2006 when the Ports of Los Angeles and Long Beach, with the participation and cooperation of the staff of the SCAQMD, CARB, and U.S. EPA, adopted the San Pedro Bay Ports Clean Air Action Plan (CAAP). The CAAP was further amended in 2010, updating many of the goals and implementation strategies to reduce air emissions and health risks associated with port operations while allowing port development to continue. In addition to addressing health risks from port-related sources, the CAAP sought the reduction of criteria pollutant emissions to the levels that assure port-related sources decrease their “fair share” of regional emissions to enable the Basin to attain state and federal ambient air quality standards.

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The CAAP focuses primarily on reducing diesel particulate matter (DPM), along with NO_x and SO_x. The CAAP includes proposed strategies on port-related sources that are implemented through new leases or Port-wide tariffs, Memoranda of Understanding (MOU), voluntary action, grants or incentive programs.

The goals set forth in the CAAP include:

- Health Risk Reduction Standard: 85% reduction in population-weighted cancer risk by 2020
- Emission Reduction Standards:
 - By 2014, reduce emissions by 72% for DPM, 22% for NO_x, and 93% for SO_x
 - By 2023, reduce emissions by 77% for DPM, 59% for NO_x, and 93% for SO_x

In addition to the CAAP, the Ports have completed annual inventories of port-related sources since 2005. These inventories have been completed in conjunction with a technical working group composed of the SCAQMD, CARB, and U.S. EPA. Based on the latest inventories, it is estimated that the emissions from port-related sources will meet the 2012 AQMP emission targets necessary for meeting the 24-hr PM_{2.5} ambient air quality standard. The projected emissions from port related sources are included in the “baseline” emissions assumed in this plan to attain the PM_{2.5} standards.

While many of the emission reduction targets in the CAAP result from implementation of federal and state regulations (either adopted prior to or after the CAAP), some are contingent upon the Ports taking and maintaining further actions which are ~~voluntary in nature~~ not required by air quality regulations. These ~~voluntary~~ actions include the Expanded Vessel Speed Reduction Incentive Program, lower emission switching locomotives, Green Flag Program, and incentives for lower emission marine vessels. ~~Clean Truck Program, Oceangoing Vessel Low Sulfur Fuel Program, and the Shore side power and Auxiliary Marine Power Program.~~ This AQMP control measure is designed to provide ~~an “insurance policy” that provides~~ a “backstop” to the Ports’ actions to provide assurance that, if emissions do not continue to meet projections, the ports will develop and implement plans to get back on track, to the extent that cost effective and feasible strategies are available. ~~and ensures that the emission targets from port-related sources are met in a timely manner.~~

Regulatory History – *no change to this section*

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PROPOSED METHOD OF CONTROL

The goal of this measure is to ensure that NO_x, SO_x and PM_{2.5} emissions reductions from port-related sources are sufficient to attain the 24-hr federal PM_{2.5} ambient air quality standard. This measure would establish targets for NO_x, SO_x, and PM_{2.5} for 2014 that are based on emission reductions resulting from adopted rules and other measures such as railroad MOUs and vessel speed reduction that have been adopted and are being implemented. These emissions from port related sources are included in the “baseline” emissions assumed in this plan to attain the 24-hour PM_{2.5} standard. Based on current and future emission inventory projections, ~~anticipated emission reductions from port related sources~~ these rules and measures will be sufficient to achieve attainment of the 24-hr federal PM_{2.5} ambient air quality standard. ~~This measure is divided into two phases. The Phase I R~~requirements adopted pursuant to this measure ~~are~~ will become effective only triggered if emission levels exceed the above targets ~~projected to result from the current regulatory requirements and voluntary reduction strategies that are assumed and relied upon in the 2012 AQMP are not realized.~~ Once triggered, the ports will be required to develop and implement a plan to reduce emissions from ~~their port-related~~ sources to meet the emission targets over a time period. The time period to achieve and maintain emission targets will be established pursuant to procedures and criteria developed during rulemaking and specified in the rule. ~~This control measure is designed to ensure that the necessary emission reductions from port related sources projected in the 2012 AQMP milestone years are achieved.~~ The Phase II is designed to reduce emissions if it is later determined through a SIP amendment that additional region wide reductions are needed due to the change in Basin-wide carrying capacity for PM_{2.5} attainment. In this case, the ports will be required to develop and implement a plan to further reduce their emissions on a “fair share” basis.

This control measure will be implemented through a District rule. Through the rule development process the AQMD staff will establish a working group, hold a series of working group meetings, and hold public workshops. The purpose of the rule development process is to allow the AQMD staff to work with a variety of stakeholders such as the Ports, potentially affected industries, other agencies, and environmental and community groups. The rule development process will discuss the terms of the proposed backstop rule and, through an iterative public process, develop proposed rule language. In addition, the emissions inventory and targets will be reviewed and may be refined if necessary. This control measure applies to the Port of Los Angeles and the Port of Long Beach, acting through their respective Boards of Harbor Commissioners. The ports may have the option to comply separately or jointly with provisions of the “backstop” rule.

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Elements of Backstop Rule

Summary: This control measure will establish enforceable nonattainment pollutant emission reduction ~~goals-targets~~ for the ports in order to ensure ~~attainment-implementation~~ of the 24-hr PM2.5 attainment strategy in the 2012 AQMP. The “backstop” rule will ~~be implemented~~ go into effect if aggregate emissions from port-related sources exceed specified emissions targets. If emissions do not exceed such targets, the ports will have no control obligations under this control measure.

Emissions Targets: The emissions inventories projected for the port-related sources in the 2012 AQMP are an integral part of the 24-hr PM2.5 attainment demonstration ~~by-for~~ 2014 and its maintenance of attainment in ~~2019~~ subsequent years. These emissions serve as emission targets for meeting the 24-hr PM2.5 standard. ~~Future targets will be developed for the ozone standards in future SIP revisions.~~

Scope of Emissions Included: Emissions from all sources associated with each port, including equipment on port property, marine vessels traveling to and from the port while in California Coastal Waters, locomotives and trucks traveling to and from port-owned property while within the South Coast Air Basin. This ~~analysis-measure~~ will make use of the Port’s annual emission inventory, either jointly or individually, as the basis for the emission targets. The inventory methodology to estimate these emissions is consistent with the CAAP methodology. Other sources—i.e. sources that are unrelated to the ports—would not in any way be subject to emission reductions under this measure (including through funding of emission reduction measures, or purchase of emission credits, by the ports or port tenants).

Circumstances Causing Backstop Rule Regulatory Requirements to Come Into Effect: ~~The Phase I~~ of the “backstop” requirements will be triggered if the reported aggregate emissions for 2014 for all port-related sources exceed the 2014 emissions targets ~~milestone~~. The rule may also provide that it will come into effect if the target is met in 2014 but exceeded in a subsequent year. ~~The Phase II requirements will be triggered after a two-step evaluation. First, the Basin fails to meet the 24-hr PM2.5 standard as demonstrated in the 2012 AQMP and there is a change in Basin-wide carrying capacity, in which case a new reduction target for each pollutant will be established through a full public process of amending the AQMP. The second step will evaluate the feasibility of further emission reductions from port-related sources using a “fair share” methodology. District staff will work with the ports, other stakeholders, CARB and U.S. EPA to perform such a feasibility analysis and present it to the the Governing Board at a regularly scheduled public meeting.~~ If the target is not exceeded, the ports would have no obligations under this measure.

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Requirements if Backstop ~~Triggered~~ Rule Goes Into Effect: If the “backstop” rule ~~is-goes into triggered effect~~, the Ports would submit an Emission Control Plan to the District. The plan ~~should-would~~ include measures sufficient to bring the Ports back into compliance with the 2014 emission targets. ~~(Phase I) and to further reduce their emissions to the new target based on their contribution to the total inventories, necessary in meeting the 24-hr PM_{2.5} standard through a SIP amendment (Phase II).~~ The Ports may choose which sources would be subject to additional emission controls, and may choose any number of implementation tools that can achieve the necessary reduction. These may include ~~environmental lease conditions, port rules, tariffs or incentives~~ clean technology funding programs, lease provisions, port tariffs, or incentives/disincentives to implement measures. As described below, the ports would have no obligation under this measure to implement measures which are not cost-effective and feasible, or where the ports lack the authority to adopt an implementation mechanism. The District would approve the plan if it met the requirements of the rule. ~~Failure to implement the plan would be a violation of this control measure.~~

RULE COMPLIANCE AND TEST METHODS

Compliance with this control measure will depend on the type of control strategy implemented. Compliance will be verified through compliance plans, and enforced through submittal and review of records, reports, and emission inventories. Enforcement provisions will be discussed as part of the rule development process.

COST EFFECTIVENESS AND FEASIBILITY

The cost effectiveness of this measure will be ~~determined~~ based on the control option selected. A maximum cost-effectiveness threshold will be established for each pollutant during rule development. The rule will not require any additional control strategy to be implemented which exceeds the threshold, or which is not feasible. In addition, the rule would not require any strategy to be implemented if the ports lack authority to implement such strategy. If sufficient cost-effective and feasible measures with implementation authority are not available to achieve the emissions targets by the applicable date, the District will issue an extension of time to achieve the target. It is the District’s intent that during such extension, the ports and regulatory agencies would work collaboratively to develop technologies and implementation mechanisms to achieve the target at the earliest date feasible.

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IMPLEMENTING AGENCY – *no change to this section*

REFERENCES – *no change to this section*

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CMB-01: *Clarification under Emissions Reduction discussion.*

CMB-01: FURTHER NO_x REDUCTIONS FROM RECLAIM – PHASE I

[NO_x]

EMISSIONS REDUCTION

Phase I reductions target a range of 2-3 TPD NO_x. During the rule development phase, staff may refine the emission reductions to include growth and other unforeseen issues. Phase I is expected to be adopted in 2013 and the shave will be implemented/triggered for compliance year 2015, if the attainment of 24-hr PM_{2.5} standard is not met by 2014. If not triggered in 2015, these reductions will be a part of the 3 – 5 TPD of NO_x reductions for Phase II of CMB-01. Note that the California Health and Safety Code requires the District to monitor the advancement in Best Available Control Retrofit Technology (BARCT), and if BARCT advances, the District is required to periodically re-assess the overall facility caps, and reduce the RTC holdings to applicable equivalent command-and-control BARCT levels.

CMB-01: FURTHER NO_x REDUCTIONS FROM RECLAIM – PHASE II

[NO_x]

EMISSIONS REDUCTION

Staff's initial analysis shows that approximately 1-2 tpd additional NO_x RTC reductions are feasible for the second phase from the RECLAIM universe (from the overall 3-5 tpd NO_x RTC reductions discussed in the first phase). During the rule development phase, staff may refine the emission reductions to include growth and other unforeseen issues at this stage. Phase II is expected to be adopted by 2015 for implementation beginning in 2020. It should be noted that since there are substantial NO_x reductions needed by 2023, if additional reductions are feasible and cost effective, they will be evaluated during rulemaking. Note that the California Health and Safety Code requires the District to monitor the advancement in Best Available Control

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Retrofit Technology (BARCT), and if BARCT advances, the District is required to periodically re-assess the overall facility caps, and reduce the RTC holdings to applicable equivalent command-and-control BARCT levels.

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CTS-01: *Inventory has been modified to reflect emission inventory values found in Appendix III.*

**CTS-01: FURTHER VOC REDUCTIONS FROM ARCHITECTURAL COATINGS (RULE 1113)
[VOC]**

CONTROL MEASURE SUMMARY				
SOURCE CATEGORY:		ARCHITECTURAL COATINGS		
EMISSIONS (TONS/DAY):				
ANNUAL AVERAGE	2008	2014	2019	2023 (2023-2007 SIP)*
VOC INVENTORY	21.9	15.8 <u>15.5</u>	17.5 <u>16.2</u>	19.3 <u>16.7</u> (23.7)
VOC REDUCTION			2 - 4	2.2 - 4.4 <u>2.1 - 4.1</u> (3.1 - 6.2)
VOC REMAINING			13.5 - 15.5 <u>12.2 - 14.2</u>	14.9 - 17.1 <u>12.6 - 14.6</u> (17.5 - 20.6)

CTS-04: *Clarification to the Proposed Method of Control.*

**CTS-04: FURTHER VOC REDUCTIONS FROM CONSUMER PRODUCTS
[VOC]**

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	CONSUMER PRODUCTS
CONTROL METHODS:	<u>FURTHER STUDY OF LOW VAPOR PRESSURE SOLVENT CONTAINING PRODUCTS TO RE-EVALUATE THE EMISSION REDUCTIONS/AIR QUALITY BENEFITS; SUBSEQUENT ASSESSMENT OF COST-EFFECTIVE AND TECHNICALLY-FEASIBLE REDUCTIONS REVISE THE EXEMPTION FOR LOW-VAPOR PRESSURE SOLVENTS IN CONSUMER PRODUCTS</u>

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Changes To Control Measures IND-01, CMB-01, CTS-01, and CTS-04

PROPOSED METHOD OF CONTROL

[REPLACE PARAGRAPH 3 WITH THE FOLLOWING]:

In a subsequent phase, the control approach would revise the LVP-VOC exemption if speciated LVP-VOC survey data and research results show ~~an opportunity to further reduce VOC emissions~~ reductions from consumer products are needed. CARB and AQMD staff will work with stakeholders to identify cost-effective, technically-feasible controls from consumer product categories or others. Any proposed amendments to ~~the Consumer Products Regulations to revise the LVP-VOC exemption~~ reduce VOC emissions would be vetted through a full public process.

ERRATA SHEET FOR AGENDA #30

Adopt Draft Final 2012 Air Quality Management Plan Board Meeting December 7, 2012

1. Kindly insert the following additional resolution language on page 8 of Attachment A:

BE IT FURTHER RESOLVED, that the South Coast Air Quality Management District Governing Board does hereby direct staff to work in conjunction with CARB to provide annual reports to U.S. EPA describing progress towards meeting Section 182(e)(5) emission reduction commitments.

2. Please make the following changes in Appendix IV-A (including modifications found in Attachment F) to the emissions reduction discussion for the following control measures:

CMB-01: FURTHER NOX REDUCTIONS FROM RECLAIM – PHASE I

EMISSIONS REDUCTION

Phase I reductions target a range of 2-3 TPD NO_x. During the rule development phase, staff may refine the emission reductions to include growth and other unforeseen issues. Phase I is expected to be adopted in 2013 and the shave will be implemented/triggered for compliance year 2015, if the attainment of 24-hr PM_{2.5} standard is not met by 2014. If not triggered in 2015, these reductions will be a part of the 3-5 TPD of NO_x reductions for Phase II of CMB-01 and will be incorporated into the 2015 AQMP. Note that the California Health and Safety Code requires the District to monitor the advancement in Best Available Control Retrofit Technology (BARCT), and if BARCT advances, the District is required to periodically re-assess the overall facility caps, and reduce the RTC holdings to applicable equivalent command-and-control BARCT levels.

CMB-01: FURTHER NOX REDUCTIONS FROM RECLAIM – PHASE II

EMISSIONS REDUCTION

Staff's initial analysis shows that approximately 1-2 tpd additional NO_x RTC reductions are feasible for the second phase from the RECLAIM universe (from the overall 3-5 tpd NO_x RTC reductions discussed in the first phase). During the rule development phase, staff may refine the emission reductions to include growth and other unforeseen issues at this stage. Phase II ~~is expected to be adopted by 2015~~ will be incorporated into the 2015 AQMP for implementation ~~beginning in~~ by 2020 using

[the BARCT analysis that is developed in 2013 and 2014.](#) It should be noted that since there are substantial NOx reductions needed by 2023, if additional reductions are feasible and cost effective, they will be evaluated during rulemaking. Note that the California Health and Safety Code requires the District to monitor the advancement in Best Available Control Retrofit Technology (BARCT), and if BARCT advances, the District is required to periodically re-assess the overall facility caps, and reduce the RTC holdings to applicable equivalent command-and-control BARCT levels.

3. Kindly replace the following language from page 1 of Attachment A - Resolution:

WHEREAS, the 1997 9-hour ozone standard became effective on June 15, 2004, with an attainment date for the South Coast of ~~December 31~~ [June 15](#), 2024; and